CFA Newsletter

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CFA Newsletter
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The views expressed are not necessarily those of the CFA.

A unique approach to forest conservation in New Zealand

The spectacular 415-hectare 'Mt Terako' was the first of New Zealand's QCC forest covenant protects to be registered. It is one of the few large areas of private indigenous forest remaining in Canterbury, one of the country's most modified regions. (Photo: Queen Elizabeth II National Trust)

New Zealand's commitment to the Queen's Commonwealth Canopy (QCC) is being implemented by way of a unique type of partnership agreement between land owners and the Queen Elizabeth II National Trust (the Trust) that enables private landowners to voluntarily protect their indigenous forests in perpetuity.

The emphasis on privately owned forests reflects an urgent priority in New Zealand to protect biodiversity on private land, which covers 70% of the total land area. This is where New Zealand's biodiversity is most at risk. Originally, New Zealand was largely forested but more than 75% of its indigenous forest has been cleared or cut over since human occupation.

The most transformed landscapes tend to be in the lowland and coastal areas of the country where urban development is spreading, primary production is intensifying and the majority of land is privately owned. Much of the richest and most threatened biodiversity also occurs in these landscapes where it is least protected and most at risk of further loss. New Zealand's island biodiversity has a high level of endemism and a significant number of threatened species and habitats. Protecting what remains is a matter of urgency.

With this is mind, the New Zealand Government undertook in November 2015 to contribute to the QCC initiative – a Commonwealth-wide network of forest conservation programmes to be established as a lasting legacy of Queen Elizabeth's reign. The Government committed $1 million over a three-year period to assist the Trust in extending its network of protective native forest covenants on private land. The Trust was selected as the Government's partner because of its 40-year track record in private nature conservation together with its royal connection, having been named in honour of the Queen's Silver Jubilee.

The Trust is an independent statutory body, which was established in 1977 when the New Zealand farming community called for a legal mechanism that would enable landowners to voluntarily and permanently protect natural and

Her Excellency The Right Honourable Dame Patsy Reddy, Governor-General of New Zealand (right) and Hon Maggie Barry, Minister of Conservation (left) beside the plaque Dame Patsy unveiled at the Mt Terako forest, in celebration of its registration as the first QCC covenant. (Photo: The Press, Fairfax Media).

cultural heritage features on their land, whilst also retaining ownership. The mechanism, enshrined in the Trust's statute, is the 'open space covenant' – an agreement between the landowner and the Trust to protect specified open space values in perpetuity. The covenant is registered on the land title, thereby binding the current owner and all subsequent owners. The landowners are responsible for the ongoing care of the protected land and the Trust acts as a perpetual trustee, biennially monitoring all covenants and providing support and advice to the landowners.

A 5.5-hectare forest covenant protects coastal forest on the Coromandel Peninsula; habitat to the threatened North Island brown kiwi and New Zealand bush falcon. (Photo: Queen Elizabeth II National Trust)

Currently, there are over 4,370 registered open space covenants, which protect more than 180,000 hectares of private land – 1% of the country's total private land area. Of these, 70% protect forest habitats and no harvesting is allowed. While logging of indigenous forest in New Zealand has hugely reduced in recent decades and most productive forestry is now confined to exotic plantations, nevertheless, the forest remnants on private land are in need of formal and lasting protection.

More and more landowners are recognising this need as they become more environmentally aware – so much so that the Trust struggles to meet the demand within its normal level of funding. Every proposed covenant must go through an assessment and approval process to begin with. Once approved, the land must be surveyed, fenced off and legal documentation prepared. The whole process can take up to two years to complete.

The $1 million QCC fund is enabling at least 40 more forest covenants to be established than the Trust could otherwise afford.

All the QCC forest covenants must meet agreed eligibility. The forest must be greater than 3 hectares in area and comprise predominantly primary or advanced secondary indigenous forest with a closed canopy. It must also satisfy one or more of the national priorities for biodiversity protection on private land in New Zealand and/or add to an already protected forest corridor or landscape.

To date, 32 open space covenants have been recommended to the QCC for accreditation and endorsed to become part of the Queen's Commonwealth Canopy. The first of these, was registered in November 2016 and the New Zealand QCC programme officially launched.

So far, the covenanted forests average 60 hectares in size, ranging from 415 to 3.5 hectares, and represent a diverse range of forest types across New Zealand's two main islands, from sea level to sub-alpine altitudes. A few are contiguous with large protected forests in public ownership but most occur within highly modified landscapes with only scattered remnants of indigenous forest. More than a third occur in acutely or chronically threatened environments (where less than 10% or between 10–20% of indigenous vegetation remains) and around 40% protect the habitats of nationally threatened species, including birds, plants, fish, frogs and invertebrates.

In each case, the landowners are in effect acting as an onsite forest ranger, bringing their personal stewardship and detailed knowledge of their land to the ongoing management. It is a significant undertaking, as every landowner invests considerable time, energy and money into the initial establishment of the covenant and then its ongoing care and maintenance. For its part, the Trust works with the landowners, advising them on management and visiting them at least biennially to inspect the forest and provide support. The Trust also works in partnership with central and local government and many other organisations to facilitate practical and financial help for the landowners.

The partnership approach, where responsibility for protecting the forest values is shared between the landowner and the Trust now and into the future, has proved a particularly effective foundation for the success of the Trust's open space covenanting system. It has certainly proved an ideal tool to assist private landowners to undertake effective and enduring forest conservation and contribute tangibly to the Queen's Commonwealth Canopy. The Trust is keen to continue the QCC programme beyond its current commitment but is dependent on securing funding to do so.

Queen Elizabeth II National Trust
contact Gareth Eloff GEloff@openspace.org.nz

Association news

CFA Young Forester Award winner prepares for her work placement in Canada

Hello, my name is Racquel Williams-Ezquea from the Federation of St. Kitts and Nevis located within the Caribbean. It is an honor to be the 2017 CFA Young Forester Award winner, this opportunity is God sent. I attained my Bachelor's degree in Forestry Engineering at the University of Pinar del Rio in Cuba. Currently, I am the Forestry Officer within the Department of Environment.

I am very grateful for this opportunity as it will help to fill a significant gap in my professional development. At present, my skill set is predominantly influenced by theoretical knowledge and the much needed hands-on, practical knowledge that is essential in order to function in my profession is limited. I aspire to be a well-rounded professional.

The work placement is extremely timely as I have future plans to complete my postgrad studies in Canada. This is a very exciting opportunity, as it will not only set the stage for my future academic plans but also enhance my current skills as a Forestry professional within my country.

Racquel at Nevis Peak with the Park Rangers whom she supervises.

I am confident that this award will serve as a catalyst to new heights both personally and professionally.

Thank you!

Mount Liamuiga, at 3,792ft (1,156 m), is the highest point on the island of St. Kitts, and hosts a variety of ecosystems including secondary woodland, primary rainforest of virgin jungle and cloud forest.

The Queen's Baton Relay visits QCC sites

The **Queen's Baton Relay**, which was launched in London in May, is the first major event in the run-up to next year's Commonwealths Games, whereby a specially designed baton visits all of the countries of the Commonwealth in the run-up to the Games. We have been fortunate that the Queen's Baton Relay's route has taken in several QCC sites and through these visits has highlighted the project throughout the Commonwealth.

Jamaica

St Lucia

Antigua

St Kitts and Nevis

THE QUEEN'S COMMONWEALTH CANOPY

Belize

Maya 2020 Project

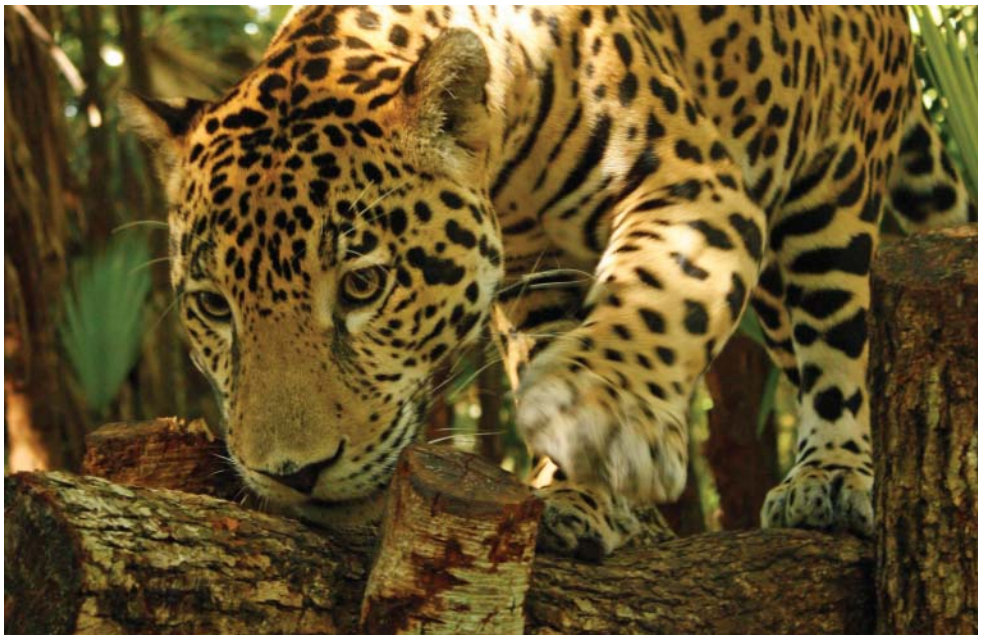
The Chiquibul Forest, in the Maya Mountains, is Belize's largest protected area. The forest provides critical habitat for countless rare and endangered species, such as the white lipped peccary, tapir, scarlet macaw, howler monkey and five species of cats including the Jaguar.

The forest harbours up to 400 species of birds, and several million birds migrate to the area during the North American winter periods. Many impressive Maya monuments are located in the Chiquibul Forest as well as the largest cave system in Central America with over 500 km of passageways.

Friends for Conservation and Development (FCD), a Belizean Non-Government Organisation, have a co-management role with the Government of Belize to protect the Chiquibul Forest for the people of Belize. The Maya 2020 initiative will support FCD in this important endeavour.

The project will set a new global standard in forest conservation with the aim of conserving the rich tropical biodiversity of the Chiquibul Forest through technological innovations whilst providing sustainable livelihoods for local people.

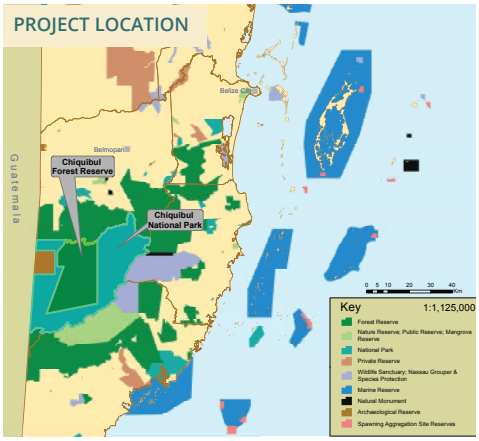
Maya 2020 is endorsed by the Government of Belize, supported by the Ministry of Forestry, Fisheries and Sustainable Development, and mentored by international institutions including Rainforest Concern, Selvana, Concentric Advisors and Survival Wisdom.



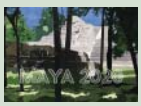
Jaguar

Macaw

Maya Mountains



Partners



RAINFOREST CONCERN
rainforestconcern.org

SELVANA

FCD
Friends for Conservation and Development

SURVIVALWISDOM
EXPERT KNOWLEDGE, BESPOKE TRAINING

CONCENTRIC

THE QUEEN'S COMMONWEALTH CANOPY

Canada

Great Bear Rainforest

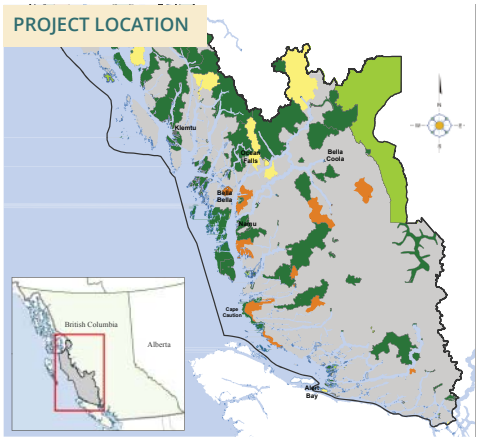
The Great Bear Rainforest (GBR) was originally established through land-use decisions first announced in 2006. Earlier this year, after extensive discussions with First Nations and stakeholders, a final ecosystem-based management system was agreed to and additional new areas will be protected.

Under the Great Bear Rainforest land use order, 85% of the forest is now protected and 15% will be available for logging, supporting local jobs. The area available for logging is under the strictest logging rules in North America. The GBR is globally recognized for its unique biodiversity and is one of the largest intact tracts of coastal temperate rainforest in the world.

The GBR covers 6.4 million hectares on British Columbia's north and central coast, and is home to 26 separate First Nations. Ecosystem-based management in the area is defined as "concurrent achievement of high levels of ecological integrity and high levels of human well-being."

To commemorate the achievement and celebrate the recent endorsement by The Queen's Commonwealth Canopy, the Province is establishing a new $1-million Great Bear Rainforest Education and Awareness Trust. More information about the Great Bear Rainforest is online at **www.gov.bc.ca/greatbearrainforest.**

PROJECT LOCATION



Partners

BRITISH COLUMBIA CANADA

SIERRA CLUB BC

COASTAL FIRST NATIONS GREAT BEAR INITIATIVE

WFP

BCTS BC Timber Sales

ForestEthics

Catalyst

GREENPEACE

INTERFOR

HOWE SOUND PULP & PAPER CORPORATION

future forests fellowship

forestry
university of british columbia

http://future.forestry.ubc.ca

Eligibility Guidelines

About the Fellowship

The UBC Faculty of Forestry's Future Forests Fellowship aims to attract and retain world-class doctoral students by supporting students who demonstrate both leadership skills and a high standard of scholarly achievement in graduate studies.

Value: $70,000 CAD annually for up to four years. The fellowship is intended to cover all expenses incurred in the preparation and conduct of research.

Application Timeline

Opening Date: The FFF application and list of supporting documents required will be made available starting August 1, 2017. In order to be considered for the Fellowship, a complete PhD program application (September 2018 intake) must also be submitted.

Closing Deadline: The FFF and PhD applications, plus all required supporting documentation, must be submitted by **4pm PST, Friday, November 24, 2017**. The award recipient announcement will be made in January 2018.

I/ Field of Study

Applicants must intend to undertake doctoral research in one of the following areas of excellence for the Faculty of Forestry. The research must be conducted, at least in part, in British Columbia, and should result in an outcome which has practical application in BC.

- Forest Products Biotechnology;
- Bioenergy;
- Forest Genomics;
- Climate Change;
- Urban Forestry;
- Forest Management;
- Conservation;
- Forested Landscapes;
- Salmon Ecology;
- Forest Health;
- Forests and Indigenous Peoples;
- Forests and Human Health.

II/ Academic Standing

FFF applicants must have a minimum A+ standing in each of their last two years of full-time study. GPA is calculated using all courses taken in a given year. For example at UBC, A+ standing is 90% and higher. At other universities, A+ standing is determined from marking keys that accompany transcripts.

III/ Citizenship

Both domestic and international students are eligible to apply.

IV/ Student Status

- Applicants must be seeking financial support for their first doctoral degree.
- Applicants must meet the eligibility requirements for admission to full time doctoral studies at UBC Forestry and intend to register beginning September 2018 (a completed application to the Forestry PhD program September 2018 intake is part of the documentation required for applying to the Future Forests Fellowship).
- To receive funding, the successful recipient of the Future Forests Fellowship must:
  - remain enrolled as a full-time student in the UBC Forestry doctoral program and demonstrate continued satisfactory progress documented through annual progress reports;
  - not hold any other awards from the Canadian government or the University of British Columbia at the same time as the Future Forests Fellowship.

APPLICATION EVALUATION CRITERIA

Academic Excellence – Weighting 30%

- Academic record;
- Scholarships and awards held;
- Duration of previous studies.

Research ability or potential – Weighting 50%

- Quality of contributions to research and development;
- Relevance of work experience and academic training to field of proposed research;
- Significance, feasibility, and merit of proposed research, and its potential contribution to the advancement of knowledge in the field, the potential benefit to society, and how anticipated outcomes will have practical application in British Columbia.
- Intended areas of research must fit with one of the following Areas of Excellence for the Faculty: Forest Products Biotechnology; Bioenergy; Forest Genomics; Climate Change; Urban Forestry; Forest Management; Conservation; Forested Landscapes; Salmon Ecology; Forest Health; Forests and Indigenous Peoples; Forests and Human Health.
- Ability to think critically;
- Ability to apply skills and knowledge;
- Judgment;
- Originality;
- Initiative and autonomy;
- Enthusiasm for research;
- Determination and ability to complete projects within an appropriate period of time.

Communication, interpersonal and leadership abilities – Weighting 20%

- The ability or potential to communicate scientific concepts clearly and logically in written and oral formats. For example, this could include:
  - quality of the application's presentation;
  - participation in preparing publications; and
  - awards for oral presentations or papers.
- Professional and relevant extracurricular interactions and collaborations. For example, this could include:
  - mentoring;
  - teaching;
  - supervisory experience;
  - project management;
  - chairing committees;
  - organizing conferences and meetings; and
  - elected positions held.

Forest Scenes

Looking into the future: measuring the impact of raised CO_2 levels in mature forests

Aerial view of the BIFoR's FACE facility (Photo: Norbury Estate)

Spring is always an exciting time in deciduous woodlands such as Mill Haft in Staffordshire. With warming temperatures, understorey plants strive to make good use of their share of sunlight before the dominant oak trees unfold new leaves. Taking some time to remobilise winter reserves from roots and stems, the more than 150-year-old oaks flush eventually and the canopy closes to become the efficient assimilation machinery that fixes carbon dioxide (CO_2) and channels sun energy into the forest ecosystem for another growing season, driving complex nutrient cycles and food webs, from the large trees to the soil microbes and everything in between including insects, birds, and mammals.

Spring 2017 was even more exciting at Mill Haft, site of the University of Birmingham Institute of Forest Research (BIFoR) Free-Air CO_2 Enrichment (FACE) facility. BIFoR FACE was 'switched on' on the 3rd of April, coinciding with bud break of the

Climbing a mast at BIFoR's FACE facility (Photo: John James UoB)

oak trees. After three years of careful planning, construction, testing, and baseline measurement, Professor Rob MacKenzie and Operations Manager Dr Kris Hart opened the main CO_2 valve. One of the largest ecosystem experiments worldwide — dubbed a £30M "sci-fi forest" by the BBC's Roger Harrabin — was finally under way. Would it all work? The team's tensions were quickly released, as the facility started operating just as planned. Three 30-metre plots of mature oak forest are now immersed in an atmosphere with elevated CO_2 concentration, topped up from current values of about 400 ppm (parts per million) to 550 ppm, a roughly 38% increase, which the entire globe is likely to see by 2050.

This decade long experiment will provide much needed real world data about the fate of increasing atmospheric CO_2 in forests and effects on all aspects of the ecosystem. Annual crops and young tree plantations can use additional CO_2 to increase growth and yields, but this is not at all clear for mature forest ecosystems, which are characterised by complex nutrient cycles and large carbon buffers in soils and tree biomass, long life cycles and slow responses. Current estimates have forests, especially mature ones, absorb about 30% of the CO_2 added by human activities to the atmosphere. This is an important (and free) contribution that forests make to slowing climate change, but the capacity of mature forest ecosystems to continue absorbing ever increasing amounts of CO_2 is entirely unknown. Even adverse effects on ecosystem health and resilience are possible with profound consequences for forests as well as the rate of global climate change. Experiments such as BIFoR FACE and its currently two analogues worldwide (in a dry evergreen forest in Australia, and in a tropical rainforest in Brazil) are urgently needed to address such significant knowledge gaps.

Key figures from across the UK forestry sector joined inaugural donors the JABBS Foundation and Norbury Park Estate, regional stakeholders, and the University of Birmingham's senior management to celebrate BIFoR FACE operations on 21st June 2017. Visitors to BIFoR FACE are welcome by appointment: please contact bifor@contacts.bham.ac.uk. Follow the project on Twitter: @BIFoRUoB.

Professors Michael Tausz and Rob MacKenzie
Directors of the Birmingham Institute of Forest Research.
(A version of this article first appeared in the BIFoR Spring 2017 newsletter)

Unravelling the complexity of landscape transitions in South East Asia

Road building inside Keo Seima Wildlife Sanctuary (Photo: Rebecca Riggs)

Rural landscapes across South-east Asia are moving through an agrarian transition. Growing market integration is driving access to frontier areas and creating new opportunities for development and resource use. Industrial agriculture, extractive industries and transport infrastructure is opening up new opportunities for smallholders and transforming rural livelihoods. This recent wave of development, expected to increase throughout the 21st century, is placing enormous pressure on tropical ecosystems. Large areas of intact forest are being designated for industrial agriculture or mining. With improved capabilities and resources, smallholders are expanding agricultural land into natural forest. While this

agrarian transition has the potential to lead to permanent livelihood improvements, serious concerns are being raised over the degree to which globally significant biodiversity can continue exist in transformed rural landscape. The expansion of agribusiness and smallholders will require trading off natural forests for plantations, likely at the expense of irreplaceable tropical biodiversity. Environmental stewards must make difficult management decisions; how to move through an agrarian transition while ensuring inclusive growth and minimising environmental harm. Meeting this challenge requires a comprehensive understanding of the impact of development on social-ecological systems, including the politics that influence them.

In collaboration with Wildlife Conservation Society Cambodia, our research takes a closer look at the social-ecological impacts of rapidly transforming rural landscapes in South-east Asia. In Cambodia, road development is giving smallholders access to frontier areas, providing poor households with opportunities to diversify into cash crop markets and logging. Governance arrangements and institutions lack capacity to regulate these changes, impeding their ability to safeguard legally designated protected areas. As a consequence, smallholder forest clearance and logging are major threats to conservation. Protected areas are at a crossroad; if rural populations remain poor, they will continue to exert pressure on natural resources with negative conservation outcomes. Yet roads, industrial agriculture and smallholders are encroaching into high conservation value forest, threatening the survival of critically endangered flora and fauna. Attempts to engage communities in conservation are frequently undermined by a political and economic apparatus that favours a powerful elite, impairing trust and relationships between conservation groups and communities living in and around forest areas. As remote areas transition to multi-functional landscapes, protected areas in Cambodia need to be able to absorb losses and adapt.

Our study involves two protected areas in Cambodia, both co-managed by the Wildlife Conservation Society and the Ministry of Environment. Over a three-year period (2016–2019), we are obtaining information from local people through and surveying forest cover and key species to build evidence on drivers of agrarian transitions and the conditions required to mediate them. By taking a system-wide approach, our aim is to identifying leverage points for harnessing livelihood opportunities and strengthening protected area management. Our research will provide evidence on conservation and development trade-offs, unravelling the socio-economic, political, cultural and environmental complexities influencing Cambodia's rapidly unfolding agrarian transition.

Preliminary Findings

In our case study of Keo Seima Wildlife Sanctuary (KSWS) in Mondulkiri Province, our preliminary findings indicate that, as predicted, increased accessibility is providing smallholders new development opportunities. Farmers are shifting from subsistence agriculture to cash crops; primarily cassava, cashew, pepper and rubber. New migrants are pouring into the landscape in search for affordable fertile land, unperturbed by the legal status of the protected area. The start of this landscape transition began ten years ago when the provincial road was upgraded to a paved two-lane highway, creating direct access to large tracts of evergreen forest for logging and clearance. As neighbouring Snoul Wildlife Sanctuary transformed from natural forest to rubber, agriculture and settlements, access to high value timber in KSWS grew. The extraction of rosewood (*Dalbergia)*, now largely exhausted, contributed significant income to local livelihoods, facilitated by the well-established illegal timber trade across the Vietnamese border. For the Indigenous communities living in and around KSWS, accessibility is

New construction driving change in Keo Seima Wildlife Sanctuary (Photo: Rebecca Riggs)

a double-edged sword. Traditional social structures are changing due to the arrival of new migrants; younger generations engage more in logging, challenging the status quo. Leaders and communities are struggling to reconcile their desire for development with traditional cultural values. As prior conservation strategies were designed to protect traditional practices, growing engagement in the cash economy is placing strain on the relationship between protected area managers and local communities. The Ministry of Environment and WCS recently began a REDD+ (Reduced Emissions from Deforestation and Degradation) project to finance conservation activities and are in a long-term process of community engagement to gain their involvement and support. However, politics and vested interests among local government and private entities are pushing development and conservation goals further apart, raising concern over the future of the protected area.

Governance challenges

The preliminary findings from this study demonstrate multiple influences on protected area management that must be considered for long term sustainable outcomes. Collaborative governance is crucial for managing the rapid pace of change and fostering partnerships for social-ecological benefits. Rural communities are not stagnant; partnerships must be resilient to demographic change. Strong leadership at the village level is essential for controlling migration into the area and building compliance and recognition of protected area boundaries. WCS and the Ministry of Environment should continue to support and build capacity of local leaders, ensuring livelihood needs are prioritized in future management strategies. Conservation incentives cannot compete against the revenue local farmers obtain when they clear forest land, especially when the farmer is protected by association with a political elite. Without unanimous support from all governing institutions, law enforcement in the protected area is ineffective. Building effective collaborative governance that fosters cooperation, coordination and commitment among institutions should be prioritised to meet the array of challenges occurring in transitioning landscapes, especially where conservation and development are in direct conflict.

Way Forward

Practitioners have long recognised the need to reconcile conservation and development. Yet as the pace and scale of development in the 21st century increases, the stakes are rising. Continued deforestation in tropical countries will mean the only remaining forest is of high conservation value. These forests will need to compete with growing populations and food production demands. As South-east Asia moves through its agrarian transition, will it be possible to retain important areas of natural forest? What are the incentives for smallholders to do so? These questions can only be answered through a holistic approach to researching and working in landscapes. The transformation of livelihoods in KSWS is symptomatic of the broader changes occurring across political and economic fronts in Cambodia and South East Asia. Without a constituency for conservation and meaningful government commitment, there is little protected area managers can do to protect their boundaries – especially in countries where the allocation of resources favour a political elite. Nurturing agrarian transitions requires strong relationships between stakeholders and building capacity for landscape management. Conservation groups and protected area managers will need to harness opportunities for development and accept trade-offs. The process will be slow and unrewarding in the short term, but conservation initiatives needs to think long term if they are to survive changing rural landscapes of the 21st century.

Rebecca Riggs
PhD candidate, James Cook University

ITTO's time-series data on tropical timber

ITTO recently released time-series data for 83 countries – including all ITTO producer and consumer member countries[1] – on the production and trade of primary timber products such as logs, sawnwood, veneer and plywood. The data, for the period 1990–2016, are available in ITTO's online statistical database (http://www.itto.int/annual_review_output/).

The time series data is valuable because it describes the evolution of, and long-term trends in, the trade of tropical timber and primary tropical timber products, as well as important shifts in timber production and further processing. For example, Malaysia's timber trade focused largely on the export of tropical logs in the 1990s; today, that country mainly exports processed products, such as plywood. Time-series data are valuable for a range of stakeholders, such as trade and financial analysts, governments, non-governmental organizations, researchers and students.

A worker records data for a recently harvested cumaru log in Madre de Dios, Peru. ITTO is building capacity in its producer member countries to collect and analyze forest data. Photo: CNF/ITTO project PD 621/11 Rev.3 (M)

[1] http://www.itto.int/itto_members/

Collecting and disseminating data on the production and trade of tropical timber and timber products is one of ITTO's core activities in assessing the international timber situation. ITTO routinely collects and analyzes data on the production and trade of primary wood products (namely industrial roundwood, sawnwood, veneer and plywood) for its 73 members, with an emphasis on the tropical components of those products. Data on the trade of secondary products like wooden furniture is also collected and ITTO's online statistical database will be expanded in coming years to include these data as well.

The Joint Forest Sector Questionnaire – a partnership among international organizations

ITTO collects data on timber products primarily through the Joint Forest Sector Questionnaire (JFSQ), which was developed jointly by ITTO and three partner organizations – the Food and Agriculture Organization of the United Nations (FAO), the United Nations Economic Commission for Europe (UNECE), and Eurostat – and has been in use since 1998. The JFSQ is updated yearly to include the latest innovations in timber products and customs codes covering them. It is sent each year to 192 countries worldwide. It has three parts in common among all participating countries: the production of primary wood products; the trade of primary wood products; and the trade of secondary wood products. The JFSQ enables the four partner organizations to standardize definitions and statistical reporting processes for timber products. Its definitions have also been proposed to and included in the World Customs Organization (WCO)'s five-year Harmonized System (HS) customs nomenclature revision cycle; for example, in early 2017, the WCO included a more inclusive list of tropical species in the HS, as proposed jointly by ITTO, FAO and the UNECE as a result of their ongoing collaboration.

Data processing and its challenges

ITTO analyzes and processes the data collected through the JFSQ, with a focus on its members. Various factors affect the JFSQ response rate and data quality, but the lack of statistical capacity in member countries is often the most important limitation. The response rate to the ITTO JFSQ[2] was only 63% in 2016, and only half the submitted questionnaires had consistent and reliable data. ITTO uses three complementary sources of information to validate the reliability of data collected through the JFSQ and to estimate missing data:

1) the databases of partner organizations, such as FAOSTAT, UNECE's database, and Eurostat;
2) UN COMTRADE (the UN database for international trade statistics); and
3) complementary reports by ITTO and other entities.

Some member countries do not report, or they under-report, production data; consequently, the ITTO Secretariat directly estimates 24% of the Organization's production statistics for primary wood products. Moreover, 12% of production statistics are repeated from previous years because complementary information is lacking. Data on timber trade are more widely available (only 2% of ITTO trade data is either repeated from previous years or estimated by the ITTO Secretariat), but a significant challenge is to account for discrepancies between reports by trading partners, because unexplained these can undermine the overall reliability of trade data. The use of mirror statistics from trading partners is one approach for improving reliability of trade statistics (28% of ITTO trade statistics is derived from mirror statistics). When ITTO does not report data from official sources such as the JFSQ, it marks it with various superscripts (http://www.itto.int/Superscripts/), which clearly indicate the source of the information.

The *Biennial Review and Assessment of the World Timber Situation* and its database

The data collected by ITTO are analysed and published in the *Biennial Review and Assessment of the World Timber Situation* (http://www.itto.int/annual_review/), the latest edition of which was being finalized as this article was submitted in July 2017. ITTO also updates its online statistical database each year; this contains about 175 000 records of the production and trade of primary wood products for 83 countries (73 current ITTO members and 10 former members) for the period 1990–2016. The online database also contains regional aggregates (e.g. the European Union; ITTO membership category of producers and consumers). The ITTO database is a formidable tool for analysing long-term shifts in tropical timber product demand and supply, thereby supporting ITTO's mission to promote sustainable forest management and a sustainable tropical timber trade.

Jean-Christophe Claudon, ITTO Statistical Assistant, at a training workshop in Côte d'Ivoire. Photo: T. Yanuariadi/ITTO

Jean-Christophe Claudon
Statistical Assistant, ITTO itto-stats@itto.int

[2] 73 ITTO members

Wealth or welfare? The Oxford Emerging Markets Symposium 2017

Introduction

Green Templeton College is the newest of 43 colleges and halls within Oxford University. It was formed in 2008 by the merger of two existing colleges, Green College, with its focus on human and environmental health and welfare, and Templeton College with its emphasis on business and management. The new college's mission seeks understanding and promotion of global human welfare through scholarship, debate and action. The series "Emerging Markets Symposium" was initiated in the same year with Ian Scott, formerly Director of the World Bank, as Executive Director; it is an academic initiative to address issues of human welfare in emerging markets. Since its inception the EMS has acquired an international reputation as an informed and influential forum on the origins and nature of human welfare issues in emerging economies and how they might be resolved.

In early 2017 an expert group of 50 world leaders in governance, public and private sectors, civil society, multilateral institutions and academe gathered for three days to review the issues affecting 20 emerging market countries and make recommendation for global leaders, particularly as they assembled for the G20 meeting in Hamburg, Germany, in July, 2017. The theme of EMS 2017 was "Health and the environment in emerging markets".

The purpose of this current note is to make readers aware of the Symposium, its report and recommendations, and the opportunities for the forestry sector in particular to influence official and public opinion while updating forest research and management to optimize the benefits of forests, woodlands and trees. The full report is available on the EMS web-site www.ems.gtc.ox.ac.uk.

Emerging Markets

The emerging markets are a diverse group of countries with enough political, cultural and institutional attributes in common that they can be considered together. They include, Brazil, China, India, Indonesia, Mexico, Russia, South Africa, Turkey and about 15 smaller countries in Africa, Asia, Europe and the Americas. In general they have achieved strong rates of economic growth while reducing poverty, illiteracy, fertility, infant mortality, communicable diseases and premature deaths. They have acquired sufficient economic power and external influence to become significant actors in regional or global geopolitics.

New opportunities

The EMS thus focussed on topics for which it could expect to expand or support existing knowledge and understanding. While much of the emphasis was on disease and morbidities themselves, topics of concern to foresters included the relationships between health outcomes and non-health policies, programmes and projects, including social, "green" and "circular" economy policies that affect environmental health.

The EMS report and web-site have four audiences: the public at large; students, researchers and academics; journalists and others who help shape public opinion; decision takers and policy makers. It is important to richer countries in addition to the EMS to recognize the increasing threats to human health, e.g. 14% deaths worldwide annually are due to environmental pollution; 6 million deaths are due to air pollution; in 2013 the cost to the global economy caused by lost labour alone was $225 billion. Nearly 80% of deforestation in emerging markets is linked to cattle farming but Intensive agriculture is increasing global antibiotic consumption and resistance; the total meat chain accounts for 40 times more toxic gas emissions than growing vegetables or grains, indicating dietary change is a major need. Opportunities for forests and trees to be managed for food and health products are great; a Research Group in the international Union of Forest Research Organizations is addressing the health benefits of trees and forests and a large number of institutions, including some in emerging markets, focus on medicinal and food trees.

Conclusions and recommendations

The EMS 2017 report calls on world leaders to reverse the traditional economic view that environmental initiatives harm economic growth. They have long been concerned more with the cost of interventions than with the cost of not intervening. The expert group accepted the view that rapid economic growth has generated unprecedented improvements in human welfare in recent decades but stressed that many policies seek to maximize growth without enforcing environmental controls.

The expert group prepared a total of 36 major recommendations related to governance at the global (6), national (2), international obligatory (1), domestic (11) and local governmental (4) levels, in addition to business (4), civil society (6) and academic and research communities (11).

Two themes that emerged from the majority of the discussions and these recommendations were the need for great inter-disciplinary approaches to identifying, describing and researching the issues and the urgent need for scientists and practitioners to develop mechanisms for widespread dissemination of appropriate knowledge to all beneficiaries in forms they can understand and implement, including the role of evidence-based decisions.

Foresters have long recognized the multiple benefits of trees and forests for economic, social and environmental enhancement and several of the 83 international environmental agreements listed in the EMS report relate to the conservation, management and wise use of these resources. Greater interaction with other disciplines is now needed including medicinal, public health and agricultural sciences and the several layers of governance.

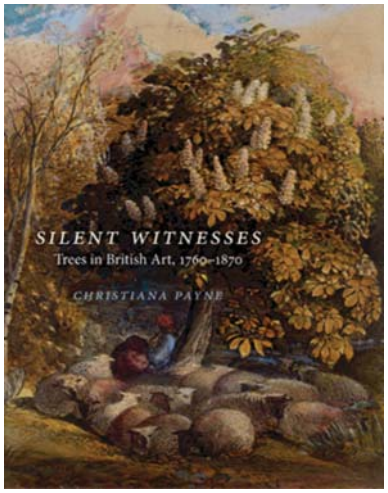
The report identifies many long-term risks of inaction and short-term risks of some actions to halt or reverse the health consequences of environmental change in emerging markets. Readers should examine the EMS web-site for vastly more details of the outstanding ideas that emerged from the EMS 2017.

Professor Jeff Burley
Vice-President, Commonwealth Forestry Association;
Emeritus Fellow, Green Templeton College Oxford University;
and Emeritus Director, Oxford Forestry Institute

Publications

Silent Witnesses: Trees in British Art 1760–1870

Christiana Payne – Sansom and Co



In the eighteenth and nineteenth centuries, British naturalists, writers, poets and artists were united by a love of trees. For the country and city dweller, ancient trees were the focus for fairs and preaching, excursions and entertainments, popular customs and superstitions. If they were hollow, they could be enclosing refuges, where people and animals were able to hide from their pursuers; or simply novel places for tea and dinner parties. They could harbour unmarried mothers in childbirth, sellers of ale, or entire families.

Landowners thought it their patriotic duty to plant trees whose timbers might become ships of the Royal Navy. Some sought to enclose the forest, denying common access to a source of fuel, grazing, contemplation and shelter. (In 1878, six thousand people marched by torchlight to protect their rights in Epping Forest). For many, the planting of new and exotic species of tree from distant lands aroused excitement and scientific enquiry. In a time of rapid urban and imperial expansion, native trees – oak, ash, beech, elm – resonated as emblems of a threatened rural heritage.

Paul Sandby, John Constable, Samuel Palmer, Edward Lear, the Pre-Raphaelites – some of Britain's greatest landscape painters made themselves experts in the drawing and painting of trees. John Ruskin pursued perfection in detailed studies of leaves. 'If you can paint one leaf', he said, 'you can paint the world'. Thus, in the nineteenth century, in drawing manuals for both the amateur and professional artist, the anatomy and character of the tree were studied as though it were of human form. The oak was a 'manly' tree which, like 'a brave man who is not suddenly elated by prosperity . . . displays not its verdure on the sun's first approach'. Conversely, Edmund Burke described the aristocracy as 'the great oaks that shade a nation'.

In Christiana Payne's entertaining and beautifully-illustrated study, trees stand as silent witnesses to human ingenuity, vanity, nostalgia and the pursuit of excellence. The author explores the role of trees in the country-house culture of the eighteenth century, the many specialized drawing manuals produced for artists and amateurs, and the growing emphasis on the value of woodlands as shady places to escape the summer heat of the cities.

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Around the World

Tunisia, Algeria lose swathes of forests in fires

The secretary of state for agriculture, Omar al-Behi, said "around 2,000 hectares" of forest land (4,950 acres) had been lost. National Guard spokesman Khalifa Chibani told reporters it was obvious the current heatwave was responsible in many cases. Temperatures at Jendouba in the northwest on Friday were "47 degrees in the shade and 59 in the open", he said. But some outbreaks were of criminal origin, Chibani said, adding that four people suspected of setting fires on state-owned land had been arrested.

Temperatures were much above average, and high in absolute terms, over Morocco and northern Algeria in June and July. Forest fires are burning across northern Algeria, consuming an estimated 1,000 hectares.

July has been a month that has seen firefighters across Italy, Spain. Portugal and France battle hundreds of wildfires, the flames fanned by a combination of heat and drought. According to authorities.

alarabiya.net

Brazil: A decade of monitoring shows the dynamics of a conserved Atlantic tropical forest

Characterised with its immense biodiversity and high levels of endemism, the Atlantic Tropical Forest has been facing serious anthropogenic threats over the last several decades, demanding for such activities and their effects to be closely studied and monitored as part of the forest dynamics.

Cattle farming, expanding agricultural land areas and mining have reduced the Atlantic Forest to many small patches of vegetation. As a result, important ecosystem services, such as carbon stock, are steadily diminishing as the biomass decreases.

Brazilian researchers, led by Dr. Écio Souza Diniz, Federal University of Viçosa, spent a decade monitoring a semi-deciduous forest located in an ecological park in Southeast Brazil. Their observations are published in the open access *Biodiversity Data Journal*.

The team surveyed two stands within the forest to present variations in the structure and diversity of the plants over time, along with their dynamics, including mortality and establishment rates. They based their findings on the most abundant tree species occurring within each stand.

At the forest stands, the most abundant and important species for biomass accumulation are concluded to be trees larger than 20 cm in diameter, which characterise advanced successional stage within the forest.

"It is fundamental that opportunities to monitor conserved sites of the Atlantic Forest are taken, so that studies about their dynamics are conducted in order to better understand how they work," note the scientists.

"The information from such surveys could improve the knowledge about the dynamics at anthropised and fragmented sites compared with protected areas."

In order to encourage further research into the composition, diversity and structure of the Atlantic Forest over time and the subsequent contributions to the preservation of this threatened ecosystem, the authors made their data publicly available. The datasets, including species occurrences, are now openly accessible via the Global Biodiversity Information Facility (GBIF) and the biodiversity informatics data standard Darwin Core.

eurekalert.org

Myanmar: Amendments seek to punish illegal logging

The Ministry of Resources and Environmental Conservation sought amendments to the 1992 Forest Law to ensure stricter penalties for illegal logging, in an effort to reduce the cases of unlicensed cutting of timber which remains rampant in the country, said Union Minister U Ohn Win.

"After the enactment of the new forest law, we will take stricter actions against illegal logging and smuggling offences," he told the Pyithu Hluttaw on June 28.

"For example, we've added a K3 million fine in addition to maximum 15-year prison sentence," he said, adding that he believes the hluttaw will approve the bill soon.

The Food and Agriculture Organization of the United Nations (FAO) said the country's forests were reduced to 42.7 percent in 2015, down from 60.89pc forest cover in 1975.

Minister U Ohn Win said that based on the FAO report, 1.7pc of the country's forest cover is lost annually.

He said the main reasons for forest depletion are excessive logging, illegal logging, forest fires and natural disasters.

Minister U Ohn Win traced the problem of illegal logging to poor living conditions of the people in rural areas, making illegal logging their main source of livelihood.

He observed that the machinery used in the illegal trade, such as hand saws and unregistered trucks, are easily available. He also noted that law enforcement is weak and there is lack of manpower in border areas where the illegal activity thrives.

In 2016–17 fiscal year, when the new government took office, more than 20,000 tonnes of teak and hardwood were seized and 8337 people arrested – including foreigners – for illegal logging, while a total of 2599 vehicles and pieces of machinery were seized.

U Kyaw Aung Lwin, Pyithu Hluttaw MP from Sidoktaya township, added that in many illegal logging activities, officials from townships and administrative sectors were found to be involved.

"Some of the officials of administrative sectors from township levels were discovered to be connected with these cases." He said.

Minister U Ohn Win explained the government is finding it hard to curb the problem because of serious lack of manpower, adding that at present one forestry staff is responsible for more than 8000 acres of forests.

The minister seek the cooperation of the public, especially those near the forest areas, in helping curb illegal logging.

"An information network will be established in the regions and states, wards and townships. A supervising and reporting system will be started, a hotline to inform about these matters is also being set up," he said.

mmtimes.com

Africa: Developing sustainable forest ecosystems in Africa will help boost its economy

Humanity has long appreciated forests for the energy, food and medicine they provide, and as a source of wood products for construction and other purposes. But the role of forests in supporting agriculture, preserving biodiversity, protecting water supplies, creating jobs, increasing domestic GDP and moderating the impact of climate change are less well understood. It is an industry often crucial to the well-being of people in large parts of Africa.

Angola, for example, has a total forest area of 60 million hectares, representing 20 percent of its total land area including a rich variety of flora and fauna. This is combined with relatively stable governance as well as various measures the government has implemented to improve Angola's forest ecosystem such as creating ties between the Ministry of Agriculture – and the Ministry of Planning, Ministry of Industry and Ministry of Water and Energy. The country's exotic plantation area is small (0.2 percent of forest area) but with significant potential for the economy.

Located in the Planalto region of Angola, Quantum Global Group, through its $250 million Timber Fund, has acquired 18 land concessions leased from the Government of Angola. The objective is to manage and rehabilitate the old Angolan Government Eucalyptus pulpwood plantations, with an aim to build an integrated forest industry in the provinces of Huambo, Benguela, Huila and Bie to develop the country's forest ecosystem.

Natural resources have a large role to play in Africa, specifically the timber industry due to its enormous potential. Through the Timber Fund, we have opted to plant carefully selected Eucalyptus species, given its many uses and reputation as one of the best options for curbing deforestation of natural woodland in Africa.

Eucalyptus is not only sustainable but also plays a driving role in the supply of raw materials for the manufacturing industry whilst presenting tremendous benefits for local communities. The sale of wood will be used for both national and regional exports, including for residential and other basic needs. In addition to the creation of a medium-term pipeline for products such as electricity poles, it will also serve as a long-term basis for the development of a timber processing cluster and a pulp and paper industry which is in high demand across Africa.

Almost every African state today is a net importer of wood products. The Group's Timber Fund will create a replacement for expensive imports. Such an investment in a country like Angola can mean the difference between expensive timber imports and medium-term self-sufficiency (in 7–8 years). And after the construction of a new forestry industry, the prospects for a successful export trade are already very promising. Intra-regional trade will be another important component in exporting. Neighbouring South Africa for example, now one of the only African wood exporters – is likely to become an importer of wood products over the next decade.

The company's Timber Fund has several footings across the entire chain of forestry management in Angola including plant trials, the management of new tree nurseries, sustainable plantation management and harvesting. The manufacturing capabilities directly influence the industrial benefits which are both profitable and sustainable, a twofold value. Planting is typically the most expensive phase of reforestation projects, which makes crop trials a key part of every programme to save costs in the long-term. Avoiding short-term volatility is much less important than avoiding large permanent loss.

Attitudes to forestry are starting to change in Africa, including the value of old-growth forests which provide a range of vital, but less tangible, services to the economy. Cultural influences and legal frameworks play a major role in shaping the success of any industry in Africa, operating within a sovereign territory and among local communities. Specific species such as Eucalyptus, suit Africa's limited technological resources and yield more financial reward than other tree crops. Not only is it a key driver of economic and social development, but it also provides us with one of the best options for contributing towards sustainable forestry in Africa.

South Sudan is an example of a country not currently benefiting from the economic and environmental benefits of having a sustainable forest ecosystem. Over 10% of the country's land is covered by forestry, but South Sudan currently has no forestry policy in place, leaving opportunities open for illegal loggers and an insufficient ability to benefit from an industry that can increase food security, build sustainable, agriculture-based livelihoods and positively impact the country's ecosystem. A 2010 study conducted by the United Nations Food and Agricultural Organization (FAO), estimated that up to 2,776 square kilometres of forests and other wooded land were being lost annually in South Sudan.

Considering all the above aspects, we are confident that Quantum Global's investment within the timber sector in Angola has the potential to be one of the continent's leading forestry projects in terms of production, management, and technologies for Eucalyptus forest plantations, including the various ways that it will positively contribute to building forest industry clusters.

Trees take time to grow, and creating a forestry industry will not happen overnight. The Group's aim is to build a sustainable forest ecosystem to provide greater community benefits in the near-to-long term. And it is projects such as these which take advantage of Africa's vast land potential, throwing into the mix sound forestry practices and a greater appreciation of the real economic value of a sustainable forest eco-system. But, with all these elements in place, we see a positive outlook for flourishing forestry ecosystems in Africa.

venturesafrica.com

Canada: Fighting to breathe in the face of Canada's wildfire emergency

It's stiflingly hot and I'm trapped inside a dome of smoke. I know I'm in a river valley nestled within mountain ranges, but the visibility is cut so low that I can't see any of the dramatic peaks that dominate landscapes across British Columbia. It's the worst documented wildfire season since 1958, and smoke is an omnipresent and unwelcome companion.

"We have a very significant fire season unfolding," says Daniel Perrakis, a fire research scientist at the Canadian Forest Service. It's the largest area burned since the advent of modern fire-suppression and fire-management techniques, he says. Over 591,000 hectares have burned so far.

I've left my coastal home in Vancouver and travelled inland to support evacuations, joining the swarms of volunteers being deployed to help.

Shifting winds and an atmospheric wall of high pressure have funnelled smoke into the city of Kamloops, filling the air with an unprecedented 684.5 micrograms of fine material per cubic metre. That's nearly 70 times more than the World Health Organization's guidelines for safe exposure limits.

My eyes sting when I walk outside, and I feel the throb of a headache coming on if I dare walk as far as the street corner. Even indoors, the smell of smoke whispers through the ventilation systems until it clings to everything. I woke up to ash on my toothbrush, large black flakes against white bristles.

The story of how things got like this is a slow-speed disaster of climate change, a beetle invasion, and the unintended consequences of well-meaning policy gone wrong.

British Columbia is a mountainous, highly forested province in western Canada. More than half of the province is forest, with lodgepole pine dominating every ecosystem except the alpine tundra. "It's a tree that is really everywhere in BC," says Perrakis.

Over the past century, the forest industry has transformed native forests into denser, more homogenous stands by suppressing fires and selectively replanting the most economically valuable species after harvesting. "They weren't nefarious policies at the time, based on what was known," says Perrakis.

But one unintended recent consequence has been a province-wide bark beetle outbreak that has devastated the region's forests – with the dying trees heightening the fire threat.

The dense, homogenous stands of lodgepole pine allowed native mountain pine beetles to spread quickly, while a changing climate reduced the severity and duration of cold winters that historically kept the beetle population in check. The infestation hit its peak between 2006 and 2008, although it has begun to slow down in recent years.

I've grown accustomed to seeing the once-green mountain slopes spotted with beetle-killed trees: first, one pine turns red as it dies, then more and more follow in speckled waves. Between six months and four years later, depending on individual circumstances, the red needles drop, leaving trees that look like grey, dry skeletons. Now, over 11 per cent of the province is covered in a forest graveyard of dead trees.

The dead trees in the "red attack" phase are already known to pose a high fire risk. "We saw fire spread rates two to three times higher in these red-attacked stands," says Perrakis. Fires burned quickly through the dry tree crowns, racing ahead of firefighters' attempts to contain and control them.

But starting in around 2011, forests became dominated with the grey tree skeletons – and we don't yet fully understand how this "grey attack" phase affects wildfires. The situation is complex, with various competing factors either helping or hindering fires.

Without needles, fires no longer spread through forest crowns, but "underburns" racing along the ground are still common as new plants take over the forest. Fire-resistant aspen are taking over some hillsides, whereas highly flammable black spruce is growing in others.

Now when a fire starts, it spreads through a new mix of plants, and the dry wood of the beetle-killed trees adds to fire intensity and smoke production. "The dead trees fall over much more easily, sometimes even with just a breath of wind," says Perrakis. This increases the danger to crews working in these stands.

This year in British Columbia, over half a million hectares have burned since 1 April, and with 126 fires still burning, that number may keep growing before the snows come. With slow starts to milder winters, that might not be until December. And we have no guarantees that this same disaster won't unfold again next year, or the year after that.

Sunlight filtering through the smoke creates a perpetual golden hour and dampens shadows, making me feel trapped in a single moment at which time is standing still. It's hard to remember the world is passing by outside our smoky bubble.

During the drive home, we pass through a recently burned area. Helicopters with water buckets cross the highway, dumping their load on fires I can smell but not see. Hillsides are stained red with fire retardants, remnants of lines drawn to keep the flames back. Some of these efforts worked. Others didn't, charred homes silent testaments to battles lost. Smoke thins over the 500-kilometre journey home, but never disappears.

Mika McKinnon in **newscientist.com**

Pakistan: Forestry vital for tackling urban warming

Minister for Climate Change, Mushahidullah Khan, on Sunday urged the federal and provincial forest officials to boost urban forestry at national scale to protect urban areas from heat waves and from becoming heat islands. He told the forest officials, "Planting trees in urban centres must be made integral part of the seasonal monsoon and spring tree plantation campaigns.

The minister highlighted that urban forestry was the most viable and cheapest way to protect Pakistan's urban areas from becoming heat islands. "Our cities and towns have now become recently hotter than their adjoining or nearby rural areas for various reasons and increasing green areas and planting more trees in the cities and towns is the most effective and cheapest way to cope with heat island effect that poses risk to lives and livelihoods in urban centres of the country," Mushahidullah Khan noted.

An urban heat island effect is described as an urban or metropolitan area that is significantly warmer than its surrounding rural areas due to human activities, he added.

Quoting a study of the UN's Food and Agriculture (FAO), Mushahidullah Khan said planting trees in urban areas could help cool the temperature by between two to eight degree Celsius. This would help cut use of air conditioners by more than 30 percent, use of which is one major cause of the urban warming, he said.

Counting key causes of the heat island effects, he said removal of green areas, rapid rise in motor vehicles, soaring building construction activities, modification of land surfaces, emission of heat from air conditioning units and encroachment on natural waterways or rainwater drains have converted the urban centres into heat islands, making them unlivable.

The minister noted that these natural waterways that snake through these urban centres provide natural cooling effect when wind passed across them during sweltering summer months. "But it is a matter of sorry that most of them have been encroached upon by land mafia in connivance with civil and municipal authorities," he remarked.

pakobserver.net

Global: Paying for forests has multiple benefits

Two new studies have reinforced the idea that financial incentives can help save forests. Research from the Amazon region has confirmed that payments to landowners can conserve forest biodiversity. And a study from China suggests that rural communities, if given an incentive, could help restore the nation's native forests. Both studies come within weeks of a finding that African villagers will conserve their forest plots more carefully if given even quite small payments not to clear the woodland.

Forest conservation is a key part of any global strategy to mitigate climate change: forests are also reservoirs of natural biodiversity and play a vital role in water conservation. Their value to the planet is beyond question: it has always been harder, however, to find ways to persuade the people who live in or by the world's forests that conservation is in their interests too. But, since concern about climate change began to grow, there has been a series of initiatives to reduce deforestation.

A team from the US reports in the journal Ecological Economics that they went beyond simple analysis of canopy loss in the Ecuadorian region of the Amazon basin to find out what compensation payments to landowners did for the diversity of species in the forests. Not only did payments make a difference; they found that those species being protected were twice as likely to be of commercial value as timber, and also more likely to be at risk of extinction.

Between 2008 and 2014 payments stopped 9 per cent of the forest area from being cleared. And of the 40 hectare (100 acre) forest plots enrolled in the scheme, each contained one or two more species than those in non-enrolled forests.

"More than 7 billion acres of tropical rain forests were destroyed between 1995 and 2015, so policy makers established voluntary compensation programs to slow down tropical deforestation and degradation," said Francisco Aguilar, a forester at the University of Missouri school of natural resources. "While these programmes seem to be making a difference, there aren't enough on-the-ground evaluation tools to see if biodiversity is being maintained, too. Therefore we looked for other ways to observe the value of these payments for forest conservation."

The Chinese study told a different story: total woodland cover in China has increased in the last two decades, but the nation has continued to say goodbye to its native forest. That is because, while the nation has policies to encourage landowners to protect and restore forests, these have not been used to restore the biodiversity that characterises native forest.

Researchers from the US and universities in China and the World Agroforestry Centre point out in the journal Conservation Letters that land owned by rural communities is home to 60 per cent of the country's forests, including most of the newly-established forest cover. "However, existing forest policies largely neglect collectively-owned lands and provide no mechanism for restoring native forests on them," said Fangyuan Hua, of the Kunming Institute of Botany in Yunnan, who is also based at Cambridge University in the UK.

She and colleagues point to a proposed new Mechanism of Compensation for Ecological Protection that could establish effective, socially-just compensation. "Rural communities would receive badly-needed income, while benefits such as improved soil health, greater biodiversity and reduced erosion would benefit society as a whole. China should not let this opportunity slip away," she said.

eco-business.com

Global: Most countries lose out with forest-to-farm conversions

Converting forests into farms is not economically viable except in selected regions, says a global study. Published last in July in *PLoS Biology*, the study by researchers from the National University of Singapore (NUS) examined deforestation in more than 50 countries in the tropics between 2000—2012, and identified regions where deforestation is most and least beneficial.

According to Luis Roman Carrasco, lead author of the study and assistant professor at the NUS faculty of science, the study was undertaken "to help policymakers realise whether their deforestation strategies made economic sense and how these could be modified to avoid inefficient loss of natural resources."

Areas where benefits from agricultural conversion are higher than cost of deforestation were identified as the Atlantic Forest (mostly coastal Brazil), the Gulf of Guinea and Thailand. These areas have high potential yields, low production costs, high prices for the produce and have market accessibility to trade centres such as cities.

In contrast, deforestation in Latin America, insular South-East Asia (which include Brunei, Indonesia, Malaysia, the Philippines, Singapore and Timor Leste) and Madagascar derived low agricultural benefits and high environmental costs.

The team analysed deforestation and crop distribution and studied the trade-offs between agricultural benefits, carbon emissions and losses of multiple ecosystem services, which are benefits obtained by people from ecosystems such as forests. These benefits include carbon sequestration, flood protection and water purification. The findings show that while gains by agriculture are US$32 billion to US$53 billion per year, the environmental damage caused by tropical deforestation during this period amounts to future annual losses of US$107 billion to US$135 billion per year. On the whole, tropical deforestation generates large economic losses, Carrasco notes while also pointing out that subsequent erosion from conversion was not even factored into the analysis.

"Having created this global map of trade-offs between agriculture and the benefits provided by tropical forests, we will now be looking into integrating these maps with market models to understand how changes in land use could lead to changes in prices and affect consumers, and other indirect impacts on deforestation," he says. "We are hoping that governments realise that deforestation has large, unrecognised costs in the form of lost ecosystem services. Land use planning decisions that ignore these costs are bound to be inefficient and harmful for local communities and humanity as a whole," Carrasco adds.

William Laurance, director of Australia's Centre for Tropical Environmental and Sustainability Science, says that even in the absence of biodiversity values, "most tropical forest lands are worth more as intact forests than felled and converted into agriculture." Even the areas identified in the study as suitable for deforestation, Laurance notes, are full of critically endangered species. "If you consider biodiversity as well as carbon and ecosystem services, you'd probably tend not to favour much deforestation at all."

David Edwards, senior lecturer in conservation science, University of Sheffield, UK, believes that agricultural enterprises tend to measure predicted profits against costs of land, taxes, labour and inputs. "But through deforestation, they also create negative externalities — costs incurred by society, not the company."

"What is needed," Edwards says, "is a step change in how food is produced across the tropics to prevent further deforestation and thus slow climate change, save biodiversity and continue the flow of ecosystem services that people require."

scidev.net

USA: Some wildfires simply can't be fought

There is a cadence to fire season and a predictability to the headlines: A wildfire is burning, homes are threatened, residents are urged to evacuate.

We've grown used to watching the air-and-ground assaults. The image of a DC-10 dumping retardant on burning brush is an indelible symbol of our attempt to control nature. We've come to expect that firefighters will bring flames into submission because they so often have — and this has made us comfortable.

Perhaps too comfortable. Despite the reassuring images of firefighters conquering wildfires, the truth is that once a large fire is burning, there's very little that firefighters can do to stop it, or to protect homes nearby. Faced with the decision to risk their lives to save somebody's property or let the property burn, firefighters know that there is only one sensible choice.

Fire feeds on grass and fallen leaves. It uses brush and toppled branches to climb onto the crowns of trees, where it then takes off. You cannot subdue rushing flames with shovels, picks, power saws and axes — the tools that firefighters carry. The best strategy is to retreat.

If firefighters don't withdraw or hold back when they should, they pay the ultimate price. State forestry officials made the wrong calculation in Arizona in 2013, for instance, and 19 firefighters died. The men, all members of an elite, highly skilled team called the Granite Mountain Hotshots, were swallowed by a giant wave of flames as they trudged through thick, unburned brush toward a community they were trying to protect. Their deaths serve as an awful reminder that some fires simply can't be fought.

This is increasingly the case, as forests in the United States become ever more flammable. Larger areas are primed for burning, choked by overgrowth and parched by a warming climate that quickly turns grass into kindling. Wildfires have become bigger, more intense and more frequent. In most Western states,

the number of large wildfires ignited annually has at least doubled since the 1970s, and the fire season is longer by almost three months.

Overgrown forests have struggled through a punishing six-year drought in California. More than 100 million trees died during these years, according to the California Department of Forestry and Fire Protection. The drought had weakened them and bark beetles had finished them off. Although last winter's rain and snowfall lifted the state out of drought, the moisture also created the perfect conditions for wildfires. Much of the vegetation that sprouted from the moist soil dried up when the temperatures climbed.

This is why the Detwiler fire, which is still burning near Yosemite, spread so quickly. The area was covered in dead trees — fuel for flames. Ten days in, the fire had consumed more than 80,000 acres, destroyed 67 structures and required more than 4,000 firefighters to bring it under control.

In Arizona, where I live, the Ponderosa pine forests are ripe for wildfires. Many of these forests had about 40 trees per acre in the 1950s; today, the same areas have as many as 1,000 per acre, according to some scientists. Michael Kodas, the author of a forthcoming book on the phenomenon of "megafires" — especially large and devastating forest fires — compares such forests to crowded cities, where "disease spreads much easier" and the competition for resources is fierce.

And yet, on the premise that wildfires can be fought, or perhaps because we are not fully aware of the risks, we continue building homes ever closer to forests and other vulnerable areas. According to a 2016 report by the data company CoreLogic, 1.8 million homes across 13 Western states are at extreme or high risk of wildfire damage. One in three of these homes is in California.

Overall, since 1990, 60% of all new housing units in the U.S. have been built on the edge of forests. Such developments are big business for builders and communities looking to expand their tax base — but an increasingly risky one.

We can do this, first, by taking measures to prevent them. Some 95% of wildfires in California are caused by humans. Nationally, that rate is 84%. Sometimes they are started by an abandoned campfire. Other times, by a cigarette that was carelessly disposed of. The Trabuco Fire, which burned about 20 acres in Orange County last September, started when a golf club struck a rock and sent sparks flying. To prevent such fires, we need to take seriously all of the common-sense recommendations made by Smokey the Bear. Don't build campfires in dry conditions. When you do build one, make sure it is extinguished.

But we should also prepare for inevitable wildfires by doing our part to make our homes less flammable — by regularly trimming trees, keeping tall trees spaced apart, removing dead vegetation from under decks and pine needles from on top of them, and cleaning out gutters.

Above all, we need to accept that if we choose to live on the edge of woodlands, our homes may very well end up in the path of a wildfire and there might be nothing firefighters can do to save them. This means calibrating our priorities to value the lives of firefighters more than our property.

latimes.com

Indonesia: APP Promotes Forest Fire Management at International Dayak Congress

Asia Pulp and Paper, or APP, the pulp and paper arm of conglomerate Sinar Mas Group, participated in the International Dayak Congress in Pontianak, West Kalimantan, by promoting fire management programs, according to a statement received by the Jakarta Globe on Thursday (27/06).

The international congress, which took place on July 26–27, was the first that focused on the Dayak, the indigenous people of Borneo.

One of the programs APP promoted at the congress is named the Prosperous Villages Fight Fire (DMPA), which helps improve the welfare of local farmers and encourages them to be more responsible of their immediate environments by introducing alternative techniques to land burning.

Another program introduced at the congress is the Integrated Fire Management (IFM), a series of actions aimed to prevent and mitigate forest fires, starting from forming a team of fire fighters to equipping them with advanced tools.

"Our DMPA and IFM programs are our real responses to the Forest Conservation Policy [FCP], which includes human resources development and nature conservation around our concession areas, one of which is in West Kalimantan," APP Sinar Mas director Suhendra Wiriadinata said.

The company also showcased the "Cassesart" variant of cassava, planted by farmers under APP's training.

West Kalimantan Governor Cornelis thanked the private sector for supporting the congress.

"The International Dayak Congress aims to come up with new ideas and raise awareness on the importance of improving Dayak human resources," said Cornelis, who is also the president of the National Dayak Ethnic Council (MADN).

Justice and Human Rights Minister Yasonna Laoly also expects the congress to bring concrete advantages to the Dayak people.

"Besides being a medium for people to mingle, the first International Dayak Congress aims to harmonize the views and formulate decisions that will be in favor of the interests of the Dayak community, who are also part of Indonesia," he said.

The congress was also attended by representatives from Malaysia, Brunei Darussalam, Thailand, the Philippines, India, Taiwan, New Zealand, as well as the UN's Food and Agriculture Organization (FAO).

jakartaglobe.id

Global: 'Donald Trump forest' climate change project gains momentum

A campaign to plant trees to compensate for the impact of President Trump's climate policies has 120,000 pledges. The project was started by campaigners upset at what they call the president's "ignorance" on climate science. Trump Forest allows people either to plant locally or pay for trees in a number of poorer countries.

Mr Trump says staying in the climate pact will damage the US economy, cost jobs and give a competitive advantage to countries such as India and China.

The organisers say they need to plant an area the size of Kentucky to offset the Trump effect.

Based in New Zealand, the project began in March this year and so far has gained pledges from around 450 people based all around the world. In the first month, 15,000 trees were pledged – that's now gone past 120,000.

Some people have paid for trees to be planted in forest restoration projects in Madagascar, Haiti, Ethiopia, and Nepal. Others have simply bought and planted a tree themselves and sent a copy of the receipt to the project.

The organisers, who are long-term climate campaigners, say they have tapped into a global sense of frustration with the president's climate change policies.

Mr Trump has ordered a review of Obama-era climate regulations and he has also declared that the US will leave the Paris climate agreement.

"We've met some of the people on the front lines of climate change in Bangladesh, Mongolia and in other countries, and we found it extremely upsetting that Mr Trump's ignorance is so profound," said Adrien Taylor, a co-founder of Trump Forest.

"So we started to do something about it. Only a small percentage of the world voted him in, but we all have to deal with the consequences of his climate ignorance."

The organisers estimate that they will need to offset 650 megatonnes of CO2 equivalent by 2025 to compensate for the president's policies, which translates into more than 100 billion new trees. Despite the massive scale of planting needed, the campaigners believe it can be done.

"We want to plant a global forest that will offset all of the emissions that the Trump administration puts in the atmosphere. It sounds a bit ridiculous but it is completely feasible," said Dr Daniel Price, another co-founder.

While there has been much support, the organisers say they have also had "a bit of hate mail" from people who support the president's policies. However, they have also had some grumbling from people who say that calling the idea Trump Forest is simply stroking the president's ego.

"We kind of want him to love the forest; this is his forest after all. We would love it if he tweeted about it," said Mr Taylor.

"All we're trying to do is pick up the slack he has created and do the work for him," said Dr Price.

"So if he wants to take ownership of this forest just like Trump vodka and Trump Tower, we would welcome that; the phone line is open. So, Mr President, if you are reading this. . ."

bbc.co.uk

USA: Wild bees thrive after severe forest fires

For most people, outside expert circles, there is no reason to believe that forest fires are good. However, early results from a study by researchers at Oregon State University (OSU) suggest that moderate and severe forest fires could lead to greater abundance and diversity of wild bees.

The underpinnings behind the observation in the first year of the two-year project, to be presented at the annual conference of the Ecological Society of America (ESA) on August 10 in Portland, Oregon, a state in the U.S. Pacific Northwest, were conditions created by forest fires.

A team of field researchers, led by Jim Rivers, an OSU forest wildlife ecologist, began trapping bees at 43 sites burned by the 2013 Douglas Complex fire north of Grants Pass, which affected more than 24,000 acres of forests in southern Oregon. The sites ranged from places where fire severity was low to places where severity was moderate and high.

In low severity spots, where flames were confined to low-growing vegetation and failed to reach the canopy, according to Sara Galbraith, a post-doctoral researcher in the OSU College of Forestry who will present a paper at the ESA conference, there is not a lot of evidence of fire except for some blackened areas on some of the tree trunks. In comparison, at some of the high-severity fire sites, it is a completely open canopy.

There, at the high-severity fire sites, Galbraith saw a lot of flowering plants in the understory because the light limitation is gone. "It just looks completely different," she was quoted as saying in a news release.

Funded in part by the U.S. federal Bureau of Land Management, the researchers in the study attracted wild bees by reflecting ultra-violet light, which the insects mistook as a huge flower. And once the bees got inside, they were unable to fly out from the trap.

As there are more than 500 species of native bees in Oregon that are important pollinators of wild plants and crops, the researchers noted, the findings suggest that fires may promote bee populations that in turn may influence agricultural productivity and overall floral diversity.

news.xinhuanet.com

Pakistan: Punjab Govt to plant 12m saplings under Green Pakistan Programme

Punjab Forest Wildlife and Fisheries Department Secretary, Capt (retd) Jahanzaib Khan said the Punjab government, under Green Pakistan Programme, would plant 12 million saplings in the province during the monsoon season. He said the Punjab government would utilise all possible available resources, adding the government had allocated Rs 20 billion for agriculture sector during the fiscal year 2017–18. Captain (retd) Jahanzaib Khansaid that the government was committed to boosting the country's forest cover in order to mitigate the impact of floods in the most effective way.

"All provincial and federal government organizations, educational institutes, corporate sector, the NGOs and media were being approached and engaged, in this connection," he added. According to the United Nation's Food and Agriculture Organization (FAO) forests hold back flood water by nearly 72 hours, he said. He further said that forests reduce intensity of the deluge water, lower chances of deaths and damages to roads, building infrastructures, bridges as well as standing crops from being washed away or wiped out, he added. Jahanzaib said that the various entities have already made preparations for the monsoon plantation with enough stocks of saplings in nurseries in various parts of the province.

He further said the Punjab government was revamping the forest sector to tap its full potential to drive prosperity in the province. It is pertinent to mention here that the federal government on Sunday approved a 'monsoon campaign' which aims to plant more than 100 million saplings across the country.

Besides, the Khyber-Pakhtunkhwa will plant 70 million saplings, Sindh 14 million saplings, Balochistan 750,000, Azad Jammu and Kashmir 3.75 million, the Fata 1.01 million, Ministry of Defence one million, Heavy Industries Texila 1,000, the Pakistan Ordnance Factories 4,000 and the IUCN 500,000 saplings.

To a question, he said that the present PML-N-led government was well-aware of the country's exacerbating vulnerability to the climate change impacts and was taking all-out measures to boost climate-resilience of the country.

pakobserver.net

Poland: Activists accuse Poland of logging in ancient forest despite EU order

Environmental activists accused Poland of ignoring an order from the EU's top court to stop large-scale logging in one of Europe's last ancient forests – an allegation dismissed by Warsaw. Green campaigners told Reuters they had seen commercial loggers recently in Bialowieza forest – an area that has become a focal point in a widening standoff between the EU and its biggest eastern member.

The European Court of Justice (ECJ) issued an injunction banning logging in the northeast of the forest on the Belarus border. The area is a UNESCO world heritage site, home to rare species and protected by EU law. The European Commission has said the case was so serious that any continued logging would be considered in a wider EU investigation into whether Warsaw's government is undermining the rule of law.

Campaign group Wild Poland Foundation said activists blocked a working harvester in the Bialowieza area. "The disposal and sale of the wood proves that today's logging was typically commercial," the organization said.

Poland's government led by the nationalist and eurosceptic Law and Justice party (PiS) initially shrugged off the ECJ ruling, saying the only logging going on was legitimate activity to control a beetle outbreak. It said it was removing only dead and weak trunks for safety. "Thus, the actions being conducted are in line with the ECJ decision," the environment ministry said. But other environmental groups including Greenpeace have accused the government of letting loggers take large numbers of trees for profit, threatening the habitat of the European bison, lynx and rare birds.

The case has also drawn in other critics of the government, including opposition politicians who have accused PiS of moving towards authoritarian rule by tightening control over courts, prosecutors, state media and other areas. European Council President Donald Tusk – Poland's former prime minister from a centrist party opposed to PiS – said Warsaw was sending dangerous signals by continuing with the logging. "This extraordinary arrogance with which injunctions and preliminary rulings, including from European courts, are being rejected signals something very dangerous," Tusk told journalists in Warsaw.

"For me, this hints of a prelude to an announcement that Poland does not need the European Union and the European Union does not need Poland. I will keep on saying that this moment would be one of the most dangerous ones in our history. I am afraid that we are closer to that point than further."

PiS regularly dismisses criticism from the EU as unacceptable foreign meddling. Environment Minister Jan Szyszko kept up the combative stance on the forest, saying "EU experts cannot distinguish a beetle from a frog," in an interview with Rzeczpospolita newspaper published on Thursday.

Szyszko, who has said he doubts whether global warming is man-made, approved a tripling of the quota of wood that can be harvested in one of three Bialowieza administrative areas in March 2016, triggering the dispute.

reuters.com

Vietnam: Highlands deforestation continues as forest rangers lose control

According to the Central Highlands Steering Committee, 209,000 hectares of forests under the management of districts' and communes' people's committees have been devastated in the last few years. The devastated forest area under state-owned forestry companies' management is 87,000 hectares. The figures are 25,000 hectares for forests managed by households, 23,000 hectares by economic organizations and 21,000 hectares by armed services. People's committees at different levels and protective forest management units have lost the most.

Pham Hoa Dung, director of Nam Tay Nguyen Forestry Company, told the press days ago that about 30 people were holding their ground in the deep forests in the wards of 1500 and 1504 of Quang Truc commune, where they had cleared forests for cultivation.

According to Dung, the deforestation started on November 30, 2016. However, though the appropriate agencies quickly discovered the case, they could not discharge the illegal loggers because it was too crowded. At first, only 1.2 hectares of forests were cleared. But the figure rose to 16.3 hectares.

The Hop Tien Cooperative in Quang Son commune in Dak G'long district has had difficulty dealing with 125 households which have encroached on the forest area that the cooperative leases from Dak Nong province. According to Nguyen Anh Duc, director of the cooperative, at first, only three households visited the forest to hunt for animals and pick fruit. Later, 125 households came, clearing 218 hectares of natural forest to set up a village and cultivate crops on the cleared land.

"Five officers of the cooperative and one forest ranger were injured by 30 people in the village with guns and knives," he said. "It is nearly impossible to drive the people out of the forest because they are crowded with people," he complained.

On April 28, in the presence of military forces, police and forest rangers, 17 people were driving trucks, with two drills and knives and scimitars, to a forested area only 70 meters away from the check-point station.

Senior lieutenant colonel Nguyen Van Thuyen, head of the Quang Son National Defence Economic Unit, said the illegal loggers might receive backing from the criminal world. Meanwhile, many forest owners are powerless amid the deforestation. The Dak Nong provincial authorities have discovered that since 2008, the Duc Hoa Forestry Company in Dak Son district has lost 2,600 hectares of forest, but the company has reported a loss of only 67 hectares.

vietnamnet.vn

Guam: Trees need birds – forest fruitfulness depends on seedy living

An unwinding ecological disaster on the Pacific island of Guam has provided a team of Australian and American scientists with a rare opportunity to quantify the importance of forest fruit lovers to maintaining the diversity and health of arboreal habitats.

The introduction of the brown tree snake (*Boiga irregularis*) to Guam in the 1950s led to the extinction of all the island's native vertebrate seed dispersers apart from one small population of Micronesian starlings (*Aplonis opaca*) and a few bats. This species loss has provided a chance to gauge how Guam's forests have been affected by the almost complete absence of animal seed dispersers, comparing to the forests the neighbouring Micronesian islands of Saipan and Rota, where animal seed dispersers remain relatively abundant.

About 70% of tree species across the three islands have fleshy fruits adapted for dispersal by birds. The research teams led by Elizabeth Wandrag of the University of Canberra created "canopy gaps" on each island, counting tree seedlings that grew in each gap after one year. Seedlings were classified as either having come from seedfall from nearby trees or from further afield via active dispersal.

Seedling diversity was consistently higher in the gaps on Rota and Saipan compared to Guam, according to the research published in the *Proceedings of the National Academy of Science*. The loss of vertebrate seed dispersers on Guam, the paper estimates, resulted in about half the number of tree species taking root.

On Guam the gaps were also generally populated by one species or another, while on Saipan and Rota species were more evenly distributed. "Gaps in tropical forests are nurseries for the future," Wandrag says. "These seedling species simply aren't getting to the gaps and will therefore struggle to survive."

"Losing native seed dispersers from the landscape could irrevocably change the way these forests look. Introduced species such as the brown tree snake could end up threatening not just local animals but ultimately entire ecosystems."

cosmosmagazine.com