

“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)

## BARCODING

### Barcodes gather evidence to combat illegal trade in Kenya

The Kenya Wildlife Service (KWS) is already stretched thin protecting the elephants and big cats that draw the tourists. But even when it does manage to apprehend hunters and dealers in bushmeat, it is near impossible to obtain a conviction without irrefutable evidence. “KWS has been getting increasingly frustrated. It is just their word against the suspects who often claim they were only selling goat meat,” Iregi Mwenja, Kenya Country Director of the Born Free Foundation said.

But now, Mwenja says, DNA technology is being used to create barcodes from genetic material to facilitate the positive identification of wild meat, and ivory, using a database with samples of meat, hair or bone collected from a wide variety of animals in the region.

“The direct cause of wildlife decline is illegal hunting due to increasing population,” he said. Born Free and KWS recently carried out a study in butcher shops along a 200-km stretch of Kenya's main highway that runs from Nairobi to the Indian Ocean. Through the use of barcodes, they found that between 5 and 8 percent of the meat on sale was bushmeat.

The International Barcode of Life project and the University of Guelph in Ontario, Canada are sponsoring the data banks, and Kenya is supplying samples from its wildlife. Mwenja said the identification is so precise that it is possible to determine from which

area and herd the animals come. [Source: CIFOR, 13 June 2011.]

### Mexico: barcoding biodiversity not free of risks, activists say

As the Barcode of Life project continues the work of sequencing specific segments of genes in Mexican animals and plants, there are some concerns about how to safeguard the biological samples collected from the threat of commercial exploitation.

Supporters of the initiative argue that the information gathered can lead to the discovery of new varieties, and to the better protection of biodiversity. But critics say big pharmaceutical and synthetic biology companies, which produce organisms with specific functions through genetic engineering, could exploit the data in the service of their own economic interests.

“The barcoding project is helping to document the country's biodiversity, so that better conservation management plans can be designed. If we do not know what species exist, we will not know what to protect,” said researcher Lidia Cabrera of the Biology Institute at the state National Autonomous University of Mexico (UNAM), who is also on the thematic network committee of Barcode of Life in Mexico (MexBOL).

Mexico is one of the five most biodiverse countries in the world, yet less than 1 percent of species have been barcoded. The project has already produced barcode sequences for about 20 percent of fish species, 70 percent of birds and close to 10 percent of plant species. Mexican scientists barcoded 6 000 samples in 2010.

“There are no safeguards whatsoever that apply to this area,” she complained to IPS. She was referring to the fact that the 1992 Convention on Biological Diversity lacks any regulations about artificial creations based on biological materials. [Source: International Press Service [IPS], 28 July 2011.]

**The International Barcode of Life project ([www.ibol.org](http://www.ibol.org)) was launched in 2003 by the Biodiversity Institute of Ontario at the University of Guelph, Canada. The following year, a consortium for the project was created, made up of organizations from 43 countries. Mexico joined in 2009.**

### INSTANT TREE IDENTIFICATION IS NOW POSSIBLE

Botanists from the Smithsonian Institution (Washington, DC, United States of America) have helped develop a smartphone application that can identify tree species within seconds, using visual recognition software, and then share the location with a growing database of tree populations. After a user takes a photo of a leaf with his or her smartphone device, the so-called Leafsnap application (<http://leafsnap.com/>) searches a library of leaf photographs compiled by the Smithsonian Institution and almost immediately delivers high-resolution photographs of the likely species, along with information on flowers, fruits, seeds and bark.

In addition, the geographic data of that query is shared with a community of scientists tracking flora across the United States of America. The application will eventually provide a database of trees nationwide, said John Kress, a Smithsonian research botanist who developed the application with engineers from Columbia University and the University of Maryland. [Source: Yale Environment News 360, 9 June 2011.]

### Wales (United Kingdom) to DNA “barcode” plants

Wales is set to be the first place to produce a DNA barcode for every one of its native flowering plants, scientists claim. The “Barcode Wales” project will aim to catalogue all 1 143 species of native flowering plants based on each plant's unique gene sequence.

This would mean that the tiniest fragment of leaf or pollen grain could be used to identify any plant in Wales. It would also allow scientists to understand better the plant's genetics. The information will help biologists to track the status of pollinating insects, such as bees. And the database itself could be used to test the authenticity of Welsh products, including honey, and help identify plant fragments in forensic examinations.

Dr Natasha de Vere from the National Botanic Garden of Wales is leading the study along with her colleagues, Dr Tim Rich from the National Museum Wales and Professor

Mike Wilkinson from Aberystwyth University. The team is taking on the substantial task of collecting samples from every species of Welsh flora. Using a combination of freshly picked plants and dried specimens housed in the National Museum Wales collections, they have gathered examples of all the "floral heritage" of Wales. The scientists have extracted and sequenced a section of the DNA code from each plant.

By comparing the DNA barcodes of modern-day plants with specimens from the Wales Natural History Museum, the team will be able to determine whether plants are losing their genetic variation. The results of the Barcode Wales project are due to be published this summer; the findings will be used to establish tailored conservation programmes for Welsh plants. The scientists hope eventually to extend the project to include the rest of the United Kingdom. (Source: BBC News [Wales], 7 April 2011.)



### CONGO BASIN: CAN'T SEE THE WOOD FOR THE TREES? LOOK AGAIN

Export products such as timber dominate any superficial glance at the forests of the Congo Basin. Recent studies, however, argue that there is more to the forest – in this case of the second largest tropical forest in the world – than just its trees as export products.

A spate of recent publications highlight that massive hidden economies, mainly for domestic and regional consumption, are largely hidden or ignored. The latest *Forests of the Congo Basin: State of the Forest 2010*, an exhaustive biannual appraisal of the state of the region's forests, ecosystems, biodiversity, population and socio-economic situation, devotes a whole section to looking deeper into the forest and uncovering the large scale of commerce in four hidden products: fuelwood, bushmeat, NTFPs and domestic timber.

The chapter on NTFPs indicates that the vast majority of NTFPs used across the Basin provide important contributions for household food and medical needs, as well as for cultural use and as multiple tools. The sector is also a major employer, for example in Cameroon, where more people work in the trade of a handful of the major products than in the industrial timber sector.

Bushmeat is another lucrative trade. While exports to a hungry diaspora in Europe may previously have been underestimated, the domestic market in the Basin appears

much larger and remains largely unquantified. Many of the popular species of bushmeat traded are not captured either in national statistics or by international trade conventions such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Like other hidden forest products, bushmeat provides a vital source of nutrition, as well as providing significant employment and revenue for those involved in the trade. These conflicting aspects, however, have formed a contradictory crisis for conservation and development circles. (Source: CIFOR, 10 May 2011.)



### CONSERVATION ETHNOBOTANY IN THE NORTH ATLANTIC

A survey was conducted across the Faroe Islands and Iceland with wild collectors, gardeners, farmers and chefs, with the support of the Partridge Foundation's Trans-Atlantic Partnership between the College of the Atlantic in the United States of America, the University of Kassel in Germany and the Organic Research Centre in the United Kingdom. The aim was to determine the extent, composition and function of uses of native species of terrestrial plants, algae and fungi in the region through the use of quantitative ethnobotanical methodology. By identifying culturally significant native species of terrestrial plants, algae and fungi, researchers in the study hope to show that the potential for conservation also increases.

The survey identified a total of 130 native species with cultural significance from 88 genera, including 99 native species of terrestrial plants (65 species of annual and eight species of perennial herbs, 15 species of perennial shrubs and 11 species of perennial trees), 20 native species of algae, ten native species of fungi, and one native

species of lichen. In Iceland, 109 native species were cited as culturally significant (CI [Cultural Importance] Index), whereas 57 were identified in the Faroe Islands. All respondents collected some wild species and 50 percent grew some native species in home gardens or commercially.

The proportion of all potentially usable native species with CI in the Faroe Islands and Iceland could, however, be much greater. Nevertheless, some native species of plants are known ubiquitously. Those most commonly used are *Angelica* spp. and *Betulla* spp., traditionally used for food and medicine and still used today for these purposes. A strong possibility for sustainable management of wild collection of these native species exists through expansion of organic certification.

The identification of cultural keystone species is hence paramount in their conservation. Looking at ways to increase the cultural importance and the number and types of uses by people living in an area will increase the likelihood that the natural areas where these species exist will be preserved. Culture and knowledge are dynamic, and this survey attempts to look at cultural uses of native plants while being mindful of the dynamism of cultural knowledge and the changes that are taking place in both ecology and culture.

Through the interviews and sample collections, it became apparent that there exists a conservation mentality in the culture of native plant collection and usage in the Faroe Islands and Iceland. People who tend to use native biodiversity also tend to have an appreciation and a conservation attitude towards that biodiversity. Many of the wild collectors are also activists and politically active change agents in the Icelandic and Faroese politics related to natural resources management.

A chef in Tórshavn in the Faroe Islands said that wild collection by his kitchen staff and others around Scandinavia is leading to a new paradigm of food in the North Atlantic. The movement is called the "Nordic Kitchen" and is leading to conservation efforts by chefs and food enthusiasts around the region to learn, preserve and utilize native species for traditional and innovative local dishes.

**(Contributed by:** Cory Whitney M.Sc., International Relations Consultant, Korean Organizing Committee for the 17th IFOAM OWC, 202 Misung Plaza, 685-1 Guan-dong, Namyangju City, 472-060, Gyeonggi Province, Republic of Korea. E-mail: whitney.cory@gmail.com/)



*Angelica* spp.

## ELEPHANTS, THE GARDENERS OF ASIAN AND AFRICAN FORESTS

Recently, researchers have begun to document the seed dispersal capacity of the world's largest land animal, the elephant, proving that this species may be among the world's most important tropical gardeners.

"In our paper we show that African forest elephants are the ultimate seed dispersers – they disperse vast numbers of seeds of a high diversity of plants in a very effective way [...] Asian and African savannah elephants also disperse many seeds [...] but seem to be less frugivorous [i.e. fruit-eating]," said Ahimsa Campos-Arceiz, coauthor of a recent paper in *Acta Oecologica* on African and Asian elephant seed dispersal.

Stephen Blake, the other coauthor, says that the behaviour of different elephant species, in this context, has more to do with habitat than species' preference.

Blake and Campos-Arceiz highlight in their study that some plant species may depend entirely on elephants for their dispersal, much as some orchids depend wholly on a single insect pollinator for propagation. "The best documented case is the relationship of *Balanites wilsoniana* and savannah elephants in Uganda. Several studies have found that elephants consume and disperse lots of *Balanites* seeds, and that no other animal disperses these seeds," explains Campos-Arceiz.

However, Blake adds that the "cumulative impact of elephant dispersal" is more important than their connection to one species: "a few trees declining because an elephant disappears is of course detrimental, but *Balanites* going extinct will be unlikely to have a massive impact on the forest ecosystem. However, elephants going extinct means that the competitive balance of many species, arguably over 100 in Central Africa, will be tipped in favour of species poor abiotically [i.e. wind-dispersed species]. That is the key point from an ecological perspective."

According to the researchers, Asian elephants spread seeds from 1 to 6 km, while in the Congo, forest elephants are capable of spreading seeds as far as 57 km.

Despite their ecological importance, elephants in Asia and Africa are threatened. While some populations of savannah elephants in Africa are stable, Blake says Africa's forest elephants – the world's biggest frugivores – are in "steep decline due to poaching". [Source: [www.mongabay.com](http://www.mongabay.com), 25 April 2011.]

## EXPANSION OF PEOPLE-CENTRED FORESTRY

The Second Regional Forum on Community Forestry, Key to Solving Current and Emerging Challenges, which took place earlier this month in Bangkok, Thailand, discussed the further expansion of people-centred forestry in the years ahead. A broad range of social and community forestry issues were addressed, from the origins of the movement and government decentralization to gender equity and REDD+. In a keynote speech, the Association of Southeast Asian Nations (ASEAN) Social Forestry Network Secretariat Chairperson Haryadi Himawan emphasized the important role of local people in sustainable forest management and the importance of supporting the livelihoods of some of the poorest and most vulnerable populations in Asia.

Francisco Chapela from Rainforest Alliance reported that nearly all remaining forestland in Mexico and Guatemala is managed by indigenous people, who have an incentive to conserve their forest resources.

A "Knowledge Fair" highlighted local and country-specific experiences and lessons learned in community forestry. Forum participants drafted a call for action, which will be released soon for action at other fora to mark the International Year of Forests and at the Durban climate conference. [Source: *Traditional Knowledge Bulletin*, 16 August 2011.]

## FORESTS AND FOOD SECURITY: WHAT WE KNOW AND NEED TO KNOW

The importance of forest-based emissions as a driver of climate change is one of the most indirect and hard-to-prove causal pathways linking forests and food security; most linkages between forests and food security are more direct and more easily grounded in empirical research.

We know, for example, that forests and trees make significant direct contributions to the nutrition of poor households. A 2008 review of the literature on bushmeat – conducted by the Center for International Forestry Research (CIFOR) and the Secretariat of the Convention on Biological Diversity – affirmed that rural communities in Central Africa obtain a critical portion of protein and fat in their diets through hunting wildlife in and around forests. The



5 to 6 million tonnes of bushmeat eaten yearly in the Congo Basin is roughly equal to the total amount of beef produced annually in Brazil – without the accompanying need to clear huge swathes of forest for cattle. Globally, forested watersheds, wetlands and mangrove ecosystems support the freshwater and coastal fisheries on which many communities depend. And that is in addition to the many fruits, nuts, grubs, mushrooms, honey and other edibles produced by forests and trees.

Equally important, forests provide an essential source of cash income to purchase food, especially during poor harvests. Results from CIFOR's Poverty and Environment Network project – which has recently published a database of income survey results from some 6 000 households – confirm that families living in and around forests derive on average between one-fifth and one-fourth of their income from forest-based sources.

But my feeling is that the most underappreciated – and perhaps most under-researched – linkages between forests and food security are the roles that forest-based ecosystem services play in underpinning sustainable agricultural production. Forests regulate hydrological services including the quantity, quality and timing of water available for irrigation. Forest-based bats and bees pollinate crops. Forests mitigate impacts of climate change and extreme weather events on the landscape scale.

The nature and significance of many of these linkages remain contested; one of the most controversial studies ever published by CIFOR was the 2005 report in collaboration with FAO that questioned the linkage between forest cover and major floods. Tantalizing findings on the impact of native pollination services on the size, quality and/or stability of harvests for 70

percent of global crops suggest the potential significance of forests on agriculture at the farm level. Projections of the potentially devastating consequences of reduced rainfall on Brazil's booming agricultural sector because of deforestation in the Amazon are sufficient to focus the attention of national policy-makers with or without REDD+ revenues.

Reports produced by the Economics of Ecosystems and Biodiversity (TEEB) initiative are only the most recent in a series of attempts to assign price tags to ecosystem services, including those provided by forests.

Reasonable people may disagree over the relative priority of further empirical valuation studies versus research on shaping institutions to govern payments for such services and allowing markets to determine prices. And the potential of REDD+ payments to improve climate security, the focus of much current forestry research attention, is certainly relevant to this challenge. Faced with rising food prices, political instability and the impending need to feed an estimated 3 billion more people by 2050, we also urgently need to accelerate the complementary research agenda on the relationship between forests and food security. (Source: Frances Seymour, CIFOR Director-General, 20 April 2011.)

## GENERATING INCOME FROM FORESTS AND TREES

Food insecurity is generally related to poverty and limited opportunities for employment or income generation. Income from forests and from trees on farms can make a significant contribution to rural households and their food security. Some households in Mozambique, for example, obtain 30 percent of their income from unprocessed forest products such as fuelwood, fruits, mushrooms, insects, honey and medicinal plants.

Women play an important role in the processing of tree and forest products. Given their responsibilities for ensuring food security at the household level in many parts of the world, income generated from such activities is often an important means of providing food for the family.

Ironically, in many cases the tropical areas that are richest in forest resources are the poorest, because of their

remoteness and low levels of external investment. The collection, processing and sale of forest products (or activities involving non-consumptive use of forests such as ecotourism) are often among the few income-generating opportunities available in these areas.

The creation of small or medium-sized forest-based enterprises can help secure better market access and share, or add value to harvested products. Many small-scale enterprises are based on NWFPs. They are particularly important in arid and semi-arid areas where agricultural production is more vulnerable to external threats such as drought or extreme weather events.

The collection and sale of gum arabic (from *Acacia senegal* and *A. seyal*) in 17 countries across dryland Africa is an example of how NWFPs are increasingly integrated into global markets. Four processors in the United States of America and Europe account for about 70 percent of world trade in raw gum, which is then processed and resold as additives for the food and drinks industry. Between 2003 and 2007, the European Union imported 200 000 tonnes, valued at close to US\$432 million. Establishing local processing and value-addition measures could help producer countries realize an increased market share of this lucrative trade.

Harvesting of NWFPs must be managed and regulated in order to be sustainable. However, regulations governing the harvesting of forest products, as well as related permits, licences and taxes, are often complex, and in order to compete effectively, small enterprises may be forced to operate without the required paperwork. Weak or selective enforcement of existing regulations can foster unsustainable harvesting of NWFPs and create unfair competition for small enterprises.

Small-scale forest enterprises generally operate in the informal sector, and their contribution to the economy is often "hidden", in contrast with larger-scale private-sector activity such as timber harvesting. National reporting and statistics on forestry or trade rarely capture the contribution of NWFPs. *FAO's Global Forest Resources Assessment 2010* reports that the value of NWFP harvesting was about US\$18.5 billion in 2005, but notes that this is probably a significant underestimation of its true value. (Source: FAO, 2011. *Forests for improved nutrition and food security*. Rome.)

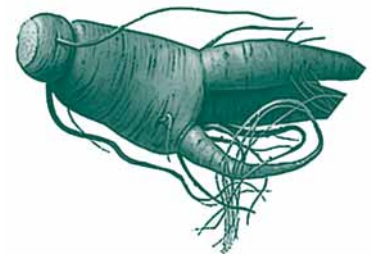
## HERBAL CUISINE

Few would like the idea of adding medicine to food but, for the Chinese, sometimes food is medicine, and adding natural herbs to dishes may mean the creation of a gourmet dish with healthy benefits.

Some of the ingredients often used this way include ginger, ginseng and angelica root. For instance, ginger is often infused in boiling water to create a home cure for mild throat infections or to prevent the onset of a cold. Ginseng is slowly stewed with chicken to replenish energy (or *qi*) deficiency. Angelica is a popular tonic herb, often added to a ginger and mutton stew to make a warming winter soup. *Rou cong rong*, or *cistanche*, is a parasitic root plant produced in the deserts of Xinjiang and Inner Mongolia. Locals dub it "desert ginseng", and cook it with mutton and beef to strengthen the kidneys, as a natural aphrodisiac for men.

Such healthy cooking has given rise to a genre of restaurants that specialize in herbal cuisine. At Herbal Cuisine Kitchen, for instance, there is fungus on the menu, including the celebrated lacy bamboo fungus, slowly braised with turtle skirts and *ganoderma*. *Ganoderma* is credited with all sorts of health-giving properties from just good-for-you to anticarcinogenic. It is a tonic soup very suitable for every season.

The use of herbs in food has generated some recent controversy. For example, wild ginseng may be too strong a tonic for some, and pregnant women should avoid saffron. (Source: *China Daily*, 17 July 2011.)



## IN THE MANAGEMENT OF FORESTS, GENDER MATTERS

At the recent Poverty and Environment Network (PEN) Conference in London, "Counting on the Environment", some interesting results related to the gender differentiation of roles related to rural livelihoods were presented. Aggregating global data from 36 long-term studies of

forest-proximate communities in 25 countries, representing more than 8 000 households, it was possible to determine just who does what in contributing to the family's well-being and what value forest products represent in the livelihood strategies of local people.

There are many assumptions about the role of men and women in contributing to the household economy in rural societies. The first of these is that men are more likely to be engaged in the generation of cash income from NTFPs, while women tend to collect forest products for direct household use. As such, it is therefore assumed that women rely far more on forest products than do men. But is this really the case?

In order to understand the importance of gender, the PEN global data set was used to assess within-household gendered differences: (i) in the consumption and sale of forest products; and (ii) in the reliance of processed and unprocessed forest products.

This was able to be done accurately because during the data collection process, information was gathered on who collected what (e.g. male, female, child) and what forest product was actually harvested. To check whether patterns of forest product use are consistent across regions, the analysis was conducted at the global and regional levels. Taken together, the results are somewhat surprising.

Almost without exception, the most able-bodied members of the household (men, women and children) do indeed participate in the collection and processing of forest resources. These include a wide range of products from rattan to resin, fruits to forage, medicines to matting. However, what is surprising is the level of gender specialization in the collection and processing of forest products: put simply, men and women tend to collect different forest products.

Contrary to popular wisdom, the value of forest products collected by men surpasses the value of those collected by women. It was also found that women tend to specialize in the collection and processing of forest products that are used for subsistence, whereas men tend to specialize in the harvest of forest products for sale.

There are important regional differences in this overall pattern. In the Latin American cases, the value of unprocessed forest products collected by men considerably surpasses the value of those collected by women. In the Asian cases, the value of unprocessed forest products collected by

men and women is less marked and in the African cases, the value of unprocessed products collected by women is larger than the value of those collected by men. On all three continents, however, men tend to play a more predominant role in the processing and sale of forest products and generate the greatest income. Despite assertions to the contrary, the male members of rural households really are doing their bit for the household economy!

So what does this all mean? The regional differences suggest there is no neat "one size fits all" policy for gender-oriented research or NTFP-focused development interventions. The highly specialized gender differentiation evident from this research suggests that locally focused gender-responsive forestry policies and programmes should explicitly take into account the opinions, needs and interests of both genders. [Source: Terry Sunderland in CIFOR Forests Blog, 23 July 2011.]



**LES EXPERTS EN PRODUITS FORESTIERS NON LIGNEUX D'AFRIQUE CENTRALE SE SONT RÉUNIS DANS LE CADRE DE L'ANNÉE INTERNATIONALE DES FORÊTS 2011**

«Des forêts pour les populations», tel est le thème principal de l'Année internationale des forêts, qui met en évidence la relation dynamique entre les forêts et les personnes dépendant de celles-ci. Les forêts fournissent des produits forestiers ligneux et des produits forestiers non ligneux (PFNL), aussi les dialogues multipartites proposés dans le cadre de cette année à leur enseigne s'inscrivent-ils dans les missions du Sous-groupe de travail PFNL (SGT-PFNL), créé en mars 2011 par la Commission en charge des forêts d'Afrique centrale (COMIFAC) au sein

du Groupe de travail biodiversité de l'Afrique Centrale (GTBAC).

En vue de contribuer à l'Année internationale des forêts, à travers le SGT-PFNL/GTBAC et avec l'appui de la FAO, la COMIFAC a regroupé du 25 au 28 juillet 2011, à Boali, République centrafricaine, des acteurs d'Afrique centrale concernés par les PFNL. La rencontre a ainsi rassemblé des experts en PFNL provenant du Gabon, du Cameroun, du Congo, de la République démocratique du Congo et de la République centrafricaine, affiliés à des institutions de développement et de recherche gouvernementales et non gouvernementales, telles que la Communauté économique des États d'Afrique centrale (CEEAC), le Centre mondial d'agroforesterie (ICRAF), l'Organisation néerlandaise de développement (SNV), le Centre pour la culture en pépinière et la propagation de l'éru (CENDEP), Bioversity International, TRAFFIC ou DONAVAL, ainsi que des producteurs et commerçants locaux, et des représentants de populations autochtones.

Cette première réunion du Sous-groupe de travail PFNL a permis de capitaliser les expériences visant à renforcer la contribution des PFNL dans la lutte contre la pauvreté et l'accroissement de la sécurité alimentaire, notamment à travers (i) la domestication des espèces, (ii) l'introduction d'un système d'information sur les marchés au Cameroun, (iii) le développement des petites et moyennes entreprises forestières, (iv) la formulation de *Directives sous-régionales relatives à la gestion durable des produits forestiers non ligneux d'origine végétale en Afrique Centrale* de la COMIFAC et (v) l'élaboration de stratégies nationales et de plans d'action sectoriels. Les participants ont reconnu qu'il revient à toutes les parties prenantes de vulgariser les approches existantes, afin de les rendre plus visibles et de les mettre en œuvre dans divers pays du bassin du Congo.

Dans l'orientation politique définie pour les pays membres, le Plan de convergence de la COMIFAC met un accent particulier sur les PFNL et leur importance dans la lutte contre la pauvreté et l'insécurité alimentaire, et ce à travers huit de ses 10 axes stratégiques. Or, l'examen critique des Plans de travail annuel (PTA) des ministères en charge des forêts des pays représentés à la réunion a fait ressortir un manque de prise en compte des PFNL dans la plupart des PTA, ainsi que l'absence de plans d'opérationnalisation du Plan de convergence. Les participants ont ainsi recommandé l'élaboration de ces derniers.

Enfin, l'importance politique des PFNL devrait aussi se refléter dans les organigrammes des ministères, que ce soit au niveau des Directions comme au Gabon ou au niveau des Services comme au Cameroun et au Congo.

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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 page 59 for more information on this project.)**



**NON-PROFIT  
ORGANIZATIONS  
AND NGOS**

**Rainforest Alliance**

The Rainforest Alliance works to conserve biodiversity and ensure sustainable livelihoods by transforming land-use practices, business practices and consumer behaviour. The organization believes that the best way to keep forests standing is by ensuring that it is profitable for businesses and communities to do so. This means helping farmers, forest managers and tourism businesses realize greater economic benefits by ensuring that ecosystems within and around their operations are protected, and that their workers are well trained and enjoy safe conditions, proper sanitation, health care and housing. Once businesses meet certain environmental and social standards, the Rainforest Alliance links them up to the global marketplace where demand for sustainable goods and services is on the rise.

The Rainforest Alliance supports NTFP research through its Kleinhans Fellowship for Non-Timber Forest Products, and by certifying a broad range of NTFPs to the standards of the Forest Stewardship Council.

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**FOR MORE INFORMATION, PLEASE CONTACT:**

**Rainforest Alliance, 665 Broadway, Suite 500, New York, NY 10012, United States of America. E-mail: [info@ra.org](mailto:info@ra.org); [www.rainforest-alliance.org/](http://www.rainforest-alliance.org/) (Please see page 71 for more information on the Kleinhans Fellowship.)**

**WildlifeDirect**

WildlifeDirect, a Kenya and United States of America-registered charitable organization, was conceived as a non-profit conservation organization along the lines of an Internet

start-up company. The organization was built to secure efficient conservation management in parks, reserves and other conservation areas throughout the world.

In 2004, a group of committed conservationists, led by Dr Richard Leakey, became convinced that current developments on the Internet provided the best opportunity for securing a future for wildlife: an approach that could harness the collective energy of countless good conservationists and combine it with millions of individuals around the world who have a genuine concern for the future of the planet's wildlife and unique habitats. These people would connect through the Internet to create a movement powerful enough to produce a virtual endowment capable of reversing the catastrophic loss of habitats and species.

WildlifeDirect was thus established in 2006 to provide support to conservationists in Africa directly on the ground via the use of blogs, which enable anybody, anywhere to play a direct and interactive role in the survival of some of the world's most precious species.

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**FOR MORE INFORMATION, PLEASE CONTACT:**

**WildlifeDirect Inc., 306 5th St SE, Washington, DC, United States of America 20003 or Africa Conservation Fund (Kenya), PO Box 24467, Karen 00502, Nairobi, Kenya.**

**E-mail: [info@wildlifedirect.org](mailto:info@wildlifedirect.org);**

**<http://wildlifedirect.org/>**



**NON-WOOD GOODS IN  
EUROPEAN FORESTS**

Temperate and boreal forests are a traditional source not only for timber but also for many products that have been extracted from forests, including resin, tannin, fodder, litter, medical plants, fruits, nuts, roots, mushrooms, seeds, honey, ornamentals and exudates. In many parts of central Europe, forest sites became subject to nutrient imbalance because they were used for grazing and for extracting litter. Over time, the utilization of non-timber products became marginalized as management objectives shifted to timber production. The shift has been driven by different processes: the increasing estrangement of local people by an increasing disregard of subsistence use and small-scale rural industries, technological substitution, intensification of agricultural production and prosperity development.

Today, there is an institutional rediscovery of the value of forest products and services

other than timber. The socio-economic contribution of forests to livelihoods and the impact of their use on the environment are essential components of modern concepts for sustainable forest management. The integration of the assessment of non-wood goods (NWGs) in extensive forest surveys causes problems as most NWGs are site specific, depend on spatial distributions and may be of only local importance.

Indicator 3.3 Non-wood goods in the *State of Europe's Forests 2011* covers the value and quantity of marketed NWGs from forest and other wooded land. For reasons of consistency, NWGs harvested for self-consumption and other forms of uses are excluded, even if they could represent a substantial part of the total amount of harvested NWGs. In the available data sets, the main NWGs identified are as follows: Christmas trees, mushrooms and truffles, fruits and berries, cork, medicinal or colorant products, ornamental plants, seeds of forest tree species, game products and honey.

The total value of NWGs reported has almost tripled since the 2007 assessment. This is partly because of improved reporting. However, NWGs are an important source of income and their share of the total economic value generated by forests is increasing. In 2010, Christmas trees, fruits and berries, and cork were the most important NWGs. The total value of marketed NWGs represented 15 percent of the roundwood value when comparing countries reporting both values.

**Status and trends**

Quantities and/or values of marketed NWGs were provided by 33 countries. The available data sets are fragmentary for several reasons: the utilized assessment measures for quantity are not harmonized and render it difficult to compare data; collecting data on NWGs is costly; and most countries collect data only for specific NWGs that are of local significance. As the importance of NWGs differs among countries, a holistic view of all types of NWGs across Europe is difficult to obtain. However, the reported data clearly show that NWGs can be an important source of income at the local level (see Table 1).

TABLE 1. QUANTITY AND VALUE OF MARKETED NWGS: MARKETED PLANT PRODUCTS

Region	Christmas trees		Mushrooms and truffles		Fruits, berries and edible nuts		Cork		Resins, raw material for medicine, aromatic products, colorants and dyes		Decorative foliage, incl. ornamental plants (mosses ...)		Other plant products
	Quantity 1 000 pcs	Value €1 000	Quantity tonnes	Value €1 000	Quantity tonnes	Value €1 000	Quantity tonnes	Value €1 000	Quantity tonnes	Value €1 000	Quantity tonnes	Value €1 000	Value €1 000
Russian Federation	6	4	9 332	21 006	49 053	105 501	-	-	5 059	7 861	-	2 240	3
North Europe	17 162	132 104	4 428	12 493	52 231	15 107	-	-	882	182	400	58 824	-
Central-West Europe	38 850	733 900	732	14 550	239	883	1 550	775	145	32	1 581	7 202	55 231
Central-East Europe	1 542	2 830	29 935	10 587	61 362	28 132	-	-	957	1 621	350	1 802	106
South-West Europe	-	110 828	366 873	124 161	208 236	299 574	167 665	323 850	7 351	2 364	-	-	7 997
South-East Europe	631	377	17 398	11 283	5 056	10 296	-	-	17 368	12 476	37	921	408
Europe	58 193	980 043	428 699	194 081	376 178	459 494	169 215	324 625	31 762	24 536	2 368	70 989	63 745
Europe without Russian Federation	58 187	980 039	419 367	173 075	327 125	353 993	169 215	324 625	26 703	16 675	2 368	68 749	63 742

Because of the differences in reference units (e.g. weight, volume, number or price), the following remarks relate not to quantity but to the value of NWGs. The total value that was reported for NWGs reaches almost €2 763 million for the entire FOREST EUROPE region, of which €2 116 million are marketed plant products and €648 million are marketed animal products. The need for further processing differs significantly among individual NWGs; as a consequence, for some products, the marketed value of NWGs generates only marginal income for the forest owners as most of the marketed value is related to processing.

"Christmas trees", "fruits, berries and edible nuts", and "cork" are the three categories of NWGs for which the highest total values were obtained. In 2010, the reported values for these NWGs represented 83 percent of the total value of marketed NWGs in the FOREST EUROPE region.

The highest shares in the value generated by NWGs are tied with the Central-West (€813 million) and the South-West Europe region (€869 million). Lowest shares are reported for the South-East (€35 million) and the Central-East (€4 million) Europe region.

In 2010, €980 million were realized by the marketing of Christmas trees, with highest values reported for Central-West Europe (€734 million) and North Europe (€132 million). Christmas trees account

*The State of Europe's Forests 2011: Status & Trends in Sustainable Forest Management in Europe* provides an overview of the status and trends of forests and sustainable forest management in Europe in the period 1990–2010. The report covers the 46 FOREST EUROPE signatory countries and the European Union. Major parts of Europe's forests are located in the Russian Federation, accounting for almost 80 percent of the region's total forest area. The Russian Federation is therefore presented as a separate country group.

for 34 percent of the total reported value of NWGs; 25 countries reported data on Christmas tree production. In Croatia, Denmark and Germany, harvested quantities exceeded 10 million pieces; the whole production in FOREST EUROPE countries amounted to 58 million Christmas trees. Values above €100 million from Christmas tree production were realized in Denmark, France, Germany and Spain.

Data on mushrooms and truffles were provided by 24 countries and account for

9 percent (€194 million) of the total value generated by NWGs. Central-East Europe shows the lowest value obtained for mushrooms and truffles but the second highest quantity (30 million tonnes) after South-West Europe (367 million tonnes). Italy is by far the most important producer of mushrooms and truffles, with a share of 357 million tonnes or 83 percent of the total quantity.

Information on the quantity of fruits, berries and edible nuts was reported by 23 countries, and on their value by 17 countries. In the reporting countries, harvested fruits, berries and edible nuts amounted to 376 000 million tonnes, or €459 million. The main producers in quantitative terms were Italy (116 million tonnes), Spain (70 million tonnes) and the Russian Federation (49 million tonnes); in terms of value, the main producers were Italy (€187 million), the Russian Federation (€106 million), Spain (€60 million) and Portugal (€34 million).

Data on cork production, which is limited to the Mediterranean region, were provided by France, Italy, Portugal and Spain. Portugal was the most important producer of cork and reports a production of 100 million tonnes with a value of €203 million. The production in Spain (62 million tonnes; €111 million), Italy (6 million tonnes; €9 million) and France (1.6 million tonnes, €0.7 million) was considerably lower.

TABLE 2. QUANTITY AND VALUE OF MARKETED NWGS: MARKETED ANIMAL PRODUCTS

Region	Game meat		Living animals		Pelts, hides, skins and trophies		Wild honey and beeswax		Raw material for medicine, colorants		Other animal products
	Quantity tonnes	Value €1 000	Quantity 1 000 pcs	Value €1 000	Quantity 1 000 pcs	Value €1 000	Quantity tonnes	Value €1 000	Quantity tonnes	Value €1 000	Value €1 000
Russian Federation	16 945	16 945	16 945	16 945	16 945	16 945	16 945	16 945	16 945	16 945	16 945
North Europe	33 535.2	5 791	-	-	47 316	345.5	-	-	-	-	-
Central-West Europe	42 264	217 505	-	-	28 700	6 738	10 150	25 616	-	-	1 340
Central-East Europe	23 903.4	15 117	3 117	1 221.2	50 358.6	2 136	-	-	160	1 115	2 461.1
South-West Europe	2 634	149 537	-	-	-	-	37 869	101 088	-	-	-
South-East Europe	2 368.31	4 266.5	-	-	6 526.3	8 439.16	4 275	3 660	-	-	-
Europe	121 650	409 162	20 062	18 166	149 846	34 604	69 239	147 309	17 105	18 060	20 746
Europe without Russian Federation	104 705	392 217	3 117	1 221	132 901	17 659	52 294	130 364	160	1 115	3 801
EU-27	121 650	394 457	3 117	1 221	126 032	16 679	47 469	119 704	160	1 115	1 366.1



Data on the three categories “Resins, raw material–medicine, aromatic products, colorants and dyes”, “Decorative foliage, incl. ornamental plants”, and “Other plant products” were provided by 23 countries (“Resins, etc.”: 13 countries; “Decorative foliage”: nine countries; “Other plant products”: ten countries). The total value of these three categories comprised approximately €160 million. Among the countries reporting, the highest values were generated for decorative foliage in Denmark (€58 million), for other plant products in Germany (€54 million) and for resins, raw material – medicine, aromatic products, colorants and dyes in Turkey (€10.6 million) and the Russian Federation (€7.9 million).

The quantity and value of different types of marketed animal products are presented in Table 2.

Game comprises all hunted birds and mammals, such as partridge, pheasant, hare, deer, wild boar and chamois. The figures presented include game whose habitats are forest related or forest dependent. Excluded is game roaming on farms. Data on game harvest, meat and hides were reported by 23 countries for the quantity and 19 countries for the value. In many countries, the commercial sale of game meat is an important economic activity. Among the reporting countries, Germany was by far the highest producer of game meat in terms of value (€180 million). Of the reported value of non-wood products, game made up €409 million (14 percent of NWGs) for all responding FOREST EUROPE countries.

Honey and beeswax production was mentioned by nine countries for quantities.

The other categories of marketed animal products contributed approximately 3 percent to the total value generated by NWGs.

The value of NWGs has almost tripled since the last *State of Europe's Forests* report in 2007. However, this increase is partly an artefact due to the rising information needs on NWGs and respective increase of assessment activities. Thus no trend for NWGs is presented. (Source:

Forest Europe, UNECE and FAO, 2011. *State of Europe's Forests 2011: Status & Trends in Sustainable Forest Management in Europe.*)

(Please see page 69 for more information.)

## RECONCILING SELECTIVE LOGGING WITH THE LIVELIHOOD IMPORTANCE OF NTFPS

The potential for combining timber and non-timber forest product extraction has been examined in the context of diversified forest management; a new study reviews this question from the livelihood perspective.

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. Existing examples of conflicts and complementarities between selective logging and non-timber uses of forests were assessed from the livelihood perspective. Case studies from Brazil, Cameroon and Indonesia were also used to examine by what mechanisms, and to what extent, logging impacts forest resources of livelihood importance, as well as to consider how factors such as logging regime and forest management system may mediate such influences. The study identifies four



specific mechanisms, with conflict of use and the indirect impacts of logging being those most commonly implicated in negative effects on livelihood-relevant NTFPs.

The majority of reviewed studies highlighted negative impacts on NTFP availability with examples of positive impacts restricted to light-demanding species that respond to the opening of forest structure. Such species typically represent a small subset of those of livelihood value.

Despite considerable impacts on livelihoods, in all three case studies there was evidence to support the potential for enhanced compatibility between timber extraction and the subsistence use of NTFPs. The results of the studies have significant implications for reconciling timber and non-timber uses of tropical forests with recommendations generated for research, policy and management implementation. (Source: L. Rist, P. Shanley, T. Sunderland, D. Sheil, O. Ndoye, N. Liswanti and J. Tieguhong. *The impacts of selective timber harvest on non-timber forest products of livelihood importance. Forest Ecology and Management*. (in press) **Contributed by:** Lucy Rist, Ecology and Environmental Sciences, Umeå universitet, SE-901 87 Umeå, Sweden. E-mail: lucy.rist@emg.umu.se; www.futureforests.se/)

## REFORMING FOREST TENURE SYSTEMS

Reforming forest tenure systems and securing forest ownership rights can significantly improve peoples' livelihoods and enable them to gain income from forest products, FAO stated in a newly published guide, *Reforming forest tenure*.

"The continuing demand for land, weak governance in many countries, and emerging global challenges such as climate change increase the urgency of addressing forest tenure reform," said Eva Muller, FAO's Chief Forest Policy Officer.

The guide was launched at the Forest Tenure, Governance and Enterprise Conference taking place in Lombok, Indonesia, from 11 to 15 July. Attended by around 200 representatives from international and regional organizations, the private sector, NGOs, civil society and researchers, the conference was coorganized by the Indonesian Ministry of Forestry (MOF), the International Tropical Timber Organization (ITTO) and the Rights and Resources Initiative (RRI).

In recent years, FAO has carried out extensive assessments of forest tenure systems in Africa, Southeast Asia, Latin America and Central Asia and their impact on sustainable forest management and poverty reduction. Based on this analysis, the guide offers practical guidance for policy-makers involved in forest tenure reforms.

According to FAO, around 80 percent of the world's forests are publicly owned, but forest ownership and management by communities, individuals and private companies are increasing, more in some countries than in others.

In the Bolivarian Republic of Venezuela and French Guiana, for example, almost all forests are under public ownership, whereas in Paraguay, Honduras, Guatemala, Costa Rica and Chile more than 30 percent of forests are under private ownership. In Peru, Guyana and Costa Rica, more than 10 percent of forests are owned by indigenous people.

"A more diversified tenure system could result in improving forest management and local livelihoods, particularly where state capacities to manage forests are weak," said Muller. (Source: FAO News, 13 July 2011.)

## WORLD SACRED FORESTS MAPPED OUT

A team of scientists from the University of Oxford, United Kingdom, are working on a world map that shows all the land owned or revered by various world religions. This "holy map" will display all the sacred sites from Jerusalem's Western Wall, to Masjid al-Haram in Mecca, to St Peter's Basilica in the Vatican City. Just as interesting, the map will also show the great forests held sacred by various religions. Within these protected lands exist a wide variety of life and high numbers of threatened species.

The sacred land mapped out by the Oxford researchers is not necessarily owned by a certain religious community, but rather contains sacred connotations. They estimate that about 15 percent of all land on Earth is "sacred land", and 8 percent of all land is owned by a religious community. Much of the land held sacred is forest.

The Oxford researchers – from the Biodiversity Institute in the Oxford Martin School – are focused on determining the value of this land in terms of biodiversity.

Many of the sacred forests are managed by the local community, yet receive no formal protection. The researchers hope that their scientific study will help guarantee official protection from regional and national governments.

Initially, efforts were only made to map out land controlled by the large mainstream religious groups. Teaming up with the Alliance of Religions and Conservation (ARC), the Oxford researchers decided to investigate religious land controlled by all groups. The new initiative is already under way, since the team has planned visits to areas in India, Ghana, Japan and elsewhere.

The first step in the team's research is to delineate the location of the sacred land by investigating the boundary lines. The status of the land and its borders must be known before a biodiversity assessment can take place. The researchers will also assess the land's value in carbon dioxide absorption and its abundance of medicinal plants, as well as the value to the local people.

"We urgently need to map this vast network of religious forests, sacred sites and other community-conserved areas to understand their role in biodiversity conservation," said Dr Shonil Bhagwat, on the research team. "Such mapping can also allow the custodian communities, who have protected these sites for generations, to secure their legal status." (Source: Environmental News Network, 1 August 2011.) 🌿



**Enthusiasm is the inspiration of everything great. Without it no man is to be feared, and with it none despised.**

*Christian Nevell Bovee*