

non-wood

news

EDITORIAL

The editorial for this issue of Non-Wood News has been written by Dr Wulf Killmann, Director of the Forest Products and Industries Division.

From 3 to 5 June 2008, FAO, in collaboration with the World Food Programme (WFP) and the International Fund for Agricultural Development (IFAD), hosted in Rome an International High-Level Conference on World Food Security: the Challenges of Climate Change and Bioenergy. For three days, over 4 700 people, among them 43 Heads of State or Government, discussed options and ways forward to overcome a major challenge for the years to come: global food security in times of changing climatic conditions.

Indeed, not since the 1970s have we seen rises in food prices like those of the last few years. The FAO Food Price Index rose by 8 percent in 2006 and by a further 24 percent in 2007. The index average for the first three months of 2008 was 53 percent higher than for the same period in 2007; the price of vegetable oils rose by 97 percent, grains by 87 percent, dairy products by 58 percent and rice by 46 percent. Sugar and meat prices also rose, but to a lesser extent. This rapid rise in food prices is affecting people in all countries, particularly in low-income and food-deficit countries, where it is raising the cost of food imports and exacerbating the balance of trade. The livelihoods of hundreds of millions of already-vulnerable, poor and hungry people in developing countries are further threatened. However, rising food costs are affecting consumers in wealthy countries as well.

About 850 million people of a world population of 6 billion still go to bed hungry. By 2050, the world population is expected to have increased to 9 billion people. During the same period, climate change and related extreme weather events will affect food production and infrastructure, and thus further challenge the attainment of food security.

What does this mean for forests?

The population increase and negative impacts of climate change will especially affect tropical countries. The resulting rising demand for food, water and energy is likely to put additional pressure on tropical forests. In some countries, the demand for wood fuels may increase. More forests may be converted for cultivation of agricultural crops or liquid biofuel crops, or for raising cattle. This will affect the water cycle, biodiversity and the carbon cycle. Already, 13 million ha of forests, roughly the area of Greece, are deforested annually, leading to greenhouse gas emissions in the order of 1.6 gigatonnes of carbon.

However, the food crisis also represents new opportunities for forests. Sustainably managed forests play an important role in contributing to food security, both directly and indirectly. Forests regulate the water cycle and protect



CONTENTS

3 Guest article

- Revitalizing Pacific sandalwood production

5 Special Features

- Bee products
 - World honey trade
 - German scientist identifies special properties in manuka honey
 - Honey-based cosmetics manufactured in the Russian Federation
 - A tree full of honey
 - Honey hunting of honeybees
 - Sustainable honey collection boosts returns to Cambodian communities
 - Turkey is second in honey production
 - Beeswax
 - A Cameroon body cream using beeswax
 - Propolis
- NWFPs and climate change
 - Climate change and indigenous peoples
 - Canada must adapt to climate impact on forests
 - Bark cuts methane emission from cows
 - Development should not affect forests
 - Carbon traders, not conservationists, could save the Cameroon rain forest
 - Bamboo as carbon sequester and income booster
 - Biodiversity key to fighting climate change

NON-WOOD NEWS

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Non-Wood News is open to contributions by readers. Contributions are welcomed in English, French and Spanish and may be edited to fit the appropriate size and focus of the bulletin.

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NON-WOOD NEWS – FOIP

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www.fao.org/forestry/nwfp/nonwood.htm

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watersheds, and thereby also agricultural production in the lower catchments. They protect and conserve soils; give shelter for agricultural crops in agroforestry and mixed cropping systems; provide fodder for livestock and offer grazing in silvopastoral schemes; and conserve biodiversity that may provide gene banks for future crops. Forests supply employment and income for an estimated 1.2 billion people, thus allowing them to buy food. They also directly supply food and livelihoods for an estimated 450 million people worldwide.

Non-wood forest products play an important role in all this. They are a direct source of staple foods, essential nutrients such as proteins, carbohydrates, fats and vitamins, snacks and relishes, and they cater for a diverse and flavourful diet. They also play a very important role in health care, and in alleviating seasonal hunger, i.e. during dry spells and monsoons, or periods of high food prices.

Thus, the global food situation should be an incentive for us to take a closer look at the existing, as well as the as yet unrealized, opportunities that NWFPs provide for food security!



- Climate focus neglects biodiversity and poverty issues
- Chinese biofuel “could endanger biodiversity”
- Bamboo as carbon sequester and income booster
- International Alliance will unite the forest peoples of the world

12 News and Notes

- 🌀 Approaches to NTFP modelling
- 🌀 Biopesticidal plant-derived essential oils
- 🌀 Bioprospecting/benefit-sharing or biopiracy?
 - Plans to control access to the Amazon
 - Namibia: San medicine could be hijacked
 - Biopiracy rampant in Nagaland, India
 - Filipino scientists developing system to stop biopiracy
- 🌀 CITES and agarwood-producing taxa
- 🌀 Cultivating wild fruits “could boost African nutrition”
- 🌀 Développement des PFNL comme moyen de réduction de la pauvreté des femmes rurales
- 🌀 Drinks and juices using NWFPs
 - Mulberry juice drink unveiled
 - The buzz on energy drinks
- 🌀 Exploitation des feuilles en Afrique centrale
- 🌀 Fragrance house sources sustainable ingredients
- 🌀 Functions and uses of mangroves
- 🌀 Journals
 - *Forests, Trees and Livelihoods*
 - Journal of Medicinal Plant Research
- 🌀 Latest laundry soaps
- 🌀 Non-profit organizations and NGOs
 - The Boreal Centre
 - Reforesting Scotland
 - Tourism Cares for Tomorrow
- 🌀 Plants to raise biological activity in space
- 🌀 Plugging NTFPs in the Congo Basin

- 🌀 Stylishly sustainable jewellery
- 🌀 Tanning: need to explore niche markets for East Indian leather
- 🌀 Tree resin: insulation retrofitters push “green” alternative
- 🌀 Valuing trees and forests
 - Revenues from forests of the Congo Basin
 - Adding value to forest resources
 - Putting a value on rain forests
 - How is a tree valued?

22 Products and Markets

- 🌀 Bamboo, Berries, Edible insects, Ginseng, Gum arabic, Maple syrup, Medicinal plants and herbs, *Moringa oleifera*, Nuts, Piperine, Sandalwood, Shea butter, Stevia, Wildlife

37 Country Compass

- 🌀 Armenia, Australia, Azerbaijan, Bolivia, Burkina Faso, Cambodia, Cameroon, Chile, Democratic Republic of the Congo, El Salvador, Equatorial Guinea, Ethiopia, Germany, Ghana, Honduras, India, Indonesia, Kenya, Malaysia, Myanmar, the Netherlands, Peru, the



Philippines, Portugal, Russian Federation, Rwanda, Sri Lanka, Suriname, Tunisia, Ukraine, United Republic of Tanzania, United States of America, Viet Nam

60 Econook

- 🌀 “Biodiversity is vital for human survival and livelihoods”
- 🌀 Community-based ecological monitoring – a promising option to ensure the sustainability of NWFP extraction
- 🌀 Elephants keep ants in harmony with tree hosts
- 🌀 Indigenous languages and biodiversity
- 🌀 UN strikes new forest accord

63 International Action

- 🌀 FAO, Domestication and Development of Baobab and Tamarind (DADOBAT)

65 Recent Events

67 Forthcoming Events

69 Publications of Interest

74 Web Sites

75 Readers’ Response

Non-wood forest products (NWFPs) are goods of biological origin other than wood, derived from forests, other wooded land and trees outside forests. Non-timber forest products (NTFPs), another term frequently used to cover this vast array of animal and plant products, also includes small wood and fuelwood. However, these two terms are used synonymously throughout this bulletin. Other terms, such as “minor”, “secondary” or “speciality” forest products, are sometimes used to keep original names and/or titles.

REVITALIZING PACIFIC SANDALWOOD PRODUCTION

Introduction

The genus *Santalum* includes the major sandalwoods of international commerce and trade, and indeed some of the most valuable and widely recognized plants in the fragrance and essential oil industries. Sandalwoods have a scattered distribution throughout the entire Pacific Islands region, naturally occurring wherever environmental conditions are favourable. Pacific sandalwood species of commercial trade include *Santalum austrocaledonicum* (Vanuatu and New Caledonia), *S. macgregorii* (Papua New Guinea), *S. insulare* (French Polynesia and Cook Islands) and *S. yasi* (Fiji and Tonga) in the South Pacific; and *S. ellipticum*, *S. freycinetianum*, *S. haleakalae* and *S. paniculatum* from Hawaii in the northern Pacific.

Sandalwoods were traditionally used in the Pacific Islands for carvings, cultural benefits, medicine and scented coconut oil and were also burned as an insect repellent. Nowadays, they are rarely used locally because of their scarcity and high cash value for export. Pacific sandalwoods, such as *S. yasi* and some populations of *S. austrocaledonicum*, produce highly prized sandalwoods, often similar in quality to the well-known *S. album* from India and Indonesia. The sandalwood trade was one of the first reasons to attract Europeans to the South Pacific in the early nineteenth century.

Most sandalwood species have already reached or are fast approaching commercial extinction in their native habitats. They include not only the Pacific Islands species, but also *S. album* from India and Indonesia. Sandalwood plantations being established in many parts of the local range will increasingly substitute the dwindling supplies from native forests.

The demise of commercial exploitation of natural sandalwood in the Pacific

Santalum austrocaledonicum was heavily exploited over about three decades in the middle of the nineteenth century in New Caledonia and Vanuatu and has been utilized periodically ever since. Carvings, incense production and sandalwood oil are the three major current products from *S. austrocaledonicum*. Sandalwood



Santalum

harvesting is closely regulated in both countries but, in the case of Vanuatu, the present extraction quota of 80 tonnes of heartwood per year appears unsustainable. A recent inventory of sandalwood resources by the Department of Forests and James Cook University in Vanuatu showed that only about 290 tonnes remain. At today's harvest rates, Vanuatu's sandalwood supply will be substantially reduced in four to five years and will be in short supply until plantation sandalwood is available in 12 to 15 years.

Over the past century, sandalwood from *S. yasi* in Fiji and Tonga has been exported to a limited extent, experiencing short-lived boom periods associated with a buildup of sandalwood stocks. The current high international prices for sandalwood, including *S. yasi*, have led to drastic overharvesting in Fiji and Tonga, mostly illegal and often with no returns for the legitimate owners, for whom the prices paid are variable and often extremely low, e.g. <US\$5/kg. Even immature *S. yasi* saplings are being cut to check whether any heartwood has formed: this practice invariably results in the premature death of the tree, either by blowing over during strong winds or from fungal disease.

With sandalwood now approaching commercial extinction in most parts of the Pacific Islands, there has been renewed interest in replanting it. Sandalwood has two significant factors in its favour for commercial cultivation on remote islands. First, the product has a very high unit value, e.g. US\$10–50/kg and, second, its non-perishable nature means that it is not susceptible to the vagaries of irregular and infrequent inter-island shipping. Planting of sandalwood has now extended

beyond its native range to Pacific islands such as Samoa and the Cook Islands, which is possible because of sandalwood's capacity to grow in more humid zones when cultivated in well-managed, agroforestry configurations that provide adequate sunlight and prevent overtopping by taller trees.

New plantation sandalwood resources in Australia and the Pacific Islands

Within the next ten to 20 years, it is likely that Western Australia (WA) will dominate sandalwood production and the international export trade in sandalwood products. Large plantations have been established in WA through managed investment schemes (MIS) financed by the private sector. Major players include the Tropical Forestry Services Corporation Ltd, ITC Ltd and Santalol that are growing about 3 700 ha of *S. album* under irrigation in the Ord River region. *S. spicatum* is being planted in the drier zones of WA with the Forest Products Commission aiming to establish 4 800 ha by the end of 2008. The MIS company, Rewards Projects Ltd, has already established 2 700 ha of *S. spicatum* and Emerald Peak Plantations Ltd is planning to establish 495 ha of the same species.

By contrast, new sandalwood plantings in the South Pacific Islands (as detailed below) are much smaller and more dispersed. Pacific Island plantations of sandalwood run considerable risks (from tropical cyclones, fire, *Phellinus noxius* fungus, theft and rights of ownership, etc.) but, compared with the plantations being developed in WA and elsewhere, have several advantages, such as more rapid growth and shorter rotations for the production of valuable heartwood (i.e. rich in santalols), and lower cost structures for production. The greatest opportunities for Pacific Islands sandalwood are likely to involve niche marketing, focusing on unique cultural dimensions and oil profiles (including in some cases elevated levels of the highly fragrant β -santalols).

Vanuatu. The most active replanting of sandalwood in the Pacific Islands is taking place in Vanuatu, as a result of active research by the Department of Forests, initially through the AusAID-supported SPRIG (South Pacific Regional Initiative on Forest Genetic Resources) project and more recently through an ACIAR (Australian Centre for Agricultural Research)-funded project with James

Cook University. The latter project demonstrated the variation in heartwood oil quality (santalol content) and quantity between populations and individuals, and the importance of selecting the correct seed source for replanting. A promotional video developed by the Secretariat of the Pacific Community is also sparking interest and informing native landowners about how to grow sandalwood. Surveys by the Department of Forests show that in recent years about 80 ha of native sandalwood (*S. austrocaledonicum*) have been planted by 45 growers on six islands (Aneityum, Aniwa, Efate, Erromango, Malekula and Tanna). Smallholder plantings are mainly undertaken in agroforestry systems, but most of the area planted is by commercial growers on Efate.

Fiji. The Forestry Department in Fiji has a target of propagating 10 000 seedlings per year for planting by native landowners. The main species being propagated and planted are the local *Santalum yasi*, with smaller amounts of *S. album*, and the hybrid between these two species. The focus of these plantings is on the two larger islands of Viti Levu and Vanua Levu. Native landowners are propagating and planting small areas of *S. yasi* on the outer islands of Fiji, especially on Kadavu and the Lau Group. A local company, Pacific Reforestation (Fiji) Ltd, has been undertaking research on sandalwood and host species and is currently planting several hectares per year of sandalwood and hosts on Viti Levu.

Tonga. The Forestry Division in Tonga has just set a target of propagating 100 000 seedlings per year. To date, there have been relatively few sandalwood plantings, partly because the theft of wild trees in recent years has made landowners reluctant to replant.

Cook Islands. The majority of sandalwood plantings are on the island of Mangaia where 10 ha of exotic sandalwoods (8 ha of *S. austrocaledonicum* and 2 ha of *S. album*) have been established in a variety of situations. Survival, tree form and height growth are good, but diameter increment is only moderate.

Samoa. Sandalwood was only introduced to Samoa in 2000. Since 2006, several thousand plants (*Santalum album*) have been planted per year on the islands of Upolu and Savai'i: early growth and bole form are outstanding. Together with the development of local seed sources and a major new agroforestry project, it is

expected that the establishment of agroforestry plantings of sandalwood will soon exceed 5 ha per year.

A future model?

In Fiji, a promising new model for private-public-community partnerships to develop sandalwood resources is being explored by the Government of Fiji and Pacific Reforestation (Fiji) Ltd (PRF). It has the following features.

- Sustainable and equitable utilization of *Santalum yasi*. Prior to any harvesting of *S. yasi*, the tree/resources owner must be verified by the recognized authority (Native Lands Trust Board in collaboration with local provincial councils and the Forestry Department). An agreed, fixed and fair price is to be paid for sandalwood to the rightful owner(s) with a set proportion going to the Forestry Department for sandalwood extension throughout Fiji, including training and propagation of planting materials. A modest and sustainable harvest rate for the remnant *S. yasi* trees, such as 20 tonnes, should be sustained per year over the next 15 years, until new sandalwood plantings, and plantations come into production. It is proposed that the sustainable harvest rate be regularly reviewed, e.g. every three years, by the Forestry Department.
- Value adding and marketing/branding of Fiji *S. yasi*. There would be a ban on export of unprocessed *S. yasi* heartwood to maximize local value adding and economic benefits for Fiji. The private sector, led by PRF, would develop a marketing and branding strategy to maximize market recognition and appreciation of Fiji *S. yasi* and its essential oil.
- *Santalum yasi* replanting programme. The Forestry Department would expand its current extension programmes for *S. yasi* and PRF would develop commercial partnerships with Fijian *mataqali* (landowner units) to protect and replant *S. yasi*, including provision of information, planting materials and finances.
- Research and development. The Forestry Department and PRF should develop a joint R&D programme for *S. yasi* to identify optimum silvicultural regimes, including propagation systems, most suitable hosts and technologies to initiate earlier heartwood formation.

- Conservation of genetic diversity in *S. yasi*. Update the *S. yasi* conservation and sustainable management strategy and provide private sector backing and support for its implementation.

Wherever possible, the genetic material of any cut sandalwood tree should be first conserved in gene conservation stands, either through seed and wildling collection or grafted scions.

A similar model might hold promise for other Pacific Island countries, such as Tonga and Papua New Guinea, where sandalwood resources are being exploited in an uncontrolled and suboptimal manner but with little financial return to resource owners. (The author acknowledges with thanks the input from Pacific forestry colleagues, Mr Ioan Viji, Ms Sanjana Lal, Mr Tevita Faka'osi, Mr Otheniel Tangianau and Mr Tolusina Pouli.)

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Dr Lex Thomson has recently joined the Secretariat of the Pacific Community in Fiji as Team Leader for the EU-funded Facilitating Agricultural Commodity Trade Project. His research and professional interests are in the areas of conservation and sustainable use of forest genetic resources in the developing tropics, assessment and domestication of multipurpose trees, and forest biodiversity for food security, nutrition and income generation. He has worked in more than 30 countries, mainly in the Asia-Pacific region, including research and development of sandalwood in eight countries.

BEE PRODUCTS

World honey trade

World production. Total annual world honey production is somewhere around 1.2 million tonnes. Reliable statistics are difficult to obtain because beekeeping is very widely practised on a small scale. In every country, small-scale beekeepers trade honey locally, and their produce is unlikely to be included in global production figures. No world organization can provide reliable statistics for the extent of honey production in Africa, in the Middle East or in Asia. It is known that there is considerable production and that this honey flows, through the hands of numerous traders and intermediaries, from producers in remote areas to consumers in industrialized countries. For example, honey flows from the forested mountains of Ethiopia eastwards towards the sea and the Middle East; from villages high in the Himalayas through ports such as Calcutta and Karachi, to markets in the Middle and Far East. In many cases, the honey has been harvested by some of the world's poorest and most remote people yet,



DEFINITIONS OF HONEY

Definition of honey according to Codex Alimentarius. Honey is the natural sweet substance produced by honeybees from the nectar of plants or from secretions of living parts of plants, or excretions of plant-sucking insects on the living parts of plants, which the bees collect, transform by combining with specific substances of their own, deposit, dehydrate, store and leave in honeycombs to ripen and mature.

Definition of honey according to the European Union. The EU definition differs in one respect from the above in that it states that honey is only honey according to the Codex definition when produced by *Apis mellifera* honeybees.

ultimately, some of it graces the tables of the most affluent people.

World trade. About 300 000 tonnes, around one-third of total recorded world honey production, enter the world market and are traded internationally. China, Argentina and Mexico together produce about 60 percent of world-traded honey. The EU, United States and Japan account for about 70 percent of the import trade. (*Source: Bees and their role in forest livelihoods, FAO Non-Wood Forest Products series, 19 [in press].*)

German scientist identifies special properties in manuka honey

Manuka Health New Zealand said today that it had launched the first manuka honey products certified to contain specified levels of a special antibacterial ingredient. This follows publication by a German technical university scientist of a paper that identifies the natural compound, methylglyoxal, which is responsible for manuka honey's unique properties. Manuka Health chief executive Kerry Paul said that the scientific paper was significant for the honey industry and for consumers.

Institute of Food Chemistry head, Professor Thomas Henle, the Dresden Technical University in Germany, found methylglyoxal was the dominant antibacterial constituent in manuka honey. Prof. Henle wrote in his paper that the high amounts of methylglyoxal in manuka honey have not been found in any other food. His research analysed 40 samples of honey from various sources around the world, including six New Zealand manuka honeys. Methylglyoxal levels in the manuka honeys were up to 1 000-fold higher than in the non-manuka products. Tests found a median methylglyoxal level in non-manuka honeys of 3.1 mg/kg. Concentrations of the compound in manuka honey ranged from 38 to 761 mg/kg. A minimum of 100 mg/kg is required for effective antibacterial activity. (*Source: TV3 News [New Zealand], 23 January 2008.*)

Honey-based cosmetics manufactured in the Russian Federation

In December 2007, the Apitherapy and Beekeeping Centre in Bashkiria launched a production site to manufacture cosmetics based on honey and api-products. Over 20 stock keeping units (skus) of shampoos, shower gels, facial and body creams,

aftershave products and even home care products are manufactured at the plant under the Volshebnaya Pchela (Fairy Bee) trademark. The general director of the centre claims that only purely natural ingredients are used and that they are as effective as professional cosmetics.

The manufacturer says that Bashkir honey, propolis and royal jelly are especially good for skin recondition. Volshebnaya Pchela cosmetics will be distributed in 35 regions in the Russian Federation. In addition, the first batch of the products will be supplied to Germany in mid-2008. It is the company's first step on the cosmetics market. Since 2001, it has been supplying Bashkir honey to Moscow, Saint Petersburg, Siberia and the United States. (*Source: Cosmetics in Russia [Russian Federation], 24 January 2008.*)

A tree full of honey

Bangalore. The banyan tree near Nandagudi, Bangalore rural district in India has the "world's largest number of beehives" – this unique tree has as many as 600 beehives. The Institute for Natural Resources Conservation, Education, Research and Training (INCERT) is making efforts to get this matchless tree recognized as an International Heritage Site so as to create awareness about the importance of its bee colony.

M.S. Reddy, Reader at Bangalore University said that the banyan tree had been monitored by apiculturists for more than a decade and their records show that there were approximately 625 bee colonies in November 2005. A survey conducted in October 2007 revealed the number of hives in the tree to be around 575.

The banyan tree is largely surrounded by eucalyptus trees whose flowers are a major source of nectar for the bees. During the monsoon season, the size of the colony reduces as the rock bees migrate because of lack of flowering in the eucalyptus trees. To prevent this migration, the villagers in the vicinity are being encouraged to undertake agricultural activities such as planting coconuts and floriculture, which may help create sustenance for the bee colony. This is so that the bees may thrive all year around.

For the past three years even the villagers have stopped extracting honey after they had been informed that their unskilled methods of extraction had led to the decline in the number of beehives. (*Source: The Hindu [India], 4 January 2008.*)

Honey hunting of honeybees

Honey hunting – plundering wild nests of honeybees to obtain crops of honey and beeswax – is still widely practised where people are poor and living at the subsistence level and where wild honeybee colonies are abundant. Honey hunting may be seen as part of the lives of the world's remaining hunter-gatherers, often at the margin of the farming world. The colonies of honeybees nest in the wild and, depending on species, may be nesting in tree cavities, in trees or rocks, in termite mounds or underground. Where bees are plentiful, honey hunting may be a common practice. Wild honeybee colonies are sometimes regarded as "hole in the wall" automated cash machines of industrialized countries. When a family or individual needs some cash, they can plunder it quickly by honey hunting from a known colony for some honey or some cash or "barter value". The products from honey hunting may be indistinguishable from the products from beekeeping in hives.

- **Positive aspect**

- For hunter-gatherers, honey hunting is a quick way of obtaining high carbohydrate (honey) and high protein (pollen and bee larvae) foods with no financial cost. When a buyer is available, honey hunting is often seen by the very poor as an easy way to raise ready cash.

- **Negative aspects**

- Honey hunting kills bees.
- For some bee species and in some areas honey hunting may now cause a non-sustainable depletion of honeybee colonies and habitat.
- Honey hunters may cause forest fires.

Because honey hunting usually takes place under difficult circumstances (such as swinging from a rope on a cliff face or high in trees at night time), the product from honey hunting is usually a mixture of ripe and unripe (i.e. high water content) honey, beeswax, dead bees and other debris. However, this does not mean that the product is of low value: it will often ferment quickly but has high local value as a cultural food, a tonic, an aphrodisiac or medicine. In Africa, honey from honey hunting is mainly made into honey beer. In this case, the various impurities help it to ferment all the more quickly. However, not all honey ends up this way; for example, in India, large volumes of honey are harvested from *Apis dorsata* colonies and reach the domestic honey market. There are no statistics available on the volumes of honey

harvested from wild bees. (*Source: Bees and their role in forest livelihoods*, FAO Non-Wood Forest Products series, 19 [in press].)



Sustainable honey collection boosts returns to Cambodian communities

Honey collection provides an important source of income for Cambodian rural communities, but the current system of harvesting damages the nests and dramatically reduces production. WWF Cambodia's Srepok Wilderness Area (SWA) project Community Extension Team (CET) has been teaching villages to harvest honey more sustainably – with encouraging results.

"I collect honey from 12 honey nests. Now I can collect honey from the same nest, two to three times. I am really happy." These were the words of indigenous Bunong villager, Sean Tha, who lives in Pu Rapet village, Krongtes commune, Pech Chrada district in Monduliri province. Tha had just completed a training course on sustainable honey collection, delivered by SWA, with the technical assistance of Dr Phung Huu Chinh of Hanoi-based Viet Nam Bee Research and Development Centre, a linkage facilitated by the Non-Timber Forest Products Exchange Programme. The course focused on a collection technique that leaves the honey-producing portion of the hive intact.

In the Monduliri Protected Forest where CET works, honey collection and sale can contribute up to 30 percent of total family income. This harvest season (April to May), for example, Tha collected honey worth about 200 000 riel (US\$50). Unfortunately the honey price is not stable because it depends on brokers to set the price. The price for selling in the village is 10 000–12 000 riel per litre but, if sold directly to tourists, it can reach up to 20 000 riel per litre.

CET leader Amy Maling said that the next step for CET is to set targets for honey

production within the Krongtes commune, help maintain quality and find additional honey markets.

The honey harvesting training course is just one of the many initiatives that the SWA CET is using to build a relationship with community members and assist them in conserving their natural heritage through the process of sustainable natural resource use. (*Source: Insert to Voices from the Forest*, 13.)

Turkey is second in honey production

Turkish Apiarists' Union chair Bahri Yilmaz reported that the EU imported some 200 000 tonnes of honey each year and Turkey, which produces 70 000 tonnes of honey annually, exports only 18 000 to Europe. At the meeting on "Beekeeping and Honey Production in Turkey", the point was raised that Turkey was second after China in honey production yet there were serious problems regarding honey exports, advertising and marketing.

The head of the Turkish Apiarists' Union complained about the inadequacy of legal regulations. He said that illegal honey commerce was a significant problem for producers in Turkey since this illegal honey was being exported with a "Turkish honey" label and it was all being sent back to Turkey when various chemicals were found in the honey. He said that some 40 000 people in Turkey were professional beekeepers and about 180 000 families earn a living from beekeeping. "If the honey producers are supported, this production can expand to become a very important source of economic income." (*Source: Biamag [Turkey]*, 1 January 2008.)

Beeswax

Beeswax is the creamy coloured substance used by bees to build the comb that forms the structure of their nest. Very pure beeswax is white, but the presence of pollen and other substances causes it to become yellow.

Production and trade. Beeswax is a valuable product that can provide a worthwhile income in addition to honey. One kg of beeswax is worth more than 1 kg of honey and, unlike honey, beeswax is not a food product and is simpler to deal with since it does not require careful packaging, which simplifies storage and transport. However, beeswax as an income-generating resource is neglected in certain areas of the tropics. Some African countries such as Ethiopia and Angola, where fixed comb beekeeping is still the norm, have significant beeswax exports,

while in other countries the trade is neglected and beeswax is discarded. Worldwide, many honey hunters and beekeepers do not know that beeswax can be sold or used for locally made, high-value products. Knowledge about the value of beeswax and how to process it is often lacking. It is impossible to give statistics, but perhaps only half of the world production of beeswax comes on the market, with the rest being discarded and lost.

Uses of beeswax. Beeswax has hundreds of uses, of which the following are but a few examples.

- **In cosmetics.** About 40 percent of the world trade in beeswax is for the cosmetics industry, which requires first-class beeswax that has not been overheated, is pure and free from propolis. The world price is usually US\$4–10 per kg. At a local level, making skin ointment from beeswax can be one of the most profitable beekeeping activities.
- **In pharmaceutical preparations.** About 30 percent of the world trade in beeswax is for the pharmaceutical industry that, like the cosmetic industry, requires good-quality wax.
- **Candle-making.** About 20 percent of the beeswax trade is for candle-making. Beeswax candles are less common and more expensive than candles made from paraffin wax. In the past, church candles had to be made of 100 percent beeswax, and this is still followed in some societies.

[Source: *Bees and their role in forest livelihoods*, FAO Non-Wood Forest Products series, 19 [in press].]

A Cameroon body cream using beeswax

In Cameroon, many beekeepers and honey hunters did not know the value of the honey comb. Many would burn the combs to drive away evil spirits (as the belief goes) or discard them as waste. Since I introduced them to harvesting beeswax from the combs, beekeepers and non-beekeepers have developed a great deal of interest in honey and other bee products.

One example is my recipe for body cream. This wonderful lotion has not only increased the demand for beeswax, but has solved a major problem among babies, especially in the Kom tribe of the northwest province where newborn babies were taken to special traditional healers to be protected or treated against skin diseases. Adults and babies who use this lotion do not suffer from

scabies, tinea, dandruff, chapped lips, sunburned skin, hard skin on their hands, or any of the common skin diseases. Three honest traditional doctors have confirmed the positive effect of this lotion for skin problems. [Source: Aaron Ndichia in *Bees for Development Journal*, 85.]

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HONEY AND BEE PRODUCTS IN CAMEROON

In 2006, honey and bee products from the main producing areas (northwest, southwest and Adamoua provinces, also known as the western Cameroon Highlands) had a value of at least €3 million, comprising approximately 3 225 tonnes of honey and 50 000 kg of wax. [Source: *Market access for Cameroon honey: an opportunity for income and employment for the rural poor*. Available from FAO's NWFP Web site (www.fao.org/forestry/site/35667/en)

Propolis

Apis mellifera honeybees collect resins and gums from buds or injured areas of plants. This glue-like substance, usually dark brown in colour but also sometimes varying in yellow, green or red, is called propolis. Just as with honey and pollen, propolis differs in composition according to the plants from which bees have been collecting.

Stingless bees use large amounts of resin in the construction of their nests. The constituents of these materials remain unknown and this "propolis" cannot be used by the pharmaceutical industry.

Propolis has antiseptic and anaesthetic properties and is commonly used as an ingredient in medicines, toothpaste, oral sprays and chewing gum, and in shampoos, soap, skin ointments and cosmetics. It is mainly sold as a tincture of propolis made by dissolving it in alcohol.

In forest societies, propolis is still used for many purposes. Kikuyu beekeepers in Kenya carry with them a lump of propolis to rub inside empty hives to make them

attractive to a colony in search of a nesting place. Propolis is used in traditional medicines and also as an effective glue to mend or seal containers of wood, metal or clay, and to seal up knots in wood.

Propolis has long been used for making wood varnishes, famously as a varnish for violins made by Stradivarius, in Cremona in northern Italy. The propolis in this region is gathered by bees from poplar trees. [Source: *Bees and their role in forest livelihoods*, FAO Non-Wood Forest Products series, 19 [in press].]

NWFPs AND CLIMATE CHANGE

Climate change and indigenous peoples

Many unique livelihood systems have been developed by indigenous peoples and provide examples not only of the human capacity to adapt to specific and often inhospitable environments, but also often of resilience, i.e. an ability to adapt to changing circumstances. The uniquely adapted lifestyles of many indigenous peoples and the very fact that they tend to be highly dependent on traditional knowledge, living in symbiosis with their natural environment and often acting as stewards of biocultural diversity, make them inherently perceptive of any signs of threats to the production landscape in which they live; moreover, their insight and experience may also provide alternative paradigms to address emerging threats from climate change.

Several indigenous communities make their living within vulnerable environments – in mountainous areas, in the Arctic, in jungles or in dry lands – and are thus often the first to discern and suffer the effects of climate change.

Similar disruptions in livelihoods occur in other areas where indigenous peoples make their living – the disappearance of atolls, glacier melts and forest fires impact their livelihoods. Even though they are not responsible for climate change, indigenous peoples are excessively affected by it. Additionally, they are disproportionately represented in both developed and developing countries among the poor and food insecure.

However, these peoples are not just victims of global warming; they have a critical role to play in supporting global adaptation to climate change. Several indigenous populations possess a unique knowledge of plant genetic diversity that may

be needed to fight plant and animal diseases, or they know how to breed varieties that can cope with stressed environments. The Amazon River basin is home to about 400 different indigenous groups. Although this territory accounts for just 7 percent of the world's surface area, it harbours more than half its biodiversity; indigenous knowledge and livelihoods depend on an intimate familiarity with a wide range of these unique species. Intense research is being carried out on traditional medicines and many pharmaceutical products derived from plants have been discovered through interaction with indigenous peoples.

Another valuable feature of indigenous knowledge is the ability to discern and interpret natural phenomena to forecast weather changes or identify livelihood-supporting resources.

During this century, tropical rain forests are predicted to experience a 2–8°C temperature rise and alarming changes in rainfall caused by sea surface temperature anomalies, in particular the El Niño-Southern Oscillation (ENSO). Forecasts indicate at least a 20 percent decrease in Amazonian rainfall. Negative effects will be exacerbated by deforestation and forest fragmentation.

Tropical rain forests are home to several indigenous peoples. Living from nature and depending on technologies that do not dominate their environment, they have learned to watch their surroundings and understand the intricacies of the rain forest, relying on the renewable benefits it provides. However, forest property rights are not always clear and indigenous communities often experience severe difficulties in defending their traditional rights against outside forces encroaching on their territories.

Surging demand for biofuels, timber and pulpwood is driving a large-scale destruction of carbon-rich peat lands and rain forests. For example, according to FAO, Africa lost the highest percentage of rain forest (10.5 percent) during the 1980s and the first half of the 1990s. To date, legal land titles have not been granted to forest peoples by Central African governments.

The Clean Development Mechanism (CDM) of the Kyoto Protocol is intended to oblige industrialized member countries to meet a part of their greenhouse gas reduction commitments by supporting projects in developing countries through direct investment and knowledge and technology transfer. FAO is active in

implementing and adapting CDM in forest regions, endeavouring to secure that indigenous peoples and other forest communities benefit from the initiative.

Financial incentives are supposed to compensate landowners for "environmental services" such as carbon storage and watershed protection. Nevertheless, perverse subsidies that provide incentives for clearing forests, combined with insecure property rights of local forest communities, may position industrial interests behind the current deforestation to profit from the REDD (reducing emissions from deforestation and ecosystem degradation) initiative and other ecosystem payment schemes, excluding rural forest communities. Accordingly, efforts to reduce forest-based carbon emissions must be combined with the protection of the rights of forest communities to realize the income potential of their environment. Trade-offs between reducing carbon emissions and reducing poverty have to be pursued.

The Global Forest Resources Assessment, which is continuously carried out by FAO, is now including global biomass and carbon data, at the same time as CDM small-scale forestry projects, which have the potential to provide immediate benefits to low-income smallholders and indigenous communities, are receiving particular attention. Descriptions of the FAO Forestry Department's activities related to climate change are given at www.fao.org/forestry/site/17827/en/ (Source: FAO's contribution to an interagency paper on climate change and indigenous peoples submitted to the Seventh Session of the United Nations Permanent Forum on Indigenous Issues [UNPFII]).

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Canada must adapt to climate impact on forests

Vancouver. Canada must prepare for the impact of global warming on its forests, such as increased fires in the west and ice storms in the east, the country's forest ministers said on Tuesday. Canada's lumber and paper industry must also address its declining competitiveness and use of trees for NTFPs such as biochemicals, the provincial and federal officials said in a draft report on the future of the country's forests.

Canada is home to about 10 percent of the world's forests and more than 90 percent of the country's forest land is government-owned.

The report, which was light on specifics, said the forests will feel the impact of global warming even if steps are taken internationally to reduce emissions of greenhouse gases linked to climate change. (Source: Reuters UK, 1 April 2008.)

Bark cuts methane emission from cows

The Australian Department of Primary Industries (DPI) staff jointly with University of Melbourne scientists have made a breakthrough in reducing bovine emissions by feeding an extract from the bark of black wattle (*Acacia mollissima*). The scientists

CALL FOR INCREASING THE RESILIENCE OF THE WORLD'S FOOD SYSTEMS TO CLIMATE CHANGE

The summit on soaring food prices, convened in June by FAO, concluded with the adoption by acclamation of a declaration calling on the international community to increase assistance to developing countries, in particular the least developed countries and those that are most negatively affected by high food prices.

On climate change, the Declaration said: "It is essential to address the question of how to increase the resilience of present food production systems to challenges posed by climate change ... We urge governments to assign appropriate priority to the agriculture, forestry and fisheries sectors, in order to create opportunities to enable the world's smallholder farmers and fishers, including indigenous people, in particular vulnerable areas, to participate in, and benefit from financial mechanisms and investment flows to support climate change adaptation, mitigation and technology development, transfer and dissemination. We support the establishment of agricultural systems and sustainable management practices that positively contribute to the mitigation of climate change and ecological balance." (Source: FAO Newsroom, 6 June 2008.)

found that feeding the crystallized powder not only reduced methane but also nitrogen emissions, and increased milk production.

DPI "Greenhouse in Agriculture" programme leader Dr Richard Eckard said in an interview "A tannin in the bark is combined with nitrogen in the rumen making it easier to digest and giving more benefit to the animal. The nitrogen goes out in the dung and then released slowly into the environment. The tannin stopped the nitrogen going into the bloodstream, where the animal had to work hard to process it."

"A problem is that there were no commercial suppliers of the supplement in Australia and we are importing it from Brazil or South Africa where it is used to tan leather," Dr Eckard added. (*Source: AllAboutFeed [the Netherlands], 19 February 2008.*)

Development should not affect forests

The debate on whether to conserve natural forests or clear them for investment and development projects is intensifying. At the recent international conference on climate change in Bali, Indonesia, proposals were made to look beyond development and commit more resources towards environment and forest conservation.

How do developing countries such as Uganda industrialize and transform their economies in the wake of increasing calls for the conservation of forests to mitigate global warming? Sustainable development, a development paradigm that makes the case for maximizing the benefits of investment while minimizing environmental degradation, is the way to go.

Credible development projects should have comprehensive guidelines on environmental conservation. Projects should be subjected to environmental impact assessments to mitigate degradation. There are certain conservation ecosystems that must remain intact because of their role in life-supporting systems. Substantial forest cover is a proven ingredient in stabilizing temperatures and climate. Trees suck up large quantities of carbon dioxide, a major contributor to global warming and a hazard for numerous ecosystems.

Uganda's forest reserves were gazetted around strategic locations such as mountains, waterbodies and areas with unique vegetation and wildlife species. Forests cannot be transferred because they are associated with these permanent features that cannot be replicated. Forests must cover a significant portion of the



country to be effective in their natural safeguard duty. Uganda's declining current forest cover, which is now about 22 percent of the land area, compares poorly with other developing countries such as Cameroon (47 percent) and the United Republic of Tanzania (45 percent).

Development projects should, therefore, not cause a serious threat to the declining forest cover in Uganda. There are non-destructive investments that can be undertaken within and around forests such as tree planting, ecotourism, research and beekeeping. These ventures have potentially lucrative returns but are friendly to conservation of both the environment and forests.

Climate-related negative effects of deforestation unfolding in Uganda have already had a retrogressive impact on production. With the persistent encroachment on central forest reserves and the rapid depletion of trees on private land, erratic weather is likely to get worse and could be replicated in other parts of Uganda.

Mitigating and reversing this climate trend requires improving planning to maximize investment while conserving forests and the environment.

On 3 December 2007, the Government launched a US\$653 million Natural Resources Sector Investment Plan. This seeks to increase forest cover to 30 percent of the land area by 2012. The plan is ambitious but, if implemented, will buttress efforts towards stabilizing temperature and climate, which will in turn be a vital ingredient for sustainable agricultural and industrial production and for posterity. (*Source: New Vision [Uganda], 14 January 2008.*)

Carbon traders, not conservationists, could save the Cameroon rain forest

The Government of Cameroon is looking to lease 830 000 ha of biodiverse tropical forest to conservationists for an annual sum of

US\$1.6 million. The problem? No conservation groups are interested. Apparently the asking price is too high, according to *The Economist*.

Ngoyla-Mintom forest, as the concession is known, borders the Republic of the Congo and serves as a corridor of habitat between three national parks in Cameroon, Gabon and the Republic of the Congo. Ngoyla-Mintom is home to forest animals including elephants and gorillas.

Without offers to meet its asking price, Cameroon Minister of Forestry Joseph Matta says that he has little choice but to auction the land to loggers. As *The Economist* puts it, "Ngoyla-Mintom is thus turning into an interesting test of what the conservation market will bear".

One possibility is that carbon traders will look at the value of carbon stored in the vegetation of Ngoyla-Mintom and conclude that it is worth protecting for the stream of offsets it could generate under REDD, a nascent mechanism for fighting climate change by protecting tropical forests. While REDD is only in its earliest incarnation, there are signs that it is progressing. Last week, Aceh province in Indonesia signed the first official REDD deal and the World Bank has committed US\$300 million to its newly created Forest Carbon Partnership Facility, a scheme that will offer tropical countries carbon offset credits to preserve forests.

A conservative look at Ngoyla-Mintom shows that its 830 000 ha of forest store over 200 million tonnes of carbon dioxide (assuming 250 tonnes of carbon dioxide/ha – actual values may exceed 700 tonnes). Should Ngoyla-Mintom qualify for REDD, the forest protection scheme would seem likely to offer competitive returns relative to logging concessions.

REDD calculations. From 2000 to 2005, Cameroon lost an average of 1 percent of its forest cover each year. For calculating the potential revenue generated from REDD, this figure is applied to the 830 000 ha of Ngoyla-Mintom forest cover, amounting to a forecast annual loss of 8 300 ha.

Assuming emissions of 160 tonnes of carbon dioxide/ha from logging, at US\$3 /tonne of CO₂, REDD would generate credits worth US\$64 million (net present value over 30 years using a 5 percent discount rate), well in excess of the US\$26 million in concession fees (net present value over 30 years at a 5 percent discount rate). The US\$38 million difference seems more than likely to make up the opportunity costs

of foregoing the jobs and local development from timber harvesting.

These calculations err on the side of caution. Carbon emissions from the logging or deforestation of Ngoyla-Mintom would probably be considerably higher than the figures used, particularly if the land was later converted for agriculture. Furthermore, REDD credits are at present higher than US\$3 and European ETS credits currently trade for more than US\$90 per tonne. Even so, the current model suggests that at a price point of US\$1.21, REDD credits would break even with revenue from logging concessions.

Carbon traders, not conservationists, could become the saviours of the Ngoyla-Mintom forest. (Source: The price of conservation: the unkindest cut, in *The Economist* print edition, 14 February 2008; mongabay.com, 15 February 2008.)

Bamboo as carbon sequester and income booster

Benguet. Should it prosper, bamboo production may yet be an alternative for environmental protection and as a source of livelihood since intensive production is being encouraged in the Cordillera region of the Philippines. A Memorandum of Understanding (MOU) has been forged by the Rotary Club of Makati Central, Centre of Excellence for Regional Cooperation (CERC) and Cordillera Bamboo Development (CORBAMDEV) to implement the Bamboo for Life project, in undertaking advocacy, propagation and likewise for commercialization purposes. Other signatories to the MOU were the provincial government, Baguio diocese and the Indigenous Peoples' Organization.

A bamboo advocate, Under-Secretary Edgar Manda, President of the Rotary Club of Makati Central, said that bamboo is important for socio-economic development and ecology, which are seemingly being neglected and ignored. Bamboo is also known as a "carbon sequester" since 1 ha of bamboo plantation sequesters 12 tonnes of carbon dioxide each year. In watershed protection, Manda said that a bamboo plant typically binds 6 cm³ of soil and yields six times more cellulose than the fast-growing pine tree.

Bamboo has a wide range of uses from its shoots to its rhizomes. Its waste materials can also be used to produce bamboo powder, dust for fuel, charcoal, bricks, fibreboard, paper, lumber and clothing.

Bamboo, the so-called "grass of hope", has various features that should be taken into account, according to Manda: bamboo grows more rapidly than trees – as much as 400 mm or approximately 16 inches per day. With a maturity of four to five years, multiple harvests are expected every second year up to 120 years. It can also easily be intercropped with vegetables. The establishment of a bamboo plantation requires a minimal capital investment. (Source: Philippine Information Agency [the Philippines], 25 January 2008.)



Biodiversity key to fighting climate change

Scientists from Brown University have discovered that an ecosystem's productivity is directly linked to its diversity of plant species. The discovery has granted biodiversity new importance in the fight against climate change: the more productive the ecosystem the more carbon it captures. "It's a double whammy," Osvaldo Sala explained. "We not only are disturbing our planet by putting more carbon into the atmosphere, but we're reducing the ability of ecosystems to capture and store it." Sala is the director of the Environmental Change Initiative and the Sloan Lindemann Professor of Biology at Brown University.

The Brown University scientists conducted their study for six years in Patagonia. They divided an area into 90 plots and then began systematically to remove native species from each plot and chart the changes in the plot's productivity. Productivity dropped as species were removed.

The scientists believe that productivity is linked to the diversity of species because of "niche complementarity". In other words, in an intact environment each species has evolved its own niche without interrupting

those of other species. This harmony between species allows them to interact positively with each other and fully utilize the resources of a given space. Artificial landscapes proved far less productive than natural ones.

The findings appear to have important ramifications beyond plant species, since the high biodiversity of plants depends on non-plant species. Insects, birds and bats are major pollinators for plant species; some plant species depend on a single insect or animal species for pollination. Therefore, to have a truly productive ecosystem all of the region's biodiversity must be retained.

According to the study, "this result supports previous findings and also suggests that the effect of biodiversity in natural ecosystems may be much larger than currently thought". The findings give wildlife conservationists a new powerful argument for species protection. Many biologists believe that we are currently entering a mass extinction, entitled the Holocene extinction event. Estimations range from 20 to 50 percent of species becoming extinct within approximately one hundred years. The reasons are varied for species extinction but include climate change, habitat loss, pollution, bush trade, invasive species and the trafficking of species for medicinal products.

Citation: Pedro Flombaum and Osvaldo E. Sala. 2008. "Higher effect of plant species diversity on productivity in natural than artificial ecosystems". Proceedings of the National Academy of Science in the United States of America, 22 April 2008. (Source: Mongabay.com [United States of America], 29 April 2008.)

Climate focus neglects biodiversity and poverty issues

Many efforts to curb climate change have paid little attention to conservation or to helping the world's poor, a think tank has warned. A paper by the International Institute for Environment and Development (IIED) said that bad policy threatened biodiversity and made poor nations more vulnerable. The authors called for projects tackling global problems to work more closely together in the future.

"Pro-poor, biodiversity friendly ways to adapt and mitigate climate change are clearly the way forward," said co-author Krystyna Swiderska. "But for them to work, local communities must be involved in decisions about how biodiversity is used.

Good governance and fair access to land and resources must be at the heart of these efforts." She warned that "bad polices" could accelerate biodiversity loss and increase the vulnerability of the world's poorest communities.

Ms Swiderska and co-author Hannah Reid wrote that poor communities heavily depended upon biodiversity for food, medicine and sustaining livelihoods. Protecting diversity would give these communities more options to adapt to a warming world, they added.

While global agreements, such as the CBD (Convention on Biological Diversity), the UN Framework Convention on Climate Change and the Millennium Development Goals, acknowledged the impact of climate change on biodiversity and poor nations, the authors said there were no shared or common goals to ensure that strategies did not conflict. "Policy-makers have focused on mitigating greenhouse gas emissions but biodiversity is also key," observed Ms Swiderska. "For centuries, traditional farmers have used the diversity within both domesticated and wild species to adapt to changing conditions." She said that greater recognition of local knowledge could help deliver results on a global scale. [Source: BBC News [United Kingdom], 18 February 2008.]

Chinese biofuel "could endanger biodiversity"

Beijing. Using China's forests and "idle land" to produce biofuels could pose a threat to biodiversity, experts warned at an international meeting. Spike Millington, chief technical advisor to the European Union-China Biodiversity Programme, raised the problem earlier this month (7 March) at the International Workshop on Biodiversity and Climate Change, held in Beijing, China.

In July 2007, China released its middle- and long-term plan for renewable energy. The plan encourages the development of non-grain biofuels, including cassava- and sorghum-based ethanol in northeast and south China, and *jatropha*-based biodiesel in southwest China's Guizhou, Sichuan and Yunnan provinces. But, according to Millington, the region of southwest China targeted coincides with the home of the last remaining intact natural forests in China. He added that the degraded forests in the area also play an important role in biodiversity. Liu Xuehua, an associate professor of environment at Tsinghua

University said that land classed as idle is often not empty land, and can be home to diverse undomesticated species.

To cope with potential risks, Millington recommends that environmental assessment is carried out to distinguish high biodiversity areas from low biodiversity areas that are suitable for *jatropha* trees or other biofuel plants. [Source: SciDev.Net Weekly Update, 17-24 March 2008.]

International Alliance will unite the forest peoples of the world

The forest peoples of the world are joining forces in order to have access to resources deriving from the thriving green market, based on future mechanisms for the reduction of emissions from REDD, to be created through the UN Climate Convention. They want to use this opportunity so that their fundamental rights may be fulfilled: the right to land and to natural resources and respect for their traditional livelihoods.

Gathered in Manaus, in the heart of the Brazilian Amazon, the participants of the Peoples of the Forest and Climate Change Workshop have just set the basis for an international alliance, based on a Brazilian model with a 20-year long history that brings together indigenous peoples, extractive producers and riverine populations, inspired by the efforts of Chico Mendes. The new alliance will function as a network and transnational forum for the exchange of experiences among forest populations and mostly for influencing international discussions on climate, deforestation and mechanisms for the reduction of greenhouse gas emissions.

The International Alliance of Forest Peoples was unanimously approved on 4 April by the 11 countries that signed the Manaus Declaration: Brazil, Colombia, Costa Rica, Ecuador, Guyana, French Guiana, Paraguay, Nicaragua, the Bolivarian Republic of Venezuela, Suriname and Panama and by the members of delegations from Africa (Democratic Republic of the Congo) and Asia (Indonesia). The document was approved with the participation of UN observers and observers of Non-governmental Organizations (NGOs) from Brazil, the United Kingdom and the United States.

In spite of the differences in legislation regarding the use and conservation of forests that exist in these countries still hosting major extensions of rain forests, they share common problems and already feel the negative effects of climate change upon the planet in similar ways: severe droughts,

floods, changes in the natural biological cycles, with interferences in farming and fishing.

"The indigenous peoples need to understand exactly what is happening to their forests. They have always been forgotten when it is time for decision-making and the time has come for them to be taken into account because their ancestral knowledge on nature enables them to provide important inputs for the climate debate," said Yolanda Hernández, the indigenous representative of the Maya Kakchiquel people of Guatemala.

The differences that exist both within and among these countries may be better addressed in their quest for common solutions to ensure the worthy survival of the people and the conservation of forests, i.e. to maintain the environmental services required for the balance of the planet. "Therefore, the scenario provided by the REDD mechanism brings together the interests of forest communities and the interests of scientists, environmentalists and members of social movements throughout the world," says Paulo Moutinho, from the Amazon Institute for Environmental Research (IPAM). According to the coordinator of Instituto Socioambiental, Márcio Santilli, this is also an economic opportunity capable of changing the balance of forces on behalf of the acknowledgement of the territorial rights of the traditional and indigenous peoples. [Source: ForestNewsWire [press release] [Canada], April 2008.] ♣

CORRECTION: SAGO PALM (METROXYLON SPP.)

Unfortunately, during typesetting one line was omitted from the text in the first column of page 10 of *Non-Wood News* 16. The sentence should have read: "The two primary uses are for the production of edible starch and durable leaf thatch". In addition, in order to clarify the text in the box on Edible starch on the same page, the author has advised that: "This synopsis is for the lesser known species of sago palms found to the east and northeast of New Guinea and does not include the most important economic species *M. sagu*".

"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)

APPROACHES TO NTFP MODELLING

Models of tropical mixed forests for simulation of multiple-use forest management are of importance because of the significance of both timber and non-timber forest products (NTFPs) for large numbers of the rural poor. Models capable of accurately simulating multiple-use forest management and their impacts could be used to address questions such as, how much of a given NTFP can be extracted before jeopardizing production of other products, and how NTFPs should be extracted or silvicultural treatments applied to increase timber and NTFP production. Based on the review of the literature, the authors observed that i) there is practically no integration between studies that focus on timber and those of NTFPs; and ii) in most cases, the limitations of common NTFP modelling approaches are rarely acknowledged. The authors identify key processes that require empirical data collection and suggest modifications to models to represent better multiple-use forest management. (Source: D. Ribeiro do Valle, C.L. Staudhammer & W.P. Cropper. 2007.



Simulating nontimber forest product management in tropical mixed forests. *J. Forestry*, 105(6): 301-306.)

BIOPESTICIDAL PLANT-DERIVED ESSENTIAL OILS

Boreal forest may be home to new medicines

In recent years, global initiatives and multilateral partnerships for the prevention and treatment of malaria have taken great strides towards the reduction of malaria deaths, in garnering a strong funding base and in identifying regimes and products that are effective in disease vector control. In order for these regimes and products to reach full coverage of malaria-vulnerable populations, global initiative partners emphasize demand creation among consumers of malaria commodities, together with subsidy and pricing structures that work for villagers living in poverty, while providing a reasonable profit margin for private sector suppliers. Effective social marketing of approved technologies depends on wide acceptance and persistent use of a variety of synthetic insecticidal treatments. However, the installation of new and emerging markets for approved malaria commodities, although proven to reduce child deaths from malaria, creates new disparities between developed and developing nations, since only a few, large multinational manufacturers are capable of producing approved technologies. Meanwhile, concerns over the potential long-term health and environmental effects of insecticidal toxicity remain largely unaddressed.

Funding is needed for the research and development of alternatives, such as biopesticidal plant-derived essential oils, and for capacity building that enables the village-level production of malaria commodities. Supporting such initiatives may ultimately prove to be a greater social good than building consumer demand for imported products that potentially create new health and environmental risks. (Source: *Transforming the malaria commodities market: the need for interdisciplinary research and development of alternatives to synthetic pesticide applications for disease vector control*. Paper prepared by Jennifer Chesworth, 2008. Available at: www.herbalistswithoutborders.org/ Chesworth.MalariaCommodities.pdf)

Fair trade and organic product development in malaria commodities markets is unlikely, although perhaps not impossible. For example, the African native chrysanthemums used as source material for pyrethrum could be farmed organically under fair trade cooperative management and developed for vector control use domestically, if intellectual property and patented technologies allowing for effective product manufacture were equitably shared. If a new generation of insecticides needs to be developed, produced and broadly adopted as a public good for malaria control, biopesticides may provide effective solutions that more equitably support sustainable regional economies and environmental protection.

Botanical raw materials and plant-derived essential oils known to be insecticidal via traditional knowledge and showing promise for malaria vector control – lemon grass, eucalyptus, galangal, tea tree, peppermint, thyme, oregano, rosemary, citrus species, citronella, rosewood, geranium, and cinnamon among others – can be grown and processed by agrarian villagers for their own local and regional malaria commodities markets if appropriate intellectual property rights are secured for villagers for the common good.

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BIOPROSPECTING/ BENEFIT-SHARING OR BIOPIRACY?

Plans to control access to the Amazon

Brazil's Congress is to be asked to consider a law that could require foreign visitors and workers in the Amazon region to have a permit. The legislation is designed to prevent outside interference and illegal use of the rain forest's resources. Those in the

region without a permit would be fined up to US\$60 000.

However, some scientists have warned that, if passed, the measure could have a negative impact on research and would force experts to look elsewhere.

There has long been a suspicion in some sections of Brazilian society that not all the attention focused on the Amazon region is well motivated. In an interview with the Associated Press news agency, Brazil's National Justice Secretary Romeu Tuma said that Brazil wanted the world to visit the Amazon, but he also said the country wanted visitors to inform the Government when they were coming and what they were planning to do while there. "We want to establish the Amazon as ours," he said.

In recent years, the Brazilian Government has become increasingly fearful of what it views as biopiracy, or the appropriation of traditional or indigenous knowledge and biological resources, in what is the world's largest remaining rain forest.

The Government insists that it is not trying to criminalize foreigners visiting or working in the region, but simply trying to distinguish between the good and the bad.

The proposals would require overseas organizations, including religious groups and individuals, to seek authorization to be in the area from both the Justice and Defence Ministries. [Source: BBC News [United Kingdom], 26 April 2008.]

Namibia: San medicine could be hijacked

The San people stand to be robbed of their knowledge of traditional medicine because of ignorance about the value this medicine carries, says Vicky Dan of the University of Namibia. Her study of San traditional medical usage at Farm Six in Tsumeb found that San traditional medicine, which is referred to as the "open air pharmacy", is in high demand.

The study looked into San indigenous medicinal knowledge and how it is shared. Ms Dan found that the level of awareness of what the San people has is very low, which could be a loophole for profiteers. She said that the danger arising from such a situation, if it should occur, is that the San themselves would reap few or no benefits from commercial exploitation of the natural remedies.

The study found that the San use traditional medicine to treat all diseases except tuberculosis. A variety of plants are used to treat colds and flu, aches and pains, malaria and high blood pressure; modern medicine is not considered because of the

long distances the San would have to travel to the nearest health facility. It was found that men, women and children all have considerable knowledge about traditional medicines.

The author recommended that the San be educated about the potential value of their traditional medicine and, in particular, their intellectual property rights and their right to benefit from any marketing of the medicine. She said that the Government, in collaboration with international research institutions, should undertake research into traditional remedies.

Last year, in the absence of legislation, the Government established an interim bioprospecting committee to coordinate its approach on biotrade and bioprospecting.

Biotrade and bioprospecting have the potential to generate significant economic benefits for Namibia yet, given the absence of appropriate and watertight legislation, the country would lose potential revenue sources if they are exploited without proper benefit-sharing agreements, the Ministry of Environment and Tourism Deputy Minister said at an access and benefits sharing workshop held with several other countries last year. [Source: *New Era* (Windhoek), 12 March 2008.]



Biopiracy rampant in Nagaland, India

Kohima. (Press Times of India.) Resource-rich Nagaland is plagued by biopiracy with rare medicinal herbs, orchids and other endangered species being smuggled out of the state, NGOs have claimed.

Many plants are being taken away by pharmaceutical companies through intermediaries who engage locals to collect naturally grown species for derisory sums, Thomas Rengma, Media Secretary of Peoples Group, a Naga environmental NGO, told the Press Times of India. He said that sheer ignorance about the benefits to be accrued by the people if formal business in medicinal plants and herbs were to be undertaken has aggravated biopiracy in the state.

Some years ago *Panax ginseng* and *P. pseudo-ginseng*, the local species of

ginseng that are highly in demand in international markets, were almost completely wiped out in the wilds of Nagaland. A similar situation occurred for *Taxus baccata* and *Cephalu taxus*, found in Nagaland and Arunachal Pradesh, which are used in western countries for medicines to cure cancer. These plants are being smuggled out to neighbouring Myanmar in truckloads from the Kohima and Phek districts, Rengma alleged.

The latest medicinal plant to fall prey to biopiracy is *Paris cordifolia*, a poisonous herb used for manufacturing high value drugs. It usually grows during summer in the shade of woods and is difficult to spot. Although the plant generally bears four leaves and is called quadrifolia in the West, the Nagaland variety has six leaves, which means that a single stem can give more products so that demand is high. The plant is now extensively used for homoeopathic medicines for curing headaches and chronic respiratory and bronchial infections.

Rengma said that local Myanmar drugs companies have now engaged intermediaries to collect *P. cordifolia* from the Kohima and Phek districts after it was completely eradicated from the hills of Manipur. The herbs are taken by truck to the Moreh trade point on the Manipur-Myanmar border on the way to the neighbouring country. [Source: *The Hindu* [India], 2 May 2008.]

Filipino scientists developing system to stop biopiracy

To prevent biopiracy of indigenous communities' health practices that modern medical societies have proved to be effective, Filipino scientists are developing a national digital library to take stock of the materials.

Dr Jaime Montoya, executive director of the Philippine Council for Health Research and Development (PCHRD) said that a P10-million system is being developed to protect the country's biomedical indigenous knowledge from piracy by unscrupulous foreign researchers. According to Montoya, the national digital library will contain data on local communities' health practices that are acceptable to medical societies, in order to avoid biopiracy and "protect the heritage" of Filipinos.

PCHRD has started documenting indigenous health practices all over the country and expects to finish its research and the digital library by 2010.

Montoya added that the Philippines is teeming with raw materials that can be used

to develop medicines to make the country self-reliant in life-enhancing drugs.

The Department of Health is promoting ten medicinal plants that are already available in commercial preparations, namely: *lagundi*, *verba buena*, *sambong*, *tsaang gubat*, *ampalaya*, *niyug-niyogan*, *bayabas*, *akapulko*, *ulasimang bato* and *bawang*. (Source: GMA News.TV, 11 March 2008.)



CITES AND AGARWOOD-PRODUCING TAXA

At the Conference of the Parties CoP13 United Nations Climate Change Conference in 2004, the two genera *Aquilaria* (c. 24 species) and *Gyrinops* (c. seven species) were included in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Appendix II. The implementation of trade controls for these commodities poses a challenge for CITES authorities.

CoP14 has now decided upon the following measures: i) member countries involved in trade in agarwood should produce identification materials for all forms of traded products under CITES control; ii) they should agree on which agarwood products are to be exempted from CITES control and, once agreed, a proposal for the amendment of the current annotation for agarwood-producing species should be put forward to CoP15; iii) a set of principles, criteria and indicators for the formulation of non-detrimental findings for agarwood-producing species should be developed; and iv) a workshop aimed at strengthening the capacity of member countries to implement agarwood-related decisions should be held before CoP15. (Source: *Medicinal Plant Conservation*, 13, December 2007.)



CULTIVATING WILD FRUITS "COULD BOOST AFRICAN NUTRITION"

Africa's traditional fruits could boost nutrition, environmental stability and economic development if given the right scientific and agricultural support, says a report. The report, by the United States National Research Council, was released last week (30 January) and is the third in a series by the council called "Lost crops of Africa".

A panel of experts from various African countries, with input from ordinary workers,

looked at the sustainability of growing a range of indigenous African fruits and the effect it could have on combating malnutrition and poverty in the continent. Twenty-four fruits were chosen for their potential to contribute to nutrition – particularly for children – and to economic development. Among these fruits are *aizen*, *balanites*, baobab, butterflyfruit, ebony, marula and tamarind.

Traditionally, according to the report, indigenous fruits grew wild and were not domesticated. With the advent of colonialism, fruits from Asia and America were introduced, and Africa's fruits faded into the savannahs and jungles. Mark Dafforn, who directed the study, believes that farming these fruits will be extremely sustainable. "Their success will draw on local resources and local knowledge, and these are an ancestral heritage in which people can take justifiable pride. [The fruits] have the added advantage of having survived conditions like drought and floods for millennia," he told SciDev.Net, making them better suited for sustainability than imported varieties.

The report advocates not only large-scale farming, but encourages individuals to select their best crops and share them with others for propagation, stating that collaboration between amateurs and professional horticulturalist and scientists will be the key to success. "Even if just for home use rather than markets, they could lead to better nourishment in the general rural population, an essential foundation for any economic improvement in Africa," adds Dafforn.

Jane Guyer, professor of anthropology at the United States-based Johns Hopkins University and a member of the panel for the report, points out that these crops are already valued and used in many parts of Africa. "These crops were never lost to the people; they have just been lost to the kind of agricultural science that focused mainly on internationally commercialized crops." (Source: SciDev.Net Weekly Update, 4–11 February 2008.)



DÉVELOPPEMENT DES PFNL COMME MOYEN DE RÉDUCTION DE LA PAUVRETÉ DES FEMMES RURALES

Le dernier Rapport de Suivi Mondial (RSM) 2007 de la Banque Mondiale estime que parmi les 900 millions d'habitants les plus pauvres de la planète, les plus touchés se situent en Afrique. La majorité se concentre toujours en zone rurale, les femmes rurales et les enfants demeurent les couches les plus vulnérables. Au cours des 10 dernières années, le nombre de femmes vivant dans la pauvreté a augmenté plus rapidement que celui des hommes, en particulier dans les pays en développement. La pauvreté continue de perpétuer en zone rurale sahéenne et magrébine.

Un développement durable et une croissance économique à la fois soutenue et durable ne seront possibles que si l'on améliore la situation économique, sociale, politique, juridique et culturelle des femmes. Le développement durable doit s'appuyer sur un développement social équitable donnant aux pauvres et, plus particulièrement, aux femmes pauvres, les moyens d'exploiter rationnellement les ressources naturelles. C'est dans cette optique qu'œuvre les organismes internationaux afin de réaliser les objectifs du Millénaire pour le développement (OMD).

L'exploitation, la transformation et le commerce de certains produits existant à l'état naturel ont souvent permis de suppléer aux déficits alimentaires et de fournir des apports financiers, en particulier durant la période de soudure. L'arganier au Maroc et le karité au Sahel sont des exemples d'espèces végétales naturelles d'une grande importance pour les populations rurales, particulièrement pour les femmes, qui méritent d'être mises en relief. Une meilleure gestion et un développement de la filière économique de l'arganier marocain et du karité burkinabé pourraient contribuer à la réalisation des OMD.

Le Sahel et le Maghreb disposent d'un important potentiel de produits forestiers non ligneux (PFNL), potentiel qui mérite d'être valorisé. La gestion participative et le développement de la filière économique du karité et de l'arganier permettraient de réduire l'extrême pauvreté et la faim. Cela pourrait améliorer les conditions de vie des femmes en milieu rural. L'arganier et le karité jouent un important rôle tant sur le

plan socioéconomique qu'écologique au Maroc et au Burkina. Ces deux PFNL fertilisent les sols et les protègent contre l'érosion; ils font également l'objet d'un commerce international qui devient de plus en plus important.

L'arganier et le karité recèlent plusieurs avantages: ils protègent l'environnement et constituent une source de revenus supplémentaires pour les femmes rurales. Les branches d'activité de l'arganier et du karité sont devenues une grande opportunité de développement particulièrement pour les femmes. Le commerce du karité et de l'arganier constitue de nos jours un vrai paradigme économique, du fait de la croissante demande du marché extérieur. Ces deux PFNL sont actuellement très demandés par les industries agroalimentaires et cosmétiques européennes.

A l'heure actuelle, plusieurs organismes de développement appuient la valorisation du karité au Burkina Faso et de l'arganier au Maroc. Ces différents projets s'inscrivent dans la continuité des programmes de développement, qui ont centré leurs stratégies sur plusieurs approches (bien-être, pauvreté et efficacité) concernant l'intégration des femmes dans le développement. Ces politiques, inscrites dans la continuité des concepts du développement durable, ont pour fondement la croissance économique. Ainsi l'augmentation de la production locale de karité et d'arganier devrait générer un développement économique et pour les femmes rurales et, par conséquent, préserver la ressource naturelle.

En favorisant la commercialisation du beurre de karité et de l'arganier vers le marché international, les femmes pauvres pourront accroître leurs revenus (rôle productif) en s'insérant pour cela dans des groupements féminins (rôle communautaire). Elles pourront ainsi assurer le bien-être de leurs enfants et de leur famille (rôle reproductif). Qui plus est, l'importance économique de ces ressources naturelles se répercutera alors sur la préservation de l'environnement. L'arganier et le karité offrent ainsi une réelle opportunité de développement aux femmes rurales à travers le financement et l'encadrement des coopératives associatives féminines de la part de l'Etat, des ONG nationales et internationales.

Malgré les efforts de développement consentis par les femmes et les partenaires de développement, le diagnostic du secteur

révèle plusieurs contraintes. En effet, il existe un risque réel de voir les femmes rater cette opportunité à cause de leur pauvreté, leur ignorance, l'analphabétisation, et le manque de financement et de moyens de production adaptés à la démarche de qualité exigée par le marché international. Il faut aussi tenir compte de l'intérêt grandissant qu'accordent les hommes propriétaires terriens à l'arganier et au karité mettant en valeur leurs droits de propriété, freinant ainsi le travail des femmes dans les zones d'exploitation.

Le manque d'accès au marché international du karité et de l'arganier, l'éloignement et les contraintes de transport, et la faiblesse des prix auxquels les femmes vendent leurs produits aux collecteurs primaires réduisent les retombées que ces ressources naturelles devraient procurer aux femmes rurales. En plus de ces facteurs qui freinent le développement de la filière économique de ces deux PFNL, il y a également les problèmes de surexploitation et de changements climatiques qui entraînent une réduction massive des couvertures végétales et le risque de compromettre les générations futures, empêchant ainsi le développement durable.

Cette situation nécessite la mise en place de programmes spécifiques pour répondre aux besoins pratiques et stratégiques des femmes, et pour valoriser leurs compétences et les habiliter à contribuer pleinement au développement économique, social et culturel de la communauté.

Pour que les contraintes relevées au niveau des filières de l'arganier et du karité soient levées, il est nécessaire que les femmes participent à la vie économique et à la lutte contre la pauvreté par leurs activités domestiques, communautaires et professionnelles rémunérées et non rémunérées. Leur autonomie économique est une condition essentielle à l'élimination de la pauvreté. Pour que la gestion et le développement des PFNL puissent contribuer à la réalisation des OMD, et améliorer les conditions de vie de la femme rurale, il est nécessaire qu'il y ait un encadrement des femmes et leur implication réelle dans l'économie. Par ailleurs, on devrait:

- insérer les femmes, les responsabiliser et les former davantage dans la gestion des PFNL et la production de produits de qualité;
- sensibiliser les femmes et promouvoir la protection de l'environnement en décourageant l'exploitation abusive des



Community-based ecological monitoring.
A manual for practitioners

PFNL, et contribuer à rendre leur utilisation plus rationnelle;

- contribuer à l'accroissement des revenus des femmes en zone rurale en aidant au renforcement de leur capacité afin qu'elles puissent intégrer les réseaux commerciaux régionaux et internationaux;
- sensibiliser les hommes agriculteurs et nomades à protéger l'environnement, et les inciter à aider au développement des femmes.

La gomme arabique et tout le capital non ligneux dont dispose la Mauritanie nécessite une valorisation. La Mauritanie pourrait en effet suivre l'exemple de l'arganier marocain et du karité burkinabé pour développer son potentiel en matière de PFNL. Cela pourrait lui permettre de réduire la pauvreté et la faim en milieu rural, de protéger l'environnement, de lutter contre l'exode rural et l'avancée du désert.

(Source: *Gestion participative et développement des produits forestiers non ligneux comme moyen de réduction de la pauvreté des femmes rurales: cas du Maghreb et du Sahel* par Mme Hawa War, Volontaire, FAO, Le Caire.)

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Mulberry juice drink unveiled

The Progressive Food Company has announced the launch of the United Kingdom's first ever mulberry juice drink under the mul-be brand name. It is a not-from-concentrate (NFC), single fruit, 50

percent juice drink and is a premium super juice drink for adults, one of the fastest growing sectors in the United Kingdom soft drinks market. The drink contains no artificial colourings, sweeteners, flavourings or preservatives and has an extended ambient shelf-life.

Mulberries are rich in anthocyanins – powerful antioxidants that help cleanse the body of free radicals, harmful molecules that can cause serious cell damage. Mulberries are a natural source of vitamin C and each bottle of mul-be provides 70 percent of the recommended daily amount (RDA). [Source: talkingretail [United Kingdom], 23 April 2008.]

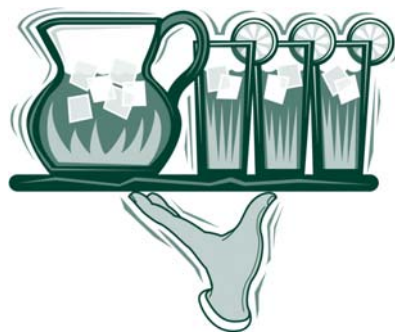
The buzz on energy drinks

Energy drinks are flooding the market. They've become so popular that sales at convenience stores are surpassing those of soft drinks. It's common now to see coolers by checkouts containing only energy drinks. Naturally, kids frequent corner stores and are big consumers of these beverages, but parents should be aware that there are health implications to this choice that children and teens are making.

Energy drinks have their place. They're meant to supply mental and physical stimulation for a short period of time. But most are packed with double or even triple the caffeine of a caffeinated pop. Caffeine can have serious effects on young bodies. High doses of caffeine in adolescents have been reported to cause severe heart palpitations and even seizures. Teens are reaching for energy drinks to stay awake all night to study, party or to play computer or video games. Most have no idea of the effects these energy drinks have on their bodies and mental health.

Most energy drinks contain a variety of medicinal ingredients. Natural sources of caffeine such as *guaraná*, a Brazilian plant whose seeds are high in caffeine, and *yerba mate*, a South American herb used to make tea, are commonly added. Many drinks also contain ginseng, a herb that can increase energy but may also cause anxiety. Sometimes glucuronolactone is added and this type of carbohydrate is known to affect mood and act as a diuretic. Taurine is often contained, and it is an amino acid (building block of protein) that aids in circulation. Currently there is no research indicating how these ingredients work together or what effect they have on the human body. The combination of these substances could be quite harmful.

It's interesting to note that some energy drinks are banned in Europe because the safety of these energizing ingredients is not known and they are deemed potentially dangerous. *There is a difference between energy and sports drinks.* Kids and parents should not confuse energy drinks with sports drinks, which rehydrate the body. Sports drinks provide sugars, which the body burns to create energy and replenish electrolytes, but do not contain caffeine. [Source: *Calgary Herald* [Canada], 16 April 2008.]



EXPLOITATION DES FEUILLES EN AFRIQUE CENTRALE

Dans la zone d'Afrique centrale, les feuilles issues des forêts sont très consommées. La récolte de ces feuilles est variée, selon qu'elles proviennent d'une liane, d'un arbuste, d'un arbre ou d'une plante herbacée.

Les lianes dont les feuilles sont les plus récoltées dans le bassin du Congo sont *Gnetum africanum* et *G. bucholzianum* (kokou ou eru). Ces feuilles sont récoltées et consommées dans l'ensemble des pays étudiés en dehors de la Guinée équatoriale. Elles font même l'objet d'échanges régionaux et internationaux (marchés importants vers le Nigéria et même l'Europe). Le *Gnetum* se trouve ainsi la proie de la convoitise de nombreux cueilleurs parmi lesquels certains n'ont pour seul souci que la maximisation du profit financier immédiat.

En République du Congo où les collecteurs deviennent de plus en plus nombreux, seules les feuilles sont généralement récoltées sur la liane et cette dernière est rarement coupée. Malheureusement, par ignorance ou nécessité économique «vitale» peut-être, toutes les feuilles sont récoltées dans la mesure du possible. L'activité photosynthétique de la liane complètement

défeuillée se trouve ainsi sérieusement perturbée. A peine de nouvelles feuilles apparaissent-elles qu'elles sont récoltées à nouveau. Cette méthode de récolte bien que moins destructrice que celle pratiquée au Cameroun, a une incidence non négligeable sur la croissance et la capacité de régénération de la plante.

Au Cameroun, très peu de cueilleurs se donnent la peine, comme au Congo, de prélever uniquement les feuilles sur la liane. Celle-ci est préalablement coupée à la base de manière à être sûr de ne laisser aucune feuille. En forêt dense, le *Gnetum* utilise parfois des arbres comme tuteur autour desquels il s'enroule jusqu'à atteindre la cime. Dans pareilles circonstances, la liane est coupée avant d'être déroulée. Au cas où l'opération de déroulage de la liane autour de l'arbre serait ardue voire impossible, le cueilleur abat purement et simplement le tuteur avant de faire la récolte, feuille par feuille. Une autre méthode de récolte encore plus dangereuse pour le potentiel productif usitée au Cameroun consiste à déraciner la liane avant d'en collecter les feuilles, ce qui rend impossible tout rejet de souche. Ces méthodes particulièrement destructrices et utilisées à une large échelle compromettent sérieusement l'avenir des *Gnetum* dans leur milieu naturel.

Les feuilles de plantes herbacées de la famille des marantacées ne sont pas comestibles, mais elles jouent un rôle prépondérant dans l'alimentation. En effet, elles servent d'emballage pour de nombreux mets d'Afrique centrale (à l'instar du bâton de manioc, des gâteaux de pistache, d'arachide, etc.). Les espèces les plus commercialisées et donc les plus exploitées sont: *Megaphrynium macrostachyum* et *Sarcophrynium brachystachys*. Ces dernières poussent dans le sous-bois en forêt et préfèrent généralement les zones humides. L'exploitation de ces plantes est très intensive mais seules les feuilles «adultes» sont récoltées et ces espèces possèdent des capacités exceptionnelles de multiplication végétative. Il n'y a, pour l'heure, aucune raison de s'inquiéter quant à l'avenir de ces espèces dans leur milieu naturel malgré une exploitation qui se déroule toute l'année.

[Source: *Gestion des ressources naturelles fournissant les produits forestiers non ligneux alimentaires en Afrique centrale*. Produits forestiers non ligneux - Document de travail n° 5, FAO, 2007. www.fao.org/forestry/site/40716/en]

FRAGRANCE HOUSE SOURCES SUSTAINABLE INGREDIENTS

Givaudan, the Swiss fragrance house, has entered into ethical sustainability partnerships with Australian and Venezuelan producers as part of a move towards sourcing of sustainable ingredients. It has embarked on its Innovative Naturals programme, which it hopes will secure the supply of natural resources for the fragrances of the future.

The two ingredients involved in the programme to date are sandalwood sourced from the southern part of Western Australia and the tonka bean found in the Caura basin of the Bolivarian Republic of Venezuela.

Australian sandalwood. The first of Givaudan's partnerships is with sandalwood producer Mount Romance. The sandalwood is harvested by the Aboriginal communities in the southern part of Western Australia and Givaudan claims to be the first fragrance house to use the Aboriginal source of the wood.

The company will pay a premium for the supply to be passed to the harvesters; a transaction that will be inspected by the Songman Circle of Wisdom (an independent indigenous certification body). In addition, a fund to finance harvesting equipment has been set up by Givaudan and Mount Romance, bringing benefits to both the company and the harvesting communities.

Venezuelan tonka beans. The second of the agreements is with the criollo peoples of Venezuela's Caura basin in partnership with the non-profit organization Conservation International to ensure the sustainable sourcing of tonka beans (*Dipteryx odorata*). Through the agreement, local communities will receive technical and productivity assistance in exchange for their efforts in forest and wildlife conservation.

Like the sandalwood partnership, the agreement is to benefit both Givaudan by improving the quality and harvesting of the beans, and the local communities that will be supported in the pursuit of sustainable economic activities.

Securing resources for the future.

Givaudan's fragrance division has a portfolio of more than 190 natural raw materials and the Innovative Naturals programme is a way for the company to

enlarge this range. Company chief executive officer Gilles Andrier highlighted the importance of securing sustainable future resources for companies with such a large range of natural ingredients.

(Source: CosmeticsDesign-Europe.com [France], 7 February 2008.)



FUNCTIONS AND USES OF MANGROVES

Mangrove forest ecosystems fulfil a number of important functions and provide a wide range of services at the local and national levels (see Box). Fishers, farmers and other rural populations depend on them as a source of wood (e.g. for timber, poles, posts, fuelwood and charcoal) and NWFPs (food, thatch, especially from nipa palm, fodder, alcohol, sugar, medicines and honey).

Mangroves were also often used for the production of tannin suitable for leather work and for the curing and dyeing of fishing nets. However, this production has declined in recent years, mainly because of the introduction of nylon fishing nets and the use of chrome as the predominant agent for curing leather.

Mangroves support the conservation of biological diversity by providing habitats, spawning grounds, nurseries and nutrients for a number of animals. These include several endangered species and range from reptiles (e.g. crocodiles, iguanas and snakes) and amphibians to mammals (tigers – including the famous *Panthera tigris tigris*, the Royal Bengal tiger, deer, otters, manatees and dolphins) and birds (herons, egrets, pelicans and eagles, to cite just a few). A wide range of commercial and non-commercial fish and

MANGROVE USES – WOOD AND NON-WOOD FOREST PRODUCTS

Fuel	Honey
Fuelwood	Wax
Charcoal	Birds
Construction	Mammals
Timber and scaffolding	Reptiles
Heavy construction	Other fauna
Railway sleepers	Food, drugs and beverages
Mining props	Sugar
Boat-building	Alcohol
Dock pilings	Cooking oil
Beams and poles	Vinegar
Flooring and panelling	Tea substitute
Thatch and matting	Fermented drinks
Fence posts and chipboard	Dessert topping
Fishing	Condiments (bark)
Fishing stakes	Sweetmeats (propagules)
Fishing boats	Vegetables (fruit/leaves)
Wood for smoking fish	Agriculture
Tannin for nets/lines	Fodder
Fish-attracting shelters	Household items
Textiles and leather	Glue
Synthetic fibres (rayon)	Hairdressing oil
Dye for cloth	Tool handles
Tannin for leather preservation	Rice mortars
Other natural products	Toys
Fish	Matchsticks
Crustaceans	Incense
	Other forest products
	Packing boxes
	Wood for smoking sheet rubber
	Medicines
	Paper products
	Paper – various types

shellfish also depends on these coastal forests. The role of mangroves in the marine food chain is crucial. When mangrove forests are destroyed, declines in local fish catches often result. Assessments of the links between mangrove forests and the fishery sector suggested that for every hectare of forest cleared, nearby coastal fisheries lose some 480 kg of fish per year. (Source: FAO, 2007. *The world's mangroves 1980–2005*. FAO Forestry Paper 153. Rome, FAO.)

INTERNATIONAL FELLOWSHIPS AVAILABLE AT THE WORLD FOREST INSTITUTE, UNITED STATES

The World Forest Institute Fellowship Program brings forestry and natural resources professionals from around the world to work at the World Forest Institute (WFI) (in Portland, Oregon) for six to 12 months.

Fellows conduct an independent research project developed in conjunction with their sponsors. Projects may involve gathering information, interviewing, visiting other organizations or planning a conference. Fellows typically summarize their projects in a report and poster published by WFI. In addition, a large component of the programme involves travelling and visiting players in the Pacific Northwest forest sector. Fellows visit forest lands, research sites, manufacturing facilities and NGOs.

Project proposals are now being accepted.

For more information, please contact:
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<http://wfi.worldforestry.org>



livelihood benefits and the alleviation of poverty; ii) NTFPs and services derived from forests; iii) the management of natural and seminatural forests and plantations for enhanced livelihood benefits, including indigenous tree and forest management systems; iv) trees and common pool resources in land use and management systems; and v) policies, institutional issues and implementation of rural development forestry.

A special issue of the journal (Vol. 18[1], 2008) focused on the certification of NTFPs and included articles on:

- certification of wild coffee in Ethiopia: experiences and challenges;
- NTFPs and certification: strange bedfellows;
- experience with NTFP certification: lessons from Brazil;
- certification for local realities: valuing traditional ecological knowledge of NTFPs;
- bridging the gap: Phytotrade Africa's experience of the certification of natural products;
- certification of NTFPs in China: effects on food quality, forest conservation and rural development.

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Journal of Medicinal Plant Research
The monthly *Journal of Medicinal Plant Research* (JMPR) publishes articles in all areas of research in medicinal plants.

JMPR welcomes the submission of manuscripts that meet the general criteria of significance and scientific excellence. All articles are peer-reviewed. The following types of papers are considered for publication: i) original articles in basic and

applied research and ii) critical reviews, surveys, opinions, commentaries and essays. Instructions for authors and other details are available from the JMPR Web site.

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LATEST LAUNDRY SOAPS

Soap nuts aren't exactly new. In fact, the hard, nut-like fruit of the *Sapindus mukorossi* (or soap nut tree) has been used as a natural detergent for hundreds of years – not just in the United States. Now, however, they're becoming an alternative to manufactured soap among green-leaning Americans.

All you do is take a couple of soap nuts, place them in the small cotton sack that comes with the nuts and throw the whole thing in the wash. Soap nuts don't foam, but they seem to clean well enough. (Some online discussions suggested they do best in hot water.) They have a light scent and can be tossed in the composter after they've been used. [Source: *Minneapolis Star Tribune* [United States], 31 December 2007.]



NON-PROFIT ORGANIZATIONS AND NGOS

The Boreal Centre

The Boreal Centre for Conservation Enterprise is a non-profit association concerned with community development in the Peace River region of northern British Columbia, Canada. The Centre's goal is to help improve the livelihoods of the

JOURNALS

Forests, Trees and Livelihoods

Forests, Trees and Livelihoods, originated in 1979 under the title of the *International Tree Crops Journal*, adopted its new name in 2001 in order to reflect its emphasis on the diversity of tree-based systems within the field of rural development. It is a peer-reviewed international journal publishing comments, reviews, case studies, research methodologies and research findings and articles in order to promote discussion, debate and the exchange of information and views in its main subject areas: i) the economic and social importance of trees and forests for people, including their cultural significance, potential for enhanced

marginalized northern, rural and First Nation communities through the promotion of ecologically responsible, financially viable and socially relevant "conservation-based" enterprise.

Since its formation in 2000, the Boreal Centre has been engaged in market opportunities research on NTFPs and has facilitated regional consultations on community development. The Centre's vision is being realized as individuals, families and communities discover new, environmentally sustainable business opportunities.

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Reforestation Scotland

Reforestation Scotland is a Scottish charity that works to promote and support people's benefits from forests and facilitates networking of those active in the ecological and social regeneration of Scotland.

Reforestation Scotland promotes NTFPs as an alternative use of forestry and has held seminars on various aspects of NTFP production and marketing. In addition, it maintains the ForestHarvest Web site, Scotland's only Web site dedicated to providing information about the diversity of products available from Scottish woodlands. One of the purposes of the site is to help develop the untapped market potential of these products. It includes information on gathering, management and trading of NTFPs, including a database of buyers and case studies of operating businesses.

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Tourism Cares for Tomorrow

Tourism Cares for Tomorrow – the tourism industry's non-profit organization – exists to preserve, conserve and promote the responsible use of the world's natural, cultural and historic treasures, and to support education and research to help

secure the positive future of travel and tourism worldwide.

As part of its mission, Tourism Cares for Tomorrow distributes charitable grants to worthy tourism-related non-profit organizations worldwide. It considers projects or programmes with either or both of the following goals: i) projects that protect, restore or conserve sites of exceptional cultural, historic or natural significance; and ii) programmes that educate local host communities and the travelling public about the conservation and preservation of sites.

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PLANTS TO RAISE BIOLOGICAL ACTIVITY IN SPACE

Tomorrow, the Russian carrier vehicle Progress M63 will deliver a box with cells of two plants – red-rooted gromwell (*Lithospermum erythrorhizon*) and ginseng (*Panax ginseng*) – to the orbit. The new scientific experiment is aimed at studying the peculiar features of the development of plant cell cultures under zero gravity conditions for a potential rise in their biological activity.

The box will stay on board the international space station until the middle of April under natural radiation conditions, charged particle flows and magnetic fields. Cell cultures are usually time restricted – culture lawn dries out in 60 days. However, this experiment provides an airtight container, allowing longer life of both cell and bacterial cultures.

The plants chosen for the experiment are special. Ginseng biomass is a perfect

material for making various medical agents, as well as for cosmetology and the food industry. Ginseng is a source of biologically active substances called ginsenosides, evidencing various therapeutic effects. Red-rooted gromwell contains the valuable, biologically active substance shikonin, possessing bactericide and fungicide properties, as well as having a burn-treating effect. [Source: Russia-InfoCenter [Russian Federation], 4 February 2008.]

PLUGGING NTFPS IN THE CONGO BASIN

The potential of NTFPs to reduce poverty continues to divide opinion. Recently the Rainforest Foundation, a United Kingdom-based charity campaigning for the protection of rain forests and the livelihoods of indigenous people who depend on them, added fuel to the debate by publishing a survey of over 30 years of research from the Congo Basin (*The use of non-timber forest products in the Congo Basin: constraints and opportunities*, by Alison L. Hoare).

The survey concluded that, while NTFPs themselves are rarely the answer to poverty alleviation, their importance nevertheless merits a fundamental shift in forest management policy. Up to now, policy-makers in the six countries surveyed (Cameroon, Democratic Republic of the Congo, Equatorial Guinea, Gabon, the Republic of the Congo and the Central African Republic) have prioritized timber over all other forest products. However, according to the report, NTFPs provide important nutritional, financial and cultural benefits to forest communities that are often threatened by timber extraction. **Food, money and medicine.** Sources of income from the forest vary across the basin, but bushmeat and fish are often the most important. In some villages in southern Cameroon, sales of bushmeat accounted for 51 percent of annual incomes, compared with 32 percent from agricultural sales. In the Central African Republic, hunters can earn between US\$400 and US\$700 per year, more than the official minimum wage. Trade in forest insects is also big business; every year an estimated 9 600 tonnes of edible caterpillars are sold in the Democratic Republic of the Congo capital, Kinshasa, alone.

Bushmeat, fish and insects also provide between 30 and 80 percent of the protein needs of forest populations in the countries surveyed. Other major sources of income from NTFPs include rattan cane, charcoal, mushrooms, palm wine, edible vines, kola nuts and various fruits.

Forest products form the basis of healthcare in the region. The high cost of pharmaceutical medicines and the limited numbers of university-trained doctors have led to an increase in the use of traditional medicines. In the southern province of Cameroon, around 300 species of NTFPs are used medicinally and, in some parts of the Congo Basin, over 90 percent of the population relies on plant-based remedies.

Felling the arguments for timber. Although forests can prove bountiful, many NTFPs are under threat. *Gnetum* vines, for example, provide nutritious leaves much in demand in urban markets, but deforestation is removing the trees that support the vines. *Nudaurelia oyemensis* – a widely consumed caterpillar species – is threatened by the loss of its preferred host plant, the sapelli tree, which is highly valued for its timber. Rattan canes are frequently overharvested because of their perceived status as a free or "open access" resource. Finally, strong urban demand for bushmeat has had a severe impact on animal numbers, exacerbated by increasing human populations and diminishing forest areas.

The need to protect the long-term supply of these products has been recognized by the World Agroforestry Centre (ICRAF), among others, which has projects for the domestication of some fruit species, such as safou (*Dacryodes edulis*) and bush mango (*Irvingia gabonensis*). There are also trials to incorporate rattan in agroforestry and the Center for International Forestry Research (CIFOR) has supported cultivation of *gnetum* vines.

Towards sustainable forest management. Domestication – including genetic improvement – and cultivation of species outside the forests themselves are often seen as the only way to ensure a continued supply of many products. While acknowledging this, the Rainforest Foundation is concerned that cultivation may reduce the incentive for forest preservation, and may not stop overharvesting, since people will continue to be attracted by a free resource. In addition, the Foundation points out that many forest products are collected by women and the elderly or by vulnerable groups such as Pygmies. If forest plants and

insects are farmed rather than gathered, the benefits they currently offer to these groups may be lost.

Cultivation should therefore be combined with sustainable resource management *in situ*, says the Foundation report. Beyond this, it recommends a comprehensive set of policies aimed at supporting the NTFP sector; promoting policies are needed to establish harvesting levels for threatened species and to allocate harvesting licences. Further policies would be required to develop certification schemes for NTFPs and to clarify land tenure and resource rights of forest communities. Such policies would offer a more holistic approach to the region's forests than the current focus on timber, reflecting nutritional, financial, environmental and cultural values. Revised management plans for the region would be likely to include extraction of NTFPs, beekeeping, cultivation of medicinal plants, agroforestry, insect rearing and bioprospecting. [Source: New Agriculturist Web site: www.new-ag.info/index.php]



STYLISHLY SUSTAINABLE JEWELLERY

Sustainable jewellery label, LeJu's collections are exploding with colour. Muted lilac, citrus lime, dark red and deep aquamarine are contrasted with the natural earth-toned colours of the vegetable ivory and other tropical seeds making up the range of stylish, vibrant jewellery. LeJu combines the best in contemporary design with naturally sustainable, plant-based materials resulting in a unique, ecofriendly jewellery that is already gaining momentum with the fashion crowd.

LeJu specializes in the use of a special seed known as vegetable ivory. The seed is harvested from palm tree species (*Hyphaene* sp. and *Phytelephas* sp.), found in the Amazonian rain forest. Vegetable

ivory resembles elephant ivory in both colour and hardness and is the only 100 percent sustainable alternative. *Tagua* is another name for the seed or nut and the rich colours are created by staining and dyeing it with natural plant extracts and oils. The use of vegetable ivory provides an alternative to cutting down rain forests for farming and prevents elephants from being killed for their tusks. [Source: Easier Lifestyle (press release) [United Kingdom], 21 February 2008.]

TANNING: NEED TO EXPLORE NICHE MARKETS FOR EAST INDIAN LEATHER

Chennai. Changing fashion trends and environmental awareness of consumers in developed countries have created niche markets for ecofriendly products such as vegetable-tanned East Indian (EI) leather. This leather, produced in the small and cottage sectors, could be developed into a branded product with geographic indication, tanners say.

According to the secretary of the Tanners Association of Trichy, V.R.S.M. Mohideen, joint ventures for production and buy-back arrangements for fashion and designer products from ecofriendly and vegetable-tanned leather could be identified to boost India's leather and leather products exports. "It is also in tune with the international fashion trend, which is switching over to fully vegetable-tanned and environmentally friendly leathers," he said.

The unique technology and craftsmanship required to make vegetable-tanned EI leather (East India leather, denoting its colonial legacy) is vested in the small-scale tanners and craft workers in the Trichy and Dindugal areas of Tamil Nadu. EI leather is at present being considered for registration as a "Geographic indication" product. "India is the only source available to the world for EI leather supply," Mohideen told the *The Financial Express*.

EI leather dominated Indian leather exports until 1970. After the introduction of chrome-processed finished leather and the focus on exports of value-added consumer products, it was driven into the background. It currently accounts for less than 5 percent of finished leather exports. The EI tanners, now facing an uncertain future because of fiscal and policy constraints, believe that world fashion-makers will create new value-added

products using EI leather. However, poor patronage by the Indian mainstream leather industry, a 15 percent duty on exports, the high costs of environment protection and pollution control technologies, and import duty on essential ingredients such as wattle extracts, have led to the closure of a large number of EI leather tanneries, Mohideen said.

Removal of export duty, liberal imports of essential ingredients for tanning and government policy support for the promotion of EI leather for world markets would give a new lease of life to this traditional rural-based industry. [Source: *The Financial Express* [India], 14 January 2008.]

TREE RESIN: INSULATION RETROFITTERS PUSH "GREEN" ALTERNATIVE

FoamXperts, a Fishers-based business, is trying to introduce what it says is a more energy-efficient and earth-friendly product: tripolymer foam insulation. According to the company's vice president, the product is water-based, with a high resin content derived from tree sap. It is also mould- and fire-resistant, he said, and provides a higher level of insulating properties because it expands before hardening to conform to the shape of any space. And, perhaps more important, it is non-toxic. [Source: *Indianapolis Star* [United States], 14 January 2008.]

VALUING TREES AND FORESTS

Revenues from forests of the Congo Basin
The humid dense forests of the Congo Basin are of great economic importance to the six countries (Cameroon, Central African Republic, the Republic of the Congo, Democratic Republic of the Congo, Equatorial Guinea and Gabon) of the region; for example, contributing up to 18 percent to the gross domestic product (GDP) of the Central African Republic and 20 percent to the foreign exchange earnings of Cameroon.

However, such revenues are calculated from timber harvesting, while the value of NWFPs is generally not accounted for in national statistics. [Source: J.C. Tieguhong and O. Ndoye. 2007. *The impact of timber harvesting on the availability of non-wood forest products in the Congo Basin*. Forest Harvesting Case Study 23. Rome, FAO.

ISBN 1014-9945. Available at:
www.fao.org/docrep/010/a1105e/a1105e00.htm/

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Adding value to forest resources

Interest in NTFPs has grown with the increasing awareness of tropical forest deforestation and recognition of the need to add value to forest resources. Holistic management of NTFPs would maintain and sustain the resource, contribute to sustainable development, conserve forests and biodiversity and promote non-traditional enterprises to improve local economies and diversify the economic base of the rural poor. [Source: *Asia – a rich source of NTFPs*. *Maskayu*, 10, 2007.]

Putting a value on rain forests

Biodiversity doesn't sell! At least that was the frustrated cry of at least one delegate in New York last week at a conference of corporations, NGOs and financiers to explore innovations in biodiversity and business.

At present, natural capital remains largely off the balance sheet of all but the most innovative companies. But this may be about to change with the announcement of a ground-breaking deal by a group of London-based investors in the United Kingdom who aim to change the way the economy values the environment, by investing in rain forests as a global life-support system and to fight climate change.

The deal, announced by Canopy Capital at the world's first Biodiversity and Ecosystem Finance Conference, involves guaranteed payments over five years to the Iwokrama International Centre in Guyana in return for rights to the ecosystem services produced by a rain forest reserve two and a half times the size of London, which the Centre manages on behalf of the Commonwealth.

The funds will be used to provide livelihoods for the 7 000 indigenous people dependent on the reserve and to help support conservation of the rain forest.

Canopy Capital aims to repackage the rights into novel financial instruments such as forest-backed bonds that will acquire value over time for investors. Profits will be shared with up to 80 percent of any upside going to the Iwokrama community.

London law firm Stevenson Harwood drew up the pioneering deal, defining the "ecosystem services" of the reserve as the proven ability of rain forests to generate rainfall, cool the atmosphere, store carbon, moderate weather conditions and sustain biodiversity.

If it works, the project could create a new paradigm for maintaining life on earth by paying for it – and not just for bugs – but for all of us. [Source: Andrew Mitchell, *Telegraph.co.uk* [United Kingdom], 31 March 2008,]

How is a tree valued?

A plane tree in central London has been valued at £750 000 under a new system that puts a "price" on trees. How?

A six-foot-wide (1.8 m) plane in Berkeley Square, Mayfair, is thought to be the United Kingdom's most valuable tree. Large, mature, city trees like this one are being blamed – sometimes wrongly and often fatally – for damage to neighbouring properties. But it is hoped that a new valuation system will make it harder for "expensive" trees to be felled because of doubtful suspicions that they are to blame for subsidence.

So how are trees priced? Size is the biggest factor, followed by population density of the surrounding area (how many people enjoy the tree); the size of the canopy; its life expectancy; its impact (does it flower or drop annoying honeydew); and any special features, such as the fact that Queen Victoria planted it. The system has been on trial in London and is gradually being adopted by local authorities elsewhere in the United Kingdom, such as in Bristol. [Source: BBC News [United Kingdom], 23 April 2008.] ♣



The foundation of justice is good faith.
Marcus T. Cicero

BAMBOO

Dell develops an ecological bamboo computer

Bamboo this, bamboo that, what's up with the bamboo buzz?

The bamboo plant is strong, renewable and inexpensive. There are nearly 1 000 different species of bamboo and it can be grown in almost any moderate climate. Bamboo can grow 20 m in under 60 days. However, extremely fast growth is not bamboo's only environmentally friendly virtue. Bamboo also helps repair the devastating effects of deforestation and mining to soil and communities. It actually removes toxins from the soil, prevents erosion and provides jobs and food for many people.

Bamboo thrives in a diverse landscape up to 12 000 feet (3 657.6 m) and releases 35 percent more oxygen than an equivalent stand of trees. It is the strongest plant known to humans.

Bamboo is also extremely versatile. It has thousands of uses, from paper to clothing, fences, construction, chopsticks, flooring, musical instruments – the list is endless.

Furthermore, when manufacturing solid hardwood flooring from plantation timber, only 20–25 percent is used. Bamboo flooring, on the other hand, uses over 90 percent of the bamboo plant with no wastage.

Its strength-to-weight ratio is better than graphite. The United States Navy even used bamboo to reinforce concrete in the Second World War.

In conclusion, the buzz about bamboo is quite legitimate. (Source: ENN News, 1 April 2008.)

Dell develops an ecological bamboo computer

Dell has designed a beautifully sleek, energy-efficient desktop computer. This bamboo beauty will improve the look of any office and improve your envirogeek cred at the same time. The bamboo desktop is 81 percent smaller than other desktops and uses 70 percent less power. The internal specs are not known at this time so it is unclear what chips are incorporated or what other technology has gone into creating this small energy-efficient computer.

One thing is clear, this computer reflects Dell's "green" commitment. Harvesting bamboo for use as computer cases (as well as floors, panelling, clothing, furniture and so on) will not deplete bamboo in the same

way that harvesting trees will, since it grows back within weeks rather than the years needed for other trees. (Source: TECH.BLORGE.com [Australia], 30 April 2008.)

Bamboo speakers

Panasonic has showcased a number of its environmentally friendly products at the First World Future Energy Summit (WFES) in Abu Dhabi this week. The consumer electronics manufacturer presented its new range of speakers that use bamboo fibres in the speaker cones. Bamboo not only gives a better sound quality than traditional speaker cone materials, but it is also much more durable, extending the life of the speaker. (Source: ArabianBusiness.com [United Arab Emirates], 22 January 2008.)

Bamboo "silk" protects against ultraviolet rays and bugs

Fibres formed from pulped bamboo can be woven into strong, silky fabrics that wick away sweat. Now they have been made to absorb harmful ultraviolet (UV) rays and kill bacteria as well.

Bamboo, which is the fastest-growing plant and requires no pesticides, is touted as an environmentally friendly material. However, while its natural ability to kill bacteria has been hyped, Subhash Appidi and Ajoy Sarkar at Colorado State University, United States, found that some finished bamboo fabric does not have this ability and could cause unpleasant odours. The fabric they tested also let in UV light.

The pair added UV-absorbing molecules to a commercially available bactericide. Bamboo fabric dipped in the mixture killed 80 percent of bacteria and blocked UV rays.

The results were reported at the 235th National Meeting of the American Chemical Society. (Source: *New Scientist* [United Kingdom], 15 April 2008.)

Greener gear for skiers and boarders

Bamboo appears to be the natural material of choice for the manufacturer of both snowboards and skiwear.

Salomon snowboards have launched a brand-new freestyle ecoboard called the Sick Stick. It is made entirely from bamboo, with the edges of the snowboard constructed from rubber and bamboo, and the layers that make up the base of the board made of bamboo light glass. The structure of the board offers super-easy transition to switch even in deep powder.

Thaw, a brand that designs thermal base

layers to suit all outdoor pursuits, is launching a new line of bamboo thermal underwear to move towards more ecofriendly material that still fits the technical criteria of the brand.

Bamboo thermal underwear wicks moisture away from your skin – keeping you naturally drier and comfortable in all temperatures. Worn as a base layer it traps warm air next to the skin but is highly breathable in hot weather. It is also naturally antibacterial – staying fresher and odour-free for longer.

Most important, bamboo is just as good as or even better than any of the other alternatives but it is also extremely good for the environment. (Source: *Ski Rebel Magazine* [Ontario, Canada], 30 January 2008.)



BERRIES

Açai berries make jump from food into skin care

They've already created a big buzz in the food world over their rich antioxidant properties, now a United States aesthetician is launching a skin-care treatment featuring açai berries from the palm *Euterpe oleracea*.

Karen's Specialty Skincare is now launching a skin-care line featuring the much-heralded superfood. Company founder Karen Dunlap said she was able to "connect the dots" between science and nature, allowing her to develop the Açai Berry Anti-Aging Facial at her skin-care clinic in California, United States. She claims that thanks to the antioxidant-rich properties of the açai berry extract incorporated into the formulation, the product is able to combat premature ageing, as well as nourishing the skin and improving the tone.

Otherwise known as the Amazonian palm berry, açai was shown to top the

antioxidant rankings in a study conducted in 2006 by AIBMR Life Sciences that showed it had the highest ORAC (oxygen radical absorbance capacity) antioxidant value of any food.

Açaí also taps into the major trend towards cosmetic products incorporating food ingredients into formulations as a means of providing naturally derived active properties.

Dunlap says that as well as being enriched with antioxidants, the inclusion of *açaí* berry in the skin treatment also means that it contains phytonutrients, vitamins and minerals to help promote skin cell health.

The berry extract is also enriched with flavonoids, which fight inflammation, together with essential amino and fatty acids to help regenerate skin cell growth, and phytosterols to preserve collagen. [Source: CosmeticsDesign.com [France], 5 February 2008.]

Indian berries may fight dengue mosquitoes

Hong Kong SAR. Berries of a common weed found in India may be effective in fighting mosquitoes that spread dengue fever, a study has found. Synthetic insecticides are increasingly useless in fighting disease-spreading mosquitoes, such as *Stegomyia aegypti* that can spread dengue and yellow fever viruses.

In the online open access journal *BMC Complementary and Alternative Medicine*, scientists in India described how they used juice and extracts from the *Solanum villosum* weed and found it was particularly effective in eliminating *S. aegypti* larvae. "The extract ... from the plant could be used in stagnant waterbodies that are known to be the breeding grounds for mosquitoes," the scientists from the University of Burdwan in West Bengal stated.

They went on to discover that the juices contained certain chemical compounds that act as a repellent protecting against the lethal effects of the larval mosquitoes. [Source: Reuters India, 3 April 2008.]

Studies show goji berries are among the most nutritious foods on the planet

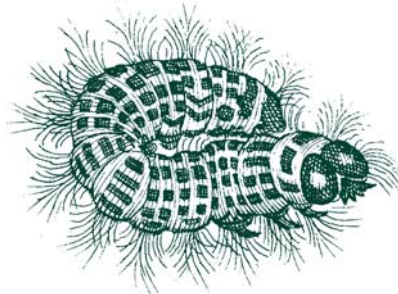
People in the valleys of the autonomous region of Tibet and Mongolia cherish the *goji* berry (also known as the wolfberry, *Lycium barbarum*). In fact, they honour it in celebrations that last two weeks each year. It is believed this berry is what gives them their disease-free lives, which often last for

more than 100 years. People in the Ninxia region of northern China have 16 times more centenarians than people in the rest of the country.

Researchers began studying *goji* berries expecting to find similar results as other fruits. However, vitamin, mineral and nutrient analysis revealed that the berry is one of the most nutritionally rich foods on the planet.

In 1988, the Beijing Nutrition Research Institute conducted detailed chemical analysis and nutritional composition studies of the *goji* berry. They discovered that it is packed with an incredible range of vitamins, minerals, protein, amino acids, essential fats and health-enhancing phytonutrients.

Research has shown that the *goji* berry is loaded with age-defying, disease-preventing antioxidants. Its ORAC value (the value a food is given for its protective potency) is far higher than blueberries, pomegranates, oranges or raspberries, all of which are powerful antioxidants themselves. [Source: Natural News.com [Arizona, United States], 2 April 2008.]



 EDIBLE INSECTS

Beastly bugs or edible delicacies

Chiang Mai. With over 1 400 insect species eaten by humans worldwide, the insect world offers promising possibilities both commercially and nutritionally, FAO said today. A workshop organized by FAO in February 2008 discussed the potential for developing insects in the Asia-Pacific region.

While the idea of eating insects may seem unusual or even unappetizing to some, human consumption of insects is actually very common in most parts of the world. At least 527 different insects are eaten across 36 countries in Africa, and they are also eaten in 29 countries in Asia and 23 in the Americas.

Source of protein, vitamins and minerals

Of the hundreds of insect species reportedly eaten as human food, the most common come from four main insect groups: beetles; ants, bees and wasps; grasshoppers and crickets; and moths and butterflies. As a food source, insects are highly nutritious. Some insects have as much protein as meat and fish. In dried form, insects often have twice the protein of fresh raw meat and fish, but usually not more than dried or grilled meat and fish. Some insects, especially in the larval stage, are also rich in fat and contain important vitamins and minerals.

Most edible insects are harvested from natural forests. Yet, while insects account for the greatest amount of biodiversity in forests, they are the least studied of all fauna. "Little is known about the life cycles, population dynamics, commercial and management potential of most edible forest insects," said Patrick Durst, Senior FAO Forestry Officer. "Among forest managers, there is very little knowledge or appreciation of the potential for managing and harvesting insects sustainably," noted Durst. "On the other hand, traditional forest dwellers and forest-dependent people often possess remarkable knowledge of the insects and their management."

In some areas, insects are only occasionally eaten as "emergency food" to stave off starvation. But in most regions where insects are consumed for food, they are a regular part of the diet and are often considered delicacies. In Thailand, nearly 200 different insect species are eaten, many of which are highly sought after as snacks and treats. Vendors selling insects are a common sight throughout the country, and in the capital, Bangkok.

Traditionally, humans have benefited from insects largely for the production of honey, wax and silk, as a source of dye, and in some cultures as food and medicine.

Wherever forest insects have been part of the human diet, the insects are usually collected from the wild, with most collectors focusing on larvae and pupae – the insect forms most commonly eaten. Simple processing and cooking are the norm and only minimal forest management is needed to exploit the resource.

A few insects such as silkworms and bees were domesticated centuries ago, but it is only recently that interest has grown in rearing other insect species for food. It is now common to find farmers in northern Thailand, for example, raising bamboo worms or crickets for sale to local buyers.

Commercial potential

Aside from their nutritional value, many experts see considerable potential for edible insects to provide income and jobs for rural people who capture, rear, process, transport and market the insects. These prospects can be enhanced through the promotion and adoption of modern food technology standards for food insects that are sold live, dried, smoked, roasted or in some other form. Care must, however, be taken to ensure that the insects are hygienically safe for human consumption and do not contain excessive amounts of chemical residues such as insecticides.

"Opportunities also exist for improved packaging and marketing to make edible insects more enticing to traditional buyers and to expand the market to new consumers, especially in urban areas," according to Durst. (Source: FAO Newsroom, 19 February 2008.)

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Recipes for southern Africa's edible insects

Most rural people in southern Africa utilize edible insects as a household nutritional supplement as well as for income generation. Insects supplement the human diet with protein, energy, minerals, carbohydrates and various vitamins (see Table). Some individuals (mostly women) sell these insects at local urban markets for household income. The insects are eaten raw, roasted or dried by rural inhabitants in southern Africa. Factors such as an abundance of insects in a particular area, ethnic group and religious beliefs, determine the adoption of a particular insect.

The cooking and eating of these insects are part of the tradition and culture of southern Africa. However, as the population becomes more modernized, consumption is being drastically reduced. As a result, people are ashamed of eating the insects, and those who cannot afford other nutritional food supplements become more vulnerable to malnutrition.

The recognition of the role of edible insects in household nutrition is essential and people should be educated on how to harvest and cook them.

Nutritional value of some of the insects consumed in Limpopo province, South Africa (based on a 100 g serving)

Species	Protein (%)	Energy Kcal/100 g	Minerals (g/100 g)	Carbohydrates (g/100 g)	Fats (%)
Stink bugs (<i>Encosternum delegorguei</i>)	35.2	2 599	1.2	7.63	50.5
Termites (<i>Macrotermes falciger</i>)	41.8	7 611	0.75	No data	44.3
Mopane worms (<i>Imbrasia belina</i>)	63.5 45-65	543 No data	3.5 No data	11.4 No data	18 51
Grasshoppers/locusts	77.2 46.1	363 No data	2.1 No data	12.4 No data	12 9.6

RECIPES FOR COOKING SOME EDIBLE INSECTS

Mashonzha mopane worms

Mopane worms are available from April to May and from December to January.

1. After harvesting the mopane worms, squeeze out the gut content, starting from the head.
2. Wash the worms in cold water and then boil them for about 15 minutes in a pot.
3. Add salt to taste.
4. Allow the worms to cool down and then put them in the sun for a few days until they are completely dry.
5. Dried mopane worms can be eaten as snacks, with or without porridge, and/or cooked again.
6. The steps for cooking mopane worms are given below.
 - Soak one cup of mopane worms in hot water for about 30 minutes.
 - Rinse the worms in cold water.
 - Put them in a pot with 1/2 fried onion, 2 tomatoes, curry and green pepper.
 - Add 1/2 cup of water and 1/2 teaspoon of salt and mix.
 - Allow to boil for about 20 minutes.
 - This serves about five people, with porridge.

Thongolifha stink bugs

Stink bugs are collected at dawn when they are still inactive.

1. After harvesting the bugs, put them in hot water to kill them.
2. Separate them from leaves and other debris.

3. Squeeze the bugs and then wash them in cold water to clean the defensive secretion.

4. Boil the bugs and then sun dry them.
5. Put two cups of dried bugs in a pot.
6. Add 1/2 cup of water and 1/2 teaspoon of salt and mix.
7. When the water is dry, add fish oil and fry the bugs.
8. This serves about four people, with porridge.

Nzie locusts

Locusts are harvested when they are inactive, especially in cold weather; a tree branch is used to hunt for them.

1. Once a locust is caught, remove the wings and hind legs.
2. Wash the locusts in cold water and put them in a pot.
3. Add 1/2 cup of water and 1/2 teaspoon of salt and mix.
4. Fry the locusts in fish oil until they are brownish in colour.
5. Serve with porridge.

Madzhulu termites

Termites are trapped by inserting a reed into their hole; once they bite the reed (as a defence mechanism), they will be trapped in the reed.

1. First put the trapped termites in a bucket or container.
2. Separate the termites from debris.
3. Put them in a pot, add water and salt and fry them.
4. Sun dry them for several days until they are completely dry.
5. Eat as snacks with porridge.

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Insectes en République Démocratique du Congo

Les insectes jouent un rôle important dans les régimes alimentaires des peuples du monde entier. Dans les régions tropicales et subtropicales, en particulier, ils représentent une source de nourriture acceptable, principalement intéressante pour les populations rurales vivant en autosubsistance, dans la mesure où ils peuvent être trouvés en abondance et faciles à récolter. Etant riches tant en protéines qu'en lipides, ils améliorent sensiblement la qualité du régime alimentaire. Ils constituent en outre une source de revenus pour la majorité de ramasseurs.

Parmi les insectes les plus recherchés figurent:

- **les chenilles** sont très prisées aussi bien par les populations rurales que par les populations urbaines. Les espèces les plus consommées appartiennent à diverses familles, notamment: *Attacidae*, *Notodontidae*, etc. Elles se nourrissent des feuilles de différentes espèces forestières telles que *Bridelia ferruginea*, *B. micrantha*, *Erythrophleum suaveolens*, *Entandrophragma* spp., *Petersianthus macrocarpus*, *Triplochyton scleroxylone* et *Trema orientalis*. On les récolte pendant la petite saison sèche durant les mois de juillet et août et parfois septembre;
- **les larves d'Oryctes sp. et de Rhynchophorus phoenicis** qui se développent dans les troncs d'*Elaeis guineensis* et de *Raphia* sp. en décomposition. Elles constituent une friandise appréciée surtout par les populations forestières de l'Equateur, urbaines et rurales. On les récolte toute l'année;
- **les criquets**, qui apparaissent surtout en début des saisons sèches, sont consommés tant par les populations locales qu'urbaines. Les espèces faisant l'objet d'une récolte assidue pendant la période favorable sont *Ruspolia differens* (la sauterelle verte) et *Brachytripes membranaceus* (grillon);
- **les termites** dont la récolte est effectuée à l'occasion des vols d'essaimage, principalement lors du retour des pluies. Les termites de la famille des *Macrotermitidae* sont les plus convoités, principalement l'espèce *Macrotermes falciger*.

- **les crevettes (*Caridina africana*) et les crabes (*Potamonautes bayonianus*)** sont récoltés dans les rivières et ruisseaux du sous-bois des forêts hydromorphes, surtout pendant les saisons sèches. Ils sont très appréciés par les populations des zones forestières.

Dans les villes visitées, principalement à Kinshasa, Mbandaka et Kisangani, les chenilles sont vendues chez les grossistes par sac de 40 kg et, chez les détaillants, par des mesures communément appelées «sakombi» (100 sakombi = 1 sac) et «ekolo» (1 ekolo = 3 sakombi), ou parfois par tas. Le prix suivant la loi de l'offre et de la demande présente des écarts énormes entre les lieux de production et ceux de consommateurs urbains. Il est par exemple de 35 dollars le sac à Monkoto (non loin de Mbandaka dans la province de l'Equateur), de 50 dollars à Mbandaka, de 120 dollars à Kisangani et de 140 dollars à Kinshasa. Associant le coût de transport par bateau (5\$) et les taxes estimées à environ 3,5 dollars, on observe que la marge bénéficiaire du produit à Kinshasa est de 276 pour cent.

Source: *Analyse de l'état des lieux du secteur des produits forestiers non ligneux et évaluation de leur contribution à la sécurité alimentaire en République démocratique du Congo*. Décembre 2007. Documents du projet «Renforcement de la sécurité alimentaire en Afrique centrale à travers la gestion et l'utilisation durable des produits forestiers non ligneux (PFLN)» (GCP/RAF/398/GER) www.fao.org/forestry/site/43715/en



Major ginseng research programme

Avignon. Naturex announces today its participation in the project "New Technologies for Ginseng Agriculture and Product Development", an innovative programme oriented towards validating several health claims on North American ginseng. Research will focus on various

medical and health areas, including metabolic syndrome, stress, physical endurance, cardiovascular diseases, immunomodulation, reproductive health, and neuroprotective and psychiatric disorders.

Ginseng is one of the most widely used medicinal herbs in the world. The two best-selling species are North American ginseng (*Panax quinquefolius*) and Asian ginseng (*Panax ginseng*).

The research project is headed by Dr Edmund Lui from the Schulich School of Medicine and Dentistry, University of Western Ontario, Canada. Dr Lui explained: "This is the most extensive project on ginseng ever planned; it involves six of Ontario's universities and key participants from the industry like Naturex, the largest botanical extracts manufacturer in North America. The ultimate objectives of this project are health claims validation and to establish an 'umbrella branding' for the Ontario ginseng." The scientific team involved in this project consists of researchers with diverse backgrounds including agriculture, life sciences, biochemistry, social sciences, economics and marketing.

On 29 January, the Ontario Minister of Research and Innovation announced that his Government will grant Can\$6.9 million to the Ontario Research Fund as a contribution to this five-year project. (Source: Edubourse.com (Communiqués de presse) [France], 26 February 2008.)

Wild ginseng in Bhutan becomes endangered

Ginseng has been used in traditional Bhutanese medicine and in many Asian cultures as a nourishing stimulant to increase mental and physical efficiency, lowering blood sugar and cholesterol levels, and also to address sexual dysfunction in men. Tried and tested products of ginseng, a slow-growing perennial plant, are today sold the world over in health stores, and their unique properties substantially benefit growers.

In Bhutan, wild ginseng (*Panax pseudo-ginseng* subsp. *H. Hara*) grows sparsely in specific locations at elevations ranging from 2 300 to 3 000 m above sea level.

However, the wild plant has become highly endangered because of growing illegal collection, according to researchers with the Renewable Natural Resources Research Centre in Jakar, Bumthang. "A small area in Dochola, once filled with the plant, has none left today because of indiscriminate collections and destruction of its natural

habitat," said the centre's principal researcher, Dorji Wangchuk. He added that ginseng plants in the forest were scattered and thinly populated, with ages between one and four years. "The oldest plant found was of six years, indicating its life span in Bhutan's forests."

The researcher said that it had become imperative to try and domesticate the species and introduce commercial varieties for export to protect the plant in the forest and also to provide a lucrative option for farmers.

As a personal initiative, Dorji Wangchuk has already begun trials to cultivate the plant in his garden at Kuje. The trials started in November 2004 with nodular rhizomes collected from Pelela, which were planted in a mixed humus and sandy soil under artificial shade. The plant in the mixed humus showed healthy growth. Dorji Wangchuk said that American ginseng (*Panax quinquefolium* L.) had been tried with a few seeds in 1984, but the plants withered from too much sunshine, as he then had no knowledge regarding ginseng cultivation.

Dorji Wangchuk learned a little more about ginseng cultivation after a 16-day trip to Shimane, Japan, in 1986. However, importing ginseng seeds had been a major problem, although the plant was commercially cultivated in the Republic of Korea, Japan, China and the United States of America. The researcher said that the ginseng plant needs shade and a lot of leaf mulch and manure and that the age of the plant can be read by the number of stems.

Ginseng is commercially grown from seeds and seedlings but its propagation from rhizomes is not known. The trials will show whether propagation is possible from nodular rhizomes, said the researcher.

It is usually the dried roots of the plant that are consumed for their properties. Recent studies have shown that some ginseng contains the biologically active saponin. [Source: *Kuense* [Bhutan], 14 February 2008.]

Ginseng aids vaccination response in horses

Ginseng, revered as a human tonic for centuries, has been found to have beneficial properties for horses. Work undertaken at the Equine Research Centre at the University of Guelph in Canada has shown that low doses of ginseng in the lead-up to an inoculation improve a horse's antibody response when it receives a vaccination for equine herpesvirus 1 (EHV-1). American ginseng (*Panax quinquefolium*) made the vaccination more effective.

[Source: *Horsetalk* [Canterbury, New Zealand], 1 January 2008.]

Ginseng helps cancer patients reduce fatigue, increase energy

American ginseng may reduce fatigue and increase overall psychological well-being in cancer patients, according to a study conducted by researchers at the Mayo Clinic in Rochester, New York, and presented at the annual meeting of the American Society of Clinical Oncology.

Researchers treated 282 cancer patients with a daily dose of either a placebo or of 750, 1 000 or 2 000 mg of Wisconsin ginseng. They found that treatment with the placebo or the 750-mg dose caused very little improvement in measures of fatigue or physical or psychological well-being. Treatment with the higher doses, however, led to an improvement in overall energy and vitality levels, a decrease in fatigue and an improvement in overall emotional, mental, physical and spiritual well-being. Extreme fatigue is a common symptom among cancer patients, one that often cannot be remedied by increased rest or sleep.

Ginseng has a long history of use in Asian and indigenous American cultures. In modern times, it is most often used to increase energy levels and stamina and to reduce stress or fatigue. It can also reportedly help in the treatment of diabetes and can reduce obesity risk.

All of these purported benefits have led ginseng to become the second best-selling herbal supplement in the United States, at US\$62 million annually. It has even been incorporated into mainstream energy drinks, albeit usually in subclinical doses.

Lead researcher Debra Barton of the North Central Cancer Treatment Group, shied away from advising cancer patients to take ginseng supplements. The researchers hope to begin clinical trials by 2008 to find safe ways to incorporate ginseng into cancer treatment. [Source: *Natural News.com* [Arizona, United States], 23 April 2008.]

GUM ARABIC

Pectin replaces gum arabic for better beverage stability

Replacing gum Arabic with low levels of pectin can lead to more stable orange beverage emulsions, suggests new research from Malaysia. The study, published in the journal *Carbohydrate Polymers*, Vol. 73(1),

taps into the growing research trend in beverages for producing emulsions with less or no gum Arabic, a gum historically subject to some supply variations.

"The present study demonstrated that the substitution of 20 percent Arabic gum with high pectin concentration (3–4 percent weight for weight) resulted in a better storage stability, thus ensuring the adequacy of pectin as a potential replacer for Arabic gum in the formulation of orange beverage emulsion," wrote lead author Hamed Mirhosseini from the Faculty of Food Science and Technology at the Universiti Putra Malaysia.

The supply of gum arabic (E414 in the European Union), also called acacia gum because it comes from acacia trees in the gum belt of Africa, is variable because of political and climatic factors in the primary producing countries such as the Sudan and Nigeria; this has led to spikes in the price of the ingredient.

Gum arabic, known as the Rolls-Royce of gums, is widely used by the food and beverage industry, and the top producers (mainly the Sudan) bring about 50 000 tonnes of gum to the market each year.

Attempts to find an alternative have led researchers to study alternatives that could be used as a thickener, adhesive and stabilizer for food and beverage applications. [Source: *FoodNavigator.com* [France], 10 April 2008.]

MAPLE SYRUP

Untapped resource

New York has untapped potential in its trees – an opportunity only saps would ignore. That's the word from the state's maple syrup industry, which says that only about 1 percent of New York's estimated 300 million sugar maples are accessed for their sap. The percentage is believed to be considerably higher in Vermont and, particularly, in Quebec.

The problem? Limited access to private land.

The industry is backing a bill by Sen. Charles Schumer, Democratic, New York that would sweeten the pill for private landowners. The Maple Tapping Access Program (TAP) Act would offer money to states that establish land-access grants and incentives. The Maple TAP Act would provide a national total of US\$20 million annually from 2009 to 2012, a Schumer spokeswoman said, and states would be in charge of



Sugar Maple

designing and implementing their own grant programme.

The measure comes as demand for maple syrup is increasing, driven by a growing desire for the product in Japan, China and the Russian Federation. The price paid to producers has increased by about 30 percent over the last year, to about US\$3 per pound (0.45 kg), and there are worries about a potential syrup shortage.

David Campbell, president of the New York Maple Producers Association and owner of Mapleland Farms in the Washington County town of Salem, said this would be a great time to ramp up his annual production of about 3 500 US gallons of syrup, if he had access to more than the 8 000 trees he currently taps. A programme that offered grants to landowners who allow access to their trees could work, he said. "They don't have to do the work," he added. "We do it for them."

United States producers believe that Quebec taps nearly a third of its sugar maples. And that, Campbell said, "is why they produce so much more maple syrup than us". Indeed, Quebec produces as much as five million gallons of syrup annually. Vermont, by contrast, produced 450 000 gallons in 2007, while New York trees generated 224 000 gallons, according to the United States Department of Agriculture.

Schumer, in a statement, said that the state has "hundreds of millions of trees" that "are just sitting there, full of a lucrative natural resource that could propel New York to the top of the maple industry". Schumer's bill would apply to all states, not just New York. That opens potential for other states to increase syrup production as well, to the detriment of New York farmers. But Campbell downplayed that possibility, noting that only northeastern states produce significant amounts of maple syrup. (Source:

Albany Times Union [New York, United States], 30 April 2008.)

Season not so sweet for maple syrup producers in Canada

Quebec City. An unusually short season this year means that the province's maple syrup producers will have trouble meeting demand.

After having to dig out their tubing, because it was still buried under the snow, Anne-Marie Granger-Godbout of the Federation of Quebec Maple Syrup Producers says the freezing nights, and warm days required for the sap to run did not last more than two to three weeks. "In March there was a lot of snow, and it was very, very cold," she says. "Then very suddenly the weather changed and we were almost in summer." Granger-Godbout says a normal syrup-producing season lasts six to eight weeks.

Couple the short season with the fact that producers had depleted their reserves thanks to an aggressive marketing campaign, and she says some export markets will not be satisfied.

She admits consumers here could face a small price increase but, since 80 percent of people in Quebec buy their syrup straight from the farm, she says it is unlikely that they will even notice. (Source: *CJAD* [Montreal, Canada], 2 May 2008.)

MEDICINAL PLANTS AND HERBS

New yardstick for medicinal plant harvests

Every year more than 400 000 tonnes of medicinal and aromatic plants from approximately 3 000 species are traded internationally, according to TRAFFIC, a non-profit watchdog group that monitors commerce in natural products. (Up to 70 000 species are used medicinally worldwide, most of them locally.) Such a growth in demand for these plants threatens natural resources, since about 80 percent of commercially traded species are gathered from the wild, according to the World Conservation Union (IUCN). In February 2007, several groups concerned about the potential adverse effects of this rise on plant habitats announced an international standard designed to preserve nature's medicine chest for future generations. A year later, the standard appears to be bearing fruit.

The IUCN Medicinal Plant Specialist Group, IUCN Canada, the German Federal Agency for Nature Conservation, the World Wide Fund for Nature (WWF) Germany and

TRAFFIC proposed the standard and coordinated several rounds of international vetting in 2005 and 2006. The new International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP) is intended to balance the needs of people whose traditions and livelihood depend on these species with long-term survival of the plants in their native habitats.

The new standard is based on six principles related to maintaining wild resources, preventing negative environmental impacts, respecting customary rights (for example, of indigenous populations), and exercising responsible management and business practices. Plant scientists also drew on earlier guidelines both for the conservation of medicinal plants and for good agricultural and collection practices. "We did not want to reinvent the wheel," says Susanne Honnef, TRAFFIC medicinal plant officer with WWF Germany, "so the standard builds on existing frameworks."

The new standard involves all actors along the supply chain – from wild plant harvesters to sellers – in a process to determine how to conduct harvests and trade sustainably, says Honnef. The standard also outlines practices for monitoring the impact of harvests over time.

Honnef says the standard will protect important natural resources. As the benefits of sustainable use become more broadly recognized, harvesters will be encouraged to protect the ecosystems that support their livelihoods. And government agencies will have tools for defining benchmarks in a trade that is often informal and that falls through the cracks between the groups that manage agriculture and forestry.

The standard was tested in preliminary trials undertaken in six countries. Next comes a two-year implementation phase at sites in Asia, Africa, southeast Europe, and South America.

Josef Brinckmann, Vice President of research and development with manufacturer Traditional Medicinals, points to Asia and Europe as places where the standard may first have a significant impact in alleviating intense harvest pressures. "China and India are the two largest producers and exporters of medicinal plants in the world," he notes. Southeastern European countries and the Russian Federation are also important in the world market. (Source: David Taylor in *Environmental Health Perspectives*, January 2008.)

Medicinal plants "facing threat"

Hundreds of medicinal plants are at risk of extinction, threatening the discovery of future cures for disease, according to experts.

Over 50 percent of prescription drugs are derived from chemicals first identified in plants. But Botanic Gardens Conservation International has said that many were at risk

from overcollection and deforestation. Researchers warned that the cures for diseases such as cancer and HIV/AIDs may become "extinct before they are ever found".

The group, which represents botanic gardens across 120 countries, surveyed over 600 of its members as well as leading university experts. They identified 400 plants

that were at risk of extinction. These included yew trees, the bark of which forms the basis for one of the world's most widely used cancer drugs, paclitaxel. *Hoodia*, which originally came from Namibia and is attracting interest from drug firms looking at developing weight-loss drugs, is also on the verge of extinction, the report said. And half

MEDICINAL PLANTS FOR LIVELIHOODS

Medicinal plants are clearly an important global resource in terms of health care but they are also an important economic resource, traded extensively on scales ranging from the local to the international.

Internationally, the trade in medicinal plants is estimated to be worth US\$60 billion per year, increasing at a rate of 7 percent a year.

Very little of the raw material to supply this demand comes from cultivated sources.

Of the 3 000 or so species known to be in international trade there are approximately 900 for which commercial cultivation is under way or in development. Put another way, 70–80 percent of the medicinal plants being traded in the world's most important range countries for medicinal plants originate from collection in the wild. Many of these species are widespread and abundant but, for naturally rare and heavily exploited species, wild collection can be a major threat with local extinction the outcome. It is the collection for commercial trade rather than home use that is the overwhelming problem.

Although notoriously poorly documented, and although our understanding of the biology, ecology and status in the wild of most medicinal plants is very fragmented, this level of wild harvest is said to be currently unsustainable.

We know this because herb gatherers are having to go further and further afield to harvest the plant they want; they are experiencing a drop in harvest levels. Some species simply are no longer there. Unfortunately, the motivation of short-term profit increase neglects all considerations of

sustainability, but conservation intervention can occur at several points along the supply chain.

The consequences of unsustainable harvest are far-reaching, and not merely confined to a loss of health care or biodiversity. Many of the world's poorest people rely on the collection and sale of wild medicinal plants for income generation. Although prices paid to gatherers tend to be very low, medicinal plant collection provides a significant income for the often marginal, rural poor.

- About 20 000 tonnes of medicinal and aromatic plants worth US\$18–20 million are traded every year in Nepal alone, and about 90 percent are harvested in an uncontrolled fashion by landless, resource-poor mountain farmers for whom the harvest of and trade in medicinal plants constitute their only form of cash income. The situation is similar in Bangladesh, Bhutan, India and other countries of South Asia.
- In Namibia, there are an estimated 5 000–10 000 devil's claw (*Harpagophytum* spp.) harvesters, 50–100 intermediaries and 17 Namibian exporters. The retail value in 2001 was some US\$40 million, although Namibia captures at most 5 percent of the retail value of the trade.
- Ethnoveterinary medicine is used by livestock raisers throughout the world to keep their animals healthy and productive, since modern treatments may be expensive and inaccessible in remote areas.

The world's greatest concentration of medicinal plant wealth is found in tropical developing countries that are beset by acute poverty. In these regions, the loss of biodiversity and land degradation are accelerating as

poverty is increasing. The loss of livelihood is a very real concern, given that approximately one billion people, a fifth of the world's population, live on less than US\$1 a day.

A common definition is that a livelihood is the financial means whereby one lives; for example, by collecting wild medicinal plants for sale. However, this does not necessarily mean that the plants collected are sufficient to satisfy an individual's needs or to lift people out of poverty. Such a livelihood cannot therefore be sustainable. A sustainable livelihood is one that can cope with and recover from stresses and shocks while maintaining or enhancing its capabilities for the future and without undermining the natural resource base. Sustainable use meets the needs of the present without compromising the ability of future generations to meet their own needs. (*Source: Plants for life: medicinal plant conservation and botanic gardens*. Botanic Gardens Conservation International [Richmond, United Kingdom].) Download at: www.bgci.org/files/Worldwide/Publications/PDFs/medicinal.pdf



Harpagophytum spp.

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of the world's species of magnolias are also under threat. Magnolias contain the chemical honokiol, which has been used in traditional Chinese medicine to treat cancer and slow down the onset of heart disease.

The report also said that autumn crocus, which is a natural treatment for gout and has been linked to helping fight leukaemia, is at risk of overharvesting since it is popular with the horticultural trade because of its stunning petals.

Many of the chemicals from plants at risk are now created in the laboratory.

However, the report (*Plants for life: medicinal plant conservation and botanic gardens* – see Box) said that as well as future breakthroughs being put at risk, the situation was likely to have a consequence in the developing world. It said five billion people still rely on traditional plant-based medicine as their primary form of health care.

Report author Belinda Hawkins said: "The loss of the world's medicinal plants may not always be at the forefront of the public consciousness. However, it is not an overstatement to say that if the precipitous decline of these species is not halted, it could destabilize the future of global health care." (Source: BBC News [United Kingdom], 19 January 2008.)

Cheap malaria medicine from endive

Wageningen plant scientists are creating a variety of endive that produces the anti-malarial drug artemisinin. This is in collaboration with the company Dafa Pharma, which wants to use the plant to produce inexpensive malaria medicines for the African market.

Artemisinin is a complex compound derived from the plant annual wormwood (*Artemisia annua*), which a Chinese researcher discovered can kill the malaria parasite in the body. Annual wormwood, however, is a fussy plant that produces only a small amount of active material. "To provide affordable malaria medicines, we need an efficient source," says researcher Harro Bouwmeester.

The bitter substances in the endive variety chicory resemble artemisinin. But chicory lacks the artemisinin enzyme found in annual wormwood. By introducing the gene for this enzyme into chicory, Bouwmeester thinks he can get chicory to produce artemisinin. In about five years, the researchers expect to have a chicory plant that can produce seven times more artemisinin per hectare than annual wormwood. (Source: *Wageningen Update*, 3/07.)



Herbal tea may help diabetes

A herbal tea developed by scientists from the Bangladesh Council of Scientific and Industrial Research may benefit diabetic patients. The researchers say the tea – made from the leaves of the local tree *Lagerstromia speciosa* Lin – could help lower sugar levels in patients' blood naturally, reducing the amount of insulin they need to inject. The herbal tea might also help reduce obesity, the experts added. (Source: *The Daily Star* [Bangladesh], 6 March 2008 in SciDev.Net Weekly Update (17–24 March 2008).)

Nature's pharmacy: African herbals on the rise

The future of African herbal medicine is in question as the plants on which it is based fall victim to overharvesting, deforestation and climate change. This spells disaster for the 80 percent of rural Africans who depend on medicinal plants in times of sickness or injury. Switching to expensive conventional drugs is not an option for poor people. Instead, new initiatives are focusing on protecting and studying traditional African medicinal plants.

The Medicinal Plant Incubator Project was recently launched in South Africa, where it is estimated that more than 350 species of plants are used for medicine. The primary mission of the project is to protect South Africa's indigenous plants while ensuring that they remain available to the traditional healers and others who use them. Scientists will also study how the healing properties of these plants are affected by different growing conditions. In order to prevent overharvesting of the plants, well-tended nurseries will be established, from which traditional healers can purchase a regular supply of the plants that they need.

The project is also educating local people as to the importance of caring for the areas where plants with medicinal uses grow naturally. Project leader Erica van den

Heever observed: "There are 40 000 traditional healers in Guateng. They harvest, harvest, harvest and don't conserve". Proper management of traditional herbals would probably lead to better yields and therefore cheaper prices, more variety and more widespread use. In addition, it would stimulate the local economy by increasing the number of job opportunities available through trading and harvesting.

With such a large proportion of Africa's population dependent on medicinal plants, the matter of quality and standards is crucial. In response, last year, the Association for African Medicinal Plants Standards unveiled plans for a Pan-African pharmacopoeia – a catalogue of native African plants with medicinal properties. Each entry includes a list of medicinal uses, general taxonomic information, a chemical profile, and safety and toxicity information. The pharmacopoeia will also include information on chemical tests that can be used to identify medicinal plants. The first phase of the project is already complete and has resulted in the production of 23 plant profiles.

In addition to increasing the quality and reliability of information about African medicinal plants, the Pan-African pharmacopoeia hopes to enhance cooperation and communication between the academic and industrial sectors. This would make it easier for African communities of all sizes to have a share in a market that has until now been dominated by more familiar Asian herbal products.

Efforts to revive traditional African medicinal products have already paid off in countries such as Mali. With the help of scientists from the University of Oslo, Norway, this West African nation has upgraded its research on medicinal plants and has seen cooperation grow between conventional and traditional medical practitioners. As a result, the mainstream medical community has in recent years begun to accept many of the plants and practices of traditional healers.

The work that is being carried out in Mali has done more than improve the status of traditional healers. It has fostered important links between Malian and European scientists and with the local villages that will benefit from their research. After studying the effectiveness of herbs used to treat everything from malarial parasites to stomach ulcers, scientists give feedback to the healers who first recommended them, thereby helping local communities to invest

more in the species that have greater potential for success. "We see a change coming," said Professor Smestad Paulsen of the University of Oslo. "A lot of plants have been verified to have an effect. The World Health Organization acknowledges traditional medicine as vital to improving public health in developing countries."

The future of African herbal medicines is looking much brighter thanks to projects such as the Medicinal Plant Incubator Project and the Pan-African pharmacopeia. As rural communities learn how best to conserve plants with medicinal uses and efforts are made to implement quality standards, millions of African people will gain easier access to the treatments they need. With time, these initiatives could not only improve the economies of rural African communities but also introduce African herbals to the rest of the world.

[Based on *Hidden in the herbs*, Norwegian Centre for International Cooperation in Higher Education; <http://www2.siu.no/vev.nsf/o/SIUs+publications-Global+Knowledge-Hidden+in+the+Herbs>] [Source: Biodiversity International. *Geneflow 2007*, pp. 44-45.]

Recherches faites sur l'importance du *Vernonia conferta*

Le *Vernonia conferta* est une plante médicinale que l'on trouve dans les forêts du bassin du Congo et dont l'utilisation concerne le traitement traditionnel de la malaria et la purification du sang à partir d'un protocole consistant à faire bouillir ses feuilles avec de l'eau et d'inhaler la vapeur qui s'en dégage dans une enceinte couverte.

De par son importance dans le domaine de l'industrie pharmaceutique résultant d'une recherche visant à voir comment les grands singes du bassin du Congo (à savoir les chimpanzés, les gorilles et les bonobos) utilisaient les feuilles de cette plante pour se débarrasser des vers, leur comportement a poussé les chercheurs à faire des analyses chimiques qui ont démontré que la sève de cette espèce végétale contient des substances chimiques qui, présentes dans un organisme, développent des toxines qui attaquent des vers.

Cela montre d'avantage l'importance des ressources naturelles dans l'amélioration économique et sociale du cadre de vie des populations à l'échelle locale, nationale, régionale et internationale.

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Chelidonium majus

Cancer drug to be produced in the United Arab Emirates

A Ukrainian scientist who invented a revolutionary cancer treatment medicine plans to manufacture the drug in Dubai. Dr Wassil Nowicky – who was nominated for the Nobel Prize for chemistry in 2005 – said he was setting up a factory to produce Ukraine, a half-synthetic plant-based medicine, and he intends to open special hospitals and clinics in the United Arab Emirates to treat cancer patients from around the world. The anti-cancer drug market is estimated to be worth several billion dollars a year and Dr Norwicky believes he can capture a large share once production starts in 2010. His company, Nowicky Pharma, is forming a joint venture with Abu Dhabi-based Emirates Health Care, the Middle East distributor of the patented drug, to set up the factory.

The United Arab Emirates Health Care Chairman Mutasim Al Midfa said: "The raw material is *Chelidonium majus*, a medicinal plant that grows in southern Europe. We will grow the plant commercially in Europe and bring its essence to Dubai to produce the drug."

The factory will have a capacity of 500 000 ampoules per year – last year 100 000 ampoules were produced. Each ampoule is sold for Dh950 and a patient requires 20 ampoules each month. Dr Nowicky said that the ampoules selectively destroyed cancer cells without damaging healthy ones. It has been recognized as the first and only drug to do this by the United States National Cancer Institute. It is free of side-effects such as hair loss or extreme nausea, so no additional drugs are needed. The effectiveness of the treatment has been proved in 56 universities and research institutes by 192 scientists from 21 countries.

[Source: *Emirates Business* 24/7 [United Arab Emirates], 6 February 2008.]

MORINGA OLEIFERA

Potential role of the *moringa* tree (the miracle tree) in the food security and livelihoods of poor communities in arid regions

The family Moringaceae contains 14 species of *moringa* trees. *Moringa oleifera*, known as the "multipurpose" tree, is drought tolerant and is the best-known member of the family. It is native to the sub-Himalayan regions of northern India and is distributed all over the world in the tropics and subtropics. *Moringa* tolerates a wide range of environmental conditions, grows in various soils types and can withstand up to 48°C in the shade.

The great potential of the tree and its various products has not yet been fully recognized: *moringa* holds tremendous promise for benefiting humanity. Initial studies in different parts of the world have evidenced the following usages and benefits.

1. Excellent human food resource

All parts of this tree are edible; the leaves can be eaten raw, cooked like spinach or made into a powder that can be added to sauces, soups or chowders. The dried powder can be stored for long periods. The new leaves have a tendency to appear towards the end of the dry season when few other sources of green leafy vegetables are available. The young green pods can be eaten whole and are similar in taste to asparagus. The older pods can be used for their seeds, which can be prepared as peas or roasted and eaten like peanuts. The flowers, which bloom around eight months after the tree is planted, can be eaten fried and have the taste and texture of mushrooms. In Hawaii, the flowers are used to make a tea that cures colds. In addition, the flowers are a year-round source of nectar and can be used by beekeepers. Not only is the *Moringa oleifera* tree extraordinary in that all its parts are edible, but its most amazing aspect is its exceptionally high nutritional value. The leaves are an excellent source of vitamin A (four times the amount in carrots), rich in vitamin C (seven times the amount in oranges), calcium (four times the amount in milk), protein (twice the amount in milk) and potassium (three times the amount in bananas); they are also a good source of vitamin B and other minerals.

2. Improvements in human nutrition and health

Moringa is an excellent source of nutrition and is a natural energy booster. Since this energy boost is not based on sugar, it is sustained. The iron content is very good and the leaves have purportedly been used for

treating anaemia in the Philippines. The content of amino acids, such as methionine and cystine, is also high. Carbohydrates, fats and phosphorous content are low, making this one of the finest plant foods to be found. These qualities have made the *Moringa oleifera* tree a candidate in the fight against malnutrition.

A group of health workers from the Church World Service have been utilizing this highly nutritious and fast-growing tree as a means to cure and prevent malnutrition in infants and pregnant and lactating women as an alternative to the classic and expensive food condiments. For pregnant and breastfeeding women, *moringa* leaves and pods can do much to preserve the mother's health and pass on strength to the foetus or nursing child. One 100 g portion of leaves can provide a woman with over one-third of her daily calcium needs and give her important quantities of iron, protein, copper, sulphur and B-vitamins. In the case of HIV/AIDS, the Vitamin A found in *moringa* has the potential to build immune systems and sustain health better. Vitamin A is also considered important in building resistance to malaria.

Moringa is soothing; it helps lower blood pressure and is a sleep aid. Its detoxifying effect may come from its ability to purify water. It acts as a coagulant attaching itself to harmful material and bacteria and it is believed that this process also takes place in the body. The result is long-lasting energy without hyperactivity, a nerve system at rest, a blood system not under pressure, and a gland and hormone system in balance.

The flowers and roots of *moringa* trees contain a powerful antibiotic known as pterygosperrin, which also has fungicidal properties.

3. Animal feed sources

Leaves and seed press cake are useful as cattle fodder since the dry matter (DM) yield is high at 15 tonnes/ha/year. The fresh leaves were found to contain 23 percent crude protein (CP) in DM, 12.3 MJ of metabolizable energy/kg DM. The inclusion of *moringa* as a protein supplement for low-quality diets improved DM intake and digestibility of the diet and increased milk production. In general, feeding *moringa* increases daily weight gain by up to 32 percent and increases milk production by 43–65 percent.

4. Water purification

The powder from ground *moringa* seeds and the press cake left over from oil extraction have the ability to clear murky water since they act as a coagulant that attaches itself to particulate matter and bacteria in the water

and sinks to the bottom of the container. The purified water can then be poured out and boiled. This method has been used for centuries domestically; it was recently tried commercially and was found to be equally efficient. *Moringa* is traditionally used for "household treatment" in the Sudan, Ethiopia and Indonesia and is also used successfully in large-scale water treatment works in Malawi and other countries.

5. Mats, dyes and tanning

The bark of the tree can be used to make mats or rope and in tanning hides. The gum from the cut tree trunks is used in calico printing and in some medicines, while the wood can be used to make a blue dye and also for firewood.

6. Pulp and paper source

The wood provides a pulp that is considered suitable for newsprint, wrapping, printing and writing papers and for viscose rayon grade pulp for textiles and cellophane.

7. Oil production and utilization

When the pods mature and turn brown, the seeds can be removed and pressed to extract high-quality oil, similar to olive oil and rich in oleic acid (73 percent). The mature seed contains about 40 percent oil. The oil, which is known as ben oil, can be used for cooking, lubrication, in soaps, in lamps and in perfumes. It was highly valued by the ancient Greeks, Romans and Egyptians and was used in perfumes and for skin protection; it was also used in Europe in the nineteenth century for the same purpose, and was imported from the West Indies.

8. Plant growth enhancer and soil fertilizer

An effective plant growth hormone can be extracted from the fresh leaves and has been found to increase crop yields by up to 25–30 percent. The leaves can also be used as a green manure to enrich farmlands. In addition, *moringa* can be used in agroforestry for intercropping with other crops since the trees are legumes and add nitrogen to the soil. *Moringa* trees can also be grown as live fences and windbreaks.

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Moringa oleifera leaves

Student researchers study natural water purifier

University of Buffalo, United States undergraduate researchers Kelly Miller and Daniel Loscalzo have been working to find a natural water filtration system that could be used in Africa, where potable water is a luxury. The students, like other researchers around the world, are trying to develop a plausible way to use the seeds of the *moringa* tree to purify water naturally and with Africa's available resources. While many scientists have been focusing on commercial use of this technique, Miller and Loscalzo are trying to make it easier for people to purify their own water at home.

To use the seeds for water purification, they are crushed into a powder and clean water is added. The milky product is then added to more water where it acts as a coagulant, attaching itself to any bacteria or silt, and sinks to the bottom of the container. The purified water is then poured out. "These seeds can be used to filter water instead of expensive imported chemicals," Miller said.

The students hope to help the Nigeria Delta area with their research. (Source: *The Spectrum* [University of Buffalo, United States], 16 April 2008.)

Body Shop launches a moringa bath and body range

The cosmetic company Body Shop (belonging to L'Oréal) has just launched a *moringa* bath and body range. *Moringa* is presented as a "miracle of hydration" on the large advertisement posters on the shop windows. The packaging has white flowers on it but the origin of the oil is not indicated (i.e. there is no mention of fair trade).

This is the first worldwide advertisement campaign on a *moringa* product. (Source: *Moringanews*, in *April 2008 Update* from the Global Facilitation Unit for Underutilized Species.)

Philippines biotechnology firm to sell moringa oil to the United States

Manila. A local firm has started exporting *malunggay* (*moringa*) seeds and *moringa* oil, which can be used as biodiesel, according to the Department of Agriculture-Biotechnology Program Office (DA-BPO). In a statement, DA-BPO said that countries such as Brazil, South Africa and Australia have already sought *malunggay* seeds from Secura

International, a 100-percent Filipino biotechnology firm. Secura's business includes extracting oil from *malunggay* seeds and marketing it as an edible oil with multiple pharmaceutical uses.

Secura's president and chief executive officer said that Viet Nam, Indonesia and Thailand were interested in *malunggay* and that their desire for its oil had intensified after they had learned of its use as an alternative biodiesel. Secura is also targeting Japan and the Republic of Korea as its next biggest markets for *moringa* oil.

Meanwhile, Secura is seeking to complete 500 000 ha of *malunggay* plantations in order to meet the demand for *moringa* oil as biodiesel feedstock for North American Biofuels, Inc. The United States firm had scrapped *jatropha* oil and opted instead to use *moringa* oil as biodiesel after testing a 100 kg sample sent by Secura.

Malunggay oil, which is extracted from its leaves, is said to be far superior to olive oil and is a cheap alternative natural medicine for common illnesses. (Source: Inquirer.net [the Philippines], 13 April 2008.)

"Buy a Miracle Tree" campaign

The Irish charity Vita has launched the "Buy a Miracle Tree" campaign 2008. This campaign focuses on the vital importance of trees, particularly *moringa*, for the sustainable livelihoods of people in Africa. The campaign will take place in schools throughout Ireland this spring, with each participating school receiving a fun and educational special "Buy a Miracle Tree" School Pack. The trees bought will then be planted in Ethiopia and Eritrea. (Source: *Nenagh Guardian* [Ireland], 1 February 2008.)



NUTS

Maya nut: a forgotten treasure

One of the largest trees in the forests of Central America, the Maya nut (*Brosimum alicastrum*) used to be abundant throughout the region. Its seeds were once a staple food of the Mayan people, as well as sustaining dense populations of deer, another Mayan staple. Its leaves, pulp and seeds continue to be central to the diet of many forest birds and animals. However, as areas of forest have been felled for timber and for maize, Maya nut numbers have declined and the tree has become extinct in some areas.

Nevertheless, this nutritious nut, which can be stored for up to five years, is an excellent drought- and climate change-resistant food for rural communities. Entire villages have survived by eating Maya nuts; flour from the nuts was used as a valued emergency food after Hurricane Stan in Guatemala (October 2005) and Hurricane Felix in Nicaragua (September 2007). Yet in many areas, the nuts are considered only as "famine food" and consumption has dropped to less than 5 percent of local diets.

To counter this trend, over 8 000 women from villages in Honduras, Nicaragua, Guatemala, El Salvador and Mexico have been trained since 2001 by the NGO The Equilibrium Fund to raise awareness of the potential of Maya nut. Communities are encouraged to conserve the tree, establish community nurseries and reforest depleted areas; they are also taught the nutritional value of the nut. During demonstration cooking days, the women are shown how to make new and traditional recipes, substituting Maya nuts for maize. Through its work, the NGO has inspired communities to plant more than 300 000 Maya nut trees, supplementing food and income, and protecting water sources and forest biodiversity.

The benefits of Maya nut have not just been felt at the household level. In 2005, Alimentos Nutri-Naturales, a women's Maya nut producer group in Guatemala, opened the first Maya nut processing plant in the world. The plant is owned and operated by the group, which won a US\$10 000 award in recognition of its efforts, by being selected from over 100 entrants as one of the top ten businesses in Guatemala.

The same group won the prestigious Equator Prize in 2007, which included a US\$30 000 cash award. The women have used this money to implement a school lunch programme, which will provide Maya

MAYA NUT (*BROSIMUM ALICASTRUM*)

Known as *capomo*, breadnut or *ramón* nut, among many other names, the Maya nut – a relative of the fig family – is rich in fibre, protein, vitamins A, B, C and E, and minerals, including calcium, potassium, folate, iron and zinc. Nutritionally comparable to amaranth, quinoa and soybean, it is not surprising that the nut was a favoured food of indigenous groups in Central America.

Maya nut tolerates marginal soils, salt and drought and is an excellent species for rehabilitating degraded land. Once established, the tree requires no inputs yet, once mature, can yield over 180 kg of nuts each year, and provide food as well as valued ecosystem services for over 150 years.

nut-based school lunches to rural Guatemalan schools. Their goal is to revitalize the economies of producer communities, improve children's health, reduce dependence on imported food and motivate communities to reforest and protect Maya nut trees in Guatemala.

Another Guatemalan women's organization, CODEMUR – the Committee for Rural Women's Development – is using a grant from the United Nations Development Programme (UNDP) to promote Maya nut consumption, conservation and reforestation among some of the poorest communities in the southern coastal region of Guatemala.

Yet while thousands of hectares of rain forest have been conserved as a result of the work of The Equilibrium Fund and its partners, the Maya nut remains endangered in many areas and is probably extinct in parts of Honduras, El Salvador, Guatemala and Nicaragua. Unfortunately, *in situ* conservation is the only option for the tree as the seed is "recalcitrant", i.e. it does not survive drying or freezing. However, a variety that produces fruit in four years, half the usual time, was recently discovered in Mérida, Mexico.

Erika Vohman, Executive Director and Founder of The Equilibrium Fund, estimates that at least 200 Maya nut landraces are currently vulnerable to extinction and is keen to conserve landraces and identify the fastest growing and most nutritious varieties for

reforesting. She concludes: "Investing in research and genetic improvement of this species, as well as encouraging its use for food, fodder and environmental services, may well be one of the most positive things governments and organizations can do right now to improve agro-ecosystem resilience to climate change and thereby secure the future of both human and wildlife populations in the neotropics". [Source: New Agriculturist Web site, May 2008.]

Brazil nuts: the green gold of the Amazon
São Paulo. With the certainty that green may generate profit without being destroyed, Ouro Verde Amazônia (Green Amazon Gold) makes organic products derived from Brazil nuts. After three and a half years of research, the company has developed three products: extra virgin olive oil, low-fat groundnuts and cream, which is a kind of royal jelly made from nuts. With organic certification by Ecocert, about a year and a half ago, the company started making contacts abroad. The first shipments should be to France, Australia and Malaysia.

"The global demand for sustainable products is enormous. Rich in antioxidizing minerals, omega 6 and omega 9, the products are recommended to prevent diseases and to improve the working of the human body's metabolism," explained Ana Luisa da Riva, partnering director at Ouro Verde Amazônia. "We are also developing business with Germany and China," she said.

According to Ana Luisa, on making the sustainability project real, the company helps people to appreciate one of the main treasures of the country: the Amazon. "We try to add value to the fruit, integrating and training Amazon communities, which live close to the Brazil nut harvest areas, as well as practising sustainable development and contributing to the preservation of the forest, adding effective value to biodiversity," she pointed out.

In 2007, Ouro Verde had revenues of 500 000 Brazilian reais (US\$284 000 at current exchange rates). The forecast for 2008 is for revenues of 1 million reais (US\$568 000), and exports alone should guarantee the same volume of revenues as the company had for the whole of its production last year. The company should soon place a greater range of organic and sustainable products on the market. [Source: Brazil-Arab News Agency [ANBA] [Brazil], 8 February 2008.]

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Schinziophyton rautanenii (mungomu) and its use in Mozambique

Schinziophyton rautanenii (ex *Ricinodendron rautanenii*), known as *mungomu* in Macossa, is a tree that produces a nut that is one of the staples of the diet of the Kung Khoi-San tribe in the Kalahari Desert. The nut, (also known as manketti nut), supplies up to three-quarters of the dietary needs of this tribe. In Mozambique, it occurs irregularly in hot dry country on poor soils, north of the Save River. It is recorded from Chibabava, Nhamatanda, Gorongosa and Macossa districts in central Mozambique and from Tete, Nampula and Cabo Delgado provinces. The tree occurs both sporadically and in almost pure stands.

The objective of a recent study was to review and document local knowledge of the *mungomu* tree in Macossa and establish whether it varies according to gender, socio-economic status and generational differences. The study also looked at how the nut is used by local people and its importance for food security.

The study found that the culture of using *mungomu* is very much alive in Macossa. All long-term residents knew about the *mungomu* tree and its nut; only a few new residents who had arrived after the civil war were unaware of it. Consumption, however, is declining because of the use of oilseeds such as peanuts, and the amount of work involved in cracking the nuts. Traditional methods involve using a small and a big stone to crush the nut, or splitting the nut casing with a stick and an axe blade. These rudimentary systems were found to be the main barrier to maintaining, or possibly commercializing, the utilization of the nut. The kernel is used to enrich sauces, to accompany meat, fish, and vegetables, but also to produce oil. Consumption increases in difficult times, such as droughts and during the civil war. [Source: *Indigenous knowledge of edible tree products – the mungomu tree in central Mozambique*, by Gregory Saxon and Catarina Chidiamaassamba. 2005. FAO. LinkS Project Report 40. www.fao.org/sd/LINKS/documents_download/Kulima_40.pdf]

Inocarpus fagifer (Tahitian chestnut)

The edible kernel of *Inocarpus fagifer* (Tahitian chestnut) is an important indigenous food in many island countries in the Pacific. It is available in Vanuatu between the two yam seasons. The kernel is an important traditional supplemental staple in Fiji, although today its importance has declined in favour of cassava and imported rice.

The kernels must be cooked to make them edible. These nutritious kernels have protein and carbohydrate contents of about 5 and 22 percent, respectively. They are prepared in many different ways, including roasting, grilling, boiling, baking and mashed in puddings in Papua New Guinea, Fiji, Solomon Islands, Vanuatu and Polynesia. Well-known dishes include *lap lap* (Vanuatu), *koko* (Fiji) and *masimasi* or *robe* (western Solomon Islands). Fruits are harvested either directly from the tree at maturity or from the ground after ripening. The kernels are sold mainly in domestic markets. They are also a good feed for free-range chickens. [Source: extracted from *Traditional trees of Pacific Islands*, ed. Craig R. Elevitch, 2006.]

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Piper nigrum



Therapeutic value of piperine
India is the major producer, consumer and exporter of black pepper (*Piper nigrum*), which is known as the "king of spices". Spices are mainly added to increase the taste and flavour of food. Pepper contains piperine, a compound that has food and medicinal value and is mainly responsible for the pungency in black pepper.

The Romans travelled the Silk Road to obtain piperine from the Middle East and Asia, while from the 1600s to the 1800s the Dutch and English fought over trade routes and land. In 1820, the Danish physicist, chemist and professor at the University of Copenhagen, Hans Christian Orsted, was the first to identify the compound piperine. Its chemical makeup was later isolated during laboratory synthesis in 1882 and 1894.

Pepper and piperine are now widely used throughout the world.

Piperine is primarily found in the fruit of the pepper vine, *Piper nigrum*, which is indigenous to the Malabar Coast of India, but is also grown in other parts of southern Asia, South America and even Africa. The plant is known for its broad shiny green leaves and small flowers. Piperine imparts a hot, biting and very pungent taste and makes up 5–7 percent of peppercorns. It is found in nature with 98 percent purity. Piperine can also be found in other vegetables and spices, such as hot jalapeño peppers.

In the past, piperine was substituted for or used in conjunction with cinchona alkaloids in the treatment of malarial fevers. Nowadays, it is mainly used to treat intermittent fever, but has been found to be less efficient than the alcoholic extract of black pepper. Its use has also been advised in colic, diarrhoea, cholera, scarlatina and chronic gonorrhoea.

Pepper was the first spice used in the Middle Ages to season everyday foods. In India, many typical southern foods tend to be extremely spicy. This is not a cultural aspect but has scientific value: the piperine in the spicy food has a habit of stimulating perspiration, which causes a cooling of the body and is, therefore, very helpful in the south where summer temperatures can reach 40–45°C.

Piperine also enhances the absorption of certain vitamins such as selenium, vitamin B and beta-carotene. It has the ability to increase the body's natural thermogenic activities (thermogenesis is the process of generating energy in the cell), which in turn creates a demand for nutrients necessary for metabolism. This has been particularly helpful for patients who suffer from a defective intestinal lining. Moreover, children under five have been fed piperine in the form of pepper powder, dry ginger and jaggery (sugar) to alleviate colds and poor digestion. In addition, piperine inhibits a number of enzymes responsible for metabolizing drugs and nutritional substances.

Piperine is found in most insecticides, especially those used against the common housefly.

Piperine is a boon to humans because of its versatile chemical nature, with a wide medicinal and therapeutic use. It not only inhibits infection, but also highlights the bioavailability of chemical substances and is involved in catalysing certain complex mechanisms in the human immune system.

Commercially, piperine can be extracted using a solvent extraction method. A pinch of piperine can replace a large purchase of raw pepper. Value-added black pepper in the form of piperine has great potential for pepper growers, industrialists, exporters and therapists. Hence, awareness needs to be created to exploit the efficiency of piperine.

(Contributed by: M. Velmurugan, K. Rajamani, P.S. Kavitha and P. Paramaguru, Horticultural College and Research Institute, Tamil Nadu Agricultural University, Coimbatore, India.)

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Sandalwood oil deal with Lush (United Kingdom)

Perth-based Indian sandalwood grower, TFS Corporation Ltd, has signed a five-year deal with United Kingdom-based handmade cosmetics company, Lush, to supply oil produced from TFS plantations. Key aspects of the agreement include the commencement of supply upon the availability of the first commercial quantities of oil from TFS plantations, which is anticipated to occur by financial year 11, and for Lush to purchase a minimum of 1 tonne of oil and up to a maximum of 15 percent of TFS oil production in each 12-month period.

Lush has agreed to create a new sandalwood-based product range using TFS oil for marketing throughout their worldwide retail network of 500 stores in 44 countries.

TFS will issue one million options to Lush, exercisable at US\$1.80 per share at any time within three years of the first commercial oil delivery. [Source: WA Business News [Western Australia], 21 February 2008.]

Fresh bid to check sandalwood smuggling in India

The state forest department is planning to meet the Sashastra Seema Bal (SSB) border guarding force to come up with strategies to launch a crackdown on the illegal transportation of red sandalwood across the Indo-Nepal border. Red sandalwood is the finest and most expensive variety of sandalwood. A forest representative said that the department will meet the SSB and the police in April. The decision, which will be made official shortly, comes after the department in February intercepted over 10 tonnes of red sandalwood, bought from Andhra Pradesh, in the bordering Maharajganj district. The truck driver revealed that he was taking the sandalwood to Nepal, from where it was to be sold on the international market, particularly in China and Japan.

The wood, as the best of its kind, would have fetched over Rs100 crore.

This is not the first incident. The route is being used on a large scale by smugglers from Andhra Pradesh and Karnataka. [Source: Lucknow Newslines [India], 20 March 2008.]



Fair Trade certification spreads to cosmetics

Fair Trade certification has long been available for food manufacturers and importers keen to redress power imbalances in international trade and protect the rights of disadvantaged workers. The certification system has now spread to personal care with shea butter being the first Fair Trade certified cosmetic ingredient to hit the Canadian market.

Imported by Quebec-based Société d'Agri-Gestion Delapointe and produced by a female farming collective in Burkina Faso, Africa, the Fair Trade shea butter is suitable for use in lip balms, body milks and massage creams.

A recent Organic Monitor report predicted a sharp rise in the number of Fair Trade personal care products on the market over the coming years. Beauty consumers have become increasingly interested and concerned about the ethical and environmental impact of their purchases. Manufacturers have therefore begun to respond to their demands by seeking Fair Trade certification, which guarantees a minimum price to producers

and requires in return that producers pursue projects for further sustainable development.

"Access to the international market via Fair Trade is very promising for the women shea butter producers because it guarantees a price per kilo that is two to three times greater than what companies from the conventional market usually offer," said Adama Quedraogo, director of CECO, a poverty-fighting NGO that has supported the producers of the shea butter in Burkina Faso. [Source: CosmeticsDesign.com [France], 31 January 2008.]

Shea butter: an essential luxury

Shea butter is one of those wonderful things that too few people know about but actually end up paying quite a bit for when it makes a guest appearance in their favourite moisturisers and conditioners. Consider this: 300 g of "pure" shea butter from a premium brand such as L'Occitane costs around US\$40. You may well get the same amount of shea butter for a fraction of the price, however, at an organic or health store.

What makes shea butter an essential luxury is that it is absolutely necessary if soft, supple skin is your aim, but it is so little known that it is very hard to find in India. For many people across sub-Saharan Africa it is as common as, say, coconut oil; increasingly westerners have also woken up to its wonders and now look for it if not in its pure form, then at least as an ingredient in their winter creams and lip balms. However, the very nature of the way shea butter is made means that it will never become really cheap for the rest of the world.

Everything about shea is amazing. The thick, waxy trunk of the karite (or shea) tree (*Vitellaria paradoxa*) is flame resistant and extremely resilient even in poor soil, so it grows defiantly across some of the most inhospitable parts of Africa. The first fruits come only when the tree is 20 years old (hence large-scale commercial production has not been viable), but the tree is then productive for the next 200 years. The incredibly tasty fruit is greenish yellow and looks rather like a cross between a litchi and an *amla* (Indian gooseberry).

The all-important butter comes from the kernel, so people simply eat the flesh and save the pits for this by-product. The kernels go through a complicated nine-stage metamorphosis from sun drying and cracking to crushing, roasting and curing until they attain the creamy shea butter avatar, in shades of cream to palest green.

The key element that sets shea butter apart from other "butters" sourced from seed oils is the essential healing content of the oil, which has vitamins A and E and other crucial phytonutrients. The higher the healing content of shea butter, the better the quality. If the product is two years old or more, it may not be as effective; although the moisturizing effect will be there, its healing quotient may have become less. [Source: *The Economic Times* [India], 20 January 2008.]



GLG ramps up stevia production for Rebiana supply

Ingredient firm GLG Life Tech Corporation will construct two new stevia processing plants in China, in a bid to meet the supply demands of Coca-Cola and Cargill. The Canadian firm has raised Can\$34.5m through the issue of additional company shares in order to finance the expansion project.

The two new plants, to be located in the south of China, will start off with a capacity of 1 000 and 500 tonnes of processed stevia. GLG's original facility, which last year expanded its capacity from 100 to 300 tonnes, will ramp up production to 500 tonnes, placing the firm's overall output at around 2 000 tonnes per year.

Coca-Cola and Cargill have developed a proprietary stevia product called Rebiana, which they plan to market both in food and beverage products and as an ingredient. The ingredient is in its final stages of development, and the two companies soon expect to start marketing it initially in countries where stevia is approved as a food additive. They are also expected to petition for approval in other global markets, including the United States and Europe. In order to meet their supply needs, the two companies have set up a global supply chain. GLG is one of their suppliers.

GLG operates as fully integrated a supply chain as is possible in China since it cannot buy the stevia farms, but will be supplying the high-quality seedlings to farmers and buying back the leaf under contract. The company claims to control over 80 percent of stevia production in China. It also plans to develop its own line of table-top products for sale in the United States as dietary supplements (for which stevia has regulatory approval).

The company is confident that stevia will be approved in the United States within the

next one to two years and in Europe within three to six years, no doubt on the back of petitioning from Coca-Cola and Cargill.

Currently, the largest markets for stevia are Japan and the Republic of Korea. In Japan, the ingredient has been used to sweeten diet sodas for about 20 years. Other markets where it is approved include China and Brazil.

Stevia, derived from the South American plant *Stevia rebaudiana*, is said to have up to 300 times the sweetness of sugar. As a sweetener, stevia's taste has a slower onset and longer duration than that of sugar, although some of its extracts may have a bitter or liquorice-like aftertaste at high concentrations. However, Cargill and Coca-Cola claim they have achieved the right sweetness with their product. [Source: FoodNavigator-USA [France], 7 January 2008.]



Caiman yacare in Bolivia

Latin America is the richest area in species of crocodylians, compared with any other area in the world; 12 taxa (including subspecies) occur from Mexico to Argentina. The vast area of humid lands and immense river systems provide an extensive habitat for caimans and crocodiles, which is the reason for the large number of these animals in the region, although the exact numbers are not known. These crocodylians represent a resource of considerable ecological value and have great economic potential.

Latin America has suffered the greatest hunting operations of crocodylians in the world. Historically, this hunting was carried out for the international trade in skins, causing a serious decline and local extinction of some species. In the 1990s, the region provided half of the skins of crocodylians worldwide. The loss of habitat and hunting continue and are a risk for the survival of several species. However, there has been a basic change in conservation tendencies throughout the world, including

Latin America: international controls are being implemented that restrict the trade of wildlife and improved conservation management programmes are being established, generating some optimism with regard to the future of caimans and crocodiles.

The adoption of strategies for the sustainable use of crocodilians has provided new incentives for the conservation of these species and their habitat. In Bolivia, the development of a pilot programme "Sustainable Utilization of Caiman in Bolivia" started in 1995, creating the basis for the adoption of the Regulation for the Conservation and Advantage of the Caiman (*Caiman yacare*) in 1997. At the same time, the General Biodiversity Direction (DGB) prepared the national programme of conservation and sustainable use of the species in Bolivia, in which evaluation and monitoring of the caiman population and other species of crocodilians were established.

The habitat of the species consists of moving waters for the "white yacare" and ponds for the "black yacare", mainly on the borders of the Amazonian waterbodies. In times of abundance, these species inhabited lakes, lagoons, wells, marshes and small streams in the plains and forests. Frequently they cross land when migrating from the great rivers to the different ponds.

The main use of the large reptiles is in the leather industry. In 2004, however, export of caiman meat started – both fresh vacuum-sealed meat and dry meat (*charque de jacaré*) – mainly to the markets of the United States, Japan and Italy for use in exotic food restaurants.

Since 1987, Bolivia has maintained a Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) commitment to limit the exports of skins to 50 000 annually. In 2003 and 2004, 48 000 caiman skins were authorized annually. Nevertheless, it is not clear whether or not the quota is being fully respected, although a brief evaluation indicated that recent numbers of caiman skins have not yet reached the annual quota set by CITES.

The major challenge in changing the Government policy from total prohibition to sustainable use of caiman is to maintain a strong caiman population size, while at the same time ensuring that local people are benefiting from the commercialization of caiman. So far, this challenge seems to have been met. (Source: Case study on *Caiman yacare* in Bolivia in *Trade measures – tools to*

promote the sustainable use of NWFP? FAO Non-Wood Forest Products Working Document 6. www.fao.org/docrep/010/k0457e/k0457e06.htm#P408_41380)



The high price of wild meat

A new report from the wildlife trade monitoring group TRAFFIC finds that hunting by hungry East African refugees is decimating populations of chimpanzees, buffaloes and zebras in the United Republic of Tanzania. More than half a million refugees from Rwanda, Burundi and the Democratic Republic of the Congo have taken up residence in camps across the country in recent years, pushing the nation's ability to protect its wildlife to the limit.

TRAFFIC reports that refugees are resorting to hunting wildlife because agencies supplying food are not providing meat. "The scale of wild meat consumption in East African refugee camps has helped conceal the failure of the international community to meet basic refugee needs," said Dr George Jambiya, the report's principal author. "Relief agencies are turning a blind eye to the real cause of poaching and illegal trade – a lack of meat protein in refugees' rations."

TRAFFIC, a joint operation of two leading international non-profit organizations, the World Conservation Union (IUCN) and the World Wide Fund for Nature (WWF), recommends that relief agencies and the Tanzanian Government increase the supply of meat protein to refugees in order to help reduce overhunting of already strained wildlife populations. But with even canned meat costing far more than the beans most agencies now provide as a protein source, wildlife advocates are not optimistic. (Source: *emagazine.com*, 27 January 2008.)

Trade is virtual but wildlife isn't

Chinese conservationists met major Internet auction site companies in January, urging action on illegal virtual trade in thousands of products made from threatened wildlife. On Chinese-language

Internet sites, 4 300 advertisements for the sale of wildlife products, including elephants, tigers, rhinoceroses and marine turtles, have been found.

The meetings with authorities in China, Hong Kong SAR and Taiwan Province of China follow an eight-month survey of popular Chinese-language auction sites by TRAFFIC. As a result, several advertisements have been removed, deliveries intercepted and those involved convicted.

Once the report *World Without Borders* was published, traffic TRAFFIC met the China CITES Information Authority and the China Internet Information Security Monitoring Bureau to address different standards in physical and virtual trade. The latest meetings were held with major Web site companies and other relevant organizations, such as the State Forestry Administration and the Customs Bureau, to find solutions to control illegal wildlife trade on the Internet.

TRAFFIC's aim is to promote efforts to keep online trade legal and sustainable, because the extent of wildlife being offered for sale in apparent contravention of international and national laws is alarming. The report recommends the development of strategies to police virtual markets, to bring Web-based markets under the same regulatory structure as physical markets and alert shoppers to the growing use of the Internet for illegal trade. (Source: *ENN News*, 29 February 2008.)

Gorilla Agreement enters into force

The Gorilla Agreement, negotiated in October 2007 by representatives of nine African range states under the auspices of the Convention on Migratory Species (CMS), has been signed by three range states and will enter into force on 1 June 2008. The Central African Republic and the Republic of the Congo signed the agreement during the meeting of the Congo Basin Forests Partnership on 26 October 2007, while Nigeria signed on 9 April 2008.

The first Meeting of the Parties will take place on 29 November 2008, in Rome, Italy, immediately prior to the Ninth Conference of the Parties to CMS (<http://www.cms.int/>). (Source: *MEA Bulletin*, 45.) ♣

A clear conscience is a soft pillow.

German proverb

 ARMENIA

Armenian tea isn't appreciated in Armenia

When the thyme leaves blossom, residents of nearby villages begin to harvest the herb from the lofty meadows around Sisian, Kapan and Goris. The fragrance of the thyme is pronounced in these areas and the oil content of the herb is rich.

"Bio Universal" LLC, purchases the thyme from the residents in its dried state and produces tea, oil, syrup, tinctures and seasonings from the herb. "Some 3 200 herbs grow in Armenia, of which 1 500 are medicinal plants. Many such plants are only to be found in Armenia," says Yuri Chilingaryan, the firm's director. "Based on this fact, we've decided to select the better-known varieties and produce teas, essential oils and condiments from them."

Tea is produced from thyme flowers and oil from the stems. The rest of the herb is used to make seasonings for appetizers and cheese that is aged underground. One gram of thyme essential oil can cure 100 kg of meat. It neutralizes the meat's odour and prolongs its shelf-life.

These products are also used for curative purposes. Thyme tea regulates the body's metabolism, cleanses it of the negative properties of alcohol and narcotics and stabilizes blood pressure. Thyme oils refresh and rejuvenate the skin. Joint pain can be eased when the affected areas are massaged with thyme essential oil. These items are also used to produce medicinal remedies since the herbs contain potassium, calcium and magnesium, among other elements.

Bio Universal began operations two years ago. During this period, teas, syrups and oils made from blackthorn, hawthorn, rose hips, mint, peppermint and other medicinal herbs have been added to the product list sold under the Manana brand name.

While these herbs were traditionally used in Armenian medicine, Armenian consumers today are more attracted to the black and green tea varieties more commonly found on the market. One of the reasons is that Armenian teas are expensive when compared with other tea types. One packet of thyme tea, for example, has an intrinsic value of 1 300 drams and is sold in stores for 1 560 drams. One gram of thyme essential oil is valued at around US\$5. This cost factor does not allow for large quantities of the product to be sold on the Armenian market.

In addition, 20 percent VAT (value-added tax) is also tacked on. This further complicates matters for the small-scale producer, says Chilingaryan. "We have packaged and stored away much of our product line but it's been a year already that we haven't been able to sell it. Our thyme and rose hip items are stored but haven't yet been packaged. At the same time we're ready to produce more and expand our production that today only amounts to 25–30 percent of total capacity."

The Armenian market for Bio Universal's product line is fairly small. Thus, the company views any future growth solely linked to the foreign market and orders with foreign buyers are at present being negotiated. [Source: Hetq Online [Yerevan, Armenia], 4 February 2008.]


 AUSTRALIA

Europe a weak link in the native food chain

Indigenous Australians have eaten them for tens of thousands of years and scientists are now telling us they are among the world's best sources of vitamins and antioxidants. But sales of Australian native foods are being hindered by stringent international laws that treat them as "novel foods" alongside genetically modified crops and food engineered by state-of-the-art nanotechnology. It is one of the reasons, say industry experts, that a dozen Australian "superfruits" are still a novelty on menus from Paris to London and Montreal.

Sibylla Hess-Buschmann, a native foods grower and researcher, has spent the past 18 months collecting documentation to prove that ancient Australian foods such as lemon myrtle and Kakadu plum are not novel exports to the European Union (EU). Since the establishment of the EU and the

mad cow disease scare, stringent food safety regulations have required importers to prove that products are not new, or face shipments being impounded. South American countries have called the EU's policies protectionist and appealed to the World Trade Organization for fairer access to EU markets for traditional foods.

The rarity of native food exports has created uncertainty for sellers and buyers and hobbled the export trade, Ms Hess-Buschmann said. But she hopes her research, combined with regulations expected soon, will open up the gate.

Not all barriers to the rise of native foods have been international. Australians have also been guilty of what some call a culinary cringe when it comes to our indigenous produce.

The Commonwealth Scientific and Industrial Research Organization (CSIRO) has estimated the industry's value "at the farmgate" at \$A14 million a year, not including the macadamia industry. But an industry spokeswoman, Martha Shepherd, said this figure was growing. An industry group, Australian Native Food Industry Ltd, began life only last year. It is now focused on getting about a dozen of the most commonly available native foods registered with the EU – a list that includes lemon myrtle, the quandong, the bush tomato, wattle seed and the desert lime. Some of these "priority foods", such as the Tasmanian pepperberry and the Kakadu and Illawarra plums, are among a list identified by Food Science Australia as having vitamin and antioxidant contents up to five times that of blueberry.

The chef Mathew Cribb says that the industry is a victim of its infancy, which means the prices of emu and crocodile can run to \$A70/kg. "Some of the ingredients are so expensive to buy that no one wants to take the risk."

Once that cycle is broken, they are confident that the times will suit Australian native foods – here and abroad. [Source: *Sydney Morning Herald* [Australia], 27 December 2007.]

 AZERBAIJAN

Originating centre and domesticating history of sea buckthorn (*Hippophae rhamnoides* L.) in Azerbaijan

The Genetic Resources Institute of the Azerbaijan National Academy of Sciences is one of the leading institutions in the region

and houses, among others, a Fruit, Berry and Grapevine Laboratory. The laboratory works on collections, reproduction studies, documentation and conservation of the gene pool of local resources of berry plants, including sea buckthorn.

There are natural brushwoods of sea buckthorn within 15 regions of the country Sheki-Zagatala, Quba-Khachmaz, Shirvan, Karabakh and Nakhchivan zones are especially rich in sea buckthorn. These ancient floristic regions of Azerbaijan are the origin of several families and genera, including oleaster (*Elaeagnus* L.) and sea buckthorn, which are representatives of the Elaeagnaceae Lindl. family. It is thought that migration to the north of these genera started from here.

Sea buckthorn used to be a tree-shaped plant in subtropical conditions. As a result of a colder climate in the Pleistocene and later periods, the bush shape began to develop. However, sea buckthorn kept its biological and morphological peculiarities, which are characteristic of tropical aboriginal wooden plants. Towards the end of the Cretaceous period, the Caucasus with its humid climate was covered by tropical and subtropical forests, but during freezing periods these tropical forests were nearly destroyed. However, the Talysh Mountains were not very exposed, which resulted in conditions to maintain the tropical forest components of the Hirkan flora. This is the reason why the Talysh Mountains play an exceptional role in the country's present very rich vegetation cover. Taking into account Hirkan flora's autochthonous origin, we believe that sea buckthorn has spread throughout Azerbaijan and to neighbouring countries directly from the Talysh region.

Like other fruit berries, sea buckthorn exists in many wild forms. Despite the large variety of sea buckthorn in Azerbaijan, there were no cultivated species. To meet individual demand, local people harvested wild brushwoods of sea buckthorn. Taking into account the small fruits, thorny bushes and the inaccessible locations of the natural brushwoods, fruit collection resulted in massive destruction of the wild varieties.

In order to meet both the people's and industry's demand, Siberian varieties of the sea buckthorn were introduced into Azerbaijan. However, testing of Altai varieties in three climate zones (Apsheron, Karabakh and Sheki) did not meet the expected results: the varieties were found

to be less fertile, with a short vegetation period and with low tolerance to diseases and pests.

Because of its national economic importance as a source of biologically active substances, the Genetic Resources Institute of the Azerbaijan National Academy of Sciences has begun to resort to the gene pool collection of 1972, in order to create high-yielding and qualitative varieties of sea buckthorn from local forms and introduced Altai varieties. The use of ecologically separated forms of sea buckthorn for hybridization allowed us to create a rich hybrid material. As a result, and appropriate to local soil and climatic conditions, the following cultivars have been created: Shafa, Zafarani and Tozlayan. These are high-yielding varieties (18–25 tonnes/ha), big-fruited (the weight of each fruit is 50–60 g), weak-thorned (Zafarani and Tozlayan) and even without thorns (Shafa).

In the natural brushwoods of Azerbaijan, sea buckthorn fruits mature towards the end of October. The new cultivars have different maturation periods (beginning of August to the second half of October) and are resistant to diseases and pests. These new sea buckthorn varieties are of universal character: they can be used as fresh fruits, to prepare jam, juice, liqueur, stewed fruit and much more. Thanks to their positive bioeconomic peculiarities, the profitability level is high (414–448 percent).

From a recent hybridization between forms of different origin (Siberia x Azerbaijan), three varieties of sea buckthorn with early maturation (ultra scope matured) fruits (July) and oil content (7.1 percent) have been obtained. Taking into account the economic efficiency of growing the above-mentioned varieties of sea buckthorn, we believe they can have great potential, not only in Azerbaijan, but also in countries with similar climatic conditions such as Turkey, the Islamic Republic of Iran, Bulgaria, Spain, Portugal and the southern regions of China. (Source: article by Mirza Musayev, in *GFU Update*, October 2007.)

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Valorización de productos forestales no madereros utilizados para crear artesanías

Los recursos forestales no madereros existentes en la amazonía boliviana alcanzan un potencial poco estudiado. Los pocos productos no madereros que se conocen tienen buena aceptación entre la gente. Al ser valorados representan una alternativa para generar ingresos económicos adicionales para muchas personas que dependen de estos recursos naturales.

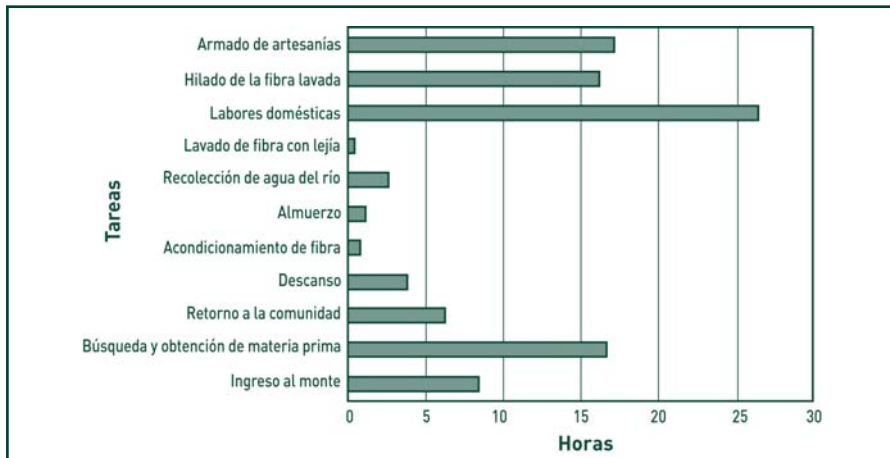
Las etnias indígenas que habitan las zonas bajas de la llanura tropical han aprendido a manejar sus recursos de forma sostenible. Un ejemplo de ello es que para facilitar varias actividades cotidianas han adoptado productos de origen vegetal, entre ellas se señala el uso de las fibras vegetales.

El uso de estas fibras ha permitido facilitar distintas actividades domésticas. Un buen ejemplo son algunos productos artesanales que elabora la etnia Yuqui, habitantes de la zona del trópico de Cochabamba (Bolivia), entre éstos se destacan las bolsas creadas con fibras de Ambaibo (*Cecropia concolor*) y Llausamora (*Abutilon purpusii*).

Este material vegetal proviene de la corteza de las especies antes mencionadas. Tanto el Ambaibo como la Llausamora poseen un filamento que se encuentra entre el ritidoma (corteza) y la parte interna del tronco (duramen). El aprovechamiento de estos filamentos conlleva una larga y ardua tarea, ya que algunas plantas como el género *Cecropia* vive protegida gracias a la simbiosis con hormigas agresivas que habitan en el interior del tronco.

Una vez aprovechada esta fibra pasa a ser transformada de forma artesanal en

Actividades regulares que intervienen en la transformación de bolsones. Las mismas fueron cuantificadas en horas promedio para bolsones medianos (25 x 22 cm.) elaborados en 5 días



pitás trenzadas. No existe una la tecnología adecuada para este trabajo, por lo tanto, los Yuquis lo realizan manualmente generalmente lo trabajan con las piernas. Este proceso conlleva mucho tiempo ya que este material es de textura dura y astillada.

Una reciente investigación realizada por E. Almanza y E. Sanzetenea tuvo como objetivo general valorizar de forma estratégica los productos artesanales de origen forestal no maderera de la comunidad indígena Yuqui. Los objetivos específicos fueron: a) registrar la cadena de transformación de un producto artesanal (bolsones) en dos zonas del trópico cochabambino; b) determinar el peso de los filamentos obtenidos de las especies aprovechadas en función de su desarrollo y ambiente, y c) determinar el peso de la fibra hilada (procesada) con relación a 100 gr. de fibra en bruto.

Entre las actividades que intervienen en la cadena de transformación, las tareas domésticas son las que ocupan mayor parte del tiempo. Los Yuquis se dedican más que todo a la caza, pesca y por ende a la atención del hogar ya que no son agricultores por tradición. Desde que empezaron a relacionarse con la cultura occidental influenciada por la migración colona, su cosmovisión sobre sus productos comenzó a tener un matiz más comercial y ello representa, hasta la fecha, extraer en mayor cantidad la biomasa del lugar.

No existe mucha abundancia de biomasa de Ambaibo (*Cecropia concolor*) y Llausamora (*Abutilón purpusii*) alrededor de la comunidad. Por referencias etnobotánicas hasta hace algunos años

atrás existía abundancia de biomasa en Bia Recuaté para elaborar bolsones de distintos tamaños. En los barbechos abandonados de sectores colonos (colindantes de la TCO Yuqui) se constató una mayor presencia de esta especie. En los lugares donde anteriormente hubo bastante intervención humana es donde se observó que el Ambaibo se desarrolla con toda tranquilidad. En predios de la comunidad San Marcos (vecina de la TCO), se encontraron manchas grandes de pura *Cecropias* ya que nadie le da importancia a estas plantas. En cuanto al *Abutilón purpusii* sucede algo similar.

En los lugares próximos a Bia Recuaté no se pudo encontrar esta especie, probablemente por las condiciones biofísicas del lugar. Al acercarse a la comunidad de puerto San Marcos, la Llausamora comienza a tener presencia en los barbechos abandonados. A unos 8 km al noroeste de San Marcos se encuentra el sector colono de Estañito Palmito, es ahí donde la abundancia de la Llausamora es mayor, aunque las plantas no presentaban mucho desarrollo sea en diámetro que en altura, a esa zona no es posible acceder por las diferencias entre colonos e indígenas. El Ambaibo y la Llausamora no son las únicas plantas tropicales que poseen fibras.

En otros bosques, algunas comunidades usan fibras de distintas especies como la Balsa (*Ocroma lagopus*), Jipi Japa (*Cardulovica palmata*), entre otros. La comunidad Yuqui particularmente, tienen más familiaridad con el comercio, ya que las fibras que ellos trabajan son bien aceptadas en el mercado local y a costos medianamente bajos.

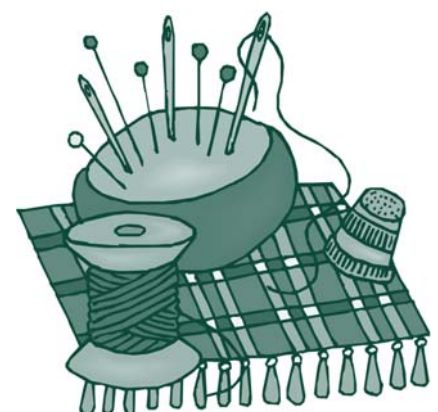
Al existir una buena aceptación del mercado sería interesante hacer ensayos de silvicultura de plantaciones, por ejemplo se podrían hacer ensayos de domesticación de las dos especies consideradas en este estudio bajo distintos tratamientos a fin de tener mayor materia prima a corto plazo.

Aportación hecha por Eddy Almanza Cadima, Proyecto Manejo Forestal Sostenible en Tierras Bajas de Bolivia (FOMABO-ESFOR/UMSS), Av. Atahualpa final norte, Temporal de Cala Cala, B. Prefectural, Casilla 447, Cochabamba, Bolivia. Correo electrónico: eddy_a_c@hotmail.com y Edward Sanzetenea Terceros, Escuela de Ciencias Forestales (ESFOR - UMSS), Av. Atahualpa final norte, Temporal de Cala Cala. B. Prefectural, Casilla 447, Cochabamba, Bolivia. Correo electrónico: e.sanzetenea@umss.edu.bo

Jipi japa resource

Jipi japa palm (*Cardulovica palmata*) is extensively distributed throughout the lowland tropics, extending from the centre of Bolivia northwards into the Amazon basin. Generally it is found within forest fringes of foothills and around river banks. It grows in clusters of individual plants, and harvesters target young unfurled leaves from which to extract plant fibre to weave hats and for other diverse crafts.

Resource scarcity is considered to be largely a result of habitat loss – deforestation and mass land conversion to agriculture – rather than overharvesting. According to the National Protected Areas Service (SERNAP), people wishing to harvest jipi japa must ask for a permit related to its function and future use, i.e. either domestic or with a commercial aim. The law states that while individuals may own the land upon which jipi japa grows,



they do not own the actual resource. However, national regulation has little impact and, in reality, this government department receives a negligible number of requests for extraction permits.

As a result of depleted natural resources, some communities have attempted to domesticate the species, with the most promising results coming from growing it with other plants and under shade. (Source: *Commercialization of non-timber forest products: factors influencing success. Lessons learned from Mexico and Bolivia and policy implications for decision-makers*, eds. E. Marshall, K. Schreckenberg and A.C. Newton.)

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BURKINA FASO

Village Tree Enterprise – supporting development of small enterprises based on NWFPs

NWFPs are an important part of traditional livelihoods and culture in the West African Sahel and remain popular not only with rural people, but also with recently urbanized populations. Villagers generally have free access to communal forest resources. NWFPs are already an important source of income for rural households – especially for women, as NWFP harvesting and marketing are traditional preserves of women in Africa. Although official statistics are rare, informal evidence indicates that trade in NWFPs has grown in recent years, both domestically and internationally.

Yet isolation from marketing opportunities remains a familiar characteristic of rural livelihoods in the Sahel. TREE AID, an NGO based in the

United Kingdom, has developed a series of initiatives to help rural populations in the region take fuller advantage of opportunities for commercial trade in tree and forest products.

In January 2005, various departments of the Burkina Faso Government, local NGOs, TREE AID and FAO joined forces to launch a pilot project for the promotion of small business development based on tree and forest products: the Village Tree Enterprise. The pilot project adopted a Market Analysis and Development (MA&D) approach to entrepreneurial organization and capacity building at the village level to improve local processing and marketing of NWFPs. (Source: *Unasylva*, 228(58), [2007; <http://www.fao.org/forestry/8707/en/>]

Collection of wild plants for household consumption

In Burkina Faso, and throughout the West African Sahel, rural women carefully collect the fruit, leaves and roots of native plants such as the baobab tree (*Adansonia digitata*) and red sorrel leaves (*Hibiscus sabbarifa*), kapok leaves (*Ceiba pentandra*) and tigernut tubers (*Cyperus esculentus* L.) for use in the family diet.

These supplement the agricultural grains (millet and sorghum) that provide only a part of the nutritional spectrum and may fail in any given year. More than 800 species of edible wild plants have been catalogued across the Sahel. (Source: IK Notes 23 in *Building on gender, agrobiodiversity and local knowledge. A training manual*. FAO.) (Please see page 73 for more information.)



CAMBODIA

Life of people in community forests in remote areas

Farmers living in mountainous areas do not have sufficient land to produce rice. They live in hope of collecting NTFPs in both the wet and dry seasons.

At present, Cambodians living in rural and remote mountainous areas have more understanding thanks to awareness-raising efforts by both local NGOs and international organizations. Through these networks, communities have made improvements in organizing themselves to manage and protect natural resources and forest areas, which they believe are valuable for their children and the generations to come.

CAMBODIA NTFP WORKING GROUP

The Cambodia NTFP Working Group is an informal network of individuals and organizations working towards the promotion of forest conservation and sustainable NTFP livelihoods in Cambodia. They produce a monthly newsletter, *Forests, People and NTFPs*.

For more information, please contact: cnwg_news@online.com.kh

Many communities living in the remote mountainous areas earn a livelihood by collecting NTFPs such as vines, rattan, wild fruits and honey. They also keep cows and buffaloes for labour exchange with the more affluent. The creative use of NTFPs helps to improve the living conditions of these communities and provide them with a brighter future.

The Vice Chairman of Taop Cheang Mountain Community Forestry said that in his community forest area there were plenty of honeybees this year, yet community members collected very little honey annually: they found it difficult to sell and it was cheap because the buyers assumed that it was not pure. No matter how hard the sellers try to explain that their honey is pure, the customers do not usually believe them.

People from Taop Cheang Mountain community rely on NTFPs, especially rattan. In general, the life of rattan collectors is extremely hard. They go to the forest in the wet season and have to set up camp to stay in the forest for many days. Since the water rises in the wet season, it is easy for boats to access and transport rattan canes. Rattan collectors have to go down deep valleys to look for rattan because these types of creepers grow in parallel with big trees. So the rattan collectors take many risks and spend a lot of money in transport. Sometimes, after dealing with all expenses, they end up having nothing left at their disposal. This makes collecting NTFPs hopeless for them. Yet they have no alternative.

There are five kinds of rattan canes (*phdao*) the traders need: i) *phdao ach moan* (*Calamus guruba*) is used for basketry and chair seats; ii) *phdao chhveang* (*C. palustris*) is excellent for

furniture frames; iii) *phdao saom* (*Daemonorops jenkinsiana*) is usually used for low-quality furniture and for coring and binding; iv) *phdao dambong* (*C. rudentum*) is used for handicrafts; and v) *preah phdao*. Every time collectors sell rattan to traders they are bought for a low price, with prices for one piece ranging from 200 to 300 riel (for *phdao ach moan*) to 1 000–1 500 riel for *preah phdao*. Sometimes the traders say they will buy only if the rattan is 5 m long. Prices are usually dictated by the traders and have no clear reference.

Therefore, there is little incentive for community people to collect rattan in the forest: rattan collection can be dangerous with the wild animals in the forest, and the price of rattan is low. If traders continue to lower the prices at their will, Cambodia's forest products may be of no use to communities in the future.

However, the community at present has hope in the local NGOs and international organizations that helped train them in techniques to process rattan for furniture and handicrafts and to find export markets. This is instrumental in order to improve the living conditions of the people in the Taop Cheang Mountain community and in other communities. [Source: *Forests, People and NTFPs*, Year 1, Issue 1, November 2007.]



Diversity of plants in cocoa agroforests in the humid forest zone of southern Cameroon

In the humid forest zone of southern Cameroon, farmers generally associate cocoa with native and exotic trees in complex agroforestry systems. Despite the socio-economic and ecological importance of these systems, few studies have investigated their plant composition. We investigated the tree composition of these cocoa agroforests along a gradient of market access, population density and resource use intensity in the subregions of Yaoundé, Mbalmayo and Ebolowa. Market access, population density and resource use intensity all decreased from the first to the third subregion.

We quantified the diversity of tree species associated with cocoa within individual agroforests, among agroforests in the same region and among the three subregions, and classified the tree species according to their main uses. A total of 9.1 ha belonging to 60 cocoa agroforests were

inventoried in 12 villages. We encountered a total of 206 tree species with an average of 21 tree species per agroforest. In the more urbanized area around Yaoundé, agroforests were less diverse than in the other subregions.

In all the agroforests, food-producing tree species tended to be more frequent than other species. Two-thirds of the food trees were native forest species and one third was introduced. From Ebolowa to Yaoundé, the density of food-producing trees doubled and the density of exotic food-producing species increased relative to native species. Some local species producing high-value NTFPs were found in the agroforests, but their density was far lower than that of exotic tree species. The agroforests also provide medicine, charcoal and other products for household consumption and sale.

We conclude that unless there are specific efforts to promote local forest tree species in cocoa agroforests, these will progressively lose importance with increasing market access, population pressure and land use intensity. [Source: D.J. Sonwa *et al.* 2007. Diversity of plants in cocoa agroforests in the humid forest zone of Southern Cameroon. *Biodivers Conserv.*, 16: 2385–2400.]

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Le Cameroun: les PFNL et la biodiversité forestière

Parmi les composantes de la biodiversité forestière, les produits forestiers non ligneux (PFNL) sont d'une manière générale les produits forestiers autres que le bois d'œuvre, désignant l'ensemble des biens et services pouvant être vendus, autoconsommés ou être utilisés par l'industrie comme source de matières premières provenant des ressources renouvelables de la biomasse. Alors, l'on ne pourrait savoir combien de fois les PFNL jouent un rôle important dans la satisfaction des besoins des communautés camerounaises et celles du bassin du Congo en général, comme étant leur moyen de subsistance, de maîtrise de la gestion de l'environnement sur le plan agro-sylvo-pastoral.

Dans le bassin du Congo, le Cameroun est l'un des pays ayant une potentialité considérable en biodiversité forestière. De ce fait, on y trouve un massif forestier dense et humide couvrant environ 60 pour cent de son territoire national, soit environ 20 millions d'hectares (classé au deuxième rang en Afrique). Par la richesse naturelle qu'offre sa biodiversité, on y trouve près de 297 espèces de mammifères sauvages (cinquième rang africain), 183 espèces de reptiles (sixième rang africain), 39 espèces de papillons (deuxième rang africain), 280 espèces d'oiseaux. Tout cela fait du Cameroun, le deuxième pays d'Afrique en matière de biodiversité forestière.

En plus de ce potentiel, il faut ajouter les plantes médicinales, les plantes alimentaires et les plantes de service. On compte près de 8 000 espèces de plantes parmi lesquelles près de 150 espèces sont endémiques au Cameroun; ce qui le place au deuxième rang africain.

Dans le cadre de cette étude, la collecte des données s'est faite pour certaines catégories de PFNL classés dans le sens latéral selon l'ordre décroissant de leur importance:

- les plantes médicinales, les plantes aromatiques et les plantes fourragères;
- les plantes médicinales, les exsudats et les produits apicoles;
- les plantes médicinales, les plantes comestibles, les plantes ornementales et les animaux sauvages vivants;
- les plantes médicinales, les plantes comestibles, les rotins et le gibier;
- les plantes médicinales, les plantes comestibles et les ressources halieutiques.

Grâce à ces travaux, certains PFNL (plantes médicinales et plantes comestibles) ont revêtu une grande importance socioéconomique à l'échelle nationale, alors que par l'absence de la vulgarisation d'une technique industrielle de conditionnement, d'autres PFNL pour le moment n'ont pas encore assez d'importance connue de tous pour une exploitation soutenue et durable. C'est l'un des problèmes majeurs liés à la gestion des PFNL et se posant dans la plupart des pays en développement, dans le bassin du Congo et au Cameroun en particulier.

Des expériences faites dans ces régions ont montré que les PFNL sont utilisés au niveau local pour la subsistance et/ou pour la génération des revenus économiques supplémentaires des populations; d'où la nécessité de leur commercialisation.

Présentation de quelques PFNL bien connus et trouvés au Cameroun

Nom commercial ou commun	Nom scientifique	Parties utilisées
Pygeum	<i>Prunus africana</i>	Écorce, feuilles, racines
Bush onion	<i>Apostyrax le pidophyllus</i>	Bulbes
Voacanga	<i>Voacanga</i>	Graines, feuilles, latex
Noisette (komol)	<i>Coula edulis</i>	Graines
Yohimbe	<i>Pausinystalia</i>	Écorces
Arbor à ail (Olom)	<i>Scorrodipheus zenkeri</i>	Ecorces
Rauwolfia	<i>Rauwolfia vomitoria</i>	Racines, écorces
Eru, Okok	<i>Gnetum africanum</i>	Feuilles
Strophantus	<i>Strophantus gratus</i>	Graines, feuilles
Bidou	<i>Saccogiotis gabonensis</i>	Ecorces
Moambe jaune	<i>Enanthia chlorantha</i>	Ecorces
Saringang	<i>Terminalia glaucescens</i>	Graines, écorces
Emien (Ekuk)	<i>Alstonia boonei</i>	Ecorces, racines, feuilles
Candle stick	<i>Carpolobia tues</i>	Tiges, écorces
Gomme arabique	<i>Acacia spp</i>	Exsudats
Atui (dabema)	<i>Piptadeniastrum afromomum</i>	Ecorces
Noix de kola (kola nut)	<i>Colonidita colacuacciminata</i>	Noix
Bambou de chine	<i>Arundunaria alpina;</i> <i>Oxytenanthera abyssinica</i>	Tiges
Aiele (abel)	<i>Canarium schweinfurthii</i>	Fruits, exsudats
Fromager	<i>Ceiba pentandra</i>	Racines, feuilles écorces,
Poivre sauvage (Bush pepper)	<i>Piper guineensis</i>	graines
Essesang (Indjanssang)	<i>Ricinodendron heudoletii</i>	Graines fruits
Bitter kola	<i>Garcinia kola</i>	Noix
Fève de Calabar (Calabar beans)	<i>Physostigma venenosum</i>	Graines
Divers afromomum	<i>Afromomum spp</i>	Graines, feuilles, fruits
Bush mango (andok)	<i>Irvingia gabonensis</i>	Ecorces, amandes
Charbon de bois	Tout bois	Bois carbonisé
Akpa	<i>Tetrapleura tetraptera</i>	Ecorces, racines, fruits
Dambala	<i>Discoglyprena</i>	Bois
Bilinga	<i>Nuclea diderrichii</i>	Fruits, racines écorces
Chewing stick	<i>Garcinia manii</i>	Bois
Padouk	<i>Pterocarpus soyauxii</i>	Ecorces
Ebene (Eboni)	<i>Diospyros spp</i>	Bois
Iroko	<i>Millitia excelsa</i>	Ecorces, graines, feuilles, exsudats
Wengue	<i>Milletia laurentii</i>	Bois
Bubinga (Essingan)	<i>Guibourtia tessimanii</i>	Ecorces
Rotin	<i>Calamus spp liagne</i>	Tiges
Moabi (adjap)	<i>Baillonela toxisperma</i>	Graines, écorces
Funtumia	<i>Funtumia spp</i>	Latex, bois

Cette analyse montre que la biodiversité forestière est constituée d'un ensemble de ressources dont les PFNL sont les plus abondants et sont susceptibles de contribuer efficacement à l'atteinte d'un réel développement économique et durable en milieu tropical. Cependant, il serait souhaitable que tous les acteurs impliqués dans la gestion des ressources naturelles puissent trouver des moyens rapides et fiables pour une pérennité, afin de pouvoir concilier la protection de l'environnement et l'amélioration du cadre de vie des communautés riveraines des forêts.

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CHILE Chile approves Native Forest Law after 15 years

Santiago. The Chilean parliament has unanimously approved a law to preserve the country's forests, promote their sustainable use and foster related scientific research.

The Native Forest Law has been in negotiation for 15 years – the longest any law has taken to pass in Chile – and members of the scientific community, environmental organizations and government authorities have expressed great satisfaction with its approval this month (19 December). "This law introduces

an ecosystemic vision that does not consider the forest just as a wood source, but as a benefit for the community, since it sets funds for forest recovery and for its non-lumber management," says Antonio Lara, Dean of the Forestry Science Faculty at the Austral University in Valdivia, Chile, and involved in the negotiations since 1992.

A key aspect of the law is the creation of an initial fund of US\$8 million a year for forest conservation, recovery and sustainable management projects. The text of the legislation mentions the establishment of an additional annual fund to "boost scientific and technological research related to the native forest and the protection of its biodiversity, soil, water sources, flora, fauna and the associated ecosystems". The law will also protect water sources by banning the felling of native forests located near springs, rivers, glaciers, wetlands and lands with steep slopes.

An advisory council will be set up – involving government authorities, forestry and biology academics, NGOs and native forest owners – to advise on the law's application and propose modifications.

Chile has more than 15 million ha of forest, 13.4 million of which are native. According to a press release from the Chilean Ministry of Agriculture, the law is likely to allow 500 000 ha of native forest to be preserved over the next 15 years, 600 000 ha to be recovered for productive use and 38 000 new jobs to be created in and around the forestry sector. Furthermore, the Ministry suggested that biomass from forest waste could also provide a potential source material for biofuel. [Source: SciDev.Net, 31 December 2007.]



DEMOCRATIC REPUBLIC OF THE CONGO Indigenous peoples map their forests with GPS in an effort to save them

This week over 500 villagers in the Democratic Republic of the Congo's rain forest will employ GPS (global positioning system) technology to map their forests in an effort to preserve their territory from logging companies. This large-scale community initiative is being managed by the Rainforest Foundation UK (RFUK), which has trained 66 "Master Mappers" to aid the villagers in mapping their territories, using motorbikes and canoes. The villagers are mapping their full

territory in the country, but are also employing GPS to mark significant areas including their villages, sacred places, and fishing and hunting areas.

The Congo Basin has the world's second largest rain forest. It has suffered greatly from the two civil wars in the Democratic Republic of the Congo (DRC) from 1996 to 1997 and from 1998 to 2003. During these devastating wars, militias and armies exploited the rain forest and its indigenous peoples with impunity. Since the end of war, the political stabilization of the country has meant that its forests are under new pressure, this time from industrial and often international logging companies.

"There is a rush for the trees," according to René Ngongo, from the local NGO, Organisation Concertée des Ecologistes et Amis de la Nature (OCEAN), which is working with RFUK. "What is at stake is enormous. Two-thirds of the people in the Congo Basin depend on this forest to provide food, medicines and building materials. It is critical for the survival of the people and animals."

The natives of the forest have largely been left out of forest policy thus far; the hope is that these maps will change all that. "It is going to be the first time that anybody in DRC sees on paper that these forest-dependent communities exist," Cath Long, RFUK Project Director, said. "Their maps will be a vital tool for the communities to negotiate with the government. It will allow them to demonstrate that they are there, and that they need to be taken into account when decisions are made about the forest they live in."

The maps are to be completed by 8 May, in time for a meeting where the government will decide how various territories of the forest are to be used. The meeting could affect forest policy in the country for decades. For indigenous villagers, who have already seen portions of their territory handed over to logging companies, this is an opportunity to make their voice heard.

Simon Counsell, RFUK Director, adds that the preservation of the rain forest, or the lack thereof, could no longer be considered purely a regional question. "This is an issue that affects us all because not only are rain forests home to an estimated 50 million indigenous forest peoples and more species of plants and animals than all the earth's other ecosystems combined, but also because

protecting the forests is essential in the fight against climate change." (Source: Jeremy Hance, mongabay.com, April 13, 2008.)

(Please see page 25 for more information on the Democratic Republic of the Congo.)



EL SALVADOR

El bálsamo de El Salvador: tradición y alternativa sostenible

El proyecto "Mejora, recuperación y promoción del bálsamo (*Myroxylon balsamum*) en cinco comunidades de la Cordillera del Bálsamo en El Salvador" es realizado por Intervida gracias a la contribución de la "Fondazione CARIPLO" de Milán, Italia. La idea del proyecto nació en 2003 cuando, visitando las zonas de intervención de Intervida en El Salvador, se tuvo la oportunidad de conocer las condiciones de vida de las poblaciones de la cordillera del Bálsamo. Se trata de una zona montañosa ubicada en los departamentos de La Libertad y Sonsonate, entre la carretera del Litoral y la carretera Panamericana que une la capital San Salvador a Sonsonate. Dichas comunidades viven en una de las zonas menos deforestadas del país, con gran vocación forestal y hasta hace pocos años dedicadas casi exclusivamente a la producción cafetalera.

Desde la introducción del café, el bálsamo, alto y majestuoso árbol, ha sido utilizado para dar sombra. A causa de la reciente crisis del precio del café, las comunidades rurales de la zona se han visto obligadas a buscar alternativas de generación de ingresos. Una de las más interesantes ha sido el regreso a la extracción de la resina del bálsamo; sin embargo, volver a esta producción supone toda una serie de problemas a los que los técnicos no tenían soluciones ni recomendaciones: no había literatura ni experiencia formalizada y estructurada. Es por esta razón que en el marco de un proyecto piloto se decidió proponer la realización de estudios que orientaran –

valorizando la tradicional experiencia de los productores – la formulación de propuestas técnicas que permitieran llegar a un aprovechamiento sostenible de este recurso forestal.

Un reciente libro (*El bálsamo de El Salvador: tradición y alternativa sostenible*, de Alessandrello, Marco; González, José Mardoqueo y de la Escuela Nacional de Agricultura, publicado en el marco de la ejecución de este proyecto, está estructurado en cuatro partes. Las dos primeras están basadas en investigaciones bibliográficas que presentan la historia del árbol y sus características, las técnicas de cultivo y extracción, calidad y usos de la resina. La tercera parte, basada en un trabajo experimental, presenta la investigación de campo sobre el cultivo del bálsamo en las cinco comunidades del proyecto y una guía del cultivo a partir de este estudio. La cuarta parte, dedicada a la comercialización de la resina, es fruto del estudio sobre el mercado nacional e internacional y las labores de investigación.

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EQUATORIAL GUINEA

Oil boom fuels bushmeat trade in Equatorial Guinea

Interdisciplinary research in continental Equatorial Guinea shows the impact of changing national economics on bushmeat hunting and trade. The economy has recently boomed following the discovery of offshore oil in the mid-1990s. A study of consumers, markets, households, hunters and offtake in the regional capital, Bata, and the village of Sendje, 41 km to the south and a major supply of bushmeat to Bata, has shown that the resulting increase in incomes is increasing demand for fresh meat and fish, with all fresh meat and fish types registering positive income elasticities. With few alternative sources of fresh animal protein (fish is favoured, but fisheries are underdeveloped and current supply is inadequate), and few alternative rural livelihoods, commercial hunting is increasing to feed this demand.

Over 10 000 animals (40 000 kg) were hunted in Sendje in 2003. Of these, relatively little bushmeat was bought or consumed by Sendje households, since its high cost meant it was more profitable to sell most of it (89 percent) to the Bata market and use the profit to buy cheaper dried fish or frozen alternatives. Across the village, hunting was the second highest-earning livelihood activity after wage-paying jobs (with hunting the sole livelihood for 55 of 93 adult males), but the median monthly income from hunting was less than half that of waged employment. Although one particularly prolific hunter had the highest per capita income in the village, in general men preferred the security of a regular wage, and nearly all said that they did not like hunting. Hunting tended to be a "fall-back" option, providing a source of income in the absence of preferable alternative livelihood opportunities.

Increasing the availability of alternatives at the urban level would decrease demand for bushmeat, but without provision of alternative rural income-generating opportunities as well, low opportunity costs mean that hunting will continue and hunting households will simply get poorer. Feasible solutions that address both demand and supply are therefore urgently needed to improve food security, livelihoods and conservation simultaneously.

[Source: N.F. Kümpel, 2006. *Incentives for sustainable hunting of bushmeat in Río Muni, Equatorial Guinea*. Institute of Zoology, Zoological Society of London and Imperial College London, University of London (Ph.D. thesis). Available at: www.iccs.org.uk]

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ETHIOPIA

Wild food plants in southern Ethiopia

The rural people of Ethiopia are endowed with a profound knowledge of the use of wild and medicinal plants, some of which are consumed and used particularly during

droughts, wars and other hardships. Elders and other knowledgeable community members are the key sources or reservoirs of plant knowledge. The consumption of wild food is still very common in rural areas, particularly among children. Of these, the most common wild plant fruits are those of *Ficus* spp., *Carissa edulis* and *Rosa abyssinica*.

The consumption of a wide range of wild plants is more common and widespread in food-insecure areas; the linkage has given rise to the notion of famine-foods, plants that are eaten only in times of food stress and are therefore an indicator of famine conditions. Local people know the importance of wild plants and the contribution that they make to their daily diet, although they also know about the possible health hazards, such as an upset stomach after eating certain wild plants. For example, *Balanites aegyptiaca* (*bedena* in Amharic), an evergreen tree 10–20 m tall, is typical of this category. Children eat its ripe fruit at any time as do adults when there are food shortages. The new shoots, which are always growing during the dry season, are commonly used as animal forage. During food shortages, however, people cut the newly grown succulent shoots and leaves and cook them like cabbage. People in the drought-prone areas of southern Ethiopia also apply these consumption habits to the fruits and young leaves of *Solanum nigrum* (black nightshade), a small annual herb, and *Syzygium guineense* (water berry tree), which is a dense, leafy forest tree about 20 m tall.

In parts of southern Ethiopia, the collection and consumption of wild food plants are key to important local survival strategies and have intensified because of

the repeated climatic shocks that have hampered agricultural production, leading to food shortages. Increased consumption of wild foods allows people to cope better with erratic, untimely rains, while they are also able to face several consecutive years of drought, without suffering severe food shortages, famine and general asset depletion, as is the case in other areas of Ethiopia. Although wild plants are found in uncultivated lowland bush, forest and pastoral areas, in the more densely populated and intensively used upper lands, a great variety of these indigenous plants and trees has been domesticated for home consumption and medicinal use. Konso, Derashe and Burji special *weredas* (administrative districts) and parts of the Southern Nations, Nationalities and People's Region (SNNPR) may still be considered part of the biodiversity hotspots of southern Ethiopia. [Source: Y. Guinand and D. Lemessa in *Building on gender, agrobiodiversity and local knowledge. A training manual*. FAO.] [Please see page 73 for more information.]

Ethnomedicinal plant knowledge and practice of the Oromo ethnic group

An ethnomedicinal study (by Haile Yineger, Delenasaw Yewhalaw and Demel Teketay in *Journal of Ethnobiology and Ethnomedicine*, 2008, 4:11) was undertaken from December 2005 to November 2006 to document indigenous medicinal plant knowledge and use by traditional healers in southwestern Ethiopia. Data were collected at random from 45 selected traditional healers using semi-structured interviews and observations.

Sixty-seven ethnomedicinal plant species used by traditional healers to deal with 51 different human ailments were identified and documented. The indigenous knowledge of the healers was positively correlated with their reported age but not with their educational level. A high degree of consensus was observed among traditional healers in treating tumours (locally known as *tanacha*), rabies (*dhukuba seree*) and insect bites (*hadhaa*). The use of more than one species was particularly cited for remedy preparations.

The reported abundance of the ethnomedicinal plant species varied significantly with regard to the presence of multiple uses of the reported species. Results showed that ethnomedicinal plant species used by healers are under serious threat owing to several factors, which



Balanites aegyptiaca

indicates the need for urgent attention towards their conservation and sustainable utilization. [Source: 7thSpace Interactive (press release) [New York, United States], 29 April 2008.]

GERMANY

German herbal cure market under strain

Germany has become the €1.6 billion a year global leader in herbal medicines, but the green lobby may be pruning back future profits.

Some 45 000 tonnes of plants, roots, shoots and leaves are harvested every year, more than in any other industrialized country. About 75 percent of customers in German pharmacies choose a natural product when buying non-prescription medications, and Germany is the world's largest exporter.

But conservationist Uwe Schippmann warns that excessive harvesting and unregulated trade pose a threat to the existence of 4 000 medicinal plants worldwide, about 150 of them in Europe. For about a decade, Schippmann's conservation group BfN (German Federal Agency for Nature Conservation) has been working with the World Wide Fund for Nature on a comprehensive protection plan for medicinal and aromatic plants. [Please see page 27 for more information.]

Growing these plants industrially is not an option – it is either impossible or requires too much effort to domesticate them. So unless ways can be found to replicate Mother Nature, natural medicines could become scarcer. [Source: This is Money [UK], 11 February 2008.]

GHANA

Bushmeat hunting and forest degradation in Ghana

Tropical forests play an important role in supporting the livelihoods of 21 million Ghanaians, particularly the rural communities. However, the combined effect of overexploitation of forest resources, unsustainable farming practices, bush fires and mining have significantly reduced Ghana's forest area. Continued forest loss, which is currently at an annual rate of 1.3 percent, threatens the existence of many valuable indigenous tree species such as African mahogany (*Khaya ivorensis*). In order to address this concern, the



Government of Ghana has embarked upon community-based forest rehabilitation and landscape restoration through the development of plantation and agroforestry systems, using indigenous tree species.

Determining the impacts of rehabilitation interventions on the livelihood structures and sociocultural practices of local communities in Ghana will be the main socio-economic subject of the Finnish-Ghanaian forestry research project "Restoration of Indigenous Forest Landscape in Ghana: Interdisciplinary Approach" between 2008 and 2011.

In Ghana, there is currently a "bushmeat boom" and people are encouraged to farm grasscutters instead of hunting animals. [See pages 25–27 of Non-Wood News 14 for more information on bushmeat and the boom in Ghana.] Bushmeat hunting can also cause deforestation if it is undertaken by starting bushfires to scare animals out of their natural habitat. FAO's *State of the World's Forests 2007* also indicated that commercial trade in bushmeat for consumption is probably the single most important cause of the decline in wildlife populations in many parts of Africa, ranging from insects, birds and turtles to primates, antelopes, elephants and hippopotamuses. However, what would be the socio-economic impacts if bushmeat hunting were to be prohibited in the project areas?

It is not clear how important bushmeat is for maintaining standards of living and as a source of protein in Ghana. For example, earlier studies in the United Republic of Tanzania suggest that the causes of hunting are connected with poverty and low dietary standards. Therefore, assessing the variation in forest use and dependence on all forest resources (and especially bushmeat) of different socio-economic backgrounds will be covered in this study. The empirical investigation of dependence on forest

resources may help to improve macrolevel poverty estimates and policy planning and execution. The quantification of environmental income may serve as an important factor in encouraging forest restoration or reforestation, input into the conservation policy and particularly establishment of protected areas, by determining the potential loss to rural dwellers of reduced access to environmental resources. [Contributed by: Dr Tapani Tyynelä, Finland.]

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Standardization and legalization of moringa leaf powder trade

Moringa is a tropical tree (*Moringa oleifera*) that can be intensively cultivated for leaf production. The leaves are extremely rich in proteins and micronutrients (vitamins, minerals and antioxidants) and can be dried and grounded into a powder, to be used as a food supplement. This product is becoming more and more popular for individual use or in schools and during maternities to fight micronutrient deficiency. African companies manufacturing cereals are also interested in enriching their products with this low-cost, locally available source of vitamins and minerals.

In 2006, the Moringanews network organized an international workshop on *moringa*, financed by CDE (Centre for the Development of Enterprise) and CTA (Technical Centre for Agricultural and Rural Cooperation ACP-UE). The workshop created a high level of interest in this plant. Demand for *moringa* leaf powder exploded, and prices reached €150/kg in February 2007. Production followed quickly and prices went down to more reasonable levels, around €40/kg (November 2007).

The Moringa Association of Ghana (MAG) was founded in January 2007, in the presence of the Minister of Health, by the main producers, processors and traders of *moringa* leaf powder. The question of product registration was quickly raised and MAG established close relationships with the regulating bodies concerned: the Food and Drug Board, Ghana Standard Board and

Food Research Institute. These bodies provided training for MAG members on sanitary issues, processing, packaging and labelling. However, the novelty of *moringa* leaf powder as a food, and in particular the absence of product standards, hindered the certification process.

In November 2007, CDE and Ex-Change agreed to finance a short mission at the request of the Paris-based Moringanews network. The objectives were to facilitate the certification of *moringa* products and identify the needs of MAG to carry out its role as an intermediary organization.

As a result of the mission, the Ghana Standard Board is ready to prepare the gazetting of Publicly Advisable Specifications, i.e. provisional product standards, until the full certification procedure is carried out. The missing data for the product standards will be researched by the Food Research Institute – shelf-life and maximum moisture content. The Food and Drug Board is ready to accept the registration of *moringa* leaf powder as a food if MAG controls the processing, packaging and labelling. Moringanews and CDE are committed to continue to support the development of the *moringa* market. [Source: Underutilized Species Update, April 2008 [Global Facilitation Unit].]

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Government taking action to reduce pressure on forests

The Government of Ghana has embarked on forest plantation development, including development of the bamboo and rattan industry, to reduce the pressure on natural forest and slow the process of deforestation.

The Bamboo and Rattan Development Programme (BARADEP), has been adopted as a national policy to complement the President's Initiative on Forest Plantations with a secretariat to coordinate issues on

THE SHEA TREE CAN BE USED TO FIGHT DESERTIFICATION

The shea tree (*Vitellaria paradoxa*) has environmental significance for Ghana, particularly in the fight against desertification. Ghana's total land area of 238 539 km² is at risk of desertification, which claims about 20 000 ha of the country's land annually. The most severely affected areas are the northern and upper regions of the country. Land in these parts of Ghana is arid and the climate is hot and dry. The land in these regions is covered in sparse vegetation and is mostly grassland, conditions which make it susceptible to desertification.

Therefore, in the fight against desertification in these areas, the shea tree, which has been described as the "cocoa of the north", could be a suitable ally. Although several efforts have been made to propagate the shea tree scientifically over the years, no significant results have yet been achieved. However, like all scientific efforts, it is only a matter of time before a solution is found. [Source: Joy Online [Ghana], 3 December 2007.]

bamboo and rattan development, processing and marketing. [Source: Modern Ghana [Ghana], 25 April 2008.]

A viable shea nut industry can curb migration of girls

A recent study, conducted by a group of researchers at the University of Ghana, has concluded that: "It is possible that if the shea nut and shea butter industry is given special attention, it could be a more lucrative source of income for young girls and make migration to the south less attractive to them". This conclusion is based on the fact that most of the young girls who migrate to the south initially engage in the shea nut trade to secure their fare to travel to the south only to engage in menial jobs. Details of the report revealed that many teenage female migrants were exposed to reproductive health risks in the south, which could have been avoided if the shea nut industry had been developed as a sustainable source of income.

The Government of Ghana in its 2008 budget promised to invest 550 000 cedis in

the shea nut industry in the north. According to the budget, a steering committee to revamp the shea nut industry, which is one of the major preoccupations of the three northern regions, has been established.

This newspaper thinks that the development of the shea nut industry should be a broad component of the Northern Development Fund, which was also announced in the 2008 budget with the commitment of seed money of 25 million cedis. [Source: Public Agenda [Accra, Ghana], 15 January 2008.]



La contribución de los productos forestales no madereros al derecho a la alimentación

En Honduras, los principales productos forestales no madereros (PFNM) utilizados y aprovechados comercialmente son la resina de pino y la resina de liquidámbar. Otros PFNM que también tienen importancia comercial son las semillas forestales, las flores, musgos, animales silvestres y una gran diversidad de cortezas y hojas utilizadas como productos medicinales.

El reglamento de la Ley de Modernización y Desarrollo del Sector Agrícola (Acuerdo 1039-93-LMDSA), contiene disposiciones en línea con tales exigencias, al establecer que el cumplimiento del plan de manejo dará al propietario el derecho a disponer de los productos forestales que se obtengan del bosque (Art. 38).

Por otro lado, el artículo 46 establece que la Administración Forestal del Estado, es decir la AFE-COHDEFOR ahora denominado Instituto de Conservación y Desarrollo Forestal, de Áreas Protegidas y Vida Silvestre, programará trabajos de reforestación combinados con trabajos agrícolas en áreas forestales nacionales desarboladas donde sea técnicamente factible, y los efectuará por contrato con cooperativas, empresas asociativas o cualquier otra forma de organización societaria legalmente reconocida por el Estado, quienes se beneficiarán en su totalidad del rendimiento agrícola y participarán en los beneficios que deriven de la explotación del bosque.

Cabe mencionar que la nueva ley forestal, de áreas protegidas y vida silvestre, aprobada por el Congreso Nacional el 13 de Septiembre 2007, establece una reforma institucional del

sector forestal muy marcada, entre las cuales se destaca que el subsector forestal será elevado a sector forestal denominado Instituto Nacional de Conservación y Desarrollo Forestal, Áreas protegidas y Vida Silvestre (ICF) en sustitución de la AFE-COHDEFOR.

El ICF promoverá también la incorporación de estos grupos "a labores" de producción y conservación de los bosques y a su aprovechamiento, incluyendo la extracción de resinas.

En relación a la comercialización interna y externa de la madera y "demás productos forestales", el artículo 68 dispone que es completamente libre, pudiendo efectuarse por cualquier personal natural o jurídica, sin necesidad de autorizaciones o permisos administrativos previos, sujetándose únicamente a la aplicación de las disposiciones vigentes en materia forestal, aduanera, tributaria, cambiaria, de sanidad vegetal y a los convenios internacionales que regulen su comercio.

Lo anterior no incluye sin embargo la comercialización de especies o productos de flora y fauna silvestre prohibidos o restringidos por convenios internacionales.

En cuanto a la producción y procesamiento de semillas forestales, estará sujeta a lo dispuesto en el Artículo 15 de la LMDSA, para lo cual la AFE-COHDEFOR (* ICF), como parte integrante del Sector Público Agrícola, emitirá los respectivos planes indicativos.

En particular, la ley establece que toda persona natural o jurídica podrá realizar actividades de investigación, producción, procesamiento o comercialización de semillas, con sujeción a las disposiciones legales vigentes y la SERNA (Secretaría de Recursos Naturales y Ambiente) establecerá y aplicará las normas de calidad de las semillas producidas y comercializadas.

El artículo 71, por fin, establece que las sociedades mercantiles u otras personas jurídicas que se dediquen al corte, aserrío, o impregnación de la madera, extracción o destilación de resinas, la industria primaria o secundaria de los recursos forestales y su comercialización interna o externa podrán contar con socios, socias y capital extranjeros de conformidad con el artículo 336 de la Constitución.

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Uttar Pradesh tribals demand forest rights

About 10 000 tribals in Uttar Pradesh's Sonbhadra district have demanded land and forest rights to sustain themselves. Over 7 000 women protesters took part in the event.

More than 40 million people live in the country's resource-rich forest areas, which include protected wildlife reserves and dense woodlands, eking out a meagre living from simple farming, picking fruit and collecting honey. For generations, they have had no legal entitlement over the land or the use of forest resources. They claim they are treated as "encroachers" and "criminals" on their own land and forced to leave it by forestry officials, mining and logging companies. (Source: *The Times of India*, 17 March 2008.)

Women and NTFPs in Western Ghats

We obtain three-quarters of our income from NTFPs," Ms Subbi Gowda, a tribal NTFP collector said, without wavering. The Appiko-Prakruti movement's decade-long study and sharing knowledge with local communities also revealed the same. In the Uttara Kannada district, Karnataka state of India, forest dwelling communities earned a maximum of 95 percent of their total income and an average 33 percent income from NTFPs. However, with the loss of habitat, overharvesting and limited knowledge regarding harvesting, processing, marketing, policy and

Contribution of NTFPs to overall household income

Total annual income (Rs)	NTFP income (%)
More than 50 000	1-10
20 000-49 000	10-20
Below 20 000	21-95

Income details per NTFP type

NTFP	Income details per type			Overall contribution (%)
	Max.	Min.	Average	
Flowers	1 875	117	620	3.10
Resins	1 660	600	1 130	0.09
Leaves	1 400	40	320	0.69
Fruits	39 000	60	4 500	76.70
Insect products	10 000	150	1 500	10.90
Rattan	35 000	100	7 700	5.79
Pods	1 275	25	350	1.60
New stem nodes	20	10	1.2	0.01
Seeds	1 500	500	900	1.07

US\$2 MILLION BAMBOO PROJECT FOR NORTHEAST INDIA LAUNCHED

An ambitious and innovative four-year project, which aims to strengthen India's role as a leader in the world cane and bamboo industry, was launched here on Wednesday. The US\$2 million project will be implemented with effect from May 2008. The United Nations Industrial Development Organization (UNIDO) will be the executing agency, with the Department of Industrial Policy and Promotion (DIPP), Northeastern Council (NEC) and Development Commissioner (DC) (Handicrafts) as the coordinating and counterpart agencies.

Of the total project cost of US\$2 307 373, the donor contribution of India is US\$1 868 472 from DIPP, NEC and DC (Handicrafts); UNIDO's contribution was US\$196 000. (Source: *The Financial Express* [India], 9 April 2008.)

cultivation aspects, the resource is depleting and collectors are not getting the desired benefits.

As an alternative to conventional development activities, Prakruti is promoting the sustainable use and development of NTFPs together with the forest-dwelling communities. Activities include resource mapping, nursery raising, cultivation, enterprise development and promotion of sustainable use of the resources. (Source: *Voices from the Forest*, 13 [October 2007].)

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Bamboo industry eyes slice of US\$7.5 billion world market

Bamboo is gradually engaging the attention of the Indian Government, which has planned to diversify its uses to reap the benefits from the US\$7.5 billion global bamboo product market.

India is the second richest bamboo resource country in the world, next only to China. In terms of genetic diversity, India has 136 bamboo species under 75 genera. About 89 bamboo species of the 126 recorded in India under 16 genera grow naturally in different forest areas or are cultivated. Although India has bamboo resources in about 9 million ha, the yield is low at 3 tonnes/ha/year since cultivation is not intensively managed. China, on the other hand, has engaged in intensive commercial cultivation of bamboo and has increased average yields to 25 tonnes/ha/year. Within two decades of this initiative, China has been able to convert its traditional bamboo-based handicrafts sector into a mechanized one.

However, the situation is changing in India with the launch of the National Bamboo Mission (NBM) a year ago. The mission is encouraging farmers to grow the right type of bamboo and facilitating bamboo-based industries. NBM works in coordination with the Cane and Bamboo Technology Centre (CBTC) and the Bamboo Technology Support Group (BTSG) in 12 states, including eight northeastern ones, in Bihar, Jharkhand, west Bengal and Orissa.

Two sites have been identified in Assam for the development of model bamboo clusters. BTSG has been entrusted with the task of certifying bamboo nurseries in northeastern India and the same is being done by CBTC in other states. (Source: *The Financial Express* [India], 21 April 2008.)

Indian bamboo trade stuck in century-old practice

Ranchi. Take a walk near Circuit House in the Lalpur area to find out how the state still lives in the past. Here, one finds any number of bullock-cart drivers transporting hundreds of bundles of bamboo every day. These are the same *gariwallahs* whose forefathers carried bamboo from remote villages to the city for more than a century.

For many decades, the forests of Jharkhand have abounded in the production of bamboo. Yet, even after so many years of independence, trading still takes place through the private *gariwallahs*. One bullock-cart driver from Angara, whose ancestors were also involved in the same trade, says:

"We collect bamboo from Ormanjhi, Bero, Angara and Namkum where it is grown on *raiyati* land and bring it near the Circuit House for sale. It is our means of livelihood."

The remote pockets from where these *gariwallahs* bring bamboo are Jumlabeda, Sikidri, Pipratoli, Hajnet, Pansekam, Husrihatu, Rajadera, Getalsud, Beesbandag, Nabagarh and Kunte. "It takes two full days and nights to reach the capital from these interior villages. The journey is quite arduous and a lot of hardship has to be borne," says another *gariwallah*, who is returning home after spending days in the city to sell his entire stock. The practice of using bullocks to carry bamboo makes them old in a mere three to four years. It is, therefore, indisputable that the real sufferers behind the practice are the native *gariwallahs*, whose lifestyle has not changed even after so many years.

The state forest department is silent on this issue of the bamboo trade whereby city business people sell at exorbitant rates after purchasing bamboo at very low prices. The *gariwallahs* demand that the Government develop this bamboo trade in a planned manner so that they get their "fair" share.

Bamboo, which is used mostly for construction, painting and other high-rise building work, yields high margins for big traders here. "We have to sell a bamboo stick at Rs30 which the city businessmen sell for Rs80, making a profit of Rs50," said one *gariwallah* who comes here every week. (Source: *Calcutta Telegraph* [India], 25 April 2008.)



India's first silk park

Nagpur. Taking a lead of sorts, the Sericulture Directorate (SD) of the Maharashtra Government is setting up the country's first-ever silk park near Amravati. In an area of 36 acres (14.6 ha) at a cost of Rs6 crore, the park will be completed in three phases by 2012. It will be divided into three

sections – the soil to silk section, the silk to fabric section and the fabric to garments section. "Besides having plantations of all the six silk varieties, it will have live demonstration units to display the rearing, reeling and weaving units – showing the formation of silk yarn from the cocoons to making silk cloth – and the pilot-scale units for designing, printing and producing garments from the fabric," said Capt. L.B. Kalantri, Director of the SD.

The plantation will include all the germplasm available in the country: the mulberry plantation – both trees and shrubs – tussar plants, *Termemallia arjunalia* (white) and *Termemallia tomentosa* (black), the Eri silk castor plantations and muga silk. "Muga silk trees grow only in Assam, but we are cultivating them in controlled conditions in the park just to showcase every variety in one place," Capt. Kalantri added.

In the second phase, the park will promote the concept of silk-to-milk, which is being universally promoted by SD. Under this project, cows are expected to be fed with the defoliated stem of the mulberry bushes, which have a very high protein content and should bring additional income for farmers. (Source: *The Times of India*, 17 February 2008.)

Lac farming boost to tribal families

Dhanbad. Lac, known for its use in making bangles, will soon be helping 250 families in the tribal areas of Dhanbad. The divisional forest department here is undertaking the cultivation of lac on palaash (*Budea monosperma*) trees in a three-year project costing Rs29 lakh. The project will involve support, cultivation and marketing of the product. Spread over 12 villages, selected families will undertake cultivation by forming self-help groups. The project plan has been sent to the state government for approval, while 50 selected farmers are undergoing a two-day training at the Indian Lac Research Training Institute in Ranchi.

Divisional forest officer (DFO) Sanjeev Kumar said that palaash is a very common tree in this part of Jharkhand, growing mostly in degraded soil. At least 10 percent of the forest cover here comprises palaash. "We planned using the trees to generate income for the poor villagers in the tribal areas. Lac cultivation is easy and reaps profits in a short time," the DFO said.

The 250 families comprising both women and men in the 12 villages will be given a target of cultivating lac in 25 000 trees with a support of Rs10 000 each in the first phase. The forest department has arranged for

brood lac at the rate of Rs70/kg. Availability and quality of brood lac is highly uncertain but the department has promised its unhindered supply.

Lac is a secretion from the body of an insect called *Laccifer* or *Kerria lacca*. The insect secretes lac resin and forms hard resinous layers as it goes into the pupa stage. This resin is scraped off, dried and processed to form lac or shellac. (Source: *Calcutta Telegraph* [India], 21 April 2008.)



Tectona grandis

NTFPs as source of livelihood for local communities: a case study from the Aravalli hills of Rajasthan, India

Rajasthan is the largest state of India, with only 9.54 percent of its geographic area classified as forest area. Per capita forest area (0.06 ha) in the state is low. More than 50 percent of the forest area lies in the Aravalli range. The state has about 5 percent of the country’s human population but a cattle population of 11 percent; its livestock population is 20.57 percent of the entire livestock population of the country. There is tremendous pressure on the state’s forests for fodder for livestock and

cattle, and for fuelwood, small timber and various NTFPs for the human population.

A study was carried out at the request and with the financial support of the Rajasthan Forest Department, in Pratapgarh, Udaipur (central) and Banswara forest divisions, where Joint Forest Management (JFM) activities are already ongoing. The tropical dry deciduous forests of the Aravalli hills house natural resources that can rightly be called livelihood assets for the local rural communities, since they collect not only fuelwood and fodder grasses from the forests but also a great variety of other NTFPs (see Table) for their own consumption as well as for sale.

An assessment of the availability/potential of NTFPs in the Aravalli hills and the value of these products was needed so as to establish a sound and ecologically viable policy for the subsistence of forest dwellers and for the overall conservation and development of the forest resources of the region. It was also necessary to quantify the annual financial value realized per household through collection of these NTFPs, and for sustaining the livelihoods of local communities. The total forest area under study was approximately 4 000 km², covering about 1 295 villages.

Three main types of forests are found in the region, namely, teak forests, *Anogeissus* forests and mixed dry deciduous forests and grasslands. Biotic interference is the main factor responsible for changes in natural vegetation in some areas. *Tectona grandis* is the main species (30 percent) followed by *Acacia catechu*, *Anogeissus latifolia*, *Azadirachta indica*, *Boswellia serrata*, *Butea monosperma*, *Diospyros melanoxylon*, *Embelica officinalis*, *Holoptelia integrifolia*,

Lannea coromandelica, *Madhuca longifolia*, *Miliusa tomentosa*, *Terminalia bellirica* and *Wrightia tintoria*.

Important tree species known for their edible fruits near habitation areas include *Mangifera indica* and *Zizyphus* sp., *Tamarindus indica* and *Phoenix sylvestris*. *Dendrocalamus strictus* is the main bamboo species of these forests, whereas *Dichanthium annulatum*, *Aristida depressa*, *Heteropogon contortus*, *Schima nervosum* and *Themeda quadrivalvis* are the main fodder grass species.

Salient research findings from the study include the following.

- Significant quantities of NTFPs are gathered in the three forest divisions of the Aravalli region of Rajasthan and the annual estimated values of NTFPs realized per household are Rs2 765, Rs794 and Rs478 in Udaipur (central), Pratapgarh and Banswara forest divisions respectively, ignoring the collection of fuelwood and fodder grass.
- Villagers in the Aravalli ranges collect NTFPs all year and their average income varies from Rs20 to Rs100/day, depending on the kind of NTFP collected and the season. The most common types of NTFPs collected are *Diospyros melanoxylon* leaves (tendu), *Madhuca longifolia* (mahua flowers and fruit), *Embelica officinalis* (aonla fruit), *Terminalia bellirica* (bahera fruit), *Cassia tora* (puwar seed), *Jatropha curcus* (ratanjot), *Butea monosperma* (khakra patta), honey and gum.
- There is a serious depletion of some NTFP species in the region (up to 50–60 percent) compared with the situation 15–20 years ago. These include the following important commercial and

NTFP availability, collection season and status in the forest study area

Scientific name	Local name	Part(s) used	Collection season	Status in local forest
<i>Aegle marmelos</i>	Bael	Fruit pulp, leaves	Oct–Nov and all year	Common
<i>Anogeissus latifolia</i>	Dhawda	Gum	Dec–Feb	Occasional
<i>Annona squamosa</i>	Sitaphal	Fruits	Nov–Dec	Abundant in some areas
<i>Boswellia serrata</i>	Salar	Leaves	All year	Abundant
<i>Butea monosperma</i>	Khakhra	Leaves	Winter	Abundant
<i>Cassia tora</i>	Puwar	Leaves, seeds	Mar–Apr	Abundant
<i>Carrisa carandus</i>	Karanda	Fruits	May–Jun	Abundant in some areas
<i>Diospyros melanoxylon</i>	Tendu	Leaves, fruits	Apr–May	Common
<i>Embelica officinalis</i>	Aonla	Fruits	Oct–Dec	Common
<i>Helicteres isora</i>	Marodphali	Fruits	Oct–Feb	Occasional
<i>Jatropha curcus</i>	Ratanjyot	Seeds	Aug–Sep and Mar–Apr	Abundant
<i>Madhuca indica</i>	Mahua	Flowers, fruits	May and July	Occasional
<i>Momordica dioica</i>	Kikoda	Fruits	May	Occasional
<i>Syzygium cumini</i>	Jamun	Fruits	Jun–July	Abundant in some areas
<i>Terminalia bellirica</i>	Bahera	Fruits	Nov–Jan	Occasional

medicinal plant species: *Acacia catechu* (khair), *Boswellia serrata* (salar), *Lannea coromandelica* (godal), *Sapindus trifolatus* (aritha), *Anogeissus latifolia* (dhavra), *Madhuca latifolia* (mahua), *Chlorophytum borivillianum* (safed musli), *Withania coagulans* (paneer bandh), *Tylophora indica* (dama bel), *Dendrocalamus strictus* (bamboo) and *Embelica officinalis* (aonla).

Local communities living near forest areas in Rajasthan state are allowed free access to the forest and collection of NTFPs by the state government. This is in accordance with government policy to provide livelihood support to local communities in a welfare state such as India.

Based upon the findings of the study, efforts need to be made by the Rajasthan Forest Department to undertake plantation activities for those NTFPs and medicinal plant species in the Aravalli hills that are being collected by local communities and harvested to a dangerous extent in order to sustain their livelihoods.

(Contributed by: Dr Rameshwar L. Srivastava, Dr Pradeep Chaudhry, Mr Arvind S. Apte and Dr Pramod Kumar, Arid Forest Research Institute, Jodhpur, India.)

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Conserving forests through eaglewood cultivation – the wisdom of the Dayak Punan of Malinau, East Kalimantan

The Dayak Punan community has spread throughout the Bulungan Regency, Berau and Malinau, a result of the Indonesian Government's resettlement programme from 1972 to 1973. Prior to this programme, the Punan were concentrated

in territories of the river upstream with primary forest. Despite the many changes in the Punan way of life, their dependence on the forest remains strong.

Consequently, they continue to hunt and seek out forest products despite being far from forested regions.

Punan life is entwined with that of the forest. They view the forest not only as their source of life, but as their home – a place where they feel safe and protected. The Punan are hunter-gatherers and thus cultivation activities are alien to their culture. However, through greater interaction with other communities, they have learned to engage in farming, planting sweet potatoes, bananas and other crops. They have also acquired skills in gold panning and rattan crafts. Eaglewood (or *gaharu*) and rattan are their main sources of income. Proceeds from the sale of these commodities are used to buy sugar, salt, tobacco and clothes, as well as televisions and parabolic aerials.

The Punan believe that eaglewood (*Aquilaria* spp.) has magical qualities and it is highly valued in traditional Punan life. It is treated as a special commodity, with a traditional ceremony held before its harvesting, when the Punan implore the spirits for high-quality resin.

Punan culture is characterized by being conservation conscious. For example, local wisdom does not allow hunting and killing of wildlife when meat supplies are still available. This principle also holds true for eaglewood harvesting. The Punan have long been harvesting eaglewood in a sustainable way; they know which trees contain eaglewood resin so that trees without resin are marked and left to grow.

Unfortunately, this wisdom is not shared by outsiders who have carried out indiscriminate harvesting of eaglewood, resulting in a drastic decline of the resource.

Today, eaglewood is on the way to extinction because of large-scale forest exploitation by pulp and paper companies, massive land-clearing in the development of oil-palm plantations, and illegal logging. This situation is worsened by the government's lack of attention to forest conservation activities.

Faced with this situation, the Punan have been forced to adapt, their gathering culture becoming slowly a cultivation culture. They have realized that it is only through cultivation that they will be able to protect the forests that they own. By

cultivating eaglewood and contributing to its conservation, their rights and ownership over their traditional land will be consolidated. Moreover, they have realized that they can obtain two profits at the same time – both from naturally growing eaglewood and the planted trees.

Initially, it was difficult to convince many of the Punan that planted eaglewood trees would produce the much-sought after resin, since they traditionally believe that this resin is available only in eaglewood trees growing naturally in the forest. In order to convince them to the contrary, LP3M (Institute of Rural, Coast and Societal Studies) invited the Punan to visit the garden of Pastor Wan Ibung N. Berkingheri, OMI. He has successfully developed resin-producing eaglewood through the process of inoculation and continues to cultivate eaglewood seedlings from these trees.

In the UN Climate Change Conference held last December 2007 in Bali, LP3M and the Punan community had the opportunity to tell their story – that through eaglewood cultivation the forest can be rescued and continue to be the source of life for the Punan and the Indonesian people. (Source: *Voices from the Forest*, 14 [March 2008].)

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Artificial rattan gains favour

Global furniture manufacturers are using more artificial rattan in their products because of short supply in the naturally occurring equivalent, the Indonesian Furniture Industry and Handicraft Association (Asmindo) said on Monday. Asmindo chairman Ambar Tjahyono said that artificial rattan, which is made of plastic, accounted for 35 percent of all global furniture containing rattan. "In the last four years, the demand for furniture made of artificial rattan has been very high, despite its higher price compared with that of the natural kind," he said.

Natural rattan producers, he added, should immediately raise production in order to be able to take advantage of the high price of artificial rattan and the rising demand for the commodity in the international market. He said the supply of natural rattan for local furniture

manufacturers had declined because of the Ministry of Trade's regulation in 2005 that had allowed for rattan exporting. He added that as of the end of last year, the scarcity had bankrupted 144 out of 426 furniture firms in Cirebon, West Java, where the majority of rattan centres are located, and that more would follow.

The central statistics agency showed a drop in rattan exports last year to US\$219 million from \$343 million in 2006.

Industry Minister Fahmi Idris said the Government would establish new rattan centres to complement those in Cirebon. [Source: *The Jakarta Post* [Indonesia], 29 April 2008.]



Plans to turn bamboo into money-maker for farmers

The Kenya Forestry Research Institute (KEFRI) plans to train farmers on the commercial gains of planting bamboo trees, setting the stage for their entry into a lucrative market. Under the training programme, artisans will learn how to make chairs, tables, pen holders, sofa sets, coat hangers and baskets using bamboo – all products for which demand has increased both locally and internationally. Most of the products on sale in Kenya are imported from Asian countries such as Japan, Thailand and China. Concerns have been raised over these large imports of bamboo products, which are thwarting efforts to expand the industry internally.

The training, which begins later this month in central Kenya, aims to create a vibrant bamboo products industry with the expectation that the sector will grow to attract the international market. Trainees are expected to help promote product-making techniques in their localities. The training programme is being funded by the United Nations Development Programme (UNDP) and the Kenyan Government.

Over the past two years, forestry officials have been promoting bamboo as an alternative to wood trees to ease the growing pressure on forests. KEFRI has also been training farmers on the artificial propagation of bamboo to expand the supply in anticipation of a steep rise in demand.

In Kenya, bamboo is mainly grown in the Aberdares, Olengurueni, Molo, Kakamega and parts of the coastal region. [Source: *Business Daily Africa* [Kenya], 4 April 2008.]



Orang Asli couple happy with income from wild plants

Pekan. The Orang Asli are known for their ability to turn plants grown wild in the jungle into traditional medicines, handicrafts and decorative items.

Budiman Saiman and his wife, Salmiah Abdullah, of Kampong Landai use their expertise to generate a source of income to support their family. The couple has a stall selling homemade handicrafts along the Pekan-Rompin stretch near Kampong Tanjung Batu, Nenas, and it attracts a large number of passers-by, especially during the weekends. The couple believes that their exposure to the jungle environment during their younger days is a blessing. "As Orang Asli kids, we were trained to follow our elders whenever they went into the jungle looking for rattan, unique tree barks and roots. The roots are used for traditional medicine while the rest of the plant is carved into decorative items," said Budiman.

Salmiah said they normally ventured into the jungle near Tanjung Batu here once a week to search for material for their handicraft items. "After we have gathered our jungle harvest, we clean the roots and separate the ones with unique shapes which we then paint to make them look more elegant. But some will also be left with their original colour because some customers prefer the natural look."

The couple earns about RM400 a month from the sales of the jungle roots and rattan. They also make and sell colourful flowerpots for between RM5 and RM20, which are a favourite among the customers and they weave *mengkuang* mats and sell them for between RM30 and RM50.

Budiman expressed concerns that the younger Orang Asli youths were not interested in earning a living like him and instead preferred to work in towns and factories. "This is an inheritance of the Orang Asli for several generations. I am worried that one day there will be even fewer Orang Asli who are self-employed," he said. [Source: *New Straits Times* [Malaysia], 13 April 2008.]



Herbal park set up to promote traditional medicines

Myanmar has set up the first national herbal park in the new capital of Nay Pyi Taw to grow herbal and medicinal plants. The herbal park is part of the Government's efforts to protect and preserve the time-tested herbs from depletion and extinction and to keep alive the country's traditional system of medicines.

Over 20 000 herbal and medicinal plants of more than 700 species from some ten states and divisions are being grown in the 81-ha park for producing medicines used in treating diseases such as cholera, diarrhoea, dysentery, hypertension, diabetes, malaria and tuberculosis.

The Government has urged the practitioners of traditional medicines to strive for promotion of the standard of the country's traditional medicine.

According to the health authorities, Myanmar has made arrangements for the development of traditional medicine in line with set standards, initiating diploma and practitioner courses to train skilled physicians in the field. [Source: *Indian Muslims* [California, United States], 6 January 2008.]



Mushroom varieties disappear

Mushrooms are declining in number in woods in the Netherlands because of the use of fertilizers, increasing acidity and soil disturbance, according to Meetnet, which tracks the threats to landscapes for the Ministry of Agriculture. Nitrogen-sensitive fungi such as the drumstick truffleclub and the dappled webcap are disappearing, despite reduction in fertilizer use since 1981, says Monday's Trouw, the Nutrition International company.

The Netherlands has 3 500 varieties of mushroom and fungus of which 500 are listed as endangered. Nearly 200 varieties have already disappeared. [Source: DutchNews.nl [the Netherlands], 1 April 2008.]



PERU

Camu-camu: a sustainable option for agroindustry in the Peruvian Amazon

Camu-camu (*Myrciaria dubia*, Myrtaceae) is a small tree native to the blackwater floodplain environments of Peru, Colombia, the Bolivarian Republic of Venezuela and Brazil. Over the last 35 years, the use and production of camu camu has developed into an export industry in the Peruvian Amazon. The main product is the pulp derived from the very nutritious fruit. This expanding industry is linked to the adoption of the species as a component of floodplain agroforestry systems by smallholders practising traditional agriculture in these seasonally inundated environments. The water-loving trees are also seen by policy-makers as a way to improve socio-economic conditions in rural areas while at the same time increasing international trade for Peru.

Camu-camu contains the highest concentration of vitamin C in any fruit known (2 800 mg per 100 g of fruit pulp); about 1.5 times that of acerola (*Malpighia punicifolia*), or 30 times that of an orange (90 mg/100 g), with far more iron, niacin, riboflavin and phosphorus. These nutritional characteristics have created a demand for camu-camu in international health food markets and as an ingredient in cosmetics and shampoos. In Peru, camu-camu is popular in ice creams, drinks and yoghurt.

The Instituto de Investigaciones de la Amazonía Peruana (IIAP; Peruvian Amazon Research Institute) has promoted the cultivation of the trees in floodplain fields to sustain production and alleviate harvest pressure on wild stands of camu-camu. Approximately 1 050 ha of camu-camu grow naturally in the Amazon Basin of northeastern Peru, with another 776 ha planted between 1997 and 1998. Smallholders who have maintained their plantings of camu-camu have found that intercropping these productive fruit trees with their traditional mix of annual crops (such as manioc, melons and beans) provides them with important additional income when floodwaters cover their fields. With fields of just 1–2 ha, their incomes

have risen by as much as US\$1 000/year through camu-camu sales, with the largest fields (10 ha) earning almost US\$20 000 in the peak year of 2007.

While demand and prices have fluctuated, the price of the fruit paid to harvesters and producers has increased over time, from US\$0.14/kg in 1997 to a high of US\$1.75 in 2007. The increase in both demand and prices for the fruit has opened opportunities for agroindustrial development in the region and brought socio-economic gains for rural inhabitants of the Peruvian Amazon. Most of the fruit that is marketed still comes from natural stands, which is an environmental concern, but there has been an increase in plantings in recent years.

Export revenues from camu-camu products have risen from less than US\$500 000/year from 1996 to 2001 to more than US\$1 million in 2005 and US\$4.8 million in 2007.

Demand for the fruit by processors is now far greater than harvests from the wild or production by smallholders. In 2007, 3 785 tonnes of camu-camu were marketed, yielding 1 000 tonnes of fruit pulp, with the remainder of the fruit sold for local consumption. Japan is currently the main market, but domestic demand for camu-camu continues to increase, providing needed economic and nutritional benefits for Peruvian society.

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Camu-camu

Manejo forestal participativo para la producción de plantas medicinales en el Perú

Después de haber terminado la primera fase del proyecto en diciembre 2007, se ha publicado un libro en cuatro idiomas para el uso de las comunidades, y de ese modo ofrecer un modelo del plan de manejo para que otros puedan efectuar trabajos similares. El plan de manejo puede ser bajado en español en el sitio: www.eci.ox.ac.uk/research/humaneco/peru-medicalinal.php

Se está buscando financiación para comenzar la segunda fase del proyecto, la cual tendrá como destinatario a dos comunidades que quieren poner en práctica el plan de manejo, y que se han comprometido a establecer negocios comunales para la producción sostenible de plantas medicinales.

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THE PHILIPPINES

Silkworms give Philippine farming town a makeover

Kapangan. Hundreds of white mulberry trees have started to cover mountain slopes deep in the Cordillera region of the northern Philippines, changing not just the landscape but also making over the image of a poor farming town. Up until the early 2000s, the upland villages of Kapangan, a vegetable-growing town of 18 000 people in Benguet province, were widely known for one of the country's largest cultivation areas of an illegal plant – marijuana.

"We're determined to be known as something else, perhaps, the silk capital of the country," said Roberto Canuto, a public attorney in the province, who was elected mayor in 2007.

Canuto said that some farmers have started growing mulberry trees, the main food of silk-producing worms from China and Japan, after sericulture was introduced in nine of Kapangan's 15 villages in late 2004. "We're expanding the mulberry plantation to accommodate more farmers willing to go into silkworm operations," he said, adding that many farmers got excited after initial trials

produced about 25 kg of raw silk, sold at US\$50/kg early this year.

Wilbur Teofilo, leader of a 33-member farmers' cooperative in Kapangan, said they have started upgrading 11 "rearing houses" and building nine more to raise raw silk production to 250 kg every two months this year. "We can easily produce about 500 kg of raw silk every two months when our operations go on full blast," Teofilo said, showing a box containing thousands of fresh cocoons, leftovers from last month's production.

An official from the Fibre Industry Development Authority reported that the silkworm project could produce as much as 2 000 kg of raw silk every year once operations expand in two years, bringing in an extra 4 million pesos (US\$95 690) for the farmers.

The head of the Philippine Drug Enforcement Agency said antinarcotics agencies had pledged to sink in more investments in the sericulture project if silk-making succeeds in cutting marijuana supply.

Teofilo stated that farmers in his village were willing to give the silkworm project a try because the potential for providing them with extra cash was huge, based on initial experiments since 2004. (Source: Reuters Canada, 21 April 2008.)

PORTUGAL

A revival of the region's cork-producing history

São Brás de Alportel has developed two projects that aim to raise awareness among residents and visitors to the region about the cork industry and the products that can result from recycling.

São Brás has a long cork-producing history with more than 80 factories having been dedicated to the industry. Now the volume of production continues to be the same because of industrialized machinery but only about ten factories are left.

On 12 March, the São Brás Câmara (chamber) hosted their third discussion entitled "Around the Cork Oak" to support the launch of the cork route (*Rota da Cortiça*) in July, aimed at highlighting the decline of cork manufacturing and plans for the future of the industry in São Brás de Alportel. The next discussion, which will take place on 5 May, will focus on the investigation and new applications for cork. These discussions, ending in July, coincide

with a national conference about the industry, as well as the inauguration of the São Brás cork route, which will be officially presented to the public during the council's *Feira da Serra*.

As well as the cork route, São Brás Câmara has already launched a project to collect and recycle used corks from bottles. There are currently 30 *rolhões* (cork recycling units) in public spaces throughout São Brás and others have been given to restaurants. For the moment, the cork collected is being transformed into objects such as heat-proof kitchen mats and notice boards. (Source: Algarve Resident [Portugal], 3 April 2008.)



RUSSIAN FEDERATION

Development of sustainable NTFP-based businesses for people living in protected areas in the Russian Federation

In January 2008, the International Union for Conservation of Nature (IUCN)-World Conservation Union project "Assessment of Non-Timber Forest Products Market Use as an Alternative Livelihoods Strategy for Local Communities at the Protected Areas in the Russian North West" came to an end. It had started in August 2006 and was funded through the BBI-Matra programme. The project's goal was to develop a sustainable model for the ecologically and economically sound market use of NTFPs by communities living in or near protected areas (PAs) that could be implemented in the future in other PAs in other regions of the Russian Federation.

The project sufficiently improved the cooperation of PAs in the Russian North West with communities and other stakeholders to promote sustainable rural development in the country and to create alternative livelihoods and additional income-generation opportunities for

communities living in biodiversity hotspots by decreasing poaching, illegal logging and other unsustainable practices of natural resource use.

The project was implemented in the Leningrad region (Veppski Les Nature Park) and in the Arkhangelsk region (Kenezerski National Park). These PAs represent different sets of priorities and objectives of functioning, different levels of biodiversity protection, different administrative schemes of management and different interactions with regional and federal authorities.

During the project, a round of consultations was organized with the principal regional partners: representatives of the Leningrad Region Administration, Regional Forest Service and NGOs, the Saint Petersburg Society of Naturalists and the Association of Protected Areas of the Russian North West. A set of analytical reviews on the assessment of NTFP harvests and their influence on the biodiversity of PAs was also developed.

From October 2006 to December 2007, training courses were organized for stakeholders in seven communities located in the PAs. Training included the organization of NTFP business and optimization of marketing strategy, and the standards of the European market for NTFPs.

Sustainable practical results were achieved through the project. A practical model for small business support in remote traditional communities, based on the sustainable use of biological resources was developed in Kenezerski National Park. This model is applicable to other biodiversity hotspots in Russia. Relations were strengthened and improved between local communities and the parks. Local communities became better informed on, and more closely involved in, natural resource management. The government of the Leningrad region upheld an initiative to support NTFP small business development in the Podporozhski district. The Khanty-Mansiisk and Vladimir regional authorities are also interested in application of the model developed by the project.

As a result of the project, local production of about 20 types of NTFPs was generated, including different crafts using birch bark, several varieties of herbal teas, dried forest mushrooms, wild berries, *chaga* mushrooms and honey, etc. Local people are now marketing these products

very successfully at local and regional fairs and to tourists through the park visitors' centres. So far, demand exceeds supply: all 2007 products were sold. Local women were very actively involved in producing and marketing the products.

Kenozerski National Park continues to invest its own funds in guaranteed purchasing of all products of sufficient quality, assessed by the park's experts on compatibility with sustainability harvesting practices.

NTPF development will be continued in this region. In January 2008, the next IUCN project on NTPF development – "Sustainable Development Models for Local Communities of Protected Areas in the North West of Russia" – will start, funded by the Ford Foundation. The project will assist stakeholders to develop PA-oriented small community-based traditional businesses and relevant support programmes/projects. Local stakeholders will be empowered by knowledge and ability to support effective use of their traditional knowledge for local economic development, compatible with the conservation objectives of the PAs.

The project will develop additional employment in the most vulnerable and fragile areas of the Russian North West, contributing to sustainable rural development of the region.

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The Republic of Karelia Forest Plan

The development of the principal forestry document of Karelia, its Forest Plan, is to be completed by 31 May 2008, according to the Minister of Forestry, Vladimir Yuriev. "Last year in the Republic, 13 norms and

regulations were developed that were necessary to introduce the Forestry Code," the Minister noted.

"Laws of the Republic have been passed on the order and regulations of harvesting of wood by citizens for their own needs; on the order of procurement of food forestry products by citizens and gathering herbs for their own needs; and also the law on the order of procurement of non-wood forestry products by citizens for their own needs," the head of the timber industry of Karelia said. (Source: *News of the Republic of Karelia* [Russian Federation], 11 February 2008.)



Country to produce silkworm eggs

Rwanda has a target to produce about 700 million silkworm eggs by the end of this year. This stock is sufficient to supply all cooperatives in the industry countrywide. The silkworm egg production is to cover 25 ha at Nyandungu site in Kigali where 300 000 mulberry cuttings imported from Uganda have been planted. In a long-term plan, the Rwandan Government aims to have 600 000 ha of mulberry planted in the next three years to benefit 60 000 poor families.

Peter Muvara, chairman of the sericulture project, said that imports of eggs for silk production are costly and at times lose viability in transit. Rwanda has been importing eggs from the Republic of Korea and India, so that making them locally is now the priority. "The challenge that constrains the project is the marketing aspect, where the private sector is still moving at a slow pace compared with production," he said.

Another challenge to the project is the cost of eggs, since each box costs from US\$15 to US\$20; processing silkworm eggs locally would save about RF383.6 million from 35 000 boxes. The Rwanda Investment Group (RIG), as a service provider in the industry, has also pioneered as a private investor in the industry with 20 ha in Rusizi, Western Province, and a local textile company, UTEXRWA, is in position to manufacture silk products.

The Government has allocated about RF154 million, in particular for training about 60 people to handle production, training in various sericulture activities including mulberry farming activities, silkworm rearing and weaving to ensure

that they produce quality silk products. Jointly with the Rural Sector Support Programme (RSSP), Silk Culture has established the Gasabo Silk Culture Cooperative to handle production and marketing.

Farmers are supplied with free mulberry cuttings because the project is still in the pilot stage, but the facilities will put sale targets in place to recover egg costs. (Source: *The New Times* [Kigali], 4 January 2008.)



Ceylon cinnamon a money spinner

The medicinal value of Sri Lanka's cinnamon has widened market opportunities in the international market, said a senior research officer of the Industrial Technology Institute (ITI), K. R. Dayananda.

True cinnamon or Ceylon cinnamon (*Cinnamomum zeylanicum*), produced only in Sri Lanka, has a promising opportunity in this emerging market. However, two challenges need to be addressed at once.

First, the traditional fumigation method used in the industry has to change immediately to meet international standards. The sulphur residual level of our cinnamon is higher than European standards and today the market has a temporary respite.

Second, true cinnamon has to be separated from cassia, or Chinese cinnamon, because both are traded commonly as cinnamon. This is a disadvantage for Ceylon cinnamon because cassia has a high percentage of coumarin, a toxic substance. ITI conducted research on the coumarin content of Ceylon cinnamon and the results were impressive, Dayananda said. This is the first comprehensive analysis on Ceylon cinnamon for its coumarin content. The results of the study confirmed that Ceylon cinnamon contains less coumarin compared with cassia and it is within the safe limits recommended by FAO/WHO guidelines.

Recent research has proved the medicinal and nutraceutical value of cinnamon. Scientists have isolated and characterized several polyphenolic polymer compounds from cinnamon bark that could one day become natural ingredients in products aimed at lowering blood sugar levels.

Today Ceylon cinnamon dominates the world market in terms of value and fetches a very high price compared with cassia. According to 2006 trade statistics, Sri Lanka has exported 10 685 tonnes of cinnamon and earned US\$5 509/tonne, which is much more than the US\$925/tonne received for cassia.

However, a large quantity of cassia is coming on to the market and it is a close substitute. We can promote the advantage of low coumarin content to compete with cassia, Dayananda said. (Source: *Sunday Observer* [Sri Lanka], 4 May 2008.)



Medicinal plants of Suriname: changes in plant use after migration to the Netherlands

Apart from contributing to their health, the sale of wild-harvested medicinal plants provides a significant income for rural people in Suriname. Almost half of the Surinamese population migrated to the Netherlands over the last three decades and many immigrants continued their use of medicinal plants and traditional health care (*winti*) in the country.

Hardly any information exists on the scale and ecological effects of the trade in medicinal plants from Suriname. Which species are sold in Paramaribo, which are exported to the Netherlands, where and how are they harvested, who is using them and why?

This research project will clarify the role that medicinal plants play in traditional health care among the various ethnic groups in Paramaribo and assess the principal factors influencing people's choice to use traditional medicine, whether or not in combination with conventional medicine (in both Suriname and the Netherlands). How does medicinal plant use change after migration?

It is expected that when people migrate from rural areas to Paramaribo and onwards to the Netherlands, their focus of herbal medicine shifts from the treatment of the basic health problems of a forest dweller to sexual and gynaecological disorders and psychosocial ailments typical of immigrants.

By investigating the importance of Suriname's biodiversity for the country's citizens and overseas immigrants, this study will bridge the gap between biological research on floral diversity and

conservation in the Guianas, anthropological research on the *winti* religion and health studies on Surinamese immigrants. Sustainable harvesting is not only essential for the conservation of medicinal plant species, but also for the livelihoods of many forest-dwelling communities. The study will not pronounce hard judgement on the sustainability of current harvesting practices, but will look for possible indications of overharvesting of medicinal plant resources in Suriname, which can form the basis for further sustainability and conservation studies. Apart from scientific publications, the results of the study will be made available by means of an online database and an illustrated field guide of Surinamese herbal medicine.

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Some aspects of forestry in Tunisia

Extending the woodland area from the 400 000 ha at independence to the roughly 1.25 million ha today (latest figures from the July 2007 inventory) has entailed good organization at every level. In percentage terms, this progression in total woodland area has grown from 4 percent to the present-day 12.5 percent. Privately owned woodlands in Tunisia amount to 54 000 ha. This growth is the result of adequate structuring that has taken into account all the factors impinging on the sector, in particular the economic, social, environmental and developmental aspects.

Given the fact that there are more than one million Tunisians resident in forests and woodlands, Decree No. 2373 of 9 December 1996 set up the Public Interest Forestry Associations (PIFAs) (*Associations forestières d'intérêt collectif*) in order both to implement decentralization and foster a participatory approach. Major schemes have been established to favour, encourage and provide training for these PIFAs. This initiative proved to be a success and legislation in the form of umbrella law No. 43 of 10 May 1999 officialized these associations as Agricultural and Fisheries Development Groups (ADGs).



Tunisia encompasses most of the main climatic zones: humid, subhumid, semi-arid, arid and desert. Thus, biological diversity is extremely rich and varied: some 2 200 plant species, of which 360 are rare or under threat of extinction; 80 species of mammals; 70 species of reptiles and amphibians; and numerous invertebrates. Furthermore, wetlands can be found throughout the country, including coastal areas, *chotts* (depressions), lakes, *oueds* (intermittent rivers), *sebkhas* (salt marsh deposits), dams, springs and oases. These areas are home to a great diversity of plant and animal life.

The conservation policy for natural areas that has guided the Tunisian authorities since independence highlights clearly the importance of sustainable development for future generations in the conservation of natural resources. Moreover, eight national parks and 16 nature reserves have been created to date. They are located across the country, include all the various ecosystems and cover some 197 000 ha. Tunisia is a signatory to all the International Conventions concerning nature conservation and protection of the environment.

The main native forest tree species in Tunisia are:

- *Pinus halepensis*, Aleppo pine: in the west-central region of the country, covering some 200 000 ha, of which

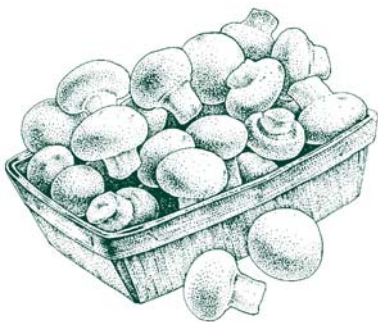
about 160 000 have been improved and exploited for wood and seeds (used in pastries and desserts);

- *P. pinaster*, maritime pine: some 5 000 ha, in the far north of the country, often combined with cork oak;
- *Quercus suber*, cork oak: in the north of Tunisia, covering around 60 000 ha – about 12 000 tonnes of cork are harvested annually;
- *Q. faginea*, zeen oak: specific to North Africa, covering about 10 000 ha – it can grow to 30 m.

The other widespread species are:

Quercus coccifera, *Q. ilex*, *Cupressus sempervirens*, *Callitris articulata*, *Fraxinus oxyphylla*, *Populus* sp. and *Acacia radiana*.

The principal native bush and shrub species are: *Pistacia lentiscus*, *Myrtus communis*, *Capparis spinosa*, *Rosmarinus officinalis*, *Artemisia herbaalba*, *Thymus capitatus*, *Calligonum arich*, *Arthrophytum scoparium* and *Rhus tripartita*. (Source: extracted from an article by H'maïed Kouki, Head of Manouba Forestry District, Tunisia in *The latest on Mediterranean Forests*, 8, December 2007.)



UKRAINE

Mushroom prices are 1.5 times higher than in 2007

According to the analysts of *Fruit-Inform weekly*, there is at present a dynamically increasing demand on the Ukrainian market for cultivated mushrooms.

Ukrainian producers are unable to satisfy demand and so prices for champignon and oyster mushroom rise rapidly on the domestic market.

As of 21 April, the wholesale prices for champignon are 62 percent higher than in the same period last year; the prices for oyster mushrooms are 46 percent higher.

According to Andriy Yarmak, the head of the *Fruit-Inform* project, the price increase for mushrooms directly relates to the

sharply increased prices for all major fruits and vegetables in a new season. Moreover, the increased price of meat has an impact on demand and prices for cultivated mushrooms, since they compete with meat for consumers.

In addition, the 2007 harvest of wild mushrooms was much lower than usual because of droughts and the hot summer. Consequently, the demand for cultivated mushrooms also shot up because of this factor. Increased expenses for energy and labour costs have their impact as well.

During the III international conference-exhibition "Mushroom Industry 2008", leading experts in Poland, Ukraine, the Russian Federation, the Netherlands and other countries will speak in detail about the prospects of Ukraine's mushroom industry in the coming years and also about the technological novelties of the mushroom business. (Source: Agricultural Marketing Project [Kiev, Ukraine], 21 April 2008.)

UNITED REPUBLIC OF TANZANIA

Combretum and *Terminalia* species in traditional medicine in Mbeya region, southwestern Tanzania

The Mbeya region, situated in southwestern Tanzania, also called the Southern Highlands, has not been well explored for its traditional medicine, although a certain amount of research has been undertaken. It is estimated that more than 60–80 percent of the population in the United Republic of Tanzania is dependent on traditional medicine for primary health care. A study in the Mbeya region revealed that people older than 55 and non-Christians tend to choose traditional medicine for their health care even when modern medicines are available, whereas Christians and younger people tend to use modern medicine.

Traditional healers, *waganga*, among the Nyakyusa and some other tribes in Mbeya region use various species of *Terminalia* L. and *Combretum* Loefl. (Combretaceae) in their traditional medicine.

Combretum molle, *mlama* (Swahili), *mpula* (Nyakyusa). Powdered dried roots, stem bark and leaves and a plant called *muwofi* are mixed with maize porridge, *ugali*, to treat gonorrhoea and syphilis. Roots and leaves are used to treat diarrhoea, influenza, severe colds and

oedema, as well as malnutrition in children. Dried root powder mixed with sheep fat is applied to the skin for wounds and infections. Skin diseases caused by fungal species are common among the population in the Mbeya region and these conditions are possibly treated with ointments of *C. molle*, among other herbal remedies available. Crude extracts of the roots and leaves have good antifungal and antibacterial effects. The antifungal triterpenoid, mollic acid-3-β-D-glucoside and the antimycobacterial ellagitannin punicalagin are the only antimicrobial compounds from *C. molle* characterized to date.

C. fragrans F. Hoffm., *hansebwe* (Swahili). Hot water decoctions of powdered roots and roots mixed with maize porridge are used to treat diarrhoea. This species is used for the treatment of infections in other African countries as well. Crude extracts of the roots have excellent antibacterial effects, but the active principles are unknown. Leaf extracts of this species have been found to contain antifungal tannins, flavonoids and saponins. Crude extracts of the leaves are excellent inhibitors of the growth of HeLa cervical cancer and T 24 bladder cancer cell lines. The cytotoxicity active compounds are yet to be elucidated. *Terminalia sericea* Burch ex. DC., *mpululu* (Swahili), *namatipo* (Nyakyusa) grows abundantly in the Mbeya region. All parts of this plant are used in medicine, except for the flowers. *T. sericea* is sometimes mixed with other plants for medicine. Diarrhoea, fever and hypertension are treated with hot water decoctions or infusions of dried leaves, roots and stem bark. Alternatively, the dried plant organs are powdered and mixed with maize porridge for the same



Combretum molle

purpose. *T. sericea* is claimed to be poisonous in large doses. Root and leaf extracts are strongly antibacterial and antifungal; the roots contain polar antibacterial compounds, whereas the leaves contain fewer polar or non-polar antimicrobials. Screenings of the antibacterial potential of different kinds of extracts of *T. sericea* have revealed that hot water decoctions are as effective as extracts made from methanol or acetone. This is an interesting result since *T. sericea* is often used as hot water decoctions for medicine in various African countries and thus antimicrobial compounds are clearly extracted by this kind of medicinal preparation technique. The lignan anolignan B is to date the only antibacterial compound characterized from *T. sericea*. *T. kaiserana* F. Hoffm., *mpululu* (Swahili), *beni* (Nyakyusa). Roots, leaves and stem bark are used for medicine and made into hot water decoctions to treat diarrhoea, gonorrhoea and vomiting. *T. kaiserana* roots are also, together with *Combretum molle*, used to treat diabetes. *In vitro* screenings of the antibacterial and antifungal effects of extracts of *T. kaiserana* justify the traditional uses of this plant in the Mbeya region for treatment of infectious diseases, since both roots and leaves contain antibacterial and antifungal compounds.

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Agroforestry systems for sustainable livelihoods and improved land management in the East Usambara Mountains

Forest destruction for agriculture continues to be a major threat to the rich biological diversity of the East Usambara Mountains in the northeastern corner of the United Republic of Tanzania. The highest ratio of endemic plant and animal species found on 100 km² anywhere in the world is dependent on the remaining natural forests. Forests are vitally important for the local population in many different ways, and nationally they are an important source of water and hydroelectricity. The soils, of low fertility and mostly acidic ferrasols, mainly have nutrients in the topsoil. After clearcutting, the soils soon become poor when the topsoil is eroded. High-value cardamom is



nowadays cultivated unsustainably in the natural forests of the East Usambaras.

The general aim was to study the possibilities of developing new profitable and sustainable agroforestry systems for the benefit of the local people and which would contribute to relieving the pressure on the remaining natural forests in the East Usambara Mountains.

Results from a spice crop agroforestry trial, established in cooperation with a local farmer, showed a clear advantage of intercropping cardamom (*Elettaria cardamomum*) and black pepper (*Piper nigrum*) with trees, especially with *Grevillea robusta*. The nitrogen-fixing tree species *Gliricidia sepium* also improved the nitrogen and organic matter content of the soil over levels found in the natural forest. With improved agroforestry methods for spice production, households generated as much as 13 times the net income obtained with traditional forest cultivation practices.

There are thus sustainable and profitable ways to cultivate spices as cash crops in well-managed home gardens. However, farmers need stable markets, access to credit and comprehensive extension services. The soil fertility depletion should be reversed with organic manure application and an enabling policy environment for the smallholder farming sector. Strong farmers' organizations and equal rights to resources and decision-making are needed. Organic spices have an increasing demand, and their export would be profitable for farmers. What, however, is most needed for change is the political will of a government that understands the importance of agricultural and forestry development for poverty reduction. [Source: Teija Reyes, [Ph.D. thesis].

Download at: www.fao.org/forestry/35667/en/

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Fruits of the soil

Conserving indigenous and wild trees is now a viable economic venture in the United Republic of Tanzania. In Tabora, Uyui and Sikonge districts, women are cashing in on species such as *ntonga* (*Strychnos cocculoides*), *ntalali* (*Vitex mombassae*), *mbula* (*Parinari curatellifolia*) and *furu* (*Vitex doniana*), which they have planted on their farms alongside traditional crops. Other trees popular with farmers are *mbuguswa* (*Fracourtia indica*), *ng'ong'o* (*Sclerocarya birrea*), *zambarau* (*Syzyium guineense*), *mmbuyu* or baobab (*Adansonia digitata*) and *ukwaju* or tamarind (*Tamarindus indica*). The fruit from these trees is processed into jams, juices and wines.

So passionate are the farmers about conservation projects in the area that they have taken to policing the vast woodlands against loggers. Mwadawa Luziga spends much of her day in the woodlands and she does not regret it. She says it is now rare to see anyone destroying wild and indigenous trees because women conservation groups have taught the community at large that it is important to conserve these trees. Government institutions have also introduced incentives to encourage private landowners to protect dwindling natural forests from further destruction. The conservation projects were conceived to address problems facing the Tabora region, such as widespread poverty, food shortages, malnutrition, HIV/AIDS and the degradation of renewable resources.

The region is dominated by miombo woodlands, which have plenty of edible fruit trees. Production of value-added products such as jams and juices started with the development of a fruit processing technology by the Agricultural Institute in Tumbi (ARI-Tumbi) in April 2004. The project received a grant of £60 000 (US\$78 000) from Farm Africa's Maendeleo Agricultural Technology Fund.

David Mayanga, an extension officer at Inara village, said: "Sustainability of these trees is vital. Most of the world's virgin forests are diminishing at a rapid rate and people must rely more and more on man-made managed forests. That's why we have been encouraging local people to manage the remaining virgin forests."

Apart from preserving large areas of indigenous forests, the success of the conservation effort is reflected in the standards of living of the surrounding communities. From processing jam and juice and wine-making, many families have seen

their incomes increase threefold. Various women's groups, each with at least 40 members, are now involved in fruit processing projects. These projects are empowering women financially and family incomes have been raised by an average of TSh30 000 a month (US\$28.5), reducing women's financial dependence and increasing their access to capital goods and social services, such as education and health for their families.

The projects have further contributed to household food security – fruits have replaced staple food such as maize in local brewing – and improved nutrition for the processors and their families.

However, the projects have created new problems of storage since most indigenous fruit trees produce one bumper crop in a year. Lack of proper packaging materials has also hampered the transportation of the indigenous fruit tree products. And since most of the areas experience electrical failures, the products can be spoiled very quickly. The conservation groups have plans to purchase solar-operated refrigerators for preservation purposes. They are also working with the Tanzania Bureau of Standards to ensure quality processed products.

The project at large has shown that it is not just fruit trees, but also a large number of other indigenous plant treasures of the miombo woodlands that need preserving. (Source: *The East African* [Nairobi], 24 March 2008.)



Native medicinal herb could become New Mexico cash crop

Alcalde. Through the centuries, settlers in the southwest have discovered the medicinal benefits of the native plant *yerba del manso* (*Anemopsis californica*), commonly called swamp root or lizard-tail. With the renaissance of medicinal herbs in the United States, a New Mexico State University (NMSU) agronomist believes that the plant could become a cash crop for New Mexican organic farmers. A feasibility study conducted by the NMSU College of Agriculture and Home Economics indicates that some herbs, depending on market demand, could provide an above average per acre (0.4 ha) gross income for small-scale farmers.

Native Americans first introduced the native herb to Spanish settlers. The Europeans learned that the plant's antiseptic and antibiotic properties had many uses. *Yerba del manso's* benefits have been passed down from generation to generation. The plant with the large white flower spikes found in riparian habitats of northern Mexico and the southwest United States can be used as a remedy for colds, sinus infections, gum diseases, toothaches, ulcers and upset stomachs.

"Traditionally, people dig up the roots or harvest the crown of the plant from wild stands in high watertable areas, such as river *bosques* (forests). But with the riparian areas in New Mexico shrinking because of urbanization, the habitat for this useful plant is rapidly disappearing," said Charles Martin of the Sustainable Agriculture Science Center in Alcalde. Since it has been plentiful and easily available to the traditional medicinal herb community, it has never been commercialized or thought of as a commercial crop. Martin anticipates a need for commercial cultivation of this plant in the future as *yerba del manso* becomes popular among herbalists.

Since 1998, Martin has studied the plant to determine how to transplant the native species into a cultivated environment. His findings have been published in NMSU's Research Report 758, *Cultivation of Anemopsis californica under small-scale grower conditions in northern New Mexico*, available from: www.cahe.nmsu.edu/pubs/research/agronomy/RR-758.pdf (Source: *El Paso Times* [United States], 21 April 2008.)



The great cork experiment

A recent article by David Taylor highlights the historic, economic and sometimes national security importance of NTFPs such as cork. It outlines the campaign waged in the 1940s by Charles McManus, head of the Crown Cork & Seal Company, an immense bottle-cap and container company then headquartered in Baltimore, to put an end to the dependence of the United States on foreign cork through the supply and planting of millions of cork oak (*Quercus suber*) acorns.

McManus had commissioned a United States map showing the climate zones most favourable for growing cork (the Eastern Shore and Tidewater Virginia appeared in a promising green). His vision was to turn these areas – and indeed anywhere else in the United States where the climate was right – into a cork-growing region that rivalled those of southern Europe and northern Africa. He distributed millions of cork oak acorns and seedlings to all takers, persuading governors in 11 states to endorse the campaign by planting seedlings on their capitol grounds.

The campaign continued for a while after his premature death but cork, once the dominant material for gaskets, seals, stoppers and dozens of other mechanical and industrial uses, would soon become obsolete. The millions of seedlings planted as part of the McManus Cork Oak Project would be forgotten. And most of them, especially in Maryland and Virginia, would succumb to the cold winters. Taylor describes his search to find any of the surviving *Quercus suber* that had been planted in the late 1940s and early 1950s.

The cork oak, one of many evergreen or "live" oaks (not to be confused with the

ornamental cork tree of Asia), is native to Mediterranean forests, and has proved adaptable to moderately warm climates everywhere. The tree's unusually light and resilient bark can be peeled off in huge sheets without damaging the tree and its combination of low density and surprising elasticity give it remarkable sealing ability and buoyancy. [Source: *Chesapeake Bay Magazine*, March 2008.]

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Multipurpose moringa tree to grow on Molokai, Hawaii

Moringa plants may soon cover 1 000 acres (404.7 ha) of Molokai land, according to an aim discussed at a recent meeting. Jim Schelinski, who spearheads the operation, noted that the target might be met within the next eight months, as those involved begin to plant the supplied seeds. The tree would provide a variety of opportunities and advantages, including 40–50 jobs.

The benefits of the multipurpose *moringa* do not, however, stop with its economic advantages. According to some sources, the leaves of the tree may prevent up to 300 diseases. Furthermore, the fertilizer derived from the plant may be used by local farmers; the oil can be shipped to the mainland, while the powder can be made into several products. Schelinski's wife is equally enthused about the project. "My biggest interest would be an emergency food supply in Molokai," she said, noting that the plants would provide even more greenery to the island.

Future goals may also include the formation of a cooperative for local farmers. [Source: *Molokai Times* [Hawaii] 8 January 2008.]



Local scientists extract cancer drug from native plant

After almost four years of research, Vietnamese scientists at Ho Chi Minh City University of Technology have successfully extracted mimosine, a toxic non-protein amino acid used in cancer treatments, from the plant *Mimosa pudica*, also known as the "sensitive" plant. Viet Nam could save thousands of import dollars by refining expensive cancer drugs, and one

area to start with is the country's abundant sensitive plant.

One obstacle that the researchers had to overcome was the matter of funding. The university provides the researchers with facilities but the materials required must be procured through private funds. Despite the benefits of mimosine extraction, the researchers were unable to secure funding and paid for the materials out of their own pockets.

Viet Nam currently imports alkaloid mimosine, which is expensive. Therefore, if Vietnamese scientists can mass produce mimosine from the sensitive plants growing wild in the country, not only will there be medicinal benefits, but there will be financial benefits as well.

The research team successfully produced a medicinal tea using the dried leaves of the sensitive plant. The tea stimulates the immune system and helps prevent bone diseases such as osteomalacia, which is common in women, and reduces the risk of cancer. [Source: *Thanh Nien Daily* [Viet Nam], 1 January 2008.]

Anticancer pines virtually wiped out

Illegal loggers have felled half the remaining stand of Viet Nam's unique *thong do* trees in the Tay Nguyen (Central Highlands). Their destruction has so shocked scientists that they have broken a 100-year-old oath to keep the location of the trees – renowned for their medicinal qualities – secret in an effort to save the last 65. They want people to know about the trees so that they can be protected.

The *thong do* (*Taxus wallichiana* Zucc.) pine is treasured for its resin, which is used to treat cancer and other diseases. The perennial trees are believed to have first grown at Nui Voi, Elephant Mountain, in the Lang Bian highlands, 2 000–5 000 years ago.

"My colleagues and I have spent more than 15 years trying to protect their original genes," says Tran Van Tien of the Lam Bong Silviculture Research Centre. "Our objective in nurturing the young pines was to reproduce the species to help cancer patients. It's high time for us to act to protect these precious trees and their 'green drug' to treat cancer."

Biologist Doan Nam Sinh, who works to replicate species for the pharmaceutical industry at Xuan Truong, believes that *thong do* trees are confined to the Lang Bian highlands.

Scientists say it takes 100 years for the tree's diameter to grow to the thickness of a human calf. Many of the felled pines were from one to two metres in diameter. But trees just 15 cm in diameter were not spared. The scientists fear that the last pines on Elephant Mountain are close to extinction because their ability to reproduce is very weak and there are no intermediary generations. [Source: VietNamNet Bridge [Viet Nam], 18 February 2008.]



Ecotourism development to protect forest biodiversity

At a seminar held in Da Lat, participants established that ecotourism could be a helpful way to protect natural resources in Viet Nam's national parks and reserves. However, the dependence of people dwelling near the forests on the parks' natural resources has resulted in the unfavourable loss of biodiversity in these areas.

Delegates noted that because forest-dependent people live in poverty, improving their living conditions is necessary in order to reduce their reliance on and resulting exploitation of the forest resources desired for conservation. These speakers emphasized that the needs of local communities must thus be addressed before plans for ecotourism and preservation can be successful. [Source: VietNamNet in RECOFTC Community Forestry E-News, April 2008.] ♣

If what you have done is unjust, you have not succeeded.

Thomas Carlyle



“BIODIVERSITY IS VITAL FOR HUMAN SURVIVAL AND LIVELIHOODS”

“Biodiversity is vital for human survival and livelihoods; we need to conserve it for future generations. At the same time, the unacceptable scale of hunger and rural poverty in our small planet calls for urgent remedial action,” FAO Deputy Director-General James G. Butler said today. He was addressing the opening session of the Thirteenth Meeting of the Subsidiary Body on Scientific, Technical and Technological Advice of the Convention on Biological Diversity (18–22 February 2008).

Ultimately, at the global level, this event – which involves FAO, the Convention on Biological Diversity and their partners – is aimed at meeting the challenges of sustainable agricultural production to ensure food security for all peoples, “especially the rural poor – often the managers and custodians of our biodiversity”, as Mr Butler put it.

The Rome meeting focused on the implementation of the programmes of work on agricultural biodiversity and forest biodiversity; the application of sustainable use principles and guidelines to agricultural biodiversity; the linkages between agricultural biodiversity and climate change; marine, coastal and inland water ecosystems biodiversity; invasive alien species; and other scientific and technical issues.

“Mainstreaming biodiversity into the food and agriculture, livestock, fisheries and forestry sectors will be critical to provide humankind with opportunities for increasing food availability and stability while maintaining a healthy natural capital for future generations,” Mr Butler said. He also stated that “understanding the positive linkages – often forgotten or

underestimated – between the production sectors and biodiversity is essential towards achieving universal right to food and sustainable development”.

Mr Butler stressed the need to foster international cooperation with regard to emerging new complex challenges for food and agriculture, such as climate change. (Source: FAO Newsroom, 18 February 2008.)



COMMUNITY-BASED ECOLOGICAL MONITORING – A PROMISING OPTION TO ENSURE THE SUSTAINABILITY OF NWFP EXTRACTION

Small-scale commercialization of NWFPs is a key livelihoods strategy in many woodland areas in developing countries. However, as discussed in previous articles of *Non-Wood News*, commercialization of NWFPs, even on a small scale, is not necessarily environmentally sustainable. Significant long-term decreases in ecosystem resilience, biodiversity and functional ability of the ecosystems were detected over time in numerous small-scale NWFP extraction systems. In detailed case studies, it became obvious that these are hard to predict because of the complexity of woodlands dynamics and human impacts.

Ecological monitoring can be very helpful to minimize these destructive effects and to increase environmental sustainability. It can be defined as the continuous collection, analysis and interpretation of data related to the environment in order to understand, determine or detect ecological trends in an area.

The development of an ecological monitoring framework adapted to small-scale use of NWFPs in Zimbabwe was started in 2005 and ended in 2007 with the publication of a manual (see Box). The aim was to develop a methodological framework, which had to be easy and cost-efficient to implement and needed to provide the necessary results for decisions on NWFP extraction and natural resource use at the community- and district-level. It had to ensure compliance of the NWFP-extraction activities to ecological criteria, be based on the participation of the collectors and respond to the challenging political, social and economic context in Zimbabwe. The tool was not meant to focus only on the NWFP resource as such, but also on the surrounding ecosystems. Moreover, it was meant to include the impact of climatic factors on the environment in order to support the communities in their adaptation to actual and future climate changes.

Outcomes in Zimbabwe. An example of indicators developed and ecological challenges addressed in the context of ecological monitoring is provided in the Table, which was derived from the ecological monitoring framework developed in the mountainous woodland area of Nyanga in the Eastern Highlands of Zimbabwe. There, leaves from *Fadogia ancylantha* (makoni tea bush) and *Myrothamnus flabellifolius* (resurrection tea bush) are collected by small-scale entrepreneurs for processing and regional sale.

With these indicators, significant effects from changes in land-use practices were already detected in the pilot implementation between 2006 and 2007 and were confirmed with historic information. For these changes, regulatory or corrective means were developed accordingly. Among others,



Extract from Nyanga Ecological Monitoring Plan

Indicator	Specifications	Ecological challenges addressed
Early/late fires per dry season	Number of fires per village, woodland/grassland area burned	Uncontrolled fires
Erosion gullies	Number of gullies wider than 1.5 m and/or longer than 3 m	Erosion
Alien plant populations	Number of <i>Eucalyptus</i> sp., <i>Acacia marnsii</i> and <i>Lantana camara</i> individuals in sampling plots	Alien plants
Number of <i>Fadogia</i> plots	Average estimated distance, time walked	Target species development
Area under tobacco	Area under tobacco cultivation per village	Wood offtake
Trade in <i>Uapaca kirkiana</i> fruits	Amount of <i>Uapaca</i> fruits traded by collectors, distance	<i>Uapaca</i> population development

possible action regarding the sharp increase of wood offtake caused by extended small-scale tobacco farming (which requires firewood for tobacco drying), is being discussed by the community and district authorities as it endangers the existence of NWFP-relevant species.

In interviews with community members, changes in the natural systems over longer periods of time also became obvious and are plausibly caused by climatic change. Some populations of the harvested *Fadogia* tea bush in rather dry areas were found to be under strong ecological pressure from

decreasing precipitation. A more rigid regulation for collection had to be introduced at these places in order to ensure the sustainability of NWFP extraction.

The development of this ecological monitoring framework and its results are indicative of a possible way of dealing with the challenges faced by natural resource management and NWFP-related initiatives in developing countries, i.e. the lack of reliable baseline data; the need to define and use highly aggregated core indicators; limited financial, technical and human resources; and difficulties in deducing evidence for long-term trends from locally and temporally limited natural phenomena.

COMMUNITY-BASED ECOLOGICAL MONITORING. A MANUAL FOR PRACTITIONERS

The Zimbabwe-based NGO SAFIRE (Southern Alliance for Indigenous Resources), together with DED (German Development Service), has developed a new approach for community-based ecological monitoring of the extraction of NWFPs. After more than two years of developing a multistakeholder process and testing for feasibility, a publication *Community-based ecological monitoring. A manual for practitioners* has now been brought out.

The manual is aimed at providing backup for staff of governmental or non-governmental institutions working in rural zones of developing countries in the context of rural development and sustainable natural resource use initiatives. In a plain and illustrative manner it explains the rationale and

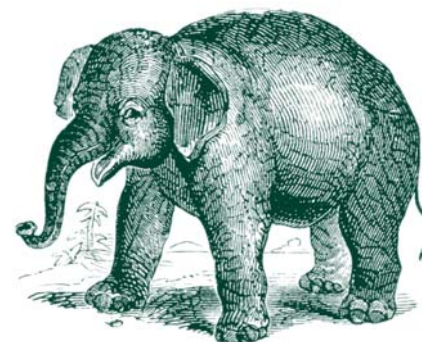
recommended steps of supporting local communities in ecological monitoring and summarizes the lessons learned.

The approach taken for community-based ecological monitoring is based on local governance structures and traditional knowledge systems. It provides a framework for the communities:

- to track *changes in the natural resource base of NWFPs* easily and effectively as a base for decisions for sustainable use;
- to detect *effects of climate change* and negative side effects of resource uses at an early stage and to plan for appropriate action;
- to support long-term maintenance of productivity and yield of NTFP resources and *conservation of biodiversity*.

The manual is available to download from the Readers' Research page of FAO's NWFP home page at: www.fao.org/forestry/site/35667/en

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ELEPHANTS KEEP ANTS IN HARMONY WITH TREE HOSTS

If the African savannah were to lose elephants, giraffes and other large grazing mammals, there would be unexpected ecological effects all the way down to the ants and acacia trees of the plains, suggests a new study. The mutually beneficial relationship between acacia trees of the African savannah and the ants that live on the trees and defend them from harm has an unexpected third partner in the form of these large mammals. In the absence of the grazers, the former cosy relationship between trees and ants breaks down into an every-species-for-itself battle.





The whistling thorn acacia (*Acacia drepanolobium*) and its ants have long been a textbook example of a mutualistic relationship. The tree provides the ants with nectar and hollow thorns to live in. The ants return the favour by aggressively attacking any animal that touches the tree.

Todd Palmer of the University of Florida in Gainesville, United States, and his colleagues compared this relationship in 12 study plots in Kenya. On half of the plots, large herbivorous mammals have been fenced out since 1995. On the other half, herbivores still roam freely. In plots without herbivores, the trees produced less nectar and fewer hollow thorns, presumably because they needed less protection. Sure enough, the most beneficial species of ant, *Crematogaster mimosae*, was 30 percent less common on trees in these plots. Instead, it was replaced by a second ant, *C. sjostedti*, which harms the trees by encouraging attack by a stem-boring beetle. As a result, trees on the herbivore exclusion plots grew more slowly and were more likely to die than trees on control plots. Even *C. mimosae* becomes less "friendly" on the exclusion plots. Left with less food and housing, it stops attacking invaders and begins tending sap-sucking insects, again to the detriment of its host.

The result has sobering implications for conservation. Large mammals are especially vulnerable to habitat loss and encroachment by human settlements, and their numbers are declining over much of Africa. If the decline continues, far more than the mammals themselves could be at risk, the study suggests. "Make a major perturbation and you're likely to see ripple effects that you might not have expected," says Robert Pringle, a member of the study team at Stanford University in California, United States.

Journal reference: *Science* [DOI: 10.1126/science.1151579]. (Source: *New Scientist* [United Kingdom], 10 January 2008.)

INDIGENOUS LANGUAGES AND BIODIVERSITY

Indigenous languages are treasures of vast traditional knowledge concerning ecological systems and processes and how to protect and use some of the most vulnerable and biologically diverse ecosystems in the world.

It is no coincidence that the areas where indigenous peoples live are the areas that contain the greatest biological diversity. In fact, biological, linguistic and cultural diversity are inseparable and mutually reinforcing, so when an indigenous language is lost, so too is the traditional knowledge on how to maintain aspects of the world's biological diversity.

The protection of indigenous languages is therefore not only a cultural and moral imperative, but an important aspect of global efforts to address biodiversity loss, climate change and other environmental challenges. (Source: *Report of the International Expert Group Meeting on Indigenous Languages*. Permanent Forum on Indigenous Issues. Economic and Social Council. E/C.19/2008/3, 21 January 2008.)

UN STRIKES NEW FOREST ACCORD

A new international forest agreement struck at the United Nations is a major step towards controlling deforestation, its sponsors say.

The United Nations General Assembly has adopted the new accord put forward by the UN Forum on Forests which recognizes that measures to produce sustainable forest use around the world must account for the human factor – that poor local communities rely on forest resources for their livelihood.

The United Nations says that 1.6 billion people rely directly on forests for fuel, food, medicine and income.

"Almost all recent success stories of restoring the world's forests are based on better recognition of the needs and actions of local peoples, their ownership and access rights and ancient knowledge of indigenous tribes and communities,"

Pekka Patosaari, Secretariat Director of the UN Forum on Forests, told General Assembly members.

The agreement is not legally binding on governments but will set new standards for forest management aimed at reducing forest clearing and the degrading of native forests in ways that preserve the livelihoods of forest users. Patosaari said the lack of national and international mechanisms to underpin sustainable economic uses of woodland areas have defeated attempts to preserve them. About 3 percent of the world's forest cover has been destroyed in the last 15 years alone and deforestation accounts for around 20 percent of total greenhouse gas emissions.

The UN Climate Conference in Bali kick-started a new trial process to pay local communities not to clear forest. Many hope this Reduced Emissions from Deforestation and Degradation (REDD) will lead to a legally binding worldwide agreement. (Source: *Environment News Service*, 27 December 2007, in *CarbonPositive News*, the Hague, the Netherlands, 2 January 2008.) ♣



Truth can be a dangerous thing. It is quite patient and relentless.

R. Scott Richards



HIGH-LEVEL CONFERENCE ON WORLD FOOD SECURITY

High-Level Conference on World Food Security: the Challenges of Climate Change and Bioenergy

Securing world food security in light of the impact of climate change may be one of the biggest challenges faced in this century.

An estimated 850 million people in the world today suffer from hunger. Of these, about 820 million live in developing countries, the very countries expected to be most affected by climate change. Governments, international organizations, civil society, the private sector and other actors must work together to address these challenges and to devise appropriate strategies and responses.

The recent Thirty-fourth Session of the FAO Conference, held during November 2007, called for a series of expert meetings and stakeholder consultations on climate change and bioenergy, to be followed by a High-Level Conference on World Food Security and the Challenges of Climate Change and Bioenergy.

The preparatory meetings were held from January to April 2008 and the High-Level Conference took place from 3 to 5 June 2008. The High-Level Conference was informed by work undertaken and findings that emerged from the expert meetings and stakeholder consultations, as well as new analysis undertaken by FAO, as part of its regular activities.

The High-Level Conference was even more timely in light of soaring food prices and the additional challenges that this situation poses to achieving global food security.

One hundred and eighty-one countries participated – 43 were represented by their Head of State or Government and 100 by high-level Ministers. Sixty Non-governmental and Civil Society Organizations were present as well. Overall, 5 159 people attended – 1 298 of them were journalists covering the event.

FOR MORE INFORMATION, PLEASE VISIT:

www.fao.org/foodclimate/home1.html

(Please also see Dr Wulf Killmann's editorial.)

FAO'S WORKING GROUP ON INDIGENOUS ISSUES

Collaboration with and learning from indigenous peoples, who make their living from their natural environment and thus generally possess a profound knowledge of its significance and potential benefits, are of great importance to FAO. Indigenous peoples are essential in the context of FAO's mandate, not only because they are among the most vulnerable in terms of food and livelihood security and remain highly dependent on agriculture for their livelihoods, but also because they and their civilizations manage, provide, contribute to, and are currently the primary custodians of the main part of the world's agricultural diversity and its related ecosystems, biological and knowledge diversity.

More than 50 FAO staff members from different technical departments come together regularly in the interdepartmental working group on indigenous issues in order to discuss and exchange experiences in their work with indigenous peoples. The working group is currently developing a publication on FAO's work with indigenous peoples, a policy for indigenous peoples and guidelines to strengthen its work on indigenous issues. Furthermore, the working group is collaborating closely with the United Nations Permanent Forum on Indigenous Issues (UNPFII) and the Inter-Agency Support Group to the UNPFII.

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FORESTRY DEPARTMENT

New FAO strategy for forestry

In March 2007, the Committee on Forestry (COFO) requested that a new FAO strategy for forestry be developed in consultation with FAO Members and other partners. The consultative process has begun. The goal is to propose a new strategy to COFO at its next meeting in March 2009. The Regional Forestry Commissions will discuss the elements for the new strategy in their 2008 sessions.

In the first stage of the consultation, comments are requested on a "Discussion paper on elements of a possible strategy". Based on feedback received during the first part of 2008, a draft strategy will be developed and circulated for comments during a second phase of the consultation in mid-2008.

To access the discussion paper and for more information on the consultation process please visit: www.fao.org/forestry/site/strategy/en/

FAO IN THE FIELD

Forests for poverty reduction: mobilizing small and medium forest enterprises in Central Africa (project GCP/RAF/408/EC)

The Congo Basin in Central Africa is the second-largest forest area in the world. Its forests are home to millions of unique animals and plants. More than 100 million people depend on the forest resources for their food, medicines, income and cultural uses. An especially important income-generating activity is the trade of NWFPs, i.e. fruits, leaves, bushmeat and tubers.

Research shows that small and medium forest enterprises (SMFEs) that deal in NWFPs are the main source of income for millions of forest dwellers worldwide:

- 80–90 percent of forest enterprises in developing countries are SMFEs;
- >50 percent of forest sector employment is generated by SMFEs;
- 20 million people are formally employed by SMFEs (140 million informally); and
- >US\$130 billion/year of gross value added is produced by SMFEs worldwide.

Despite the crucial role of NWFPs in forest people's livelihoods, the trade of these products faces many obstacles. SMFEs are mostly informal, family or community enterprises. Businesses are not organized, lack sufficient market information and technological expertise and face ownership problems.

To strengthen the contribution of SMFEs to people's well-being and poverty reduction in



Central Africa, the following measures are needed: i) strengthening capacity to organize business; ii) developing the value chains of major NWFPs; iii) adaptation of legal and institutional measures that facilitate small forest enterprises; and iv) sustainable production, harvesting and domestication techniques.

A three-year project (2007–2009) – *Forests for poverty reduction: mobilizing small and medium forest enterprises in Central Africa* (GCP/RAF/408/EC) – is being funded by the European Commission to address these issues. FAO has taken the lead role and is working in partnership with the Netherlands Development Organization (SNV), the Center for International Forestry Research (CIFOR), and the World Agroforestry Centre (ICRAF).

The project is being carried out in Cameroon and the Democratic Republic of the Congo and is pursuing close collaboration with the governments of these countries within the framework of the Central African Forest Commission (COMIFAC).

The project's focus is on the following areas.

- *Capacity building*: strengthen the organization, management, production, transformation, commercialization and marketing skills of small and medium forest enterprises.
- *Knowledge and information*: generate data on resource stock and study production, consumption and markets. Develop market information systems.
- *Processing*: develop and disseminate technologies for transformation and packaging.
- *Production*: promote sustainable harvesting techniques and domestication through the integration of high-value cultivars in production systems.
- *Access to capital*: improve access to credit by collaboration with and capacity building of microfinance institutions.
- *Legal, institutional and business environment*: multistakeholder processes play a key role in legal and institutional development, improving public-private sector relationships, strengthening civil society and increasing access to information.

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www.fao.org/forestry/site/35689/en
or Ousseynou Ndoye, Project Regional Coordinator and National Coordinator for Cameroon, PO Box 281 Yaoundé, Cameroon.
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INFORMATION ABOUT FAO'S WORK, 1945–2008

Did you know ... that if you need to find out about FAO studies and projects in a particular country you may simply search the FAO library catalogue, entering the name of the country in the search box and selecting "Documents produced by FAO"?

The FAO library catalogue is directly accessible from the David Lubin Memorial Library's Web page.

www.fao.org/library/index.htm



DOMESTICATION AND DEVELOPMENT OF BAOBAB AND TAMARIND (DADOBAT)

The Domestication and Development of Baobab and Tamarind (DADOBAT) project aims at developing sustainable production systems of baobab (*Adansonia digitata*) and tamarind (*Tamarindus indica* Lam.) in three West African countries based on characterization, conservation and use of local genetic resources. This is expected to have a positive impact on food security and income generation in the countries included in the project. Issues of new crop/niche development are addressed through a holistic research approach and multidisciplinary research activities.

Both baobab and tamarind are plant species with high potential for arid and semi-arid areas in the developing world.

Baobab is a multipurpose, widely used African tree. It occurs scattered in savannahs, often near dwellings, and has numerous medicinal properties and (non-)food uses.

- Young leaves, rich in minerals/vitamins, are cooked like spinach and sauces.
- Fruit pulp is high in vitamin C, and is dissolved in water or milk and drunk, used as a sauce or fermenting agent, etc.
- Seed kernels are eaten fresh, dry or ground and are used in cooking, as a thickening/flavouring agent, or roasted. Seeds are also a source of cooking oil.
- Bark fibre is used for rope, basket nets, fishing lines and weaving.

Tamarind is grown for subsistence and some commercial production in Asia and Latin America; however, it often occurs wild in the tropics. In Africa, unimproved trees are often commercially exploited, but are considered an underutilized crop.

- Tamarind fruit pulp is the richest known natural source of tartaric acid and is used for flavouring chutneys, sauces and juices. Sweet varieties can also be consumed as table fruit. Its leaves are a source of food and medicine.
- Tamarind wood is used for timber, tool handles, charcoal and fuelwood.
- Seed kernel powder, the major industrial product, is an important material used in sizing textiles and paper.

They can provide food, medicine, wood and a number of secondary processed products for income generation that can help to meet the basic needs of an increasing number of people in a context of decreasing land availability.

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**NATIONAL WORKSHOP
ON SUSTAINABLE
MANAGEMENT OF NTFPS**

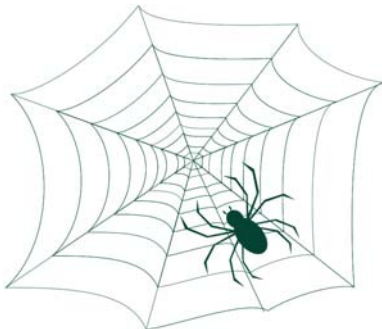
JABALPUR, INDIA
18-19 JANUARY 2008

The objectives of the workshop were to:

- identify issues relating to the sustainable management of forests and NTFPs in different states and take stock of initiatives taken to address these issues by the forest department, researchers, NGOs, etc.;
- identify and develop models of crosscutting, especially in the context of primary stakeholders, i.e. forest-protecting communities and primary NTFP collectors; and
- develop a uniform approach for planning on sustainable forest management with the roles of various stakeholders clearly defined.

FOR MORE INFORMATION, PLEASE CONTACT:

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**FOREST INSECTS AS
FOOD: HUMANS BITE
BACK. A WORKSHOP
FOCUSED ON ASIA-
PACIFIC RESOURCES
AND THEIR POTENTIAL
FOR DEVELOPMENT**

CHIANG MAI, THAILAND
19-21 FEBRUARY 2008

Organized by FAO and Chiang Mai University in Thailand, specialists attending the three-day workshop focused on edible forest insects and their management, collection, harvest, processing, marketing and consumption.

The gathering raised awareness of the potential of edible forest insects as a food source, documented the contribution of edible insects to rural livelihoods and assessed linkages to sustainable forest management and conservation.

FOR MORE INFORMATION, PLEASE CONTACT:

Patrick B. Durst, Senior Forestry Officer, FAO Regional Office for Asia and the Pacific, 39 Phra Atit Road, Bangkok, Thailand 10200. Fax: (66-2) 697-4445; e-mail: Patrick.Durst@fao.org (Please see page 23 for more information.)



**ROUND TABLE
ON SUSTAINABLE
FORESTS NATIONAL
TECHNICAL WORKSHOP
AND MEETING**

KNOXVILLE, TENNESSEE,
UNITED STATES
25-28 FEBRUARY 2008

The objectives of the workshop were to:

- learn about and provide input on data collection and reporting on NWFPs;
- highlight and learn about ongoing sustainable forest efforts in the southeast region;
- learn about and contribute to the knowledge base on climate change, and climate change in the context of sustainable forests and other resources; and
- shape future activities of the Round Table on Sustainable Forests.

The results from all the workshops will be utilized by the United States Department of Agriculture (USDA) Forest Service in their preparation of the 2010 National Report on Sustainable Forests.

FOR MORE INFORMATION, PLEASE CONTACT:

Shawn Walker, Project Coordinator, Meridian Institute, 1920 L Street NW, Suite 500, Washington, DC, 20036, United States. Fax: +1-202-354-6441; www.merid.org



**INTERNATIONAL
SEMINAR ON MEDICINAL
PLANTS AND HERBAL
PRODUCTS AND
INTERNATIONAL
HERBO EXPO 2008**

TIRUPATI, INDIA
7-9 MARCH 2008

The seminar covered cultivation, extraction of medicinal plants and herbal products, plant biotechnology, supply of planting material and herbal products, applications in ayurveda, herbal cosmetics and pharmaceuticals, standardization and quality control issues and marketing aspects.

FOR MORE INFORMATION, PLEASE CONTACT:

Prof. G. Sudarsanam. E-mail: gvsdpd@yahoo.com or ismphp@gmail.com; http://ismphp.blogspot.com



**PRIMER SEMINARIO –
TALLER DESARROLLO
DE PRODUCTOS
NO MADEREROS
DEL BOSQUE**

SANTO DOMINGO,
REPÚBLICA DOMINICANA
25 Y 26 DE ABRIL DEL 2008

El propósito general era promover tecnologías y métodos de aprovechamiento múltiple del suelo y de otros recursos naturales en áreas boscosas para la obtención de productos forestales no madereros (PFNM), como contribución al desarrollo sostenible de comunidades campesinas y otros sectores de la economía dominicana.

Otros de los objetivos del seminario-taller eran: contribuir a diversificar la producción en áreas boscosas, promover un mayor cuidado ambiental, promover la introducción de tecnologías en el

desarrollo de los PFNM del bosque, contribuir al rescate de tradiciones productivas y a la identificación de nuevas fuentes sostenibles de recursos económicos en comunidades campesinas, entre otros.

En el taller, se hizo la presentación de una propuesta sobre un proyecto de extensión y desarrollo del cultivo del ratán para la introducción en el país de germoplasma probado con éxito en áreas del caribe.

Las ponencias enviadas se encuadraron en las grandes temáticas propuestas:

- el cultivo del ratán y las posibilidades de su introducción en la República Dominicana;
- el aprovechamiento químico de los subproductos forestales: taninos, resinas, aceites esenciales, sustancias activas farmacológicas y otros;
- el uso y el aprovechamiento de la biomasa forestal;
- el aprovechamiento múltiple del suelo y de los recursos naturales locales; así como la protección ambiental;
- el desarrollo de la agroforestería y la agroecología;
- la diversificación de la producción en áreas de bosques (producción apícola, lombricultura, hongos comestibles y otros);
- la participación comunitaria en la búsqueda de soluciones; y
- la contribución al desarrollo rural sostenible.

PARA MÁS INFORMACIÓN DIRIGIRSE A:

Proyectos y Gestión Ambiental,
Fundación Desarrollo Sostenible Comunitario,
Inc. (FUNDESCO), Respaldo Kennedy No. 8,
Ensanche Kennedy, P.O. Box: 30108.
Santo Domingo, República Dominicana.
Correo electrónico: menendez63@yahoo.com;
fundesco_rd@yahoo.com
<http://groups.msn.com/voluntariosdefundesco>



**REVOLUTIONIZING
THE GLOBAL INDIAN
SANDALWOOD
(SANTALUM ALBUM)
SUPPLY**

THE KIMBERLEY GRANDE,
KUNUNURRA, WESTERN AUSTRALIA
13-15 MAY 2008

This conference showcased the scale, R&D, professionalism and history of Australia's Indian sandalwood (*Santalum album*) plantations, which will begin delivering a reliable and significant supply of high-quality *S. album* to the market within the next few years.

The conference provided an excellent opportunity to see the 12 km² of plantation, as well as the research in and development of plantation-grown Indian sandalwood, in which Tropical Forestry Services Ltd (TFS) and others are involved. Samples of TFS oil were also available.

FOR MORE INFORMATION, PLEASE CONTACT:

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e-mail: danae@tfsLtd.com.au;
www.tfsLtd.com.au



**2008 TRAINING COURSE
ON BAMBOO
TECHNOLOGIES FOR
DEVELOPING COUNTRIES**

HANGZHOU, CHINA
1 JUNE-30 JULY 2008

This training course was organized by the China National Bamboo Research Centre (CBRC) and sponsored by the Ministry of Commerce, China as a contribution of the Chinese Government to other developing countries within south-south cooperation.

The course was designed to help people who are interested or who work in the bamboo/forest sector to master the basic theories and principles of bamboo cultivation, processing and utilization; to enhance their awareness and capacity of the integrated development of bamboo; and to share China's experiences with and expertise in bamboo.

FOR MORE INFORMATION, PLEASE CONTACT:

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88869217; e-mail: cbrc@mail.hz.zj.cn or
estrellacai@gmail.com

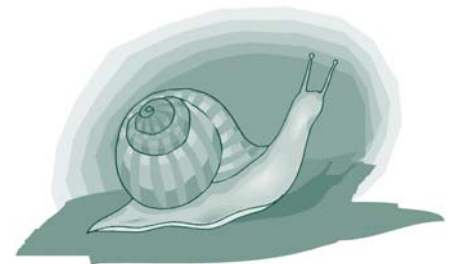


**HIGH-LEVEL
CONFERENCE ON
WORLD FOOD SECURITY:
THE CHALLENGES
OF CLIMATE CHANGE
AND BIOENERGY**

ROME, ITALY
3-5 JUNE 2008

FOR MORE INFORMATION, PLEASE VISIT:

www.fao.org/foodclimate/hlc-home/en/
(Please see Dr Wulf Killmann's editorial and
page 63 for more information.) ♣



Truth has no special time of its own. Its
hour is now – always.

Albert Schweitzer



TREES CONNECTING PEOPLE: IN ACTION TOGETHER

**BOGOTÁ, COLOMBIA
29 JULY–1 AUGUST 2008**

This international meeting on urban and peri-urban forestry is being organized by FAO. It will gather together worldwide institutions and experts, interested in building collaboration and partnership in support of the capacity building of developing countries and countries in transition, with the aim of optimizing the role of forests and trees for healthy cities.

FOR MORE INFORMATION, PLEASE CONTACT:

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E-mail: michelle.gauthier@fao.org or urban-forestry@fao.org**



2ND INTERNATIONAL BEEKEEPING CONGRESS

**THIMPHU, BHUTAN
19–21 AUGUST 2008**

Asia has long been known for its glorious tradition of beekeeping and honey hunting, its rich and diversified bee flora and fauna and its suitable climate for beekeeping almost throughout the year. Beekeeping is now established and developed as a profitable agroforest-based industry providing basic employment, supplementary income and nutritious food for a large rural population, besides enhancing crop productivity through pollination.

Beekeeping plays a crucial role in the present context of commercialization of agriculture and liberalization of economy. It covers the entire range of honeybee resources, bee products, beekeeping practices, pollination services and their interface with business systems and environmental integrity. There is a significant unknown diversity of scientific and practical knowledge available in different countries that needs to be disseminated properly. Because of lack of coordination among different implementing agencies, little information is available on the overall status of research, training and extension systems.

The International Beekeeping Congress will provide a forum for reorienting the policies and programmes for more productive and sustainable apiculture. The theme of the congress “Beekeeping development and its relevance in mountain

agriculture” is most apt in the present context. The congress objective is to showcase research and development activities in bees and bee products.

The three-day congress, organized by Century Foundation, Bangalore, India in association with the Ministry of Agriculture, Government of Bhutan, will help to develop an agenda to ensure sustainable livelihoods, natural resource use optimization and ecosystem protection through income-generating activities such as beekeeping.

Topics/Technical Sessions will cover: i) biology and management of honeybees; ii) bees and crop pollination; iii) honey flora and migratory beekeeping; iv) bee pests, diseases and enemies; v) bee products: processing and marketing; vi) honey quality, safety and international trade issues; vii) beekeeping technology and equipment; viii) bees and environment; ix) beekeeping training and extension; x) apitherapy; and xi) organic honey production and its importance.

FOR MORE INFORMATION, PLEASE CONTACT:

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Fax: 91-80-23219295; e-mail: ibcbhutan@gmail.com or sivaram900@gmail.com or Mr Kailash Pradhan, Deputy Chief Research Officer, Local Coordinator, 2nd IBC 2008, Council for RNR Research of Bhutan, Ministry of Agriculture, Thimphu, Bhutan.
Fax: 00-975-2- 322504/321097; e-mail: kp_pradhan@yahoo.co.uk**



INTERNATIONAL CONFERENCE: ADAPTATION OF FORESTS AND FOREST MANAGEMENT TO CHANGING CLIMATE WITH EMPHASIS ON FOREST HEALTH: A REVIEW OF SCIENCE, POLICIES, AND PRACTICES

**UMEÅ, SWEDEN
25–28 AUGUST 2008**

The Conference will focus on the current state of knowledge of ongoing changes in climatic conditions in different regions of the world, and the implications of these changes for forest health, management and conservation. Presentations and discussions will emphasize research, policies and practices that are needed to enable to plan for and manage healthy, productive forests to

meet future societal needs for forest products and the full range of forest goods and services. Ongoing research in various fields of forest and forest-related sciences will be presented in parallel sessions of the conference.

The conference will be co-hosted by FAO, the International Union of Forest Research Organizations (IUFRO) and the Swedish University of Agricultural Sciences (SLU) with support from the United States Forest Service, Seoul National University, Republic of Korea and the Royal Swedish Academy of Agriculture and Forestry.

Conference topics will include the following.

Impacts of Climate Change on Forest Health and Ecosystem Services.

- Physiological responses of trees to climate change, including wood properties.
- Climate-induced changes in forest ecosystem composition, processes and geographic extent.
- Invasive species – increasing establishments in previously hostile environments.
- Altered incidence, severity and geographic range of insect pests and disease outbreaks.
- Impacts on forest ecosystems of altered frequency, intensity and timing of extreme events, including fire, wind and ice storms.

Adaptation Implications for Science, Policies, and Practices.

- Silviculture and production of wood and non-wood forest goods.
- Forest biodiversity, endangered species and nature conservation.
- Protective functions of forest resources, including water and soil issues.
- Socio-economic functions, livelihoods and poverty – integrated natural resources management.
- Forest genetics and tree breeding.
- Phytosanitary regulations, including trade.
- Role of innovative management approaches, including precision forestry, ecosystem management and multistakeholder participation.

Enhancing Knowledge of Climate Change Impacts and Adaptation Measures.

- Scenarios and modelling for forest management planning.
- Monitoring, assessments and early warning.
- Roles of traditional forest knowledge in climate change adaptation.

- Opportunities for combining adaptation and mitigation (carbon sequestration) objectives.
- Quality and comprehensiveness of the existing scientific evidence base, further research needs.

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FOR MORE INFORMATION, PLEASE CONTACT:

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or Jim Carle, Senior Forestry Officer, Forest Management Division, FAO, Via delle Terme di Caracalla, 00153 Rome, Italy. E-mail: jim.carle@fao.org; www.forestadaptation2008.com



2008 INTERNATIONAL SCIENTIFIC CONFERENCE ON TROPICAL RAINFORESTS AND AGROFORESTS UNDER GLOBAL CHANGE

**BALI, INDONESIA
 5-9 OCTOBER 2008**

Tropical rain forests disappear at an alarming rate, causing unprecedented losses in biodiversity and ecosystem services. Despite an increased recognition of the value of these goods at national and international levels, rain forests continue to be seriously threatened by human-induced global change such as agricultural intensification and climate change.

Understanding these processes needs an integrated scientific approach linking ecological, economic and social approaches on different scales, from the household and village level to landscapes and regions.

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FOR MORE INFORMATION, PLEASE CONTACT:

Mr Teja Tschardtke (Chair), Faculty of Agricultural Sciences, Dept of Crop Sciences, Agroecology, Waldweg 26, 37073 Göttingen, Germany. E-mail: info@globalchange-2008.org; www.globalchange-2008.org/



4TH WORLD CONGRESS ON MEDICINAL AND AROMATIC PLANTS – USING PLANTS TO BENEFIT PEOPLE

**CAPE TOWN, SOUTH AFRICA
 9-14 NOVEMBER 2008**

At a meeting of the Secretariat of the International Union of Biological Sciences

(IUBS) in Paris in 1993, nine international organizations decided to establish an international non-governmental body to be known as the International Council for Medicinal and Aromatic Plants (ICMAP) (www.icmap.org) with the general objective of promoting international understanding and cooperation between national and international organizations on the role of medicinal and aromatic plants (MAPs) in science, medicine and industry, and improving the exchange of information between them. One of the functions of ICMAP is to arrange a world conference on medicinal and aromatic plants (WOCMAP) every five years.

About 1 200 delegates are expected to attend WOCMAP IV. Themes to be covered include:

- biodiversity prospecting and ethnopharmacology;
- conservation, cultivation and sustainable use;
- perspectives in natural products chemistry;
- targeted screening approaches for drugs and cosmetics;
- quality, efficacy and safety of phytomedicines and phytocosmetics;
- developments in industrial processing of MAPs;
- economics and marketing of MAPs;
- new developments in laws and regulations for the use of MAPs – trade and industry perspective;
- traditional medicine and health systems for new and old diseases;
- nutraceuticals;
- veterinary medicine.

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FOR MORE INFORMATION, PLEASE CONTACT:

Kobus Eloff, Chairman, Organizing Committee, Phytomedicine Programme, University of Pretoria, Private Bag X04, Onderstepoort, South Africa 0110. E-mail: wocmap@up.ac.za; www.up.ac.za/phyto



PROVOKING CHANGE: STRATEGIES TO PROMOTE FOREST USERS IN THE AMAZON

**SANTA CRUZ DE LA SIERRA, BOLIVIA
 10-14 NOVEMBER 2008**

The purpose of this international congress is to create a platform for dialogue among scientists, politicians, development agencies and representatives from civil society to catalyse a process of reflection

on the options and requirements of a broader operational framework for sustainable development, based on the use, management and conservation of the forests of the Amazon region.

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FOR MORE INFORMATION, PLEASE CONTACT:

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FIRST WORLD CONGRESS OF ENVIRONMENTAL HISTORY 2009

**COPENHAGEN, DENMARK
 4-8 AUGUST 2009**

The theme of this First World Congress of Environmental History (WCEH) is "Local livelihoods and global challenges: understanding human interaction with the environment".

Why hold a World Congress of Environmental History? Worldwide, humans interact with the environment to make their living, create artefacts, recreate, reflect their belief systems, and to survive. Humans have changed the face of the Earth considerably and have experienced both resilience and degradation of natural systems. Environmental historians in many fields study these interactions and their explorations are aimed towards a sustainable future.

WCEH 2009 will offer opportunities for all member organizations to meet and present themselves. It will bring a wide range of high-quality research papers to a diverse audience and seeks to discuss the political relevance of environmental history.

It is the goal of the congress to ensure as wide a representation of participants as possible. It invites organizations, associations, corporations and governments to provide support to enable students and scholars from under-represented countries to attend. If you come from a low-income or under-represented country, please check out our funding page for possible avenues of support.

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FOR MORE INFORMATION, PLEASE CONTACT:

E-mail: wceh2009@ruc.dk; www.wceh2009.org/home.htm ♣



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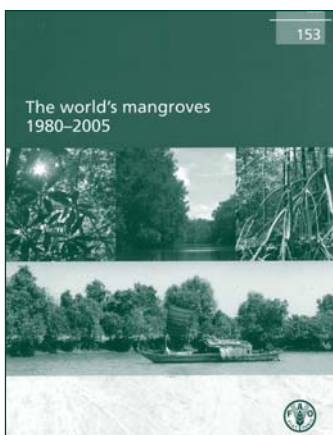
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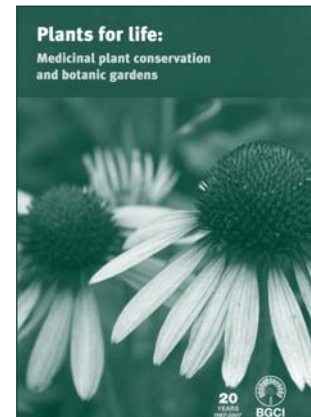
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both a relief from illness and a source of income, over 70 000 plant species are thought to be medicinal. Loss of habitat combined with overharvesting threatens the survival of many of these plant species. Botanic gardens are important agencies for ensuring their conservation. (Please see page 28 for more information.)

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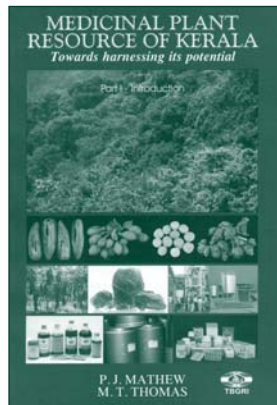
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NEW PUBLICATIONS FROM FAO'S NON-WOOD FOREST PRODUCTS PROGRAMME

NWFP Working Documents

The role of CITES in controlling the international trade in forest products: implications for sustainable forest management, by Teresa Mulliken. Working Document No. 7, TRAFFIC International.

Forests and forest products are fundamental to the health and well-being of the vast majority of the world's human population. They play a critical role in the livelihoods of local communities in and around forests and are a source of food, medicines, construction materials, fuel, ornamentation and even companionship, for example, in the case of pets. Technological innovation, and specifically improvements in the global transport infrastructure, combined with human migration have served to increase the use and availability of forest products around the world. However, this use is not without a cost – the populations of many wild species have declined as a result of harvest for international trade, some to the point that entire species are threatened with extinction.

In order to address international trade threats to wild species, governments have established the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). CITES entered into force in 1975, and has over 160 member governments (Parties). This report explores the role and impact of CITES on the trade in forest products and sustainable forest management throughout its 30-year history, with an emphasis on plant, and specifically timber, species.

An electronic version of this document is available from our NWFP home page (www.fao.org/forestry/40716/en/). A hard copy will shortly be available free of charge from FAO's NWFP Programme at the address on the first page or by sending an e-mail to: non-wood-news@fao.org

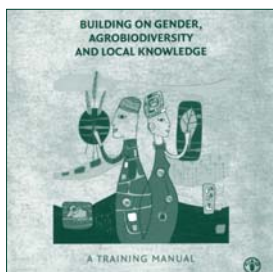
Pipeline publications

- A new title – *Bees and their role in forest livelihoods. A guide to the services provided by bees and the sustainable harvesting, processing and marketing of their products* – will shortly be added to our NWFP series. Extracts from this publication, which has been authored by Nicola Bradbear, are included in the Special Features of this issue (please see pages 5, 6 and 7).
- Another new title planned for our NWFP series is *Fruit trees and useful plants in the lives of Amazonians*. It is scheduled to be published later this year and will be a beautifully illustrated joint publication by FAO and the Center for International Forestry Research (CIFOR).

OTHER RECENT PUBLICATIONS

Building on gender, agrobiodiversity and local knowledge. A training manual

This training manual is a publication by the Gender, biodiversity and local knowledge systems for food security (LinkS) project (see also Non-Wood News, 8). It is based on experiences collected in numerous training workshops carried out under the FAO-LinkS project in eastern and southern Africa. The manual constitutes a conceptual guide for trainers that can be



used to lead them through the issues of gender and local knowledge, which are important elements for agrobiodiversity management and food security.

Agrobiodiversity and food security are complex issues that need careful consideration. The myth that technologies taught to farmers will ease their poverty and hunger because the expertise or seeds provided are modern or new, persists in many contexts. This leads to positive results not materializing and rural farmers being faced with failed crops, or it is found that the technology applied is not appropriate to the particular situation.

There have been successes, this is true; however, a careful reading of the case studies contained in the manual will prompt readers to pause and reflect. In some cases, the fine balance between wild foods and cultivated local varieties offers better solutions for local contexts and the introduction of new technologies may disturb the equilibrium.

The manual is available online at: www.fao.org/sd/dim_pe1/pe1_060302_en.htm

FOR MORE INFORMATION, PLEASE CONTACT:
Regina Laub, Gender and Natural Resources Management Officer, FAO, Viale delle Terme di Caracalla, 00153 Rome, Italy.
E-mail: Regina.Laub@fao.org

Microfinance and forest-based small-scale enterprises

Microfinance and forest-based small-scale enterprises (FAO Forestry Paper 146) is now available online in English, French, Spanish and Arabic from the FAO Forestry Department Web site at the following addresses:
www.fao.org/docrep/008/a0226e/a0226e00.htm
www.fao.org/docrep/010/a0226f/a0226f00.htm
www.fao.org/docrep/010/a0226s/a0226s00.htm
www.fao.org/docrep/010/a0226a/a0226a00.htm

Natural Inquirer

The *Natural Inquirer* is an integrated science education journal for students aged from 11 to 14. A recent issue (Vol. XI/No. 1) focused on the world's forests and was prepared in collaboration with the FAO Forestry Department. It presents the results of FAO's worldwide effort to understand the world's forests – the *Global Forest Resources Assessment 2005*, which contains information from 229 countries and territories around the world.

The journal can be downloaded from: www.fao.org/forestry/site/fra/en

Alternatively, a hard copy is available from: Laura Russo, Forestry Officer, Forest Assessment and Reporting Service, Forestry Department, FAO, Viale delle Terme di Caracalla, 00153 Rome.
 E-mail: laura.russo@fao.org

FOR MORE INFORMATION, PLEASE VISIT:
<http://www.naturalinquirer.usda.gov/>
<http://www.fao.org/kids/en/forestry.html>
www.fao.org/forestry/site/fra

Le Koko ou Mfumbu (Gnétacées) Une plante alimentaire d'Afrique centrale

Chevalier (1951) fait remarquer qu'en 1950, son attention fut attirée par un produit végétal vendu toute l'année sur les marchés de Bangui et connu des peuplades de la sous-région d'Afrique centrale sous le nom de «Koko» ou «Mfumbu». Au Nigéria, il est appelé «Okasi» et a été décrit par les botanistes qui l'ont classé dans le genre *Gnetum* dans la famille des Gnétacées qui comprend une trentaine d'espèces localisées dans les forêts tropicales d'Afrique, d'Amérique et d'Asie.

Les deux espèces africaines (*Gnetum africanum* et *Gnetum buchholzianum*) sont de petites lianes de sous-bois à feuilles comestibles. Elles constituent une source très appréciable de protéines et de sels minéraux et sont commercialisées par les femmes durant toute l'année sur les marchés d'Afrique centrale. Elles font également l'objet d'échanges transfrontaliers en Afrique et sont exportées dans les pays européens. Les spécialités à base des feuilles de «Koko» jouent un rôle qui va au-delà de leur utilisation alimentaire. Les populations d'Afrique centrale expriment leur identité culturelle à travers la consommation de ces plats.

Cet ouvrage donne des renseignements précieux sur la biologie de la plante, les possibilités de sa domestication, son intérêt alimentaire, et la commercialisation de ses feuilles en Afrique et en Europe.

Mialoundama, Fidèle. 2007. *Le Koko ou Mfumbu (Gnétacées). Une plante alimentaire d'Afrique centrale*. Paris, L'Harmattan. ♣

There are perhaps no days of our childhood we lived so fully as those we spent with a favourite book.

Marcel Proust

FAO'S NWFP HOME PAGE

Our Web site is gradually being updated and new features added. We invite you to visit:

- the "Readers' Research" page, which includes new articles on NWFP activities in Bangladesh, Pakistan, the United Republic of Tanzania, Cameroon and many more (www.fao.org/forestry/site/35667/en);
- the latest and all past issues of the NWFP Digest; bibliography page (www.fao.org/forestry/site/13467/en);
- the updated "Other NWFP links" (www.fao.org/forestry/site/12979/en);
- our ever-expanding "NWFP bibliography" page (www.fao.org/forestry/site/13467/en).

Please help us make this a rich resource by continuing to send us (non-wood-news@fao.org) your NWFP Web sites, citations of any publications that we are missing, as well as any research that you would like to share.
www.fao.org/forestry/site/6367/en



XIIIth World Forestry Congress 2009

www.wfc2009.org/800/index_800.html

Charles Darwin – complete works

The complete works of Charles Darwin are now available online. This is the largest ever publication of Darwin papers and manuscripts, totalling about 20 000 items in nearly 90 000 electronic images
<http://darwin-online.org.uk/manuscriptsBrowse.html>

Edible insects

www.eatbug.com/

Encyclopedia of Life

Excellent for checking scientific names of species.
www.eol.org/index

ForestERA

A collaborative process that views forest ecosystems from a landscape perspective to discover better ways to restore their

health and protect our communities.
www.forestera.nau.edu/index.htm

Forests and trees for healthy cities.

Improving livelihoods and environment for all

Trees and forests are an essential part of urban development, contributing to healthy cities for healthy people. The green healthy city will be an integrated element of ecosystem, landscape and watershed management, resulting in better protection of the city against floods and landslides, and reduction of damage to roads and building infrastructure. This will also improve livelihoods, and preserve human lives and health. Urbanization must be linked to the development of productive cities that support livelihoods and generate income for all population levels, while facing the challenges of environmental sustainability.

This new Web site is an "interactive online community" on urban and peri-urban forestry (UPF) with the goal of promoting UPF, taking into account the specific needs for poverty alleviation, food security, livelihood improvement and sustainable land and forest management in developing countries and countries in transition.

The site, which is available in English, French and Spanish, aims to facilitate a wide and open network to reinforce dynamics among sectors, disciplines and institutions concerned. It supports an open dialogue and exchange of information and expertise to reach an optimum integration of trees and forests in and around the cities of today and tomorrow.
<http://km.fao.org/urbanforestry>

International Association for Mediterranean Forests

www.aifm.org

Photos

New photos of plants from reader Pankaj Oudhia are available from the DiscoverLife database.
www.discoverlife.org/mp/20p?see=I_PA0/0000

Special Programme for Food Security

The Special Programme for Food Security (SPFS) helps governments replicate successful food security practices on a national scale. SPFS also encourages investment in rural infrastructure, off-farm income generation, urban agriculture and safety nets.

Since 1995, US\$770 million from donors and national governments have been invested in FAO-designed food security programmes.
www.fao.org/spfs/

What the world eats

www.time.com/time/photogallery/0,29307,1626519,00.html

Wildlife focus webcam

Webcam in the Forest, the "Puro" webcam, shows streaming wildlife footage from the breathtaking and remote tropical forest of Fundación Jocotoco's Buenaventura Reserve, Ecuador.
www.wildlifefocus.org/

Wild mushroom identification and truffle hunting device

WildMushroomsOnline.co.uk has recently launched a service for anyone who has a passion for wild mushrooms. This site has been created to assist newcomers to wild mushrooms and also, hopefully, provide some useful information for others who are similarly passionate about the subject.

People are encouraged to e-mail their wild mushroom finds to the site's editor and he will perform an online identification. He obviously urges extreme caution to anyone intending to eat their finds, since wild mushrooms can kill if the wrong types are eaten.

The site also contains latest news and recipes on cooking wild mushrooms. In the future it will contain a section on a step-by-step guide to cultivating your own wild mushrooms. [Source: PR-USA.net [press release], [Varna, Bulgaria].]
www.wildmushroomsonline.co.uk

NWFP-DIGEST-L

The Digest is a free monthly e-bulletin produced by FAO's NWFP Programme and covers all aspects of non-wood forest products. Past issues can be found on FAO's NWFP home page at
www.fao.org/forestry/site/12980/en

You can take part in contributing to the continued success of this newsletter by sharing with the NWFP community any news that you may have regarding research, events, publications and projects. Kindly send such information to NWFP-Digest-L@mailserv.fao.org

To subscribe: send an e-mail to: mailserv@mailserv.fao.org, with the message: subscribe NWFP-Digest-L; or through the NWFP Programme's home page at
www.fao.org/forestry/site/12980/en ♣

CONTRIBUTIONS TO NON-WOOD NEWS

A strong characteristic of *Non-Wood News* is that it is open to contributions from readers. Should you have any interesting material on any aspect of NWFPs that could be of benefit to all our readers, please do not hesitate to submit it. Articles are welcomed in English, French and Spanish and should be between 200 and 500 words.

Networking is an important aspect of our work and, consequently, each article should be accompanied by a complete mailing address/e-mail; this will enable readers to make contact should they require further information.

The deadline for contributions for *Non-Wood News 18* is 31 October 2008.

For more information, please contact:
Tina Etherington at the address on the front page or by e-mail to non-wood-news@fao.org

Cherukat Chandrasekharan

I read the obituary of Dr Cherukat Chandrasekharan published in the last issue of *Non-Wood News*. The comment "notwithstanding his ill health, he maintained his professional interest and commitment" touched me very much, since I am a beneficiary of his said attitude. He was kind enough to me to write the foreword of our recently released book *Medicinal plant resources of Kerala – towards harnessing its potential*, in spite of his illness.

(P.J. Matthew, Tropical Botanic Garden and Research Institute, 695562 Kerala, India.)

Request for information: foliage

I was wondering if there is any information available on the environmental impact of pistache harvesting for foliage in woods along the Mediterranean basin? As a forester, I would not be happy with the very crude way in which I observed foliage being removed; it is like cutting out olive tree branches just to get olives. However, it is a very good foliage product and would be of interest to United Kingdom customers, provided there is traceability and no damage to nature.

Sustainability is rightly becoming a big issue around NWFPs – especially foliage harvesting. Many of our customers seek a

harvesting or sourcing plan that clearly shows nature is not diminished. This will need to be supported/signed off by competent experts.

The fair trade brand appears to be inadequate. State agencies differ throughout the world in attitude, varying from a total ban which leads to illegal/uncontrolled harvesting to zero control.

I believe the Canadian Government has brought in a licensing system whereby contractors engaged in harvesting species such as salal from the forests must undergo a training programme and are allocated specific areas. This is perhaps the correct way as it enlightens contractors to the fact that sustainable harvesting is in their interests as much as it is to everyone else.

We are very interested in aromatic foliages – both tropical and temperate and would like to make contact with agencies/persons – especially from Africa.

There is huge potential to develop this sector in a sustainable manner provided proper research is done in terms of management.

(Jim Costello, forestfoliage@eircom.net)

Comments received

I have received the two *Non-Wood News* of July 2007 and January 2008. I have not known before that there is such a very good NWFP bulletin, I am very happy and feel honoured to receive them. NWFPs, especially in tropical rain forests, are much bigger than WFPs. For the case of Indonesia, where most of the forests are degraded, those NWFPs are our most possible hope to sustain the forests and their economy.

(Reader in Indonesia)

I am very grateful for your magazine that you are sending me for many years now. It makes very good reading material and has many ideas that are simple and easy adaptable. I share the magazine with friends and we discuss and put into practice a number of ideas over the years. Thank you again!

(Reader from the United Republic of Tanzania)

Also, we found your bulletin very informative and newsworthy.

(Reader from Singapore)

I find the bulletin excellent.

(Reader from Ireland)

Non-Wood News – fantastic as ever! Just a brief note to say congratulations on another great issue of *Non-Wood News*. As ever, it's packed full of loads of interesting and useful

information on a wide variety of NWFPs and related issues. The layout makes it a pleasure to read through the wealth of information presented. I can imagine what a huge amount of work this has been, and wanted to say thanks very much, it's highly appreciated!

(Reader in the United Kingdom)

I enjoyed reading it and I am looking forward to receiving further issues.

(Reader in Germany)

Non-Wood News is a valuable source of information for our staff.

(University librarian in the Philippines)

... *Non-Wood News* which I receive regularly and read from cover to cover.

(Reader from the United States)

You are doing a great work and I would like to share it also with our colleagues in the region working on NTFPs.

(Reader in the Lao People's Democratic Republic)

I don't know how you keep track of all the stuff that you manage to jam into each issue but we keep these around our lab. and they get read by students and visitors and certainly at the end of the day are more practical use than an awful lot of expensive scientific research that is supposed to be top drawer but is frankly too inaccessible.

(Reader in Hawaii)

I read the January 2008 issue of *Non-Wood News*. It is such a fascinating magazine. I was much absorbed reading fascinating stories of people from different countries of the world, including my own country, when they wrote elucidating how they utilize NWFPs to (a) build their homes; (b) supplement their diets; (c) boost their economic status; (d) try to heal patients with most difficult diseases to treat such as HIV/AIDS.

(Reader from Malawi)

Thank you very much for the newsletter! ... I enjoy looking through the articles. It's an amazingly useful source of information ...

(Reader in the United Kingdom)

I've just discovered your organization via an agroforestry Web site. Please put this library on your mailing list to receive the *Non-Wood News* magazine. It appears to fit a niche that we have never filled in our collection of periodicals. Thank you very much!

(Librarian, United States) ♣

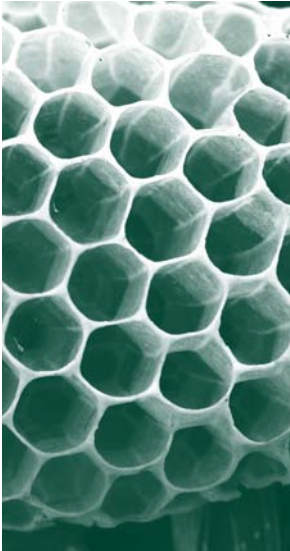
Bees and forest livelihoods



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Beekeeping is a sustainable way for local people around the world to generate income from forests. Beekeepers may have many hives distributed throughout the forest or alternatively they may harvest honey from wild nests of bees. Honey and beeswax are the main products harvested from bees. Honey is a source of high-carbohydrate food, adding nutritional variety to human diets; in many countries, it is regarded more as a medicine or special tonic rather than as an every-day food. Honey and beeswax can be used in the manufacture of many secondary products, such as honey wine or beer, sweets, soaps, cosmetics, candles and a multitude of other value-added products.