

"Non-Wood Forest Products (NWFPs) consist of goods of biological origin other than wood, derived from forests, other wooded land and trees outside forests."

«Les produits forestiers non ligneux sont des biens d'origine biologique autres que le bois, dérivés des forêts, des autres terres boisées, et des arbres hors forêts.»

«Productos forestales no madereros son los bienes de origen biológico distintos de la madera derivados de los bosques, de otras tierras boscosas y de los árboles fuera de los bosques.»

(FAO's working definition)

*uxirana*, *tento*, *cedro* and Brazil nut. She says: "The *jupati* is our discovery, no-one worked with *jupati* or *uxi* before. It's a marvellous discovery that makes unique pieces".

Some small Amazonian seeds, such as *açaí*, are being purchased in bulk at low prices and shipped to São Paulo to be industrially processed into jewellery. But jewellery from hard-to-work, unique fruits such as *uxi* and *jupati* are still hand crafted in Belém. (Source: FAO, 2011. *Fruit trees and useful plants in Amazonian life*.) (Please see page 76 for more information on *uxi*.)

## BIOPROSPECTING/ BENEFIT-SHARING OR BIOPIRACY?



### Kenya: use the law to protect traditional knowledge

I sat through an interesting discussion on bioprospecting *vis-à-vis* protection of indigenous rights. Most people took the view that local communities lose in terms of revenues and opportunities of commercially exploiting the bioresources to larger corporate and foreign entities. It is alleged the big firms exploit traditional knowledge and obtain revenues and royalties from patenting information that does not belong to them.

This may seem to be the case but a quick analysis of the law shows that the state does indeed protect local communities from such exploitation. The Constitution expressly protects indigenous communities and the environment. It is enshrined in the Bill of Rights that every Kenyan citizen has a right to enjoy the environment and a right to have it protected for the benefit of future generations. Article 69 of the Constitution ensures protection of indigenous rights by imposing an obligation on the state to ensure sustainable exploitation of natural resources and equitable sharing of benefits. The article also provides for the protection of intellectual property in indigenous knowledge.

Even before the new Constitution, there were laws to protect indigenous communities from exploitive bioprospecting. The Environmental Management and Coordination Act of 1999 contains provisions in this regard. Under Section 50, the Authority shall prescribe measures to ensure protection of biodiversity and specifically provides for the protection of indigenous people's rights.

Therefore, the indigenous community is adequately protected under statute from illegal bioprospecting.

Many potential bioprospectors engage the local community in the project and also set out the benefits available to the locals, including building of schools and other infrastructure. The Constitution makes it easy for a member of the community to challenge the prospecting activity on the grounds that the project does not guarantee equitable distribution of resources.

It has been argued that many corporate entities not only prospect illegally but go on to secure intellectual property rights in the form of patents, over illegally acquired information. Perhaps this might have happened in the past, but before a person is awarded a patent he/she must prove that there was an inventive step and the idea is new. Therefore, bioresources cannot be patented. The only thing that can be successfully patented is an invention linked to a bioresource. (Source: Cathy Mputhia, Business Daily, 15 January 2012 in Traditional Knowledge Bulletin.)

### Biopiracy: depriving indigenous rights in Sri Lanka

The issue of biopiracy, commercially exploiting naturally occurring biochemical or genetic material, has once again become a talking point following the recent arrest of a group of six foreign "biopirates" in Kalpitiya. The group was taken into custody by officials from the Department of Wildlife Conservation (DWC) on 25 February. Vials containing DNA material and specimens of protected plants and animals were found in their possession. They were fined SR435 000 after pleading guilty.

The group, which included researchers and scientists, was part of Exo Terra, which styles itself as "the market leader in reptile products for the natural terrarium", according to its Web site. It is also engaged in a number of projects dealing with reptile conservation, it claims. However, Exo Terra also sends groups on "expeditions" to various countries, most of them in Africa. The group's latest venture, detailed at length on their Web site, is the "Sri Lanka Expedition".

According to Ranjan Marasinghe, Deputy Director of Law Enforcement, DWC, at the time of its arrest the group had several local frogs and a chameleon in their possession, in addition to DNA samples from a star tortoise, a protected animal. "It is illegal even for Sri



## AMAZONIAN SEEDS USED TO MAKE JEWELLERY

At the Macapá fair, in the Brazilian state of Amapá, a small, elderly woman carefully appraises a variety of seed necklaces for sale. She shows most interest in one in particular. The craftsperson, Delomarque Fernandes, comments that the large, central bead is *uxi*. Delighted, the woman places her weathered hand firmly over the *uxi* pit and proclaims, "Then this necklace is mine, as *uxi* has a special power!".

When the endocarp of an *uxi* (*Endopleura uchi* [Huber Cuatrec]) is cut through the middle, various star shapes are revealed. By cutting the seed into thin discs these can be used as beads to make attractive necklaces, earrings and belts.

In Belém, Delomarque makes beautiful jewellery (necklaces, rings, bracelets and earrings) using parts from various regional trees. The palm trees she uses are *tucumã*, *inajá*, *babaçu*, *dendê*, *murumuru*, *mucajá*, *jupati*, *mumbaca*, *açaí branco*, regional *açaí*, *bacaba* and coconut. In addition to palms, Delomarque likes to use *uxi*,

Lankans to capture such animals, let alone obtain DNA samples, without first obtaining a specific permit from the DWC," he said.

Marasinghe explained that any foreigner who intends to conduct research on such animals in Sri Lanka needs first to submit a formal request to a research committee of the DWC.

"Among other things, the research committee is tasked with looking into what Sri Lanka stands to gain from such research. The last thing we want is for people securing patent rights to something discovered in our country and obtaining monetary rewards, while completely shutting Sri Lanka out of the process. Our country must also benefit," he explained. However, the Exo Terra group had made no such request and had no permits, he added. [Source: *Nation on Sunday* [Sri Lanka], 11 March 2012.]



### Panama is first to benefit from fund to tackle biopiracy

The Nagoya Protocol Implementation Fund (NPIF) has announced its first beneficiary: a project exploring Panama's natural resources for use in the pharmaceutical and agrochemical industries. The Nagoya Protocol was agreed in October 2010 by 193 countries to tackle biopiracy and share the benefits of research into natural resources in an equitable manner. NPIF was set up by the UN funding agency, the Global Environment Facility (GEF), four months later, as a multidonor trust fund to help nations implement the protocol.

GEF announced on 12 January that Panama will receive US\$1 million from NPIF to carry out a three-year project at the Coiba Island National Marine Park – one of the most important nature reserves in the country – located in the Gulf of Chiriqui. Researchers will collect samples of plants, fungi and algae that have symbiotic (mutually beneficial) relationships with corals, and bacteria in fresh- and seawater, according to Dario Luque, an officer at the country's National Environmental Authority (ANAM). The samples will then be analysed in the hope of discovering compounds to create new, natural insecticides or drugs to treat tropical diseases and cancer.

Other international partners are contributing the rest of the project's US\$3.4 million budget, and will share its benefits. These include the United States-based University of California and University of Utah, and the United States National Institutes of Health, as well as private sector companies based in Japan and the United States of America.

As one of a number of partners, Panama will share the rights to any products that arise from the project. But the terms of the contract can be renegotiated "if biologically active compounds are obtained in the first year of the project". [Source: *SciDev.Net Weekly Update*, 30 January–5 February 2012.]



## EUROPEAN FORESTS

### Climate change could mean big changes for Europe's forests

Rather than wait until Europe's forests begin to die off, the European Union (EU) is taking steps to prevent such a catastrophe. It is supporting leading-edge research to help forest managers decide what kind of trees they should plant now, and what kind of pests and diseases should be monitored today, so they will not become a problem in a climate-changed future. "Forests are incredibly complicated ecosystems that climate change can disrupt in equally complicated ways," said Hervé Jactel of the French National Institute for Agricultural Research (INRA), leader of the EU-funded research project BACCARA.

Launched in 2009 with €3 million in support from the EU, BACCARA is a four-year project that is working to assess how climate change will affect the biodiversity and productivity of Europe's forests.

To remove some of the guesswork from managing Europe's forests, BACCARA's researchers are trying to predict how certain kinds of trees will fare in terms of growth and pest resistance in the decades and centuries to come. Among their findings, researchers have learned that the very complexity of forests might be the best insurance for coping with climate change. "Planting several different species of trees, for example, can protect forests from insect attacks better than planting just one type of tree," Jactel said. "So if climate change can cause harmful insects to thrive, this would be a good strategy to combat pests."

The economic stakes are high for Europe, whose forest industry is worth €25 billion a year and provides four million jobs. Totalling some one billion ha, Europe has more forest land than any other region in the world – from

cork oak and cypress forests along the Mediterranean to the Scots pine taiga of Scandinavia and the mixed forests of the Caucasus. [Source: *Teatro Naturale International*, 19 February 2012.]

### European tree species map released

The European Forest Institute, in cooperation with Alterra/Wageningen University, has released a set of 1 x 1 km tree species maps showing the distribution of 20 tree species over Europe. Basic dendrometric data were received for 260 000 national forest inventory plot locations from 17 countries to compile these maps. Forest plot data collected in a European-wide network (ICP Level I) were used to extend the available data for the remaining European countries.

Furthermore, forest inventory statistics were applied. [Source: *European Forest Institute*, 10 December 2011.]



## FOREST HEIGHT AFFECTS CLIMATE CHANGE

NASA says its scientists have helped create an accurate map of the height of the Earth's forests to help understand better the role forests play in climate change. The high-resolution map will also help researchers study how a forest's height influences wildlife habitats within it, while also helping them quantify the carbon stored in the Earth's vegetation, a NASA release said.

The map was created by scientists from NASA's Jet Propulsion Laboratory (JPL) in Pasadena, California, the University of Maryland and the Woods Hole Research Center in Massachusetts, using 2.5 million carefully screened, globally distributed laser pulse measurements from space.

"Knowing the height of the Earth's forests is critical to estimating their biomass, or the amount of carbon they contain," lead researcher Marc Simard of JPL said. "Our map can be used to improve global efforts to monitor carbon. In addition, forest height is an integral characteristic of the Earth's habitats, yet is poorly measured globally, so our results will also benefit studies of the varieties of life that are found in particular parts of the forest or habitats."

The map shows that, in general, forest heights decrease at higher elevations and are highest at low latitudes, decreasing in height the further they are from the tropics. [Source: *UPI in Disaster News Network*, 21 February 2012.]

## FORESTS: MEDICINE FOR BODY AND SOUL

Imagine a doctor who, rather than advising the usual: "Take these pills daily for the next two weeks", says instead: "Take long walks in the forest daily for the next two weeks. That should get you back to normal". Okay, that's a bit fanciful. But it may not be too big a stretch.

There is a growing body of scientific research that suggests forests and other natural, green settings can reduce stress, improve moods, curtail aggressiveness and – possibly – even strengthen our immune systems.

Medical and health care costs are a skyrocketing financial burden in many, if not all, countries around the world. Policy-makers are increasingly looking at prevention as a cost-effective alternative to medical treatment. Anything that has the potential to reduce these costs – including long walks in the forest – deserves a long, hard look.

For example, numerous studies have shown that people recover more quickly and better after stressful situations in natural, green environments. Blood pressure, heart rate, muscle tension and the level of stress hormones are reduced in green environments and attention deficit hyperactivity disorder (ADHD) symptoms in children are similarly reduced when they play in green settings.

In a 2011 publication, *Forests, trees and human health*, 160 scientists from 24 European countries, with contributors from Asia, Australia, Canada and the United States of America have delved deeply into the question of whether forests and forest management help in the promotion of healthier lifestyles and improved mental health. The publication's focus is primarily on health priorities defined within Europe; however, it also draws on research from North America and elsewhere and has worldwide relevance.

While continued research is needed to further our knowledge in this area, it seems clear right now that anyone involved in making policy decisions in the medical, social, natural resources, forests or urban land-use planning areas cannot afford to ignore the relationship between a green environment and human health. (Source: Hannu Raitio, Coordinator of IUFRO Task Force for Health [DG Finnish Forest Research Institute, Metla] in IUFRO Spotlight, 3 February 2012.)

## HEALTH AND NUTRITION: COMPLIMENTS OF THE FOREST

Throughout Amazonia, abundant benefits come from the tropical forest – fruit, fibres, wood, game and medicine, as well as ecosystem services such as pollination, seed dispersal, fresh air and clean water. The value of these services and of Amazonian products such as *açaí*, *bacuri* and *copaíba* is growing quickly. But it is often not possible for people who live in rural areas to bring forest products to the marketplace or to be compensated for conserving the forest's ecosystem services. Even without earning any money, however, people earn a substantial "invisible income" (see Box) from forest goods that enrich family health and nutrition. As one Amazonian mother says: "My family saves our meagre income by eating free from the forest".

Forest fruits provide essential nutrients, minerals and antioxidants that keep the body strong and resistant to disease. Rural families recount that during the season of forest fruits and nuts they do not catch colds, coughs or flu. Common deficiencies in the Brazilian diet, such as a lack of vitamin A, can be combated with forest foods. For example, *buriti* palm fruit contains the highest known levels of vitamin A of any plant in the world. *Açaí* fruit is being hailed as a superfood for its high antioxidant and omega fatty acid content.

Preventing disease through good nutrition can save income and lives. Even excellent sources of protein can be obtained from the forest for free. Brazil



### INVISIBLE INCOME

To measure the importance of the forest in the household economy, 30 families in three communities along the Capim River in Amazonian Brazil weighed all the forest products they extracted during 1994.

The results showed that over the course of one year the vines, game and fruit that an average family extracted were equivalent to 25 percent of their average annual income. Expert hunters catch game for their families with a value equivalent to half the average annual income. Buying fruit, fibres and meat would be exorbitantly expensive for many rural families whose main source of income is the sale of *farinha* (cassava meal) and timber.

The primary forest provided 85 percent of the vines, 87 percent of the fruits and 82 percent of the game extracted.

It is advantageous that communities consider this invisible income before selling wood or forested land. They can negotiate with loggers to conserve areas of forest that have many useful tree species as well as conserving patches of forest that may serve as corridors for wildlife, linking them with other wooded areas. Villagers can also plan to preserve areas adjacent to the forests of neighbouring communities or ranchers, allowing for a higher biodiversity throughout. With planning, it is possible to manage the forest to extract wood as well as game, fruit, vines and oil. (Source: FAO, 2011. *Fruit trees and useful plants in Amazonian life.*)

nuts are rich in a complete protein similar to the protein content of cow milk, which is why they are known as the "meat" of the plant kingdom. Families with game on their lands, particularly wildlife with high reproductive capacity such as rodents, can meet their protein needs without ever needing to set foot in a meat market. If a family member does become ill, cuts, fevers, skin ailments and coughs can often be treated with the remarkable array of Amazonian medicinal leaves, oils and barks. (Source: FAO, 2011. *Fruit trees and useful plants in Amazonian life.*)

## IMPACTS OF SELECTIVE LOGGING ON NTFPs OF LIVELIHOOD IMPORTANCE

A recent paper has examined the potential for combining timber and NTFP extraction in the context of diversified forest management. Many tropical forests are exploited both commercially for timber and by forest-dependent communities for NTFPs. Divergences between these two uses may have significant implications for forest-dependent livelihoods.

The article gathers together existing examples of conflicts and complementarities between selective logging and non-timber uses of forest from the livelihood perspective. Additionally, it draws on three case studies from Brazil, Cameroon and Indonesia to examine by what mechanisms, and to what extent, logging impacts forest resources of livelihood importance, as well as considering how factors such as logging regime and forest management system may mediate such influences. By doing so, the authors aim to shed further light on a relatively unacknowledged issue in tropical forest management and conservation. Four specific mechanisms are identified – conflict of use and the indirect impacts of logging being those most commonly implicated in negative effects on livelihood-relevant NTFPs. Eighty-two percent of reviewed articles highlighted negative impacts on NTFP availability. Examples of positive impacts were restricted to light-demanding species that respond to the opening of forest structure and typically represent a small subset of those of livelihood value.

Despite considerable impacts on livelihoods, in all three case studies the authors found evidence to support the potential for enhanced compatibility between timber extraction and the subsistence use of NTFPs. Drawing on this evidence and findings from their review, they make specific recommendations for research, policy and management implementation. These findings have significant implications for reconciling timber and non-timber uses of tropical forests. (Source: L. Rist, P. Shanley, T. Sunderland, D. Sheil, O. Ndoye, N. Liswanti and J. Tieguhong. 2011. The impacts of selective logging on non-timber forest products of livelihood importance. *Forest Ecology and Management*, 268: 57–69 [2012].)



## INDIGENOUS KNOWLEDGE OF FORESTS

### Saving the forests with indigenous knowledge

For the Laibon community, a subtribe of Kenya's Maasai ethnic group, the 33 000 ha Loita Forest in the country's Rift Valley province is more than just a forest. It is a shrine. "It is our shrine. Our gods live there. We gather herbs from the place. We use it for beekeeping. It therefore forms part of our livelihood," said Olonana Ole Pulei, who is in Durban, South Africa, to represent his community at the 17<sup>th</sup> Conference of Parties under the United Nations Framework Convention on Climate Change.

According to Nigel Crawhall, Director of the Secretariat for the Indigenous Peoples of Africa Co-ordinating Committee (IPACC), different African communities have incredible indigenous knowledge that they use in the conservation of forests and biodiversity in general, and this should be recognized during negotiations in Durban.

Crawhall gave an example of how the Bambuti and Batwa pygmy communities, in the eastern Democratic Republic of the Congo, conserve the forest using traditional methods. Both communities depend on the biodiversity of animal life in the equatorial forests in order to survive. "Usually, they know how to identify particular trees that can be cut down in order to create a unique opening in the canopy, which attracts light in the closely packed Congo forests. The light

then attracts animals, birds and insects, thus giving them an opportunity to hunt," Crawhall told IPS. This helps conserve biodiversity, as well as the forests, because such a method can only work if the forest canopy is intact.

In Kenya, the Maasai culture forbids any community member from cutting down a tree, either for fuelwood or any other purpose. People are also forbidden from interfering with the taproots or removing the entire bark of a tree for herbal extraction. According to their cultural belief, one can only use tree branches for fuelwood, and fibrous roots for herbs. If the bark of a tree has medicinal value, then only small portions of it can be removed by creating a "V" in the bark. The wound is then sealed using wet soil. "We believe that the soil helps in healing the wound on a tree. This is cultural, and we all believe that it is an abomination for one to injure a tree, and not help it heal," said Ole Pulei.

"All logging activities observed on Maasai land, including the destruction of the Mau Forest, are done by foreigners because the Maasai culture does not allow such activities. This is the indigenous knowledge that helps in forest conservation," Ole Pulei told IPS.

"We have several other communities all over the continent that coexist with forests. They include the Tuareg community in Algeria, Yiaku community in Kenya's Laikipia region, the Ogiek community also in Kenya, and the Kung community in Botswana among others," said Crawhall.

"We believe that African traditional ecological knowledge is the foundation for appropriate and effective national adaptation policies," said Crawhall. (Source: IPS, 9 December 2011.)

### Indigenous knowledge complements scientific knowledge

Researchers working jointly with an indigenous tribe in Brazil wanted to help them calculate how many productive Amazon *tucumã* palms (*Astrocaryum aculeatum* G. Mey) were in their area. They used a mapping method with an excessively complicated name: "Post-exploratory systematized forest inventory with multiple beginnings". The researchers discovered that in an area where there should have been about 400 *tucumã* palms, their survey only located 16. While they asked themselves where the others were, a hard rain began to fall. As they stood around looking at each other and getting drenched, they decided that their method with the complicated name was worthless. One of them decided to inquire of the Indians:

"Do you know where the *tucumã* are?" The Indians swiftly proceeded to identify and map every *tucumã* palm in the project area.

The researchers planned to study how much each palm produced per year and multiply this amount by the number of *tucumã* palms in the area. The indigenous artisans could use this information to calculate how much material they would have to work with for the year and how much they could earn selling *tucumã* at the market. (Source: FAO, 2011. *Fruit trees and useful plants in Amazonian life*.)

## NATURAL PRODUCTS CONFERENCE

The International Conference on Natural Products, which took place in Toulouse, France from 24 to 27 May 2011, gathered close to 100 participants from 21 different countries and was a great success. Highlights of the conference include the following.

- A group of pharmacists from Thailand showed that using natural plant extracts obtained better results against bacteria resistant to synthetic antibiotics when combining the antibiotics with plant extracts.
- Dr Benamara from Algeria gave a talk on how to use wood ash to fertilize plant production and return these elements to the soil, by growing algae in salt water amended with ashes.
- Dr Lila de Castro from Spain explained how antioxidants are particularly abundant in olive tree extracts and hold promising future applications, notably the use of olive mill waste waters in making natural preservatives for food packaging.
- Researchers from Germany and the Czech Republic demonstrated how the exact nature of natural products can be deduced from high-resolution mass spectroscopy.
- An engineer from Avignon, France, showed how plant extracts can be obtained with a new microwave extractor using no solvents but the downflow of the mist coming out of the direct microwave heating of the plants, which allows collecting of the natural oils by gravity, avoiding contamination with solvents.
- A business man from Toulouse, France, exhibited the cosmetics he had made from natural products with no artificial additives, but that had good preservation properties thanks to the natural oil combinations used.

- A chemist from the Pierre Fabre laboratories discussed the active mechanism of anticancer drugs extracted from the Madagascar *pervenche* (periwinkle).
- A chemist from Florida, United States of America, working on his thesis, explained how to grow fungi in order to isolate molecules made by the fungi to fight against toxic environments.
- Dr Chen from Boston discussed the benefits of eating nuts from the nutritional point of view; they present a better balanced composition than meat products.
- There were also other talks and posters illustrating the many diverse applications of natural products, which seem to be an endless library of molecules with extraordinary complexity and adaptability to harsh environments.

However, the pharmaceutical companies present explained that most industries are abandoning the search for active molecules from natural sources because there are too many components simply to identify the active ones that may in fact be combinations of substances difficult to isolate. Today, screening of artificial molecules still seems to be more expedient and profitable. The Food and Drug Administration (FDA) of the United States of America and official administrations want reproducible drugs, and natural products vary according to season, location of plant, age and atmospheric conditions, etc. (**Contributed by:** Dr Patrick Sharrock (the main conference organizer), Département de Chimie, Institut Universitaire de Technologie Paul Sabatier, Avenue G. Pompidou, 81104 Castres, France. E-mail: patrick.sharrock@iut-tlse3.fr; [www.naturalproducts.fr/2.html/](http://www.naturalproducts.fr/2.html/))



## NEW BIODIVERSITY MAP OF THE ANDES SHOWS SPECIES IN DIRE NEED OF PROTECTION

The Andes-Amazon basin of Peru and the Plurinational State of Bolivia is one of the most biologically rich and rapidly changing areas of the world. A new study published in BioMed Central's open access journal *BMC Ecology* has used information collected over the last 100 years by explorers and from satellite images that reveals detailed patterns of species and ecosystems that occur only in this region. Worryingly, the study also finds that many of these unique species and ecosystems are lacking vital national-level protection.

Endemic species are restricted to a specific area and occur nowhere else. These species are especially vulnerable to climate and environmental changes because they require unique climates and soil conditions. This makes them an ideal indicator for measuring biodiversity.

A multinational team from the United States of America, the Plurinational State of Bolivia, Peru and other countries mapped a wide range of ecosystems in Bolivia and Peru, from the wetlands of the Beni savannah and the Iquitos várzea, to the bone-dry xeric habitats of inter-Andean valleys, and the cool and humid montane forests along much of the eastern Andean slope. Over 7 000 individual records of endemic species locations for 115 birds, 55 mammals, 177 amphibians and 435 plants were combined with climate data (WorldClim), topography (NASA's Shuttle Radar Topography Mission [SRTM]), and vegetation (NASA's MODIS satellite sensor), resulting in species distribution maps, accurate to 1 km.

Disturbingly, the authors found that a total of 226 endemic species have no national protection and about half of the ecological systems have 10 percent or less of their range protected. Additionally, only 20 percent of the areas with high numbers of endemic species and 20 percent of the irreplaceable areas are currently protected.

Dr Jennifer Swenson, from Duke University, United States of America, who led the research said, "Biodiversity in the Andes is under threat from oil and gold mining, infrastructure projects, illegal crops, and many other activities. There is already evidence of species migrating upslope to keep up with climate change in this region. Conservation across the Andes needs urgent revising and we hope that our data will help protect this incredibly unique region". (Source: EurekAlert press release, 26 January 2012.)

## NON-PROFIT ORGANIZATIONS AND NGOS

### Maya Nut Institute

The Maya Nut Institute is a non-profit 501(c)3 public charity founded in 2001. While our mission remains the same, we changed our name from The Equilibrium Fund to The Maya Nut Institute in 2010. Our mission is to "find balance between people, food and forests" by teaching rural communities about the value of Maya nuts for food, fodder, ecosystem services and income.

#### FOR MORE INFORMATION, PLEASE CONTACT:

Maya Nut Institute, PO Box 2371, Crested Butte, CO 81224, United States of America.

<http://mayanutinstitute.org/>

(Please see page 39 for more information.)

### Women Organizing for Change in Agriculture & NRM (WOCAN)

WOCAN is a women-led global network of professional women and men engaged in agriculture and natural resource management who are committed to organizational change for gender equality and environmentally sustainable development.

#### FOR MORE INFORMATION, PLEASE CONTACT:

WOCAN, United Center, Level 41, 323 Silom Road, Bangkok 10500, Thailand. E-mail: [info@wocan.org](mailto:info@wocan.org); [www.wocan.org/](http://www.wocan.org/)



## ON THE MENU: FORESTS

For almost as long as our species has lived on Earth, we have fed ourselves directly from the bounty of forests, grasslands and other wild places. Now a largely urban species, having multiplied greatly and changed the face of the Earth, we often forget or grossly misunderstand the continuing role of forests in feeding what are now the world's billions.

A special issue of the *International Forestry Review* on "Forests, biodiversity and food security" is taking a step towards rectifying this knowledge gap. Bringing together nine articles by a multidisciplinary and international group of authors – many of them pioneers in the field – editors Terry Sunderland and Alan Pottinger aim to dispel the common myth that forests have ceased to be important to food security, especially as our numbers and needs grow and change. They have put together articles that focus on



a variety of approaches and perspectives, as well as a wealth of data and analysis on the question of what forests contribute to food security, nutrition and human well-being. Together, these contributions demonstrate convincingly that two of today's greatest challenges are not irreconcilable goals: the need to protect forests and the multiple ecosystem services they provide, and the imperative to feed an increasing human population. But these articles, individually and as a group, also show that the links between forests and food security are multidimensional, complex and often difficult to see, to document and to measure. The key to understanding both the significance of the linkages and the difficulty of measuring them is appreciating diversity in its various forms and dimensions.

The editorial that opens the issue begins with the affirmation that "forests are a considerable source of biodiversity and, as such, are inextricably linked to people's food security, nutrition and health in a number of fundamental ways". Several of the articles that follow detail just how forest biodiversity – at genetic, species and system levels – contributes to feeding both the world's rural and urban populations. With around one billion people reliant on wild harvested products for food and income, the direct contribution of forests to diets is considerable and often crucial, even if often hidden from urban and official eyes. For instance, a study by Nasi, Taber and van Vliet provides data showing that approximately 4.5 million tonnes of bushmeat are extracted annually from the Congo Basin forests alone. This direct food contribution adds not only considerable calories but also much needed protein and micronutrients to the diets of local populations.

The importance of forests' direct contribution to food production may actually be eclipsed by the inputs they make to food production outside forests. As Sunderland suggests in the article entitled "Food security: why is biodiversity

important?", much more needs to be understood about the "natural capital" that forests provide to agriculture, including documenting regulation of water flow and quality; provision of pollination services and germplasm for crop improvement; maintenance of nutrient cycling and soil fertility; mitigation of climatic extremes; control of agricultural pests and diseases; and other essential functions. These services "all rely to a greater or lesser extent on biodiversity, or components of it; processes that are critical to the maintenance of agricultural systems" including the most modern agribusinesses.

But fully understanding the links between forests and food security requires appreciation not only of biological diversity, but also of the social and cultural diversity of those who use, manage, manipulate and even create forests and agroforests. Several of the articles detail the complex, divergent and changing linkages between forests, nutrition and health among people of different cultural traditions, between groups who have long lived in a particular place and those newly arrived, and between men and women, with the gender issues surrounding food security comprehensively discussed by Wan, Colfer and Powell.

Appreciation of biological and cultural diversity is central to understanding forests and food, and the wealth of resources, services, knowledge and practice that diversity produces. This is the core message of most of the articles in this special issue. Yet this richness is also one reason why forests' crucial role in food security goes unappreciated. Waving fields of grain ripening in the sun and harvested in one brief season are far easier to see, measure and understand than the "more than 400 plant species ... sourced from a wide range of habitats and subject to varying degrees of management" identified by Laird, Awung, Lysinge and Ndive as the forest-derived resources that support communities around Mount Cameroon in Central Africa. This special issue illustrates one way to begin to understand the confounding diversity but crucial importance of forests' contributions to the food security of rural and urban populations alike. The compendium suggests that the answer lies again in diversity: a diversity of approaches, perspectives, methods and tools. (Source: Christine Padoch, Director, Forests and Livelihoods Programme, Center for International Forestry Research [CIFOR] in CIFOR POLEX, 10 February 2012.)



## "PROTA 16: FIBRES": OVERVIEW OF AFRICAN FIBRE PLANTS COMPLETED!

In the International Year of Natural Fibres 2009, the Plant Resources of Tropical Africa (PROTA) programme ([www.prota.org](http://www.prota.org)) began "PROTA 16: Fibres", a project to highlight the diversity and potential of the fibre plants of tropical Africa, funded mainly by the COFRA Foundation (Switzerland).

The project has led to about 250 review articles, written by 46 authors and dealing with more than 500 fibre plant species of tropical Africa. The articles include information on traditional and modern uses; production and trade; physical and chemical properties; identification; growth and development; ecology; management; processing; conservation status; and prospects.

Attention is paid to field crops such as cotton (*Gossypium* spp.), the most important fibre plant of tropical Africa, and sisal (*Agave sisalana*), but also to a wide range of forest plants from which fibrous parts are collected. Examples are: kapok (*Ceiba pentandra*), yielding a fruit fibre used for stuffing and insulation; *Raphia* species, with the leaves yielding piassava fibre for brooms and raffia fibre for plaiting and tying; and rattan palms such as *Eremospatha macrocarpa* and *Calamus deerratus*, the stems of which are used for construction, furniture, basketry and tying. A large number of lesser-known fibre plants with regional or local importance are also considered.

In early 2012, the articles were published in English and French handbook volumes and a bilingual CD-ROM. The English and French versions of the review articles are also accessible in the free Web database



*Gossypium*

PROTA4U ([www.prota4u.org/](http://www.prota4u.org/)). (**Contributed by:** Dr Martin Brink, Coordinator "PROTA 16: Fibres", PROTA Network Office Europe, Wageningen University, PO Box 341, 6700 AH Wageningen, the Netherlands. Fax: (31)(317)482206; e-mail: [martin.brink@wur.nl](mailto:martin.brink@wur.nl); [www.prota.org/](http://www.prota.org/))



## RÉFLEXIONS SUR UN CADRE CONCEPTUEL POUR UNE GESTION DURABLE DES PFNL EN AFRIQUE CENTRALE

Impliquée dans le secteur des produits forestiers non ligneux (PFNL) en Afrique centrale depuis 10 ans, la FAO propose un cadre conceptuel qui reflète les principes directeurs guidant ses activités dans ce secteur. La finalité de ces dernières est l'amélioration de la sécurité alimentaire, la réduction de la pauvreté et la gestion durable des forêts.

Ce cadre conceptuel repose sur trois principes fondamentaux, à savoir (1) le respect des droits de l'homme – notamment participation, imputabilité, non discrimination, transparence, dignité humaine, autonomisation et état de droit –; (2) le droit à une alimentation adéquate, répondant à des obligations légales des Etats; et (3) le concept de gestion durable des forêts.

Ces trois éléments principaux se traduisent par des outils pratiques qui permettent d'orienter les activités concrètes sur le terrain en matière de PFNL en Afrique centrale, comme le développement des chaînes de valeurs des PFNL, la révision des cadres juridiques et réglementaires et l'élaboration de stratégies nationales sectorielles. Ces outils sont de divers ordres, en particulier:

- (a) La Boîte à outils sur les PFNL, la sécurité alimentaire et le droit à une alimentation adéquate: il s'agit d'un document d'orientation en cours d'élaboration qui encourage une approche multi-acteurs et multisectorielle. De manière pratique, les aspects techniques relatifs à la sécurité alimentaire sont complétés par les aspects juridiques concernant les droits de l'homme. Chaque individu est reconnu comme détenteur des droits et non comme simple bénéficiaire.
- (b) Le concept de gestion durable des forêts: celui-ci intègre les dimensions économique, environnementale et socioculturelle de l'utilisation des
- (c) Les Directives sous-régionales relatives à la gestion durable des produits forestiers non ligneux d'origine végétale en Afrique Centrale: ces directives, adoptées par la Commission en charge des forêts d'Afrique centrale (COMIFAC) en 2008, visent à améliorer et harmoniser les cadres politiques, législatifs, fiscaux et institutionnels des pays membres de la COMIFAC en proposant des bases communes pour une prise en compte appropriée des PFNL au sein de ces cadres.



ressources forestières. L'évolution ou la régression de la gestion durable des forêts dans un pays peut être définie, évaluée et suivie en fonction d'un certain nombre de principes, critères et indicateurs (PCI). La gestion durable des PFNL n'est que partiellement reflétée dans les PCI pris en compte et nécessite donc des mesures additionnelles ainsi que la définition d'autres PCI. Ces derniers devraient refléter le caractère spécifique de l'utilisation des PFNL de la part des communautés locales et des petites entreprises, et s'appuyer sur le droit coutumier et l'application des textes législatifs régissant la récolte, la transformation et la commercialisation des PFNL.

Les éléments cités ci-dessus sont présentés de manière détaillée dans une note d'information de la FAO disponible sur le site Internet mentionné ci-dessous.

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**POUR EN SAVOIR PLUS, CONTACTER:**

**Ousseynou Ndoye, Coordonnateur régional du  
 Projet PFNL GCP/RAF/441/GER, FAO, B.P. 281,  
 Yaoundé, Cameroun. Courriel:  
 Ousseynou.Ndoye@fao.org;  
 http://www.fao.org/forestry/nwfp/55079/fr/  
 (Please see pages 67–68 for more information.)**

**SCIENCE IN THE HANDS  
 OF PEOPLE**

A new FAO study released today shows how plants and fruits from Amazon forests can be used to improve people's diets and livelihoods. The book – which is written in easy-to-grasp, accessible language – seeks to take science out of the ivory tower and put it to work on the ground, in the hands of people.

*Fruit trees and useful plants in Amazonian life* was co-produced by FAO, the Center for International Forestry Research (CIFOR) and People and Plants International. It was unveiled today during a ceremony at FAO marking the close of the International Year of Forests.

"During the International Year of Forests we have managed to highlight close ties between people and forests, as well as the numerous benefits that forests provide if they are managed by local communities in a sustainable way," said Eduardo Rojas-Briales, FAO's Assistant Director-General for Forestry. Some 80 percent of people living in the developing world rely on non-wood forest products such as fruits and medicinal plants for their nutritional and health needs. This new book provides comprehensive information on Amazon fruits and plants, and is a perfect example of how to make our knowledge accessible for poor people to help them maximize the benefits from forest products and services and improve their livelihoods. While the International Year of Forests is almost



over, our efforts on promoting sustainable forest management and the importance of involving forest communities in development initiatives will continue, added Rojas-Briales.

The layout of FAO's new book aims at allowing readers lacking in formal education to extract knowledge using pictures and numbers, since 25 percent of people in developing countries are functionally illiterate, and in rural areas this figure can reach close to 40 percent.

"Some 90 Brazilian and international researchers who were willing to present their research to rural villagers in alternative formats, including jokes, recipes and pictures, collaborated in the production of this book," said Tina Etherington, who managed the publication project for FAO's Forestry Department. "And a number of farmers, midwives, hunters and musicians contributed valuable insights and experience as well. The book is of interest to a worldwide audience because of its truly innovative way of presenting science and how those techniques can be transferred to other areas in the world."

Patricia Shanley, Senior Research Associate at CIFOR and lead editor of the publication, said: "This is an unusual book. Written by and for semi-literate rural villagers, it weaves together a tapestry of voices about the myriad values forests contain".

"The book enables nutritional data and ecology to coexist alongside music and folklore, making the forest and its inhabitants come alive," she added.

The Amazon is the largest contiguous tropical forest remaining in the world, with 25 million people living in the Brazilian Amazon alone. However, deforestation, fire and climate change could destabilize the region and result in the forest shrinking to one-third of its size in 65 years, according to the publication.

In addition to the environmental services they provide, forests such as the Amazon are also a rich nutritional storehouse. Fruits provide essential nutrients, minerals and antioxidants that keep the body strong and resistant to disease. *Buriti* palm fruit, for example, contains the highest known levels of vitamin A of any plant in the world. And *açaí* fruit is being hailed as a "superfood" for its high antioxidant and omega fatty acid content. Brazil nuts are rich in a complete protein similar to the protein

content of cow milk, which is why they are known as the "meat" of the plant kingdom, said the publication. [Source: FAO newsroom, 20 December 2011.] (Please see page 75 for more information.)



**SLASH-AND-BURN  
 "IMPROVES TROPICAL  
 FOREST BIODIVERSITY"**

Mexico City. Slash-and-burn agricultural practices, banned by governments because of the risk of uncontrolled fires, provide better growing conditions for valuable new trees than more modern methods of forest clearance, a study suggests.

Starting in 1996, researchers cleared 24 half-hectare areas of tropical forest in Quintana Roo state, in southern Mexico, using three methods: clear-felling, where most of the trees are cut down; bulldozing; and slash-and-burn, a practice common among smallholders, in which trees are felled, left to dry and then burned, to prepare the land for agriculture.

Mahogany seeds and seedlings were then planted and, after 11 years, the researchers compared the sites and found that slash-and-burn techniques had provided the best growing conditions for mahogany. But, more interestingly, many valuable species had thrived in the slash-and-burn plots, said Laura Snook, one of the study authors and programme director at Bioversity International, which conducts research into agricultural biodiversity for the improvement of livelihoods.

In clear-felled areas, more than half of each area contained tree species of no commercial value, Snook said. In areas cleared by slash-and-burn, 60 percent of species were commercially valuable. Additionally, the largest trees in slash-and-

burn areas were 10 percent bigger than those in bulldozed areas.

Snook was presenting the results of the study – which ended last year – at the annual conference of the International Society of Tropical Foresters, at Yale University, United States of America, last month (26 January 2012). (*Source*: Aleida Rueda, Science and Development Network, 8 February 2012 in ENN Daily Newsletter)

## WALES-AFRICA LINK CREATES WINNING TEAM: BEST NEW SMALL AND MEDIUM ENTERPRISE IN AFRICA

Bees for Development is pleased to announce that our partner organization Guiding Hope of Cameroon has won first prize in the prestigious Best New Business category at the 2011 Africa Small, Medium and Micro Enterprise Awards. The award is a major recognition for over five years of hard work from a team of six and over 1 000 beekeepers in the remote savannah and highland forests in the Congo Basin.

Now selling over 120 tonnes of beeswax, propolis and honey a year to buyers in the United Kingdom, across Europe and Canada, Guiding Hope can hardly keep up with demand. The skilled families that have been practising beekeeping and honey hunting for centuries, although largely illiterate and living on an average of just over US\$2 a day, are now receiving up to 50 percent higher prices.

Guiding Hope's core trading principles are to support local communities, trade fairly and profitably, and look after the environment.

Bees for Development is a Welsh NGO based in Monmouth that supports beekeeping as an effective way for poor people to strengthen their livelihoods and fight poverty. It has recently been awarded prestigious Darwin Initiative funds for two years of work to



Guiding Hope sells its honey through its Aberystwyth-based partner, Tropical Forest Products, a Welsh company specializing in the import and sale of honey and beeswax from Africa to British shops as certified organic. It is also sold online across Europe via the Ethical Community Web site. The Body Shop uses Guiding Hope's wax in its popular cosmetics. The Soil Association, which has the highest standards for organic products and processing in the world, has been certifying Guiding Hope's honey, wax and other bee products such as propolis, since 2008. This gives consumers assurance that the product is organic, pure and natural. Guiding Hope, which is currently on the way to becoming an Ethical Trade enterprise with the Soil Association, went for certification to prove the natural origins and quality of its products. (*Source*: Guiding Hope press release, 14 October 2011.)

ensure equitable access to pasture use for beekeepers in the Kyrgyz Republic.

**FOR MORE INFORMATION, PLEASE CONTACT:**  
**Elizabeth McLeod, Project Officer,**  
**Bees for Development, PO Box 105, Monmouth**  
**NP25 9AA, United Kingdom.**

**E-mail: [info@beesfordevelopment.org](mailto:info@beesfordevelopment.org);**  
**[www.beesfordevelopment.org/](http://www.beesfordevelopment.org/) or Guiding**  
**Hope/GIC Guide d'Espoir, BP 15753 Yaoundé,**  
**Cameroon. E-mail: [guidinghope@yahoo.fr](mailto:guidinghope@yahoo.fr);**  
**[www.guidinghope.com/](http://www.guidinghope.com/)**

## WILD MONKEYS TO MEASURE CONTAMINATION LEVELS IN FORESTS

This new project, conducted by researchers at Fukushima University (Japan), will involve monkeys being fitted with collars containing radiation meters and GPS transmitters. Scientists will be able to monitor radiation levels deep across forest areas in Fukushima, home to the nuclear power plant severely damaged in the 11 March 2011 earthquake and tsunami. The collars will detach at the end of the experiment, which will last up to two months, according to a team of scientists led by Professor Takayuki Takahashi.



Forests in the Fukushima region are currently being monitored for radiation levels primarily from the air, with testing taking place most commonly from helicopters. However, scientists are keen to obtain more detailed data in relation to radiation levels in forest habitats and the subsequent contamination exposure of wild animals in the region. The range of elevations at which monkeys spend their time will also enable scientists to obtain a broad spectrum of radiation level data, from the forest floor to the treetops.

As many as 14 groups of monkeys are believed to reside in the mountain forests to the west of Minamisoma city, which is where the study will focus. (*Source*: The Telegraph [United Kingdom], 12 December 2011.) ♣

**To be without some of the things you  
want is an indispensable part of  
happiness.**

*Bertrand Russell*