An information bulletin on Non-Wood Forest Products

OCTOBER 2010 21

ISSN 1020-3435

non-wood news

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EDITORIAL

The editorial for this issue of Non-Wood News has been written by Gillian Allard, Forestry Officer (Forest Protection and Health), who is FAO's expert on forest pests.

My first experience of insects as a food source was not a comfortable one and has perhaps marked my own non-preference for eating cold-blooded invertebrates. At a tender age, my right of passage to join my brother and friends in their games was to eat caterpillars that had been sliced into colour-coded portions – black and yellow, species did not matter. What did matter is that I was very unwell for some days afterwards, and still was not allowed to play with the boys!

Of the known 1 700 edible insect species I, of course, had eaten a non-edible one that feeds off a poisonous plant. As an entomologist, I now know that bright colours are a warning of unpalatability to predators – not least of all human ones – and that not all insects are edible! Subsequently, my career has taken me to several countries where edible insects form the acceptable staple protein diet source.

Edible insects are an important NWFP and are the focus of the Special Feature in this issue of *Non-Wood News*. The articles included report on the contribution of edible insects to human nutrition, "insect-tasting sessions", and the importance of combining traditional knowledge with modern science. The back cover of the issue covers the same theme and highlights the role of edible insects around the world.

In many countries, edible insects are regarded both as delicacies and subsistence food, and not just in times of food insecurity. Children, in fact, are encouraged from a very early age to enjoy both live and cooked insects and to collect them from the forest during peak harvest times. Families move into temporary shelters to be close to insect food sources and some even damage trees and palms to create a suitable environment for their preferred insect.

The majority of countries in Asia, Africa and South America have ingrained knowledge passed on through the generations about the most nutritious insects, and cultural tradition eliminates the need to disguise what is being eaten.

This is far removed from Europe and North America where edible insects have recently received media interest, mainly as a result of the craze for bizarre gourmet foods served with the slight shudder factor; reality TV programmes thrive on celebrities having to eat live insects on camera. Chocolate-coated ants and mealworm-covered toffee apples are some of the gourmet delights available and many restaurants serve insects to tickle the taste buds at hugely inflated prices.

NON-WOOD NEWS

is compiled and coordinated by Tina Etherington, Forest Products Service of the FAO Forest Economics, Policy and Products Division. For this issue, editing support was provided by Giulia Muir; copy and language editing by Roberta Mitchell, Anouchka Lazarev and Deliana Fanego; design, graphics and desktop publishing by Claudia Tonini.

***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.**
If you have any material that could be included in the next issue of *Non-Wood News* for the benefit of other readers, kindly send it, before 15 January 2011, to:
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Introducing insects into the European diet is, however, not new and they were frequently mentioned in ancient Greek and Roman literature. In addition, in the United Kingdom in Victorian times, during a period of economic recession, insects were promoted as healthier options to pork, since they feed only on vegetable matter. In this issue's Special Features, one of the authors is proposing that the protein from insects be disguised as a tofu-like substance, to remove some of the horror factor, to feed us in times of global recession. This is considered an economic proposition since producing 1 kg of protein from a cow requires 13 kg of vegetable matter, while only 1.5–2 kg of fodder is needed for 1 kg of insect protein.

Whatever your own food preferences are, you probably have already inadvertently consumed foods and drinks that include insect-based products, such as the natural food colouring derived from the cochineal insect (labelled E120).

Please remember that not all insects are edible. Insects are a critical component of biodiversity, but at the same time can provide a valuable protein source for many people of the world and their animals.

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 include 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. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO in preference to others of a similar nature that are not mentioned.

A COMMUNITY APPROACH TO FOREST CONSERVATION AND SUSTAINABLE DEVELOPMENT: THE NTFP-EP EXPERIENCE

The Non-Timber Forest Products Exchange Programme (NTFP-EP) for South and Southeast Asia has been working for over a decade in seven countries (Philippines, Indonesia, Malaysia, Cambodia, Viet Nam, India and Bangladesh) in support of local – mostly indigenous – communities that depend on non-timber resources from forests for their livelihoods.

This steadily expanding network of community organizations and support NGOs is driven by local demand and aims at strengthening the capacity of forest-based communities to use sustainably and manage a broad range of NTFPs. These products include, among many others, wild fruits, tree resins and gums, materials for crafts and forest honey.

Furthermore, the network and its secretariat play a significant role as catalyst and facilitator in two overarching fields. The first involves enhancing livelihood security by improving local cash income – through enterprise development, processing and marketing of promising NTFPs – and improving subsistence economies based on foods from the forest. The second focuses on sustainably managing forest resources, community forest conservation and rehabilitation, as well as issues related to land tenure.

In function of the above-mentioned topics, ample attention is given to a number of other initiatives, such as strengthening community-based institutions, fostering dialogue on NTFP-related policies with relevant government agencies, as well as advocacy, media work and lobbying directed at restricting destructive developments. Among these initiatives is a topic that today is receiving more focused attention: working to articulate positive cultural values – in particular those related to good forest stewardship – since experience has shown that conservation efforts are most effective where they concern communities with largely intact cultures or with an explicit desire to revitalize or strengthen cultural integrity.

Support is provided primarily through three types of interventions. The first entails "information provision", such as documenting best practices and lessons learned through illustrated booklets, films, posters, etc. The second involves exchanging expertise and experiences through community-to-community visits, regional workshops and internships. Finally, direct support is offered by staff and experts affiliated with the NTFP-EP, by means of technical advice or even linking communities up with promising trade contracts, centres of expertise, the media and policy-makers.

Case study

Honey is a useful example to demonstrate the essence of the NTFP-EP approach. Wild-gathered forest honey, primarily produced by the bee species *Apis dorsata*, has long been a much sought-after delicacy throughout Asia. However, consumers are concerned with quality issues such as, for example, adulteration of the product with sugar and water or with low-quality *A. mellifera* honey, which is rampant. Therefore, the prices that consumers are willing to pay are rather low. Furthermore, the resource base and supplies are under threat because of forest degradation and conversion and often few, if any, government services are available to assist honey collectors.

In order to address this situation, starting in the late 1990s, several pilot schemes were initiated with forest honey collector groups within the NTFP-EP network. In recent years, these schemes have grown into full maturity and have expanded well beyond the original sites. Sustainable harvesting practices have been commonly accepted, while – through the introduction of improved hygienic handling techniques – acceptable high-quality standards are now achieved region-wide. Furthermore, network partners take pride in guaranteeing the purity of their products. Strict internal rules have been established to this end, while traceability of the source of origin has been made relatively easy.

As a result, but also helped by extensive free publicity in local media, markets have opened up and income derived from honey and wax collection has, in many cases, increased significantly (*please see Sundarban honey wisdom on page 42*).

In addition, organized honey collectors play an increasingly active role in forest conservation. Since it is a basic fact that bees cannot produce good honey without numerous flowering trees, suitable host trees for their hives, adequate water supplies and a large enough forest to support seasonal migration patterns, honey harvesters are in the front line for promoting conservation of intact and biodiverse forests. In Indonesia, for example, this point was forcefully stressed by senior officials during the 2008 national workshop "Forest honey and forest conservation: what is the link?"

Conclusions

One term used within the EP network is "looking at the forest from an indigenous community perspective". And indeed, those NTFP-collecting communities with an immediate stake in keeping the forest and its resources intact potentially constitute a considerable pro-conservation force. It is my wish, therefore, that now at last – in the International Year of Biodiversity and with Asia's forests under pressure as never before – this so far largely untapped potential be fully recognized.

Lessons learned

To conclude, important generic lessons learned while working with NTFP collectors in the region and recommendations subsequently made include the following.

- Aim for a holistic approach and from the start address livelihood, conservation and sustainable management simultaneously, together with issues regarding land tenure. At the same time, enhance institutions and the cultural integrity of the communities.
- Do not try to force quick fixes; instead, ensure a long-term commitment over extended periods.
- Ensure that the communities' aspirations and concerns are always fully incorporated. It is also important that the venture primarily is – and remains – the community's own initiative.
- The eventual self-reliance of the grassroots partners involved requires finding simple and culturally appropriate solutions.
- Empower community organizations by providing them with direct links to quality expertise, trade contacts and policy-makers. In other words, avoid becoming a gatekeeper!

This handful of guidelines may sound all too obvious. However, go to the field and listen around. You will discover that such seemingly simple basic points still very much need to be implemented on the ground.

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EDIBLE INSECTS

The contribution of edible forest insects to human nutrition

Wherever forest insects are part of the human diet, they have generally been collected from the wild. In most cases, minimal management of forest vegetation has been practised in association with the exploitation of forest insects, and actual domestication of insects thus far has been limited to only a few species such as silkworms and bees. The most commonly eaten insect forms are larvae and pupae, usually with little or no processing of the insects before they are consumed.

As an academic discipline, entomophagy (the human consumption of insects) is necessarily interdisciplinary, with relationships to several different recognized fields of scientific study. While entomology is the core related discipline, edible forest insects are also closely linked to the fields of forestry, human nutrition (including famine food and ritual food), traditional medicine, anthropology, agriculture and livestock raising. Contributions from these allied disciplines are exceptionally important to understanding the past and present roles, as well as to the future potential of food insects.

The lack of any one institution in the world with a strong research focus on edible insects is an impediment to conducting research on the subject. Relevant information is scattered far and wide among a variety of books and articles from different university departments and research facilities.

Worldwide, nearly 1 700 insect species are reported to be used as human food. Four insect orders predominate, in rank sequence: Coleoptera, Hymenoptera, Orthoptera and Lepidoptera, accounting for 80 percent of the species eaten.

Edible forest insects represent rich sources of protein for improvement of the human diet, especially for individuals suffering from poor nutrition because of a protein deficit. Gram for gram, insects often contain more protein and minerals than meat. In fact, nutritionists represent the leading group of researchers in food insects, motivated by a desire to remedy the problems associated with protein-deficient diets. (*Source*: D.V. Johnson. 2010. The contribution of edible forest insects to human nutrition and to forest management. In *Edible forest insects. Humans bite back!* 2010. Rome, FAO.)

Number of edible insect species reported in the world

Order	Common English name	Number of species
Coleoptera	Beetles	468
Hymenoptera	Ants, bees, wasps	351
Orthoptera	Grasshoppers, cockroaches, crickets	267
Lepidoptera	Butterflies, moths (silkworms)	253
Hemiptera	True bugs	102
Homoptera	Cicadas, leafhoppers, mealybugs	78
Isoptera	Termites	61
Diptera	Flies, mosquitoes	34
Odonata	Dragonflies	29
Ephemeroptera	Mayflies	19
Trichoptera	Caddis flies	10
Neuroptera	Dobson flies	5
Anoplura	Lice	3
Thysanura	Silverfish	1
Total		**1 681**

Number of edible insects per continent and number of consumer countries

Continent	Number of species recorded	Percentage of total	Number of consuming countries
Asia	349	20	29
Australia	152	9	14
Africa	524	30	36
Americas	679	39	23
Europe	41	2	11
Total	**1 745 ***	**100**	**113**

* The world total is actually 1 681; some species occur in more than one continent, hence the higher total.

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Nigerian researchers explore nutritional value of local insects

Nigerian researchers have confirmed that insects are indeed a good source of protein and other nutrients. They have found that edible insects constitute an important part of the daily diet of a large proportion of the population in southwestern Nigeria.

According to a study published in the *African Journal of Biotechnology*, these insects provide a high quality of proteins and supplements (minerals and vitamins) even when dried. A.D. Banjo, O.A. Lawal and E.A. Songonuga of the Department of Biological Sciences, Olabisi Onabanjo University, Ago-Iwoye, Ogun State (Nigeria) have written that "the consumption of non-toxic insects, therefore, should be encouraged. Insects are traditional foods in most cultures, playing an important role in human nutrition and have many nutrients to offer. They can be reared for their high nutritional qualities and sold to the populace that regards them as delicacies. Some of the most sought-after species, especially those with high nutritional content, ought to be cultivated with modern techniques to increase their commercial values and availability."

The study is entitled: *The nutritional value of 14 species of edible insects in southwestern Nigeria*. According to the study, commonly eaten insects in Nigeria are termites (winged adults, queen), *Macrotermes bellicosus/Macrotermes notalensis*, *esusu* in Yoruba and *aku* in Ibo; adult crickets (*Brachytrypes* spp.), *ire* in Yoruba; grasshoppers (*Zonocerus variegates*), *tata* in Yoruba and *abuzu* in Ibo; adult short-horned grasshoppers (*Cytacanthacris naeruginosus* unicolor), *tata* in Yoruba and *ukpana* in Ibo; rhinoceros beetle larvae (*Analeptes trifasciata*), *ipe* in Yoruba and *ebe* in Ibo;

scarab beetle larvae (*Oryctes boas*), *ogongo* in Yoruba; snout beetle larvae (*Rhynchophorus phoenicis*), *munimuni* in Yoruba; eggs, larvae and pupae of honey bees (*Apis mellifera*), *oyin* in Yoruba and *anwu* in Ibo; and larvae of caterpillars (*Anaphe* spp.), *ekuku* in Yoruba.

The researchers analysed 17 species of edible insects representing nine families from southwestern Nigeria for nutrient composition. They include the orders of Orthoptera, Lepidoptera, Coleoptera, Hymenoptera and Isoptera. *Analeptes trifasciata*, *Rhynchophorus phoenicis* and *Zonocerus variegates* have the highest crude protein content (29.62, 28.42 and 26.8 percent, respectively).

Hundreds of insect species have been used as human food; some of the more important groups include grasshoppers, caterpillars, beetle grubs and sometimes adults, winged termites (some of which are very large in the tropics), bees, wasps and ant broods (larvae and pupae), as well as winged ants, cicadas and a variety of aquatic insects. Insects are not normally used as emergency food during shortages, but are included as a planned part of the diet throughout the year, or when seasonally available.

The researchers concluded that "this study revealed that some of the insects which are pests also have high nutritional qualities". (*Source*: www.ngrguardiannews.com [Nigeria], 14 April 2010.)

Insects proving food for thought

An insect summit is aiming to revolutionize the way we think about bugs as a sustainable source of food. It is estimated that 80 percent of the world's population include some sort of insect in their diets. Yet, in the West, the idea is confined to reality TV shows.

The Royal Entomology Society Conference taking place at Swansea University (United Kingdom) from 26 to 28 July will hear that insect protein may be key to alleviating famine.

One man is on a mission to give us a taste for creepy-crawlies. Professor Arnold van Huis from Wageningen University in Belgium said: "Producing a kilogram of meat from a cow requires 13 kg of vegetable matter as feed. Yet 1 kg of meat from a cricket, locust or beetle needs just 1.5 to 2 kg of fodder and produces a fraction of the CO_2 emissions. The maths are quite simple. On average, in the West, we eat 120 kg of meat per person. China is currently at 80 kg per head and catching us up fast."

"If five billion people eat 100 kg of beef or pork, then we'll need to grow an average of 6.5 trillion kg of fodder per year. There just isn't enough space or nutrients in the earth to support that and the poorest people will simply starve to death," he said.

"The good news is that, not only do insects require less food to farm, you also don't have to eat as much to survive, as they are an extremely good source of protein and vitamins," added van Huis.

Thailand has 15 000 household cricket farms bred for human consumption. In southern Africa, the Mopane worm industry is worth USD85 million and is an important source of protein for the indigenous population. The insects are harvested from the Mopane trees that they use as their habitat.

In the Netherlands, insect-rearing companies are already in business; typically, they tend to breed large beetles, crickets and locusts. Locusts have to be farmed at 30 degrees, so this may be the main reason why insects are not eaten in the Western world to the same extent.

However, Professor van Huis said that the most common misconception is that insects are not tasty. "Because of the mild climate, we're just not culturally used to eating insects but, if they're cooked correctly, they can be delicious. Really, there's no credible reason against eating them, taste-wise and nutritionally, there's no difference between insect meat and that from birds, fish or mammals," he said. "But in an attempt to combat the developed world's squeamishness, we're looking at ways of grinding the meat into some sort of patty, which would be more recognizable to Western palates. It's also possible, although not yet commercially viable, to extract the protein, and produce a kind of meat substitute, similar to the Quorn products we're already used to."

On health grounds, Professor van Huis warns against going down The Good Life route, and harvesting your own bugs in the back garden.

Swansea University was chosen to host the summit in recognition of its ground-breaking work in the field. (*Source*: BBC News Online, 27 July 2010.)

Scientists "grow" edible insects in Costa Rica

The day when restaurants will serve garlic grasshoppers or beetle larva skewers is getting closer in Costa Rica, where scientists are "growing" insects for human consumption. Entomologist Manuel Zumbado's research into this alternative food source is inspired by practices in Africa, where insects have long been part of people's diet.

With its rain forests playing host to countless insect species, including thousands that have yet to be identified, Costa Rica is a perfect breeding ground for the work. From leaf-cutting ants to rhinoceros beetles and a dizzying flurry of butterflies, the Central American nation is also a haven of ecotourism. But is it the next hotbed of mouth-watering bugs? The food diversification programme at the National Biodiversity Institute in Santo Domingo de Heredia, a small city close to the capital San José, looks into indigenous insect species. But it also examines mushrooms, inspired by their importance in diets in the Himalayan kingdom of Bhutan. At the institute, Costa Rican scientists mingle with Bhutan mycology expert Ugyen Yangchen and Elisabeth Zannou, an entomologist from Benin.

"Benin knows a lot about insect consumption and Bhutan about eating mushrooms, while Costa Rica is bringing its experience in managing biodiversity," Marianella Feoli, who manages the foundation coordinating the research programme, told AFP.

In Benin, termites, grasshoppers and crickets, as well as butterfly and moth larvae, are a common part of people's diet, explained Zumbado, who travelled with his colleagues to explore the phenomenon in the coastal country. "In other countries, gourmet restaurants serve insects," he noted. "In the beginning, people thought we were a bit crazy, but I think this is an alternative, not only as a survival food, but also as a cultural concept."

Esperanzas, a large grasshopper species with long antennae that abounds in Costa Rica's forests and rural areas is "far more savoury than shrimp" when seasoned with garlic, according to the researcher.

Zumbado should know – he has consumed scores of insects during his travels in Costa Rica and Benin.

As part of his efforts to convince a sceptical public not particularly enthused at the thought of munching on crunchy creepy-crawlies, the entomologist suggested first adding insect delicacies to the menus of the best restaurants in town. (*Source*: AFP, 3 February 2010.)

Author holds "insect-tasting sessions" across Japan

Green ants, hornet larvae and silkworm pupae were on the menu at Shoichi Uchiyama's most recent insect-tasting event, held at a café in the Asagaya district of Tokyo on 8 June. And the events are becoming so popular, he said, that he has a waiting list for future insect buffets.

"I first tried this four years ago, but I have had to increase the frequency to less than one a month now because so many people want to take part," he said. "Everyone who came already knew that we would be tasting insects and even though some were a little nervous at first, they soon got their courage up and tried the dishes," he said. "I think they really enjoyed them."

Around 1 000 species of insects from around the world are considered to be edible and Mr Uchiyama has sampled most of them. He released a book of insect recipes in 2008 and traces his interest in insect cuisine to his boyhood in the northern prefecture of Nagano, where corner stores would sell bags of grasshoppers that had been cooked in sake, soy sauce and sugar.

Mr Uchiyama, 59, believes that insects can be the healthy and nutritious answer to the world's growing food shortages. To raise beef cattle, he points out, takes vast areas of land and large amounts of fodder, while insects consume the things that humans will not touch and can be raised in much smaller spaces. It helps that they are very nutritionally balanced and have little fat, he added.

Insects have been eaten for centuries, he points out, with the Chinese fond of scorpions, huge spiders considered a delicacy in parts of South America and water bugs popular in Thailand. (*Source*: *The Daily Telegraph* [United Kingdom], 14 June 2010.)

Critter cuisine could feed a nation

Vientiane, Lao People's Democratic Republic. After a hard day's work, Bounpheng Wattana and his friends like nothing better with a cold beer than a mouthful of creepy-crawlies. In his opinion, insects are the ultimate organic food. "These are local and natural foods from our country," said Bounpheng "so Lao people like this kind of food because there are no chemicals".

While tasty critters may be a popular city snack, investing in sustainable insect farming and promoting the benefits of bug-gobbling could form part of the answer to alleviating chronic malnutrition in the Lao People's Democratic Republic, said Vonglokham Phouvanh from FAO. "Insects can provide a good source of protein, fats, carbohydrates, calcium, vitamins and other minerals – this is an essential part of human nutrition," he said.

A 2007 World Food Programme report estimated that about 40 percent of children were malnourished or stunted, one of the worst rates in Southeast Asia, while the *UNDP Human Development Report 2009* indicates that 40 percent of Lao children under five are underweight.

Promoting insects could help alleviate the problem, and the potential is there – a recent FAO survey found that more than 95 percent of Lao people snack on critters. There are about 1 700 edible insect species worldwide but their nutritional benefits are a relatively recent discovery. To capitalize on this and ensure sustainability, FAO has a programme focused on the whole chain – from bug breeding to commercialization and consumption.

A video on FAO's work with edible insects in the Lao People's Democratic Republic can be found at www.youtube.com/watch?v=n6jfcHwT5_w

Vankham Duangbutby started breeding crickets from her home in the suburbs of Vientiane five years ago and soon realized how profitable it could be. "At first I did a little farming, just tried with two cylinders of crickets. After we found it worked we continued to farm until we had 56 cylinders. When we sell, on average, we can earn one million kip [USD115] a month," Vankham said.

She now receives advice and equipment from FAO to help with her cricket farming.

One of the attractions of insect farming is its simplicity, Bounthavy Sisouphanthong, Vice-Minister of Planning and Investment, told Integrated Regional Information Networks (IRIN). "You don't need to have lots of land, you don't need lots of equipment and you don't need that much knowledge, and then you can make a business," he said.

Insect farming can be a lucrative venture. Neighbouring Thailand cannot satisfy its growing demand for insects and already imports from countries including Cambodia and Myanmar.

Serge Verniau, FAO's representative in the Lao People's Democratic Republic, thinks insects could play a part in tackling world poverty. "The vision of FAO is not just to reduce chronic malnutrition in the country, which is of course the core objective, but also to feed the grand metropolises in the future, from Calcutta to Shanghai and even New York to Rome. This great food source is also environmentally friendly to produce and needs much less energy and space than conventional meats," Verniau said. (*Source*: IRIN, 14 June 2010.)

Combining traditional knowledge and approaches with modern science and understanding

In this fast-paced modern world, it is sometimes easy to lose sight of valuable traditional knowledge and practices. There is a tendency to think of traditional habits and customs as outdated or primitive. Yet, experience across numerous fields has highlighted the value and benefits to be gained from combining customary knowledge and approaches with modern science and understanding.

Such is the case with edible forest insects. The practice of eating insects goes back thousands of years and has been documented in nearly every part of the world. In modern times, however, consumption of insects has declined in many societies and is sometimes ridiculed as old-fashioned and unhealthy. Yet, it would be prudent to consider carefully the value of customary knowledge before discarding it too readily. Scientific analysis confirms, for example, the exceptional nutritional benefits of many forest insects, and studies point to the potential to produce insects for food with far fewer negative environmental impacts than for many mainstream foods consumed today.

Aside from their nutritional and environmental benefits, experts see considerable opportunity for edible insects to provide incomes and jobs for rural people who capture, rear, process, transport and market insects as food. These prospects can be enhanced through promotion and adoption of modern food technology standards to ensure that the insects are safe and attractive for human consumption.

Traditionally, most edible insects have been harvested from natural forests, but surprisingly little is known about the life cycles, population dynamics, commercial and management potential of most edible forest insects. Among forest managers, knowledge and appreciation of how to manage and harvest insects sustainably are limited. However, traditional forest dwellers and forest-dependent people often possess remarkable knowledge of the insects and their management, offering excellent opportunities for modern science and traditional knowledge to work together.

In an effort to explore more fully the various facets of edible forest insects, the FAO Regional Office for Asia and the Pacific organized an international workshop, entitled "Forest Insects as Food: Humans Bite Back" in Chiang Mai, Thailand, in February 2008. The workshop brought together many of the world's foremost experts on entomophagy – the practice of eating insects. Specialists in the three-day workshop focused specifically on the science management, collection, harvest, processing, marketing and consumption of edible forest insects, as well as their potential to be reared commercially by local farmers. The edited proceedings of the Chiang Mai workshop have just been published. It is hoped that the publication will help to raise awareness of the potential of edible forest insects as a food source, document the contribution of edible insects to rural livelihoods and highlight linkages to sustainable forest management and conservation. (*Source*: foreword to *Edible forest insects. Humans bite back!* Rome, FAO, 2010.)

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Edible insect taste test: from ant candy to bacon and cheese cricket

Many cultures across the globe incorporate insects into their diets, both as a protein source and a means of enhancing taste.

While many Americans question the practice, entomophagy (the practice of eating insects) remains a legitimate part of food culture and an ancient human tradition. Insect candy, ant candy and "crispy crickets" are now readily available even here in the United States of America through mail order.

Those looking for a fresher taste are encouraged to visit the Audubon Insectarium in New Orleans. Every day, the museum's Bug Appetit Café serves a slew of treats, such as chocolate chip cookies and garden herb dip – insect-infused, of course. Jayme Necaise, the Insectarium's Director of animal and visitor programmes, says: "We offer a virtual bug buffet. It's really a nice spread".

Last year, the Insectarium celebrated National Chocolate-Covered Insects Day with a chocolate fountain and roasted crickets. "The crickets are roasted off-site," says Necaise, "but we always hand-dip them right here".

Visitors can sample dips such as wax worm mango chutney and mealworm salsa.

For a more authentic taste, insects can also be ordered online from *Thailand Unique*. The online "specialty gourmet food store" offers insect "variety packs" with bags of cooked and dehydrated grasshoppers, weaver ants and dung beetles, as well as a pouch of mixed bugs, with bamboo worms and silkworm larva. (*Source*: Asylum online, 21 June 2010.)

Governor in the southern Russian Federation hopes to make a delicacy of locusts

The governor of the Astrakhan region in the southern Russian Federation has proposed exporting locusts, killed to protect crops, to Asian countries as a delicacy.

Swarms of locusts have been attacking crops in the region since 25 May. The regional government has declared a state of emergency amid fears the insects may destroy more than 50 000 ha of crops.

"I saw a report yesterday on how many millions we spend annually on the fight against locusts and I thought maybe we can make it a profitable business, because people in dozens of countries around the world eat locusts," Alexander Zhilkin wrote on his Internet blog on Monday.

Zhilkin suggested that locusts could be dried, salted, frozen and exported, or sold to Thai or Chinese restaurants.

The official believes that this may be an ingenious solution to the problem. (*Source*: RIA Novosti News Agency [Russian Federation], 29 June 2010.)

Bugalicious: chefs mix it up for adventurous diners with worms, ants and scorpions

Toronto, Canada. Crickets have hopped back on to the menu at Toronto's Atlantic restaurant.

Chef Nathan Isberg admits the deep-fried critters are a novelty. "Strange though it may seem to the ordinary Canadian palate, there are many people who delight in platters of ants, scorpions, worms and even bullfrogs – if they are cooked just right."

Isberg says some diners may be turned off by the squishy or crunchy delicacies. But for more adventurous types, he is happy to whip up dishes such as chilli-fried crickets with greens, cricket-fried rice or grilled crickets and jellyfish on a skewer.

The insects were briefly swatted off the menu until an insurer recently gave the OK for their return. Isberg uses rosemary or oregano to spice them up but admits that he does not cook them every night since it takes a while to raise them to the right size. "If people are particularly interested in it then I have them available, but they are pretty labour-intensive."

Insects are more often served at special events rather than restaurants in Canada. But such cuisine is catching on at authentic Mexican restaurants in the United States of America, says Jeff Stewart of Creepy Crawly Cooking in Niagara-on-the-Lake, Ontario. Before, only 10 to 25 percent of those attending special events that he catered for would taste insects, Stewart says. Now, it is closer to 75 percent.

At the 5th Annual Bugalicious Insect Food Festival in February, Stewart cooked

up cricket candy and white chocolate crickets, Chinese scorpion soup and fresh ant fettuccine alfredo.

"Is it healthy, is it good for you?" asked Stewart. "Yeah, if you look at the nutritional content, they're very good for you." Still, chefs should check with their sources since wild bugs can be exposed to herbicides, he says. (*Source: Winnipeg Free Press* [Canada], 8 June 2010.)

THE FUTURE USE OF INSECTS AS HUMAN FOOD

Edible insects may be used as space-travel food in the distant future. For long voyages to other planets, their cell culture will provide animal protein in a spacecraft, within which the area for the production of foodstuffs will be limited. If humans ever live in huge airtight domes on other planets, food production will have to be developed within the confines of the domes. Breeding of large livestock will not be practicable because of space limitations. The alternative will be to use insects to provide a source of animal protein. For such purposes, species such as silkworms, termites and flies have been suggested, taking into account the effective recycling of organic substances. (*Source*: Jun Mitsuhashi. 2010. The future use of insects as human food. In *Edible forest insects. Humans bite back!* Rome, FAO. 2010.)

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MEDICINAL PLANTS AND HERBS

Helping African farmers to help themselves

Carole Robert may not fit the stereotype of a humanitarian aid worker, but the Blainville entrepreneur has just won an international award for her programme to help poor African farmers learn to cultivate and market medicinal plants in a sustainable manner.

Until just a few years ago, Robert was a prominent businesswoman running her own construction materials export company. She realized that there was great potential for commerce in some developing countries, but the people needed education and connections.

While doing her MBA, she learned about the flourishing global trade in medicinal, plant-based products that were coming into vogue for use in pharmaceuticals, cosmetics and foods. There was already a USD60-billion global market in these products in 2004, and that market was growing by about 10 percent a year. Yet, sub-Saharan Africa, where 43 percent of the world's medicinal plants grow naturally, was only participating in 0.01 percent of this market.

Robert then launched a foundation called "Biotechnology for Sustainable Development in Africa Foundation" (BDA). BDA's first project is Plant Action, a three-year educational programme in the Democratic Republic of the Congo. This pilot project will train 30 farmers in sustainable planting and harvesting of medicinal plants and trees, and turn them into entrepreneurs.

"I believe developing countries will flourish through commerce, not charity."

In the first year, the "ecopreneurs-in-training", as Robert calls them, learn about sustainable cultivation practices in the industrial production of medicinal plants. The students will learn to grow plants such as *moringa* or neem trees to international standards of quality control. They will have access to a phytochemistry laboratory, built and financed by a local Jesuit group.

The second year consists of practical training in the equatorial forest and savannah of the Luki Man of the Biosphere Reserve, a 30 000-ha conservation area managed by the World Wide Fund for Nature. Students from the Université du Québec's *École de technologie supérieure* helped build a plant-processing centre in the reserve, which will serve as a prototype for other such centres that BDA hopes to build across the country.

In the third year of the programme, the students will return to their land to start their businesses. BDA will create funds for microcredit so the ecopreneurs can hire employees.

BDA has raised and committed USD3 million to the programme to date.

"Africans can exploit their own natural resources," Robert said, "but we wanted to help them embark on international trade in a responsible way, because that is essential. We wanted to show them how to protect these plants from overexploitation so they can protect their resources for the future and make a living at the same time," she said. (*Source: The Gazette* [Canada], 2 March 2010.)

Vets turn to African herbs as animal drugs stop working

The West's veterinary drug drive is not working, say animal disease scientists, who have started researching the effectiveness of plant-based treatments used in Ethiopia.

Researchers from the Scottish Agricultural College (SAC), United Kingdom, will visit the East African country and select 30 plants used by native herders to control parasites in their animals. These will then be taken to laboratories in Ethiopia and Scotland to test for their effectiveness.

"Like farmers across the world, they often do things because their fathers and grandfathers did. Our idea is to find out if and how they work and to feed that information back to the farmers," said project leader Dr Jos Houdijk.

Dr Houdijk said the project was recognition that it was time to look for alternatives to the veterinary drugs on which farmers in industrialized countries had become reliant to control animal diseases. "When these drugs were introduced in the West in the 1960s we thought they would solve all our problems but we couldn't have been more wrong. Nowadays, the parasites are becoming resistant and the consumer is becoming more aware about having products that have a minimum use of drugs. Alternative medicines are coming into fashion again."

The project is one of 16 others given funding by SAC to look into helping sub-Saharan and South Asian farmers tackle the spread of livestock diseases. (*Source*: *The Ecologist*, 19 February 2010.)

MANAGING AFRICA'S MEDICINAL PLANTS

Research into Use's (RIU) pocket guide and policy brief series has produced a brief that outlines the need to find ways to manage Africa's medicinal plants in a sustainable way.

The brief, *Future health: sustainable management of Africa's medicinal plants*, highlights that 80 percent of Africans use traditional treatments made from wild native plant species and one-third depends on them entirely. As populations increase, so too does use; overexploitation is rampant. Control is imperative to sustain forest resources before they are lost, potentially denying access to medicines for millions of people.

There is demand for better management of resources, and a firm belief that this can be achieved. The Trees for Health Forever resolution was signed by foresters, traders, herbalists and ministry officials from countries across southern Africa in 2005. It committed to cross-border collaboration on forest management and to get the message of sustainable harvesting issues through the medicinal plant supply chain.

Scientists are already producing tools that can make sustainable management a reality. Policy-makers are encouraged to support groups, such as the Indigenous Resources Working Group in southern Africa, and take advantage of new management approaches and tools as they become available.

Policy must ensure that all stakeholders, from traders and wholesalers to local collectors gathering forest products, are included in initiatives to preserve forests and their medicines. As a result, policies must be inclusive of all countries, and push for all trade to be monitored and recorded. This may involve new joint policies among countries in the region to protect these valuable resources. (*Source*: www.worldpress.com, 30 March 2010.)

Application of ISSC-MAP for Cambodian plants

A two-year project being piloted in Cambodia by TRAFFIC Southeast Asia on the sustainable management of medicinal and aromatic plants has come to a successful close this year. The pilot was part of the "Saving Plants that Save Lives and Livelihoods" project, designed to test a recently developed International Standard for the Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP) for species important to local health and economies around the world. Cambodia's particular success offers insights into the feasibility of a global standard for sustainable medicinal and aromatic plant (MAP) management and provides direction for future courses of action.

In Cambodia, the reliance of many people on traditional medicines highlighted the need for the application of a standard such as ISSC-MAP to conserve resources and improve livelihoods. Nearly 40 percent of plants in Cambodia are medicinal and aromatic plant species used in health care, subsistent livelihoods and commercial trade. Generally, the highly valued species in local and international markets face exhaustive collection, resulting in population scarcity, which impacts local livelihoods, traditional knowledge and biodiversity. Like plant species in many countries around the world, many MAP species in Cambodia are now threatened, mainly because of overharvesting, unsustainable collection and poor management of natural resource areas.

To apply the ISSC-MAP standard in Cambodia, a suitable location and MAP species with high potential market value were first selected. During the first project workshop, stakeholders from local communities, traders, research organizations, NGOs, government, universities and others discussed and selected a location and MAP species based on data from field observations and local interviews. The Prek Tnoat Community Protected Area (CPA) was chosen as the site for ISSC-MAP implementation for two MAP species: *krakao*, *Amomum ovoideum*, a plant whose fruits are medicinally used for respiratory and digestive health, and *tepirou*, *Cinnamomum cambodianum*, a rare tree whose bark is also used for digestive health.

A detailed resource assessment was conducted by biologists and members of the Prek Tnoat CPA to measure vegetation type and structure, species ecology, population density and yield production. In addition, a market chain survey was conducted in Phnom Penh to determine the market viability of *krakao* and *tepirou*. Results of these studies found that the *tepirou* tree was not a good candidate for the management programme: bark collection of this species can only happen on a five-year rotation and the current population size is too small to provide enough potential income for the Prek Tnoat community, and incorrect harvesting would threaten the species with extirpation. However, the management plan put in place a methodology for sustainable harvesting so that, while income generation is small, overexploitation can be avoided. The resource assessment also provided the basic information necessary to create a community-based MAP management plan covering three main areas: (i) managerial structure, role and responsibility; (ii) regulation of collection; and (iii) benefit-sharing. This MAP management plan was drafted by a team of various stakeholders and integrated into the annual CPA management plan.

- "Saving Plants that Save Lives and Livelihoods" is a global project that aims to conserve MAPs and their habitats and to establish sustainable use schemes, including benefit-sharing within local communities. It is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ), and implemented by TRAFFIC, the World Wide Fund for Nature and the International Union for Conservation of Nature (IUCN) Medicinal Plants Specialist Group in India, Nepal, Brazil (*please see page 43 for more information*), South Africa/Lesotho and Cambodia.
- The ISSC-MAP standard was developed between 2004 and 2007 by WWF, IUCN, TRAFFIC and the German Federal Agency for Nature Conservation (BfN) to provide a tool to achieve this conservation target. The rationale for developing the project was to put the ISSC-MAP into practice in selected regions worldwide to develop efficient conservation mechanisms for selected MAP resources and their habitats, which are under threat or likely to become threatened.

A key objective of the project was to ensure the continued success of ISSC-MAP implementation following completion of the pilot project. At each step in the process, efforts were made to empower and build capacity among the various stakeholders in order to retain long-term sustainable MAP management in Prek Tnoat. Members of the local community were trained to conduct their own resource assessments, monitor MAP harvest and survival, properly collect and process the MAP species, and participate in access and benefit-sharing. Leaders of the project also produced and distributed a leaflet in Khmer on sustainable harvest and processing techniques of *krakao* to produce quality fruits with high market value.

One challenge to the implementation of ISSC-MAP in Prek Tnoat was that only a select few MAPs are valued in national and/or international markets. A potential solution was to add value to the raw *krakao* material by processing and packaging it on-site into traditional medicine that commands a higher price. To this end, the stakeholders have initiated a community-based Traditional Medicine Producer Group charged with producing medicines from sustainably harvested resources. Another obstacle was that Prek Tnoat does not have a direct market link to Phnom Penh. MAP sellers were forced to transport *krakao* to Phnom Penh and often complained of being stopped and taxed by authorities along the way.

The seasonal availability of *krakao* means that Prek Tnoat will need to expand its MAP management to include other species such as *Smilax glabra*. The best strategy for increasing income for the community without overharvesting *krakao* will be to harvest multiple MAP species throughout the year. In order to meet market demand for popular MAP species and avoid local extirpation, collectors will have to expand collection to other communes and sites. Future management will also need to establish technical standards on issues such as names of MAPs (*krakao* is just one of many common names), processing techniques and community benefit-sharing. (*Source*: *TRAFFIC Bulletin*, 22: 3, 2010).

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Recognition of traditional medicine by governments

Politics have a large influence over herbal medicine, as can be demonstrated historically. East Africa and parts of the Himalayas were subject to colonial rule until the 1940s to 1960s, during which time traditional medicine tended to be neglected or even denigrated by the authorities. Since independence, traditional medicine has gradually gained increasing recognition in East Africa, especially recently with the declaration by the African Union of 2001–2010 as "The Decade of Traditional African Medicine". A "Traditional Healer Policy" was established for the United Republic of Tanzania in 2002 and similar policies are at an advanced state of preparation in Kenya and Uganda. An East African Network on Traditional Medicine and Medicinal Plants has been established with its hosting since 2007 in the Lake Victoria Basin Commission of the East African Community.

Among the Himalayan countries, Bhutan has accorded an equal status to Tibetan and Western medicine, influenced by Buddhism and regard for environmental stewardship. The Government in China has provided strong encouragement to traditional Chinese medicine, and recognized several other medical traditions, such as those associated with the Dai, Mongolian, Tibetan, Uigur and Yi peoples. In India, several indigenous systems of medicine have been legally recognized (for instance, Ayurveda, Siddha

HERBALISTS SCORE MAJOR VICTORY

Herbalists have scored a major victory in their quest for official recognition after scientists have provided evidence that some herbal medicines can cure many diseases.

Scientists from the University of Nairobi and Jomo Kenyatta University of Agriculture and Technology analysed 12 medicinal plants used by traditional healers in the Machakos and Kitui districts in Nairobi and found most to contain healing properties against common bacterial infections, including tuberculosis. They also confirmed the widely held belief that the *mchicha* plant (*Amaranthus*) has properties that protect people with HIV from various opportunistic infections.

The study carried out by nine researchers from the two universities was published in the *Phytotherapy Research Journal*. "In the past few decades, there have been intense pharmacological studies brought about by the recognition of the value of medicinal plants as potential sources of new compounds for managing diseases," says the study.

The researchers say plants such as *Aloe*, *Croton*, catch thorn (*Ziziphus abyssinica*) and several others of the analysed 12 are promising candidates in the search for new cures.

However, they warn that their findings do not authorize herbalists to use the plants indiscriminately because they have to understand the correct dosage and the part of the plant to use for the best and safest results.

Amaranthus spinosus

Citing an earlier study on the antibacterial properties of the *Croton* tree which found the plant had little medicinal value, the researchers in the current study found the tree to be quite effective, a contrast they attributed to the locality of plant species, parts used, and time of collection, storage and methods of analysis. This in essence means that a neem tree (*Azardirachta indica*), for example, found at the coast may not have similar medicinal properties to its counterpart growing elsewhere in the country. This should serve as a warning for many herbalists who are increasingly domesticating plants away from their indigenous habitats. (*Source*: Daily Nation [Kenya], 5 January 2010.)

and Unani, but not Tibetan) and the Government has established a National Medicinal Plants Board to develop and regulate the medicinal plants sector. In Nepal, recognition has been accorded to Ayurveda, but not Tibetan medicine, and development of the medicinal plants sector has been accorded a priority in government planning. A high-level Herbs and Non Timber Forest Products Coordination Committee has been formed with 12 medicinal and aromatic species selected for the development of agronomic technologies. (*Source*: A.C. Hamilton (ed). 2008. *Medicinal plants in conservation and development: case studies and lessons learnt* [Salisbury, United Kingdom], Plantlife International.)

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Ginseng: a highly valued herb

Like the rich mountain forests where ginseng grows naturally, its use dates back to antiquity. Ginseng is a perennial herb belonging to the genus *Panax*, which is derived from the Greek word *Panakos*, or panacea in English, meaning an all-healing remedy.

Both the Asian and American varieties are employed medicinally, sharing the same growth habits and virtually the same appearance, with the only difference being that the Asian variety is larger.

American ginseng (*Panax quinquefolius*) is found throughout the deciduous mountain forests of central and eastern North America. The first specimens of American ginseng were transported to Europe in 1704. It should come as no surprise that the North American Indians also knew of and utilized ginseng root for its medicinal qualities. They called it *garantoquen*, which translates as "like a man", in reference to its forked root structure, which closely resembles the shape of a man.

American Indians have a particular method of harvesting the root, whereby it is only harvested after the red fruit of the plant has reached maturity. They then bend the stem down to the ground before proceeding to dig the root. This method reportedly increases the germination rate and provides for a greater future yield. The Sioux Indian women had especially well-developed ways of cleaning and processing ginseng, and were said to collect the finest root of all the tribes.

Asian ginseng (*Panax ginseng*) is found primarily in the Northern Hemisphere and mainly in China, Tibet, Mongolia and the Republic of Korea. The Korean and Manchurian species are traditionally considered the most highly prized. Wealthy Chinese will pay up to USD200 000 for the vitality-enhancing properties of a premium-grade ginseng root.

These highly prized roots are found growing wild in the mountainous regions of the Republic of Korea and the Changbai and Xiaoxinganling Mountains in China's northeast. They grow on steep slopes at heights between 500 to 1 100 m above sea level.

Wild ginseng growing in ancient forests with deep loamy soil and moisture-laden air is found to have a much greater potency than ginseng grown commercially out of its natural environment. (*Source*: *The Epoch Times* [United States of America], 23 February 2010.)

***Picrorhiza kurrooa*, an endangered medicinal plant offering high commercial potential in the Himalayas**

Himalayan medicinal plants have been a source of curiosity for their use in ethnomedicine by numerous community healers and native people and, most important, for their historical use in one of the most accepted Indian medicine systems, Ayurveda.

The Indian Himalaya records over 1 750 species. Many Himalayan medicinal species offer a very high market value, viz.

Taraxacum officinale

Aconitum heterophyllum, Acorus calamus, Angelica glauca, Bergenia ciliata, Cinnamomum tamala, Dactylorhiza hatagirea, Heracleum candicans, Picrorhiza kurrooa, Podophyllum hexandrum, Panax pseudoginseng, Swertia chirayita and *Taraxacum officinale*. In recent times, *Picrorhiza kurrooa* Royle ex Benth (Scrophulariaceae), a perennial herb, has drawn tremendous attention from pharmaceuticals as well as conservationists. The species has an immense trade value on national and global markets and is an important high altitude herb of the Himalayas, having flexible habitat niches, mostly on open slopes (temperate to alpine). It has several local names, *kutki* (in Sikkim), *karu* (in Himachal Pradesh) and *katuka, kuru, katvi, katurhini* and *katki*.

Underground stolons of *P. kurrooa* producing erected inflorescence stalks, embedded with numerous pinkish flowers, allure visitors to alpine habitats in summer. It is distributed in Pakistan, India, Nepal, Bhutan and southern China, along an altitude of 2 700–5 000 m. In India, it is distributed from Kashmir to Sikkim; in Sikkim, it is found at an altitude ranging from 2 800 to 4 500 m. The snow melts of early summer reveal the emergence of the shoots. In the alpine meadows, the plant reaches a height of 20 cm during its flowering stage.

In Ayurveda, the whole plant is considered medicinally useful and is one of the most bitter plant drugs. The dried roots are considered a tonic, cathartic, stomachic, cholagogue and purgative, and are used in fever and dyspepsia and

against scorpion stings. The species is one of the most potent liver conditioning and protective drugs. The chief bioactive photochemical of the root is glycosides, especially picroside and kutkoside. The roots sampled from the trade market showed 0.5–3.5 percent kutkin (bitter principles). The roots/rhizomes produce non-bitter product kurrin (D-mannitol), vanillic acid and kutukol.

Over the decades, because of the prevalent trade demand by pharmaceuticals, *P. kurrooa* has been severely harvested in its natural habitats. In recent times, as a result of this depleting natural population and resulting unavailability of the raw material to meet the expanding demand from pharmaceuticals, *P. kurrooa* has become the focus of conservationists. Using International Union for Conservation of Nature (IUCN) criteria, the species was assessed as endangered and in 1997 was also incorporated in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Among 29 plants, *P. kurrooa* is banned for the export and re-export in raw form through EXIM (Export and Import Policy) 1998, under the Foreign Trade (Development and Regulation) Act, 1992, excluding manufactured parts or derivatives.

During a brainstorming exercise of international experts (Workshop on Endangered Medicinal Plants), convened by the author in 2002, *P. kurrooa* was prioritized and identified as one of the top taxa for immediate conservation through *ex situ* cultivation. In addition, *P. kurrooa* is one of the proposed taxa for overall development by the Indian Medicinal Plants Board, Government of India.

Few scientific studies have appeared so far on the cultivation of *P. kurrooa*. Wild populations at different altitudes may exhibit variations in active compounds. Studies indicated that there may be the potential to obtain a high amount of the plant's active contents even at a lower elevation, within the flexible limit of species adaptation, if densely grown. One of the cultivation efforts by my group indicated that altitudes above 2 200 m are very suitable agroclimates for *P. kurrooa* in the Himalayas, using stolon cuts. The below-ground dry weight production in *P. kurrooa* cultivation may reach 0.7 to 3.8 quintal/acre (0.4 ha) if careful and appropriate agropractices are adopted and depending upon the manure in practice in one year. The use of vegetative propagule may provide about 2.6 to 7 times greater productivity over seeds. Phenological observations, which may fluctuate over the years and altitude zones, are crucial for standardized cultivation practices at different agroclimatic zones and can be taken as important indicators of climate change and global warming.

I have tested this cultivation protocol. However, it would be beneficial if more scientific studies covering different Himalayan zones are targeted, especially on *population studies, demonstration trials* and *marketing status exploration*. Very important, location-specific knowledge on the *technical feasibility, economic viability* and *farmers' acceptability* as basic criteria for launching cultivation trials would add value to baseline guidelines for strengthening commercial ventures for poor farmers in the Himalayas.

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93 PERCENT OF INDIA'S WILD MEDICINAL PLANTS ARE ENDANGERED

The Botanical Survey of India found 93 percent of wild medicinal plants in India are endangered, many of which are used in traditional Ayurvedic medicine. The research was carried out on 359 of the most widely used wild medicinal plants species. Of these, 335 species have been assigned the Red List status. The threatened species include *Utleria salicolia* and *Hydnocarpus pentandra* in the Western Ghats and *Gymnocladus assamicus* and *Agapetes smithiana* in Sikkim. All of the surveyed plants are under threat because of overexploitation to meet the demand from herbal industries. (*Source*: Terragreen (May 2010) in *MFP News*, XX: 2, 2010.)

Gymnocladus assamicus

***Heliotropium foertherianum*: is the octopus bush a solution to fish poisoning?**

Cebu, Philippines. Scientists are improving a Pacific folk remedy used to treat a form of food poisoning that prevents millions of people in the region from consuming fish.

The octopus bush (*Heliotropium foertherianum*) is the traditional medicine of choice in the Pacific islands for ciguatera fish poisoning, which is caused by powerful ciguatoxins produced by microscopic *Gambierdiscus* algae.

Ingested by fish and clams, the toxins accumulate in the food chain, causing diarrhoea, vomiting and neurological symptoms. At least 100 000 people, mostly in the Pacific, are poisoned each year.

Scientists from the Institute of Research for Development (IRD), collaborating with colleagues from the Louis Malarde Institute in French Polynesia and Pasteur Institute in New Caledonia, Melanesia, screened around 100 medicinal plants for their activity against ciguatoxins.

Octopus bush extracts were found to be the most promising, containing a molecule similar to rosmarinic acid – a compound known for its antiviral, antibacterial, antioxidant and anti-inflammatory properties. The researchers think rosmarinic acid may remove the ciguatoxins from their sites of action, as well as being anti-inflammatory.

They are now seeking to patent rosmarinic acid and its derivatives, and are developing octopus bush extracts with an even stronger detoxifying effect.

Lead researcher Dominique Laurent of IRD in French Polynesia said that Japanese research has suggested that octopus bush may contain alkaloids, naturally occurring chemicals that can be toxic. Fear of poisoning from the remedy may be deterring people from using it and a detoxified version might be more acceptable to local people, he said. "We

prefer to improve the folk remedy because it could be difficult to explain to local populations to buy a drug rather than use a plant growing on the beach," he said.

But the researchers have yet to consider how they would commercialize such a drug, said Laurent.

The poisoning is rarely fatal but the neurological symptoms can last several years. Fear of poisoning has reduced fish consumption, and the resulting dietary shift could lead to higher rates of cardiovascular disease, obesity and diabetes.

Paul Bienfang, a specialist in diagnosing algal toxins in fish, at the University of Hawaii, said the development of an effective antidote would be a significant accomplishment. (*Source*: SciDev.Net, 9 June 2010.)

Cinnamomum cassia

Unlocking keys to herbal medicines

A team of researchers at the University of Maryland, Baltimore (UMB), United States of America, writing in the science journal *PLoS ONE*, has developed a biological method to tease out which compounds from herbal medicines and medicinal herbal mixtures produce their reputed medicinal benefits.

"This provides the first step to find, from all of the hundreds of compounds in herbs, which ones have potential for medicinal purposes. And you can do this very quickly and efficiently," says co-author Laura Dosanjh, graduate student with the School of Pharmacy at UMB.

Science has not been very helpful in determining the efficacy of herbal medicines in the United States of America. The US Food and Drug Administration (FDA), for example, has so far sided with science only once to approve a herb-based treatment with multiple active ingredients – an ointment for genital warts made from green tea leaves.

Now, using tiny worms that live only 20 days, the team sorted out which compounds found in two common Chinese herbal formulations showed the most potential for their stated purpose: extending life expectancy.

Cinnamon and ginseng won, showing the most promise.

A team led by Yuan Luo, Ph.D., M.Sc., Associate Professor at the School, conducted a first-of-its-kind, "systematic evaluation" of a mixture of ten herbs called Shi Quan Da Bu Tang (SQDB), reportedly effective for fatigue and energy; and an 11-herb formula called Huo Luo Xiao Ling Dan (HLXL) used as a treatment for arthritic joint pain. Both mixtures are reputed to have benefits for healthy living and longevity in humans.

The researchers tested the mixtures, as well as each separate herb in them, on the laboratory worm model *C. elegans*. This particular worm – which biochemists often use as their "lab rat" – shares genes for ageing and other traits with humans and other organisms.

Cinnamon bark (*Cinnamomum cassia*) from HLXL extended the life span of the worms by 14.5 percent and cinnamon bark from SQDB extended life by 10.8 percent. Ginseng root (*Panax ginseng*) from SQDB extended the life span by 7.7 percent.

Significantly, cinnamon, ginseng and SQDB also thinned out levels of hydrogen peroxide, which can destroy cells. They each also enhanced expression of small heat shock proteins, an indicator for cellular response to stress that plays an important role in the maintenance of cell functions.

Herbal medicines are usually mixtures of herbs. That presents a severe challenge for the FDA to understand which compounds or combinations of compounds in the herbs are effective or not effective.

"Because it's very difficult to sort out so many herbs with so many constituents together, we needed to find a model," says Dosanjh. *C. elegans* is valuable to science because its very short life cycle is suitable for conducting rapid experiments and between 60 to 80 percent of the 20 000 genes in the *C. elegans* genome have similar origins to human genes. The genes are found consistently along the evolutionary paths including worms and humans. (*Source*: University of Maryland, 26 March 2010.)

Institutes complete first gene map of Chinese medicinal plant

Two traditional Chinese medicine institutes announced the completion of a gene map of the plant *Salvia miltiorrhiza*, the first of its kind, on 20 June in Beijing. The Institute of Medicinal Plants of the Chinese Academy of Medical Sciences launched a programme to create a gene map of *S. miltiorrhiza* in conjunction with Hutchison Whampoa Guangzhou Baiyunshan Chinese Medicine Co., Ltd. They used the second generation of high-flux sequencing techniques to check *S. miltiorrhiza*'s DNA order and finally finished its gene map.

The success of the gene map is seen as a step forward in the research of medicinal plants and the merger of front-line life science and traditional Chinese medicine. It promises new breakthroughs in the research of Chinese medicine. (*Source*: People's Daily Online [China], 21 June 2010.) ♣

Salvia miltiorrhiza

"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)

BIOMONITORING: BEES HELP MONITOR AIR QUALITY AT GERMAN AIRPORTS

Airports in Germany have come up with an unusual approach to monitoring air quality. Düsseldorf International Airport and six other airports are using bees as "biodetectives", their honey regularly tested for toxins.

"Air quality at and around the airport is excellent," said Peter Nengelken, the airport's community liaison. The first batch of this year's harvested honey from some 200 000 bees was tested in early June, he said, and indicated that toxins were far below official limits, consistent with results since 2006 when the airport began working with bees.

Beekeepers from the local neighbourhood club keep the bees. The honey, "Düsseldorf Natural", is bottled and given away as gifts.

Biomonitoring, or the use of living organisms to test environmental health, does not replace traditional monitoring, said Martin Bunkowski, an environmental engineer for the Association of German Airports. But "it's a very clear message for the public because it is easy to understand," he added.

Volker Liebig, a chemist for Orga Lab, who analyses honey samples twice a year for Düsseldorf and six other German airports, said results showed the absence of substances that the laboratory tested for, such as certain hydrocarbons and heavy metals, and the honey "was comparable to honey produced in areas without any industrial activity". A much larger data sampling over more time is needed for a definitive conclusion, he said, but preliminary results are promising.

Could bees be modern-day sentinels like the canaries once used as warning signals of toxic gases in coal mines?

Assessing environmental health using bees as "terrestrial bioindicators" is a fairly new undertaking, said Jamie Ellis, Assistant Professor of Entomology at the Honey Bee Research and Extension Laboratory, University of Florida in Gainesville. "We all believe it can be done, but translating the results into real-world solutions or answers may be a little premature." Still, similar work with insects to gauge water quality has long been successful. (*Source*: *New York Times*, 28 June 2010.)

BIOPROSPECTING/ BENEFIT-SHARING OR BIOPIRACY?

Africa considers equitable access to genetic resources

Namibia is hosting a continental conference in preparation for the finalization of an international regime on access and benefit-sharing of the world's biodiversity and genetic resources later in the year in Nagoya, Japan. This week, environmental ministers from 38 African states and three European countries – Denmark, Germany and Norway – are in Windhoek to finalize Africa's position before the negotiations continue in Japan later in the year.

African leaders have said that without effective and wide-ranging benefit-sharing to drive sustainable use, the cost of conservation may simply be too high for many poor rural communities, which in Africa are the real custodians of biodiversity.

The consequences for biodiversity, said Namibia's Ministry of Environment and Tourism, will be dire because there will be no incentive and justification for poor people to conserve it. In fact, added Dr Bakary Kante of the United Nations Environment Programme (UNEP), this issue is more important than the Kyoto Protocol because it is at the heart of sustainability of the Earth.

President Hifikepunye Pohamba said efforts are being made in Namibia to ensure that indigenous communities can share in the benefits of the exploitation of indigenous plants such as devil's claw (*Harpagophytum procumbens*) and *hoodia* from the plant family *Apocynaceae*.

The Convention on Biological Diversity (CBD) Secretariat has stated that species are disappearing 50 to 100 more than they would have done naturally. An estimated 34 000 plants face extinction. About 45 percent of the forests, home to most of the world's known terrestrial biodiversity, have disappeared and, while there are some regrowths, the world's total forests are shrinking at an alarming rate, particularly in the tropical regions.

The World Health Organization said that 80 percent of the world's population depends on health care provided by medicinal plants and the associated traditional knowledge of indigenous communities forms up to 70 percent of the basis of modern pharmaceuticals.

The Namibian Minister of Environment and Tourism Netumbo Nandi-Ndaitwah said that 90 percent of medicinal plants are found in developing countries on the lands of the indigenous communities. A further aspect to the loss of biodiversity, said Nandi-Ndaitwah, is the loss of cultural diversity because culture is tied to resource-dependent ways of life, adding that "lack of secure rights to sustainable livelihoods is rendering many African communities extinct".

Lucy Mulenkei of the Indigenous Information Network said there is a strong need to accord indigenous communities full and effective participation within the convention of the biodiversity process to ensure that their rights and concerns are fully taken into account in the ongoing negotiations – and beyond. (*Source*: www.newera.com.na, 9 March 2010.)

Denmark to help Africa fight biopiracy

Environment Minister Karen Ellemann was the opening speaker on Monday for an international ministerial conference on biopiracy in Windhoek, Namibia, aimed at stopping companies from obtaining genetic resources from countries without providing reciprocal economic benefits. Together with the country's president, Ellemann hopes the

Danish cosponsored conference will assist Africa in obtaining some of the significant profits from its many genetic resources often used by Western companies.

Much of the material companies obtain is used to develop products such as cosmetics, medicines and genetically modified organisms (GMOs). Biopiracy is common in Africa, however, where large international companies typically exploit the countries' resources.

According to the Environment Ministry, some companies have even gone so far as to take out patents on the development of substances that have already been used for several hundred years in traditional medicines in developing countries. One notable example was chemical company W.R. Grace's attempted patent on products from the Indian neem tree (*Azadirachta indica*).

"It's high time that we stop the worldwide exploitation of natural genes," said Ellemann. "Developing countries' populations must also be a part of Western companies' profits on creams, medicines or agricultural crops, where the products were developed from those countries' genetic resources."

"Fairtrade would benefit both sides because it would be an incentive for developing countries to protect their rich natural resources, while the companies would be allowed to retain access to those resources," she said. (*Source*: The Copenhagen Post Online, 9 March 2010.)

Tensions remain over biological access protocol

After nine years of meetings about international rules on providing equitable resources, a major step was reached at the end of March with agreement on a draft text that is intended to form the basis of a protocol on access and benefit-sharing.

At the Ad Hoc Open-ended Working Group on Access and Benefit-sharing of the Convention on Biological Diversity (CBD), which met in Cali, Colombia from 22 to 28 March, representatives from 193 countries agreed to use the draft as the basis of a protocol to be submitted to the Tenth Conference of the Parties to the CBD, which will be held in October in Nagoya, Japan.

The UN hailed the meeting as a great step forward in the quest to use the world's biodiversity fairly. "Cali has entered history as the birthplace of the draft Nagoya Protocol on access and benefit-sharing," said Ahmed Djoghlaf, the UN's Executive Secretary to the CBD.

But the draft remains highly controversial, and participants have been forced to arrange a further week-long meeting to take place in Canada in July to prepare the draft for October's meeting in Nagoya.

Agreeing a protocol is one of the three objectives of the CBD. The goal is to ensure that benefits arising from the use of genetic resources from plants, animals or micro-organisms are shared in a fair and equitable way with local communities or countries that provide them.

Krystyna Swiderska, a senior researcher at the International Institute for Environment and Development in the United Kingdom, told SciDev.Net that "the real negotiations on a draft protocol only started on Thursday and I was not entirely surprised to hear that the negotiations broke down on Friday evening, given the very divergent positions between parties".

"The industrialized countries want easy access to genetic resources in other countries," she said. "If they have their way, the protocol will at most require compliance with existing legislation in the developing countries. On the other hand the biodiversity-rich developing countries want to assert national sovereignty over biological resources, and to ensure that the protocol binds industrialized countries to sharing any benefits."

Industrialized countries also want the protocol to focus only on genetic resources, while developing countries want to ensure that derivatives and traditional knowledge are included, added Swiderska. "And industrialized nations want compliance with the protocol to be enforced through individual contracts for example between drug companies and governments while developing nations want to include [legal] measures for compliance with the protocol itself," she said. (*Source*: SciDev.Net, 2 April 2010.)

Iniciativa andino-amazónica de prevención de la biopiratería

La Iniciativa andino-amazónica de prevención de la piratería, tiene como objetivo principal prevenir el uso ilegal de recursos genéticos y conocimientos tradicionales y fortalecer las capacidades nacionales y regionales para enfrentar, a través de la colaboración e interacción entre instituciones, la biopiratería. Esto incluye la implementación efectiva de políticas y normas en materia de acceso a recursos genéticos y protección de conocimientos tradicionales.

Recursos como el ayahuasca, la maca o la quinua, y los conocimientos tradicionales asociados a ellos han pasado a formar parte de invenciones protegidas legalmente por patentes u otros derechos de propiedad intelectual, sin un reconocimiento de su origen. El término de biopiratería se refiere a la apropiación indebida o ilegal de recursos genéticos, semillas y conocimientos tradicionales de los pueblos indígenas.

Desde el año 2004, la «Iniciativa» viene trabajando en la creación de redes y en la búsqueda de sinergias entre las acciones emprendidas por los países andino-amazónicos destinadas a garantizar que el acceso a sus recursos genéticos y conocimientos tradicionales sean utilizados con su consentimiento y participación. En el año 2007 se inició una segunda fase con la finalidad de profundizar en el fortalecimiento de las actuaciones de las instituciones públicas y privadas nacionales frente a potenciales casos de biopiratería.

PARA MÁS INFORMACIÓN, DIRIGIRSE A: Manuel Ricardo Ruiz-Muller, Co-director del Programa de Asuntos Internacionales y Biodiversidad, Sociedad Peruana de Derecho Ambiental (SPDA), Prolongación Arenales No. 437, Lima 27, Perú. Fax: +511-422-4365; correo electrónico: mruiz@spda.org.pe; www.biopirateria.org/spa/proyecto.php

COMPANIES FUND PROJECTS TO PRESERVE AMAZON RAIN FOREST

Deep in the Amazon, in a village accessible only by boat, river dwellers for generations have survived on fish, sparse crops and nuts from the forest. Now they have a new resource: debit cards.

Families in Boa Frente receive USD29 a month to spend in a town upriver. The village also has a new brick walkway, rainwater cisterns and a new school with solar panels and Internet access. In exchange, residents agree to protect the forest surrounding their plots instead of clearing more trees for farming or fuel. The windfall comes courtesy of Marriott International Inc., the USD12-billion hotel chain. It is part of a complex – and controversial – plan to save the world's rain forests with the help of big business.

Rules for Reducing Emissions from Deforestation and Forest Degradation – or REDD – are being designed under the auspices of the United Nations as part of a global effort to cut greenhouse gas emissions. Around the world, dozens of REDD projects are under way. So far, these REDD projects are voluntary, often funded by firms that want to burnish their green credentials. But eventually these "avoided deforestation" efforts could be included in mandatory carbon cap-and-trade systems, such as one already in place in Europe.

But nowhere has the idea been embraced more keenly than in Brazil, home to 27 percent of the world's tropical rain forests and 18 REDD projects, including the one in Boa Frente. Although 98 percent of the surrounding state of Amazonas remains forested, ranchers, farmers, loggers and miners are rapidly moving in. The state calculates that it could lose a third of its trees by 2050.

The first project is in the Juma Reserve, located 125 miles (201.17 km) south of the state capital, Manaus. It is home to 380 families in 43 villages, including Boa Frente. In exchange for their *bolsa floresta* – or forest allowance – villagers also attend two-day workshops on global warming. Their promise not to expand their plots is enforced: the land is mapped and the forest monitored by satellite. If a family reneges, its debit card is cancelled.

Forest dwellers are also trained in sustainable livelihoods, including harvesting seeds, berries, rubber and other products needed by researchers and industry.

So far, 14 villagers have been trained. In the coming months, 70 more will learn to gather seeds from dozens of species, including varieties used in medicines and cosmetics.

Downriver, in the village of Fleixal, eight families occupy thatched-roof shacks shaded by 200-foot (61-m) Brazil nut trees. Villagers attended workshops on how to build wire-mesh, plastic-covered nut dryers. A distributor now pays USD7 for a 5-gallon can – up from USD3 – because quality has improved.

"The forest has riches," village leader Aderbal de Oliveira said, thwacking dry leaves with his machete to uncover fallen nuts. "We must be its guardians." (*Source*: latimes.com, 21 February 2010.)

CONGO BASIN FORESTS AT A "CRITICAL TURNING POINT"

Deforestation has remained relatively low in the Congo Basin, the world's second largest tropical forest expanse, but is likely to increase as the region looks towards economic development, a new report warns.

The forests of the Congo Basin: state of the forest 2008, released in late 2009, states that the Congo Basin forest is at a "critical turning point".

"Because there's been very little development in the Congo Basin, forests have been protected by default," says Robert Nasi, Center for International Forestry Research (CIFOR) scientist and co-editor of the report. "It is the one area with a low rate of deforestation. But it's also an area with weak government, lots of land development, lots of resource development and lots of people looking for land and resources."

A key objective of the report is to provide regional decision-makers with up-to-date information to assist with strategic planning.

The new trend of making payments to stakeholders for the environmental services that forests provide may be essential to balance development and conservation, the report notes, but challenges remain immense in the face of weak governance and infrastructure.

The vast forest ecosystems of the Congo Basin cover some 160 million ha across six nations: Cameroon, the Republic of the Congo, the Democratic Republic of the Congo, the Central African Republic, Gabon and Equatorial Guinea. Only the forested terrain in the Amazon Basin is larger.

Unlike the Amazon rain forest, the ecosystems are still intact and functioning, as indicated by the presence of elephants, great apes and other large animals; the Amazon has long since lost its terrestrial megafauna. Studies cited in the report note that the Congo Basin hosts exceptional species diversity and is among the world's richest areas in vertebrate and plant species.

The area is also home to more than 90 million people, most of whom subsist by harvesting forest products or through small-scale slash-and-burn shifting agriculture – a practice that uses the forest for expansion.

Deforestation of the dense tropical forest is estimated in the report at a relatively low average rate of 0.17 percent. However, forests represent a major source of economic revenue, in both formal and informal sectors, and the easing of the civil war in the Democratic Republic of the Congo has brought economic opportunities.

Accompanying these opportunities are great environmental risks, as forest management takes place against a background of widespread impoverishment – and the population is expected to double in the next 20 years.

"With 73 percent of people living below the poverty line, the development needs are huge," says the lead editor of the report, Carlos de Wasseige of the International Cooperation Centre of Agricultural Research for Development (CIRAD), Head of the Central African Forest Observatory (FORAF) coordination unit in the Democratic Republic of the Congo.

Balancing economic development with sustainable forest practices and conservation is a major challenge facing the region. Accepting the "sustainable yet multiple use of forest resources" is an important step to winning support for intervention strategies, de Wasseige says.

While the complex problems are local, the issues remain global because of the effects that increased deforestation and forest degradation could have on climate change. "The whole world should be involved in searching for solutions that improve the livelihoods of Central African people while preserving forests," de Wasseige says. (*Source*: *Thinking beyond the canopy* (CIFOR), 20 April 2010.)

FOREST FOOTPRINT DISCLOSURE ANNUAL REVIEW

Forest Footprint Disclosure (FFD) is a special project of the Global Canopy Foundation. Initiated in 2008, the project is designed to improve corporate understanding of a "forest footprint" generated by the use of forest risk commodities: soy, palm oil, timber, cattle products and biofuels.

FFD designed a disclosure request asking about company policy on sustainable supply chains for these products and sent it out to 217 international companies in July 2009. This Annual Review describes the findings of that disclosure request and provides some context on the subject. (*Source*: www.amazonia.org.br, 10 February 2010.)

FORESTS MAY DEPEND ON SURVIVAL OF LOCAL COMMUNITIES

After the failures in Copenhagen to agree on a new climate protection treaty and, more recently, at the Doha meetings on trade in endangered species, indigenous forest communities may offer examples of sensible governance for shared resources on a small planet.

Hundreds of poor Mexican Zapotec indigenous farmers have become owners of a multimillion-dollar diversified forest industry, offering an important model of a community-based enterprise that supports local people and conserves the natural environment, says David Barton Bray, a professor and associate chair in the Department of Earth & Environment at Florida International University in Miami.

The farmers of Ixtlán de Juárez, a forest community in the Sierra Norte mountains of central Mexico, utilize their strong traditional community values and communal ownership of more than 21 000 ha of pine and oak forest to run a successful business that benefits the entire community.

There is no private property, and rather than establishing a business to maximize profits, the people of Ixtlán – and in other Zapotec communities of Mexico with similar forest-based enterprises – focus on job creation, reducing emigration to cities and enhancing the overall well-being of the community, Bray told participants at the Smallholder and Community Forestry Conference in Montpellier.

"Communities will be more important in the years to come because they can address vital issues that the state and the market cannot," Bray, an expert on community forests in Mexico and Central America, told IPS.

The survival of many of the world's forests may well depend on the survival of local communities. A quarter of the world's remaining forests are controlled by about one billion local people, says Estebancio Castro Diaz of the Kuna Nation in Panama, who is Executive Director for the International Alliance of Indigenous and Tribal Peoples of Tropical Forests. "Local control is good for the people and good for the forest," Castro Diaz told participants attending the conference.

"The forest is a supermarket for us, it is not just about timber," he said.

For those reasons, more than 90 percent of the forests controlled by the Kuna people are still standing. "We need to communicate that there are broad benefits to the larger society for local control of forests," Diaz said.

In sharp contrast to the usual nation-state or private enterprise overexploitation of commonly held lands, oceans or other resources – characterized as the "tragedy of the commons" – local communities can set and enforce rules to maintain their landscapes, conserve biodiversity and improve livelihoods for the long term, Bray suggests.

The World Bank, FAO, International Union for Conservation of Nature (IUCN) and others have formed a "Growing Forests Partnership" to find ways to support community-managed forests, said Chris Buss of IUCN. Not only is this partnership trying to ensure that indigenous and local people are involved in their national government's forestry policy, but also to find ways to channel financial investment into local forest management be it for timber, Brazil nuts or other uses. (*Source*: Inter Press Service [IPS], 29 March 2010.)

JEWELLER CREATES RINGS EMBEDDED WITH LIVE PLANTS

The ring collection from jeweller Hafsteinn Juliusson would not quite qualify as ecofriendly, but it does come across as a great way to spread the green message.

Rings in the jeweller/designer's collection come with a stainless steel base, but have the biggest jewel of them all: nature embedded at the top.

These rings have Icelandic moss plants as their crowning glory, leading the way for them to be called "clash of jewellery and gardening". The moss, like any other plant, needs some care. The wearer would have to water them; pruning though, will not be necessary as the moss will not grow very noticeably during the time. If cared for, the moss could last for nearly six months. However, the innovative green rings do not come cheap; each will cost £485 and we hope that there is a way to get that moss growing and thriving again after the six months are over. (*Source*: GreenPacks, 6 January 2009.)

NETWORKS EMERGE AS KEY ACTORS IN COMMUNITY FORESTRY

Community networks have emerged as an important force in enhancing forest tenure security and livelihood benefits for forest-dependent communities. In many countries, such networks have become part of the forest tenure reform process. They develop at the grassroots level, and are proving to be effective agents for collective action.

The Federation of Community Forest User Groups, Nepal (FECOFUN), is one of the largest of these organizations. It emerged along with the growth of community forestry in Nepal in the 1990s, and today represents more than 14 000 community forest user groups (CFUGs) across the country.

FECOFUN has supported CFUGs by, for example, developing and implementing management plans, staging rallies, running media campaigns and offering legal support and education. Its nationwide network and the broad populace it represents have helped it to challenge power imbalances between the forest bureaucracy and local communities. It has also increased user groups' sense of security over their forest rights.

"FECOFUN educated us about national forest policies and other legal issues that affect our relationship with the forest," says Hemraj Kafle, a community member in Nepal's Jhapa district. "Its guidance has helped us to reclaim access to diverse forest products."

FECOFUN is one of three community networks featured in a new book that offers an in-depth case study analysis of community forestry across the globe. *Forests for people: community rights and forest tenure reform* is the culmination of a three-year study in ten countries in three regions of the world – Africa, Asia and Latin America. The research project, led and coordinated by CIFOR (Center for International Forestry Research), examined 30 sites of differing size and characteristics.

Anne Larson, CIFOR associate and co-editor of *Forests for people*, notes that networks such as FECOFUN and the Association of Forest Communities of Petén (ACOFOP) in Guatemala have become key actors in the forest policy process. "These organizations have been important not only for the defence of community rights but also for opening communication between communities and the state forestry administration on a new level," she says.

In recent years, governments in developing countries have transferred at least 200 million ha of forests to communities living in and around them. Now, more than a quarter of forests in developing countries are owned by or assigned to communities. (*Source*: *Thinking beyond the canopy*, 26 March 2010.)

NON-PROFIT ORGANIZATIONS AND NGOS

Amazon Watch

Amazon Watch is a non-profit organization working to protect the rain forest and the rights of indigenous peoples in the Amazon basin. Founded in 1996, the organization collaborates with indigenous and environmental organizations, campaigning for human rights, corporate accountability and the preservation of the Amazon's ecological habitat. Its work is rooted in the belief that indigenous knowledge, cultures and traditional practices contribute in a vital way to the sustainable and equitable stewardship of the Earth.

Amazon Watch hopes to broaden public awareness and support of indigenous peoples and their stewardship of the Amazon rain forest, particularly in light of new challenges such as climate change.

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American Botanical Council, United States of America

Founded in 1988, the American Botanical Council (ABC) is a leading international non-profit organization addressing research and educational issues regarding herbs and medicinal plants. ABC's members include academic researchers and educators; libraries; health professionals and medical institutions; government agencies; members of the herb, dietary supplement, cosmetic and pharmaceutical industries; journalists; consumers; and others in nearly 70 countries.

The organization publishes the quarterly journal *HerbalGram*, the monthly e-publication HerbalEGram, HerbClips (summaries of scientific and clinical publications), reference books and other educational materials. ABC also hosts HerbMedPro, a powerful herbal database, covering scientific and clinical publications on more than 220 herbs and coproduces the "Herbal insights" segment for Healing quest, a television series on PBS.

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NGOs WORKING TO PROTECT FORESTS: MAPPING THE LANDSCAPE

A new report published by the United Kingdom Environmental Funders Network maps out the civil society organizations working to address deforestation.

The report, *Saving the rainforests: civil society mapping*, profiles 65 environmental and social justice organizations, enabling readers to identify gaps and overlaps in the landscape of groups working to reduce global forest loss. The report specifically aims to inform grant-makers providing funds to civil society organizations.

"The mapping was inspired by the observation that good philanthropy is similar to acupuncture – philanthropic grants may be small in size compared with the body politic, but when inserted in the right place they can have enormous impact," said Harriet Williams, lead author of the report. "The methodology that we're developing is applicable to any complex environmental issue."

The report – together with a map, published separately – classifies NGOs into nine "storylines" to categorize organizational culture: "Knowledge builders"; "Peoples' heroes"; "Institution watchers"; "Finance pioneers"; "Standard setters"; "Parks, rangers"; "Brand attackers"; "Critical friends"; and "Consumer guides". For example, the report distinguishes between groups that often work with business ("Critical friends") to those that expose environmental transgressors among corporations ("Brand attackers").

The map evaluates the stance of various organizations on issues including carbon offsets, REDD (Reducing Emissions from Deforestation and Forest Degradation), and certification schemes for forest products. (*Source*: *Amazon News*, 1 April 2010.)

Keystone, India

Keystone is based in Kotagiri, a small town in the Nilgiris, which is part of the Western Ghats of India. It works with indigenous communities in the Nilgiris Biosphere Reserve, declared a hotspot under the Man and the Biosphere Programme of UNESCO. It is an extremely biodiversity-rich area, both in terms of the flora and fauna, as well as the different communities that coexist here. Keystone has already completed 15 years of work in the Nilgiris.

Keystone's mission is "to enhance the quality of life and the environment with indigenous communities using ecodevelopment approaches". Some of the thematic areas that it is involved in are: conservation, livelihoods, environmental governance, culture and people, and organic market development. This has meant working with traditional agriculture, NTFPs, drinking-water and micro-irrigation, and processing and value addition of agricultural and forest produce, etc. It also means coming up with innovative approaches for mountain systems that are simple but relevant. Dialogue with the forest department and other government agencies is integral in this effort.

Keystone also works through various networks and holds the current presidency of the NTFP Exchange Programme.

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PROTECTING RAIN FORESTS SHOWN TO REDUCE POVERTY

Introduction of measures to protect rain forests and ecosystems in Costa Rica and Thailand over the past 40 years has improved the livelihoods of the local population.

Researchers from Georgia State University (United States of America) looked at the long-term impacts for poor people living near parks and reserves set up before 1985 and found the net impact of the protection was to alleviate poverty. Study author Professor Paul Ferraro said the findings went against the conventional wisdom that says biodiversity conservation was not compatible with development goals.

"The results are surprising. Most people might expect that if you restrict resources, people on average will be worse off. In contrast, the results indicate that the net impact of ecosystem protection was to alleviate poverty," he said.

The findings come as seven countries; Norway, Germany, the United States of America, the United Kingdom, Australia, Japan and France commit to funding projects that will protect rain forests. At a meeting in Oslo this week, they reached an interim agreement to help get REDD projects (Reducing Emissions from Deforestation and Forest Degradation) up and running while they wait for an international agreement on tackling climate change. A new body to manage the funds will be set up by the end of the year.

Professor Ferraro admitted that the countries analysed in his study, Costa Rica and Thailand, may not be representative of all developing nations, having experienced both rapid economic growth within relatively stable political systems. He also said the study did not look at the reasons behind the fall in poverty. However, he believes the expanding ecotourism sectors in both countries may have played a significant part.

"The question we need to answer now is whether poverty is being reduced through ecosystem protection *per se* or because tourists come to see the biological diversity or because the protection maintains the supply of other valuable ecosystem services," he said. "Or is poverty reduced through donor investments in development activities and enhanced roads and public services (e.g. electricity and water infrastructure) that often accompany the establishment of a protected area?"

The Rainforest Foundation said that the findings indicated that protected areas could have a positive, rather than the usually negative impact on poverty alleviation in poor countries in and around areas for biodiversity. "However, they have to be treated with caution, as we do not know from the study whether specific 'pro-community' measures were in place in the cases studied, as these tend to be the exception rather than the rule, and could distort the findings of this study," said United Kingdom Executive Director Simon Counsell. (*Source*: *The Ecologist*, 28 May 2010.)

THE RELATIONSHIP BETWEEN INDIGENOUS PEOPLE AND FORESTS

More than 1.6 billion people around the world depend to varying degrees on forests for their livelihoods – not just for food but also for fuel, for livestock grazing areas and for medicine. At least 350 million people live inside or close to dense forests, largely dependent on these areas for subsistence and income, while about 60 million indigenous people are almost wholly dependent on forests.

Indigenous forest people use their land in many different ways – for fishing, hunting, shifting agriculture, the gathering of wild forest products and other activities. For them, the forest is the very basis of survival and its resources have to be harvested in a sustainable manner. But when traditional lifestyles change and, for example, industrial logging or mining takes place, overuse of resources can lead to conflict.

Although indigenous people around the world often have very different sets of beliefs and traditions, a special bond with the land is a common factor. For example, the semi-nomadic Matses people of the Peruvian Amazon call the rain forest *titá*, meaning mother. *Titá* provides the Matses with everything they need – as long as they follow her rules, including never taking more from the forest than is needed and treating all things belonging to it with respect.

As with the Matses, indigenous peoples' ideas of territory are not only concerned with controlling a geographic area or using forest resources: territory also embodies fundamental aspects of culture and geography.

Indigenous forest people see themselves as inseparably linked to the forest and everything in it – trees, plants, rivers, animals and mountains. It is impossible, according to community beliefs, to separate any single object or living thing in the forest – such as a particular plant,

animal or mineral – from its symbolic position in the cosmology of the people. These ideas are expressed through mythology, religious practices and systems of social regulation, including management of the environment and systems of production and exchange.

Because of their special relationship with the land, many indigenous people cannot comprehend the idea that forests and land can be bought and sold. However, this does not mean that they do not have a clear notion of their rights. The use of certain areas or resources may be granted based on a number of criteria, such as belonging to a particular group, tribe or clan. Land use can also be based on reciprocal agreements with neighbouring groups or individuals.

In many countries, the state is the official owner of most forest areas, even though some of the land may have been inhabited for generations by large numbers of people. In some cases, the rights of such people are recognized. In the Philippines, for example, land issues in such areas are governed by the Indigenous Peoples' Rights Act. Unfortunately such regulations are often contravened by powerful local interests.

Moreover, traditional tenure systems are not always recognized by governments, leaving indigenous forest people without formal rights to their territories. This violates the United Nations Declaration on Indigenous Peoples' Rights (UNDIPR) as well as ILO Convention 169 – both of which place a clear obligation on states legally to recognize, demarcate and effectively protect indigenous peoples' territories and natural resources.

One strategy that is increasingly being used by forest people in order to defend their rights is to provide proof of their residence in, and use of, forest areas. In the Democratic Republic of the Congo, indigenous groups and other forest-dependent communities are participating in the mapping of their traditional territories. Such maps are likely to be a vital tool in the future as indigenous people around the world struggle to gain formal recognition of their rights. (*Source*: *Vital Forest Graphics*, 2009.)

THE STICKY TRUTH: WEIGHING THE SUGAR ALTERNATIVES

Americans love sweets. The sweetness we crave can come from refined sugar, chemically derived artificial sweeteners (such as aspartame), or a host of "natural" products that are less processed, so they contain nutrients that are otherwise removed in the refining process. Natural sweeteners cause less environmental damage than sugar-cane plantations, and many offer more complex flavours than plain old sugar.

Organic honey that has not been pasteurized, clarified or filtered is the most ecofriendly sweetener. It is raw, unprocessed, minimally packaged and, if you are lucky, local.

Maple and sorghum syrups are also minimally processed; the sap or juice is boiled to remove the water, concentrating the sugars and minerals.

Palm sugar is a traditional sweetener in Southeast Asia and India. The collected flower nectars are kettle-boiled into thick syrup, then dried and ground to produce a grainy, crumbly sugar that is organic, unbleached, contains amino acids, B vitamins and minerals, and has a low glycemic index. Palms grow in diverse agro-ecosystems that support wildlife habitats, restore damaged soils and require little water. Per acre (0.40 ha), coconut palms produce 50–75 percent more sugar than sugar-cane plantations, and use less than one-fifth of the nutrients for that production.

The ***yacón* (*Smallanthus sonchifolius*)** is related to the sunflower and native to the Andes. Its crisp, sweet tuberous roots have long been eaten by the Incas of Peru and Bolivia (now the Plurinational State of). The syrup is made by juicing the tubers, then concentrating the liquid by boiling. Because the *yacón*'s sweetness comes chiefly from fructo-oligosaccharides, compounds the human body does not absorb, the syrup is a low-calorie, low-glycemic sweetener. According to a study in *Clinical Nutrition*, "daily intake of *yacón* syrup produced a significant decrease in body weight, waist circumference and body mass index".

***Luo han guo* (*Siraitia grosvenorii*)** has been cultivated for centuries in southwest China. In 1995, Procter & Gamble patented a process to isolate the fruit's sweet mogrosides compounds, creating a powder that is 250–300 times sweeter than sugar. Today, several companies sell commercially prepared *luo han guo* products, some combined with herbs or sugar alcohols.

Stevia (*Asteraceae* family) is an extremely sweet herb native to Paraguay, where it has been used for over 1 500 years. In Japan, it is more common than sugar. The herb is 200–300 times sweeter than sugar, but has no calories or carbohydrates and a low glycemic index. The leaves also contain fibre, vitamins A and C and minerals. But there are many concerns about its safety. Studies suggest stevia may interfere with metabolism and absorption of carbohydrates, lead to male reproductive problems and cause genetic mutations. The herb is not approved for use in the European Union or Canada and was banned as a sweetener in the United States of America until December 2008, when the Food and Drug Administration approved certain sweet compounds extracted from its leaves.

Agave syrup, a sweetener developed in the last decade, comes from the sap of the *Agave tequilana* plant. The syrup (also called "nectar") is marketed as a healthy alternative to sugar: raw, 100 percent

Asteracae family

natural, with a low glycemic index. But, according to Dr Ingrid Kohlstadt, a fellow of the American College of Nutrition, it is just high-fructose syrup "with great marketing". That is because converting the plant's juicy sap into syrupy nectar is a complicated process involving heat and enzymes. To keep the syrup from fermenting, the natural enzymes are removed. When chemically processed, the sap becomes hydrolysed high-fructose inulin syrup devoid of nutrients. (*Source*: Yvona Fast, *The Environmental Magazine*, XXI: 2. March/April 2010.)

TREE PRODUCTS: A RESOURCE BASE FOR SUSTAINABLE AGRICULTURE

Ancient India was blessed with a rich knowledge of herbal remedies for humans called Ayurveda, as well as for plants, called Vrikshayurveda.

According to the World Health Organization, many people die every year because of pesticide poisoning and agrochemicals. The immediate effect has also appeared in the environment and ecosystems. These pesticides, besides creating atmospheric pollution and consequent health hazards, are also toxic to non-target organisms such as animals, predators and pollinators. Hence, the use of herbal insecticides in agriculture has assumed a greater importance as a result of the growing awareness of the harmful environmental effects of chemical pesticides.

Trees and plants, particularly wild species, have been an essential part of human life. Plant products are naturally evolved ingredients of the biosphere; they not only have an edge over synthetic alien molecules, but also preference and acceptance from an environmental safety viewpoint and an ecofriendly approach. The use of legumes as green manure, because of its high nutrient content and faster decomposition rate, is very well known.

Leaf extracts from neem, *pungam* and *bael* trees have been found to have insecticidal properties on pests such as *Earias vitella*, *Helicoverpa armigera* and *Spodoptera litura*, either by directly killing them or interfering with their metamorphosis.

The application of *annona* tree leaf extract has checked pest incidence in crops. This might result from the group of toxic biomolecules possessing insecticidal properties present in *annona* leaves. Similarly, some tree species (*Alangium salvifolium, Annona squamosa* and *Aegle marmelos*) have been found to have effects on the growth and development of crops because of the growth-promoting substances present in their leaf extract. The *annona* leaf extract, containing annonacin and annonidines, could enhance the physiological activity and growth of cultivated crops or plants.

The *Albizzia amara* leaf extract has desirable attributes on plant growth and yield. Being an ecofriendly and cost-effective alternative, a 2-percent spray of young leaf extract of *Albizzia amara* could be used in the absence of GA_3 for rice production.

Hence, many herbs and trees, particularly wild species, possess varied alkaloids and compounds that can be extracted and used for sustainable agriculture.

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UNDERUTILIZED FOODS AND NUTRITIONAL INDICATORS FOR BIODIVERSITY

The development of nutritional indicators for biodiversity is a collaborative international process, led by FAO, together with Bioversity International and other partners. The task is part of the cross-cutting initiative on biodiversity for food and nutrition. It is expected that these indicators will become an advocacy tool to promote awareness of the importance of food biodiversity – including wild, indigenous and traditional foods – while contributing to nutrition security and the conservation and sustainable use of food biodiversity.

When reporting on these indicators, difficulties were encountered in defining underutilized foods. Therefore, FAO and Crops for the Future have developed specific criteria in order to establish the reference list for underutilized foods accounting for the nutritional indicators for biodiversity. Of the following criteria, the first one is compulsory, and several of the others should be met for a species to be included in this list:

- the food was/is/could be used for human consumption;
- may have great potential for contributing to food security and nutrition;
- mainly local and traditional crops/animals (including insects, amphibians and reptiles) whose distribution, biology, cultivation and uses are poorly documented;
- receive little attention from research, farmers, policy- and decision-makers, technology providers and consumers;
- have weak or no formal seed/animal germplasm supply systems;
- farmed, reared, gathered or caught on a small scale;
- the species must be grown/raised in the country/region where it is underutilized. Species that are imported do not count as underutilized in that region;
- information on country/region of origin should be given.

These criteria, only intended to be used to report on the two nutrition indicators for biodiversity, should not replace the broad criteria that have been defined for categorizing underutilized species as such (www.underutilized-species.org/spotlight/what_are_underutilized_species.asp). The integration of these specific criteria and the reference list of underutilized foods accounting for food biodiversity will be uploaded on the Web sites of the Global Facilitation Unit for Underutilized Species at www.underutilized-species.org/species/about_species.asp and of INFOODS at www.fao.org/infoods/biodiversity/index_en.stm/ (*Source*: various, including *Crops for the Future*, Special Issue, March 2010. ♣

With courage you will dare to take risks, have the strength to be compassionate and the wisdom to be humble. Courage is the foundation of integrity.

Keshavan Nair

AGARWOOD

Agarwood is considered "wood of the gods" in Bhutan

When agarwood (*Aquillaria* tree) – commonly called aloe wood and eaglewood – gets infected, naturally or artificially, it produces a resin with a strong musky smell, which is highly sought after in the international market.

Locally called *ogur*, agarwood is valued in many cultures because of its distinctive fragrance. From Saudi royalty to Bhutanese monks, it is used widely in perfumes and incense.

An expert from Bhutan, Chang Dorji, calls the tree a treasure. "In the Buddhist community, it is known as *ogur sang shing* (agar incense wood) and considered wood for the gods," he said. "The dark wood is used to make special incense that is offered only to Bhutan's chief protective deity Palden Lham."

One kilogram of the infected tree's chips costs about USD190 (about Nu8 400), with better grades fetching USD10 000/kg. The cheapest *oud* oil, distilled from agarwood, can cost about USD20/kg, while the finest *oud* oils distilled from agarwood can cost as much as USD7 000/kg.

In Bhutan, the National Institute of Traditional Medicine is the only organization that currently buys agarwood for medicinal use. It costs about Nu60 for 1 kg of agar. According to pharmacists, they use about two trees.

The *Aquillaria* tree is native to Southeast Asia and grows in eight countries: Myanmar, Bhutan, Thailand, the Philippines, Viet Nam, Malaysia, India and Indonesia.

In Bhutan, it grows in the subtropical foothills, especially in Samdrupjongkhar, Sarpang, Samtse and Zhemgang. According to sources, the late Dasho Nishoka accidentally discovered it in Bhutanese forests. "Two people felling trees illegally in Panbang were caught and, on investigation, they were found smuggling agarwood," recalled a colleague of the late Dasho, adding, "Dasho used to say that there was a lot of poaching of the tree in southern Bhutan by people from across the border". A study carried out by the Department of Forests, with assistance from the World Wide Fund for Nature, found that the *Aquillaria* trees were almost extinct because of uncontrolled exploitation. "When the late Dasho learned about the value of these trees, he collected seeds and planted 3 000 of them."

But agarwood was not new to the Bhutanese living at the foothills. Tenzingla, a Bhutanese expert on plant genetics, recalls how a Bhutanese businessman approached him with an idea of extracting agarwood oil. "I found out that the tree produced the oil as a by-product of a microbial fungal reaction," he said. "The tree as such has no value. It becomes valuable only when it gets infected."

The Department of Forests says that the tree is nearing extinction in Bhutan, which Tenzingla said is a result of smuggling.

Agarwood has been identified as an endangered species, and because the market for agarwood is increasing, some countries have adapted measures to control the overexploitation of the tree. In anticipation of the growing international market, valued in billions of United States dollars, 55 million agarwood trees have been planted in Assam (India), 1.5 million in the Lao People's Democratic Republic and 2 million in Thailand.

In 1995, CITES listed the *Aquillaria* tree as a potentially threatened species in the world. At the recent CITES conference, the need to protect *Aquillaria* trees was also discussed. (*Source*: www.kuensenonline.com [Bhutan], 18 April 2010.)

Agarwood needs protection

The GCC (Gulf Cooperation Council) countries should make the right choice immediately to protect depleting agarwood resources. The agarwood trade industry with its billion dollar value is in need of proper management for its sustainable continuation, according to James Compton, Asia-Pacific Programme Coordinator for TRAFFIC, the wildlife trade monitoring network. "The CITES conference is an important turning-point for agarwood conservation and trade as some of the major consumers are in the region," he told *The Peninsula*. "There should be a collaborative management between both the consumer countries and the producers. If consumer countries such as the GCC states, Taiwan (Republic of China), Japan and others make the right choice and commitment now, a long-lasting change will happen. If something is not done, in five years the chance of a sustainable trade is very low."

Agarwood, an aromatic wood, is at threat of depletion in the wild. In 1995, one species of agarwood was listed in CITES Appendix II, meaning that trade could continue, but a CITES export permit is required. Later, in 2004, all agarwood species were also added to the list.

Although overall trade volumes of the wood may appear small in "timber trade" terms, they are not small in monetary terms. Agarwood chips and segments may sell for several hundred to several thousand United States dollars per kilogram. In the Qatar market, 18 g of the wood can cost QR500.

The wood is mainly used to make customary perfume and for other cultural purposes in the region. The demand for the wood is high because of its medicinal, religious, cultural and aromatic value throughout the world, mainly within Asia.

"The trade history of the wood goes back centuries, and hence there is a huge mismanagement as it does not look into having a trade system that can ensure the conservation of the agarwood reserves. This is a key CITES issue," said Compton.

The quality and quantity of agarwood from the wild are also going down because of extreme exploitation. "People are looking to make money out of this kind of harvesting; hence that is also another challenge for CITES to differentiate between wild and the domestic species," he said.

Consumer countries, including Qatar, should work together with producers to ensure an agarwood industry that encourages legal and sustainable trade and curbs the black market. (*Source*: *The Peninsula* [Qatar], 15 March 2010.)

BAMBOO

Bamboo nations prepare to shoot into carbon markets

Interest in using bamboo for climate change mitigation is picking up in Southeast Asia. The Philippines and Cambodia, both rich in bamboo, used the opportunity offered by the United Nations Framework Convention on Climate Change (UNFCCC) last year to open up the definition of "forest" for bamboo and palms. The two countries have taken a

national decision to broaden their forests to bamboo and palms, and have communicated this to the UNFCCC (clean development mechanism [CDM] Executive Board). Technically, this enables CDM afforestation/reforestation (A/R) projects with bamboos and palms. Viet Nam is taking a similar decision in the immediate future.

While the potential of bamboo in carbon sequestration is considered high, the standard A/R methodologies designed for tree forests need adjustments to accommodate the peculiarities of bamboo. It is anticipated that the voluntary carbon markets are providing better opportunities for bamboo, with their wider range of accepted mitigation activities.

Integrated bamboo carbon projects can be designed to: (i) plant bamboo on eligible lands for sequestration; (ii) improve stand management to enhance carbon stocking; (iii) make long-lasting products for locking up carbon; and (iv) promote fuel switches from coal and diesel to the use of dead culms and processing waste in generating rural electricity. All such activities can generate carbon offset credits, which can be sold and revenue collected. A payment for environmental services (PES) scheme would provide a robust mechanism for engaging farmers with bamboo in carbon finance.

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Desarrollo y uso del bambú como una alternativa agroecológica

El bambú, patrimonio de la humanidad, es la especie vegetal de más rápido crecimiento en la naturaleza. Dependiendo de la especie, en Asia se utiliza para alimento, materia prima para extracción de celulosa, artesanías, medicinas, laminados, refrescos, licores y mil usos más, la mayoría de estos usos se realizan a nivel industrial. El bambú ha sido utilizado en América de diferentes formas desde tiempos precolombinos, y hoy se vislumbra su uso de manera industrializada. Entre los centenares de especies de bambú endémicas de América, se destaca el género guadua, y entre ellos la especie *Guadua angustifolia*, considerada como una de las variedades más importante para la construcción por sus propiedades físico mecánicas. Con la edificación del Pabellón Zeri, en la feria de Hannover 2000,

la guadua alcanza su punto culminante como material, hoy denominado «Acero Vegetal».

En la industria papelera en Brasil, se destaca el grupo Joao Santos, y la industrialización de las chusqueas (bambúes de altura) en Chile, son dos buenos ejemplos de seguir. En la actualidad, todos los países del mundo fijan su atención en el recurso bambú y su potencial, que ya no es futuro, sino un presente.

Aproximadamente, el 50 por ciento de las especies de bambú existentes en la naturaleza, se hallan en América. Se encuentran prácticamente en todos los países americanos, desde los 40° de latitud norte hasta los 47° de latitud sur, y desde el nivel del mar hasta los 4 000 m de altura en los Andes. Cabe mencionar algunos aspectos referentes a la *Guadua angustifolia*, una de las más valiosas especies de la naturaleza, endémica desde Venezuela hasta las selvas amazónicas del Perú, aproximadamente 50 millones de personas en el continente americano, utilizan bambúes en su vida diaria, ya sea de manera tradicional o en usos modernos.

A principios del Siglo XX llegaron los nuevos materiales, como el cemento y el acero. Sin embargo, el uso del bambú en las comunidades rurales y en las áreas periféricas de pequeñas y grandes poblaciones, se convirtió en el «material de los pobres», encontrado en infinidad de aplicaciones industriales, desde alimentos hasta medicinas, pasando por tejidos, artesanías, bebidas y construcciones entre otras.

La construcción de 1000 casas anuales de bambú con material proveniente de 60 h de una plantación de *Guadua*, equivale a la madera de 500 h de valiosos árboles tropicales.

A mediados de la década de 1990 fue que se comenzó a hablar del cultivo organizado del bambú por medio de la gestión promocional de la Sociedad Civil Habitat-Cuba, a través de un trabajo sistemático que comenzó por la divulgación y capacitación, así como las experiencias en países del área que revelaron resultados positivos. En el 2003 se celebró el Primer Taller Nacional de Bambú organizado por la ACTAF y patrocinado por el Fondo Canadá-Cuba para iniciativas locales, donde se presentó el Programa Desarrollo de Alternativas Agroecológicas para el uso del bambú en Cuba. En la actualidad, se continúa con el desarrollo de este programa en siete provincias, patrocinado por la ONG COSUDE.

La regeneración natural de los bambúes ocurre estacionalmente por medio de semillas y por la activación asexual de las yemas del rizoma y de los culmos. Estas vías de propagación son limitadas, aún más cuando se desea introducir la especie a la producción. Una alternativa a la propagación vegetativa es la regeneración y multiplicación de plantas *in vitro*. Esta técnica ha sido utilizada para la propagación de otras especies de bambú, utilizando primordios foliares de ápices, semillas maduras y hojas inmaduras.

El cultivo *in vitro* ofrece varias ventajas en la propagación de las plantas, los bambúes no escapan de esta posibilidad. La propagación en laboratorio de este grupo de plantas de diferentes especies, se ha desarrollado en varios países. En Cuba, se trabaja en el establecimiento de protocolos de propagación en el laboratorio de algunas especies de interés para los programas de reforestación que se están desarrollando en algunas provincias. Sin lugar a dudas las tasas de multiplicación que se alcanzan con estas técnicas, en tan poco tiempo, no se pueden lograr por ninguno de los métodos de propagación referidos para estas especies.

Los bambúes son de vital importancia para los programas de construcción y de fabricación de muebles que se están llevando a cabo en las provincias de Granma y Holguín, entre otras. La *Guadua angustifolia* y la *Bambusa bambos* son bambúes con ciertas características particulares, y de crecimiento rápido, lo cual es de interés para estos programas de reforestación y de construcción.

Aunque los trabajos de propagación *in vitro* fueron iniciados con *Guadua angustifolia*, esta especie se comportó recalcitrante, por lo que se continuaron los trabajos con otras especies de bambúes. En el Centro de Bioplantas de la Universidad de Ciego de Avila, se han

logrado, en sólo dos semana de cutivo *in vitro*, altas tasas de proliferación para *Bambusa bambos*.

El bambú ha sido, es y será un valioso recurso natural de América, por lo que es necesario su estudio, su manejo, su explotación sostenible, su aprovechamiento industrial, así como su protección para las generaciones presentes y futuras.

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EU releases Ghana ¢28million to promote bamboo as an alternative energy source in Ghana and Ethiopia

The European Union (EU) has released 28 million Ghana cedis to support a project that seeks to promote bamboo as a new source of energy in Ghana and Ethiopia. The project, dubbed: "Bamboo as a Sustainable Biomass Energy – A suitable Alternative for Charcoal and Firewood Production in Africa", aims at increasing the use of bamboo as a source of energy for the poor, while providing a more sustainable, environmentally friendly and economical option to firewood and charcoal.

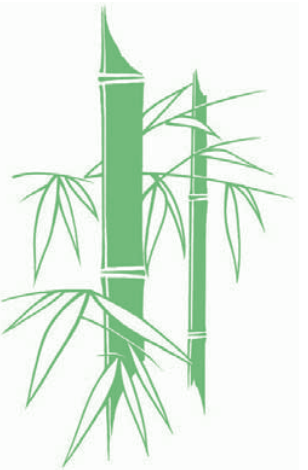
The 48-month project launched in March 2009 is being coordinated by the International Network for Bamboo and Rattan (INBAR), in collaboration with the governments of Ghana and Ethiopia.

A statement issued by the EU said it was absolutely critical that the processes of the project in both Ghana and Ethiopia respect existing government policies and help proactively in promoting sector governance issues and raising awareness of environmental aspects and consequences of the project.

In this respect, people should be mindful of the deforestation taking place in both countries and must understand the causes for this and be aware that simply introducing a new energy source may not necessarily in itself solve all the problems. (*Source*: Ghana News Agency, 19 February 2010.)

Labelling and marketing "bamboo" textiles

Bamboo is becoming more popular in commercial usage and is often marketed as a "sustainable" and "green" product in many countries. There are now many



clothing and other textile products – such as towels, socks and T-shirts – on the market, which hail the virtues of bamboo and are labelled "made from bamboo".

However, with the increase of such products, the scrutiny of the labels and claims made about the origins of the fibre have increased and, in many cases, the authorities have concluded that such claims or labelling practices do not comply with the relevant laws and regulations.

Bamboo fabric can be produced from bamboo fibres. If the natural fibres are used and made into yarn, the fabric is made from bamboo and in some countries can be labelled as such.

However, most "bamboo fabric" is actually viscose or rayon, a regenerated cellulose fibre that is chemically manufactured from bamboo, by a very similar process used to make rayon from wood or other biomass and waste by-products.

In the largest markets for these textile products – the European Union (EU), the United States of America (USA) and Canada – the authorities have all issued specific rules on the labelling and marketing of "bamboo" textiles.

For the EU market, the European Commission has issued a directive on textile names. The Directive, published on 14 January 2009, addresses labelling requirements and textile fibre names, describing conditions and rules for the labelling of textile products to be placed on the EU market.

Also, in the USA, the Federal Trade Commission (the USA's consumer protection agency) has ruled that unless a product is made directly with bamboo fibre – often called "mechanically processed bamboo" – it cannot be called "bamboo". This means that if the product is not made directly of bamboo fibre, but is a manufactured fibre for which bamboo was the plant source – it should be labelled and advertised using the proper generic name for the fibre, such as rayon.

In Canada, the Canadian Competition Bureau (CCB) requires importers and retailers to comply with the country's Textile Labelling Act (TLA) and the Textile Labelling and Advertising Regulations (TLAR). The correct generic name depends on the cellulose process used. If the product is made of commercially produced rayon fibres derived from bamboo, the generic fibre name must first make reference to either "rayon" or the corresponding process outlined in the TLAR, followed by the words "from bamboo". (*Source*: INBAR, 15 April 2010.)

FTC CRACKS DOWN ON "GREENWASHING" IN THE UNITED STATES OF AMERICA

Seventy-eight companies nationwide have received Federal Trade Commission (FTC) letters warning that they may be breaking the law by selling clothing and other textile products that are labelled and advertised as "bamboo", but are actually made of manufactured rayon fibre. The letters make the retailers aware of the FTC's concerns about possible mislabelling of rayon products as "bamboo", so the companies can take corrective steps to avoid FTC action.

The FTC has a publication designed to help businesses that sell clothing and textile products that are labelled as bamboo to market their products in ways that are truthful, non-deceptive and in compliance with the law. "Avoid bamboozling your customers" can be found at www.ftc.gov/bamboo. The FTC also has an alert entitled "Have you been bamboozled by bamboo fabrics?" that provides useful information for consumers shopping for bamboo-based fabrics. It can also be found at www.ftc.gov/bamboo. (*Source*: *Wall Street Journal*, 3 February 2010.)

Bamboo bikes: the ultimate ecofriendly ride

Craig Calfee is known as the master of bamboo-bike builders. In his workshop on the Californian coast, the frame designer builds breathtaking bikes out of the fast-growing bamboo, the largest member of the grass family.

Bamboo is native to all the Earth's continents, including North America, and for the new bike prototype Calfee used Californian bamboo. He found that the bike had impressive impact resistance and was tougher than carbon fibre and less prone to fracturing. These results were confirmed after the bamboo frames were tested at the EFBe bicycle testing laboratory in Germany.

Calfee has now found a whole new area of operations for his bamboo bikes: Africa.

"In developing countries, bicycles are enormously important for transporting goods and going to school or to the market," he says. And the big advantage that bamboo bikes have over steel bikes is that the raw materials to make them are growing right there.

Calfee founded Bamboosero, an initiative supported by, among others, the Earth Institute of Columbia University, which supports sustainable development benefiting the world's poor. The Bamboosero project endeavours to teach locals in developing nations how to make their own bicycles, with the long-term goal of eventually founding a bicycle-making business.

In February 2008, Calfee helped teach three groups in Ghana the basics of bamboo bike frame building. There are now several projects ongoing in that country. And further projects are planned, everywhere from Uganda and Liberia to the Philippines and New Zealand. (*Source*: Spiegel Online, 8 January 2010.)

Philippines town turns taxis green

The Philippine town of Tabontabon, in the province of Leyte, has commissioned taxis with bodies made of indigenous bamboo. Not only, they burn biodiesel fuel made from locally available nut oils.

Tabontabon mayor Rustico Balderian is the inspiration behind these "ECO taxis", which are 90 percent bamboo. They provide employment opportunities for local youth, and safer transport for families who otherwise ride four or five together on a single motorcycle. (*Source*: www.greencarreports.com, 19 March 2010.)

BERRIES

***Açaí* – global super fruit – is dinner in the Amazon**

Clustered high up in the slender, tilting palms of the eastern Amazon, the little purple orbs known as *açaí* (from the *Euterpe oleracea* tree) look mighty. Virtually unknown outside the Amazon two decades ago, and until 2000 not exported from Brazil – its major producer – *açaí* is now an international celebrity, riding the wave of the antioxidant craze and rain forest chic.

But for families who live here along the winding, interlaced rivers at the hub of *açaí* production, the fruit has long been a vital part of their diet, a cheap way to fill up and a taste of home. And now, for some, it is a source of newfound prosperity.

In places such as Cametá, a town of about 117 000 people, and Belém, the capital of Pará state, a bowl of *açaí* pulp is a filling side dish especially valued by poorer families. Unlike the pulp used in Rio's smoothies, the kind here is not pre-sweetened or frozen, but fresh from cylindrical machines known as *batedores de açaí*, "*açaí* beaters", which remove the thin layer of fruit from the pit. Almost every neighbourhood has stands or small stores where customers get a daily or weekly supply. Belém's most famous *açaí* market, the *Feira do Açaí*, bustles before dawn as wholesalers stack baskets of the fruit on the cobblestone square.

Açaí's international reputation as an energy booster and diet aid tickles those who grew up with it as a caloric side dish.

While the old ways of eating *açaí* continue in the Amazon, increased demand elsewhere in the world has driven up prices and made life easier for people such as 53-year-old Orisvaldo Ferreira de Souza; his younger brother, Josivaldo; and their elderly parents. The de Souzas live in a battered wooden home on stilts on Itanduba Island, about an hour by boat from Cametá's town centre. Like the families who live up and down the river from them, they make much of their living from the *açaí* harvest, which they calculate is 8 000 *açaí* palms on 35 acres (14 ha). "Two or three years ago, we had a lot of trouble selling the product," Orisvaldo Ferreira de Souza said. "We had to bring it to town, and sometimes we came back without selling it." Back then, he said, a standard *lata*, or 14 kg basket, brought about two or three Brazilian reais, or roughly five cents a pound (0.45 kg) at today's exchange rates. But now, the harvesters don't even have to leave their land: buyers ply the river right up to their rickety wooden pier offering ten reais or more. "Just yesterday, six buyers came by," he said. "We sold ten baskets each to two of them."

Exact export figures are hard to come by, but in Pará, which produces almost 90 percent of Brazil's *açaí*, the export category that essentially refers to *açaí* pulp surged from 380 tonnes in 2000 to 1 700 tonnes in 2005 – to 9 400 tonnes last year.

For the de Souzas and families around them, added income has meant that they can buy meat and chicken in town, attach motors to their boats, purchase power generators or solar panels and afford parabolic antennas and televisions.

The fruit was traditionally collected from wild palms. Now companies have *açaí* plantations, and collectors are raising more *açaí* palms on their land, according to Antônio Cordeiro de Santana, an agricultural economist at the Rural Federal University of the Amazon. With cultivation more concentrated, resistance to disease and productivity have decreased, he said, even as the number of *açaí* palms in Pará has exploded. (*Source*: *The New York Times* in Amazon News, 24 February 2010.)

***Maqui* berry, super berry**

Another year, another super berry. It used to be said that *açaí* berries packed the most powerful antioxidant punch, but research now suggests that the *maqui* berry (the fruit from the *maqui* tree or *Aristotelia chilensis*), which grows in Chile and Argentina, is even more potent.

The deep purple colour of the fruit suggests incredibly high level of antioxidants and it also boasts an ability to prevent premature ageing, aid weight loss and boost the immune system.

The *maqui* has long been used by the Mapuche Indians for its amazing health benefits. It is also believed to have powerful anti-inflammatory properties that can help

to alleviate the pain of sore joints, aching muscles and swelling.

Maqui extract is also widely used as a colouring for Chilean wines. (*Source*: www.liverpool.echo.co.uk, 22 February 2010.)

BUSHMEAT

Bushmeat trade creates new luxury market in Europe

Traders sell an array of bushmeat: monkey carcasses, smoked anteater, even preserved porcupine. But this is not a roadside market in Africa – it is the heart of Paris, where a new study has found more than five tonnes of bushmeat slip through the city's main airport each week.

Experts suspect similar amounts are arriving in other European hubs as well – an illegal trade that is raising concerns about diseases ranging from monkeypox to Ebola, and is another twist in the continent's struggle to integrate a growing African immigrant population.

The research, the first time experts have documented how much bushmeat is smuggled into any European city, was published on Friday in the journal *Conservation Letters*.

"Anecdotally we know it does happen ... But it is quite surprising the volumes that are coming through," said Marcus Rowcliffe, a research fellow of the Zoological Society of London and one of the study's authors.

In the Chateau Rouge neighbourhood in central Paris, bushmeat is on the menu – at least for those in the know.

For the study, European experts checked 29 Air France flights from Central and West Africa that landed at Paris Roissy-Charles de Gaulle airport over a 17-day period in June 2008. Of 134 people searched, nine had bushmeat and 83 had livestock or fish. The people with bushmeat had the largest amounts: one passenger had 51 kg of bushmeat – and no other luggage. Most of the bushmeat was smoked and arrived as dried carcasses. Some animals were identifiable, although scientists boiled the remains of others and reassembled the skeletons to determine the species. Experts found 11 types of bushmeat, including monkeys, large rats, crocodiles, small antelopes and pangolins, or anteaters. Almost 40 percent were listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Based on what officials seized – 188 kg of bushmeat – the researchers estimated that about five tonnes of bushmeat gets into Paris each week. They also noted that penalties for importing illegal meats are light and rarely imposed. Under French law, the maximum penalty is confiscation of the goods and a USD556 (450 euro) fine.

Bushmeat is widely eaten and sold in Central and West Africa, with the Central African Republic, Cameroon and the Republic of the Congo being the main sources. It is typically allowed where people are permitted to hunt, as long as their prey is not endangered and they can prove the animals were killed in the wild.

A bushmeat ban is enforced in Kenya, but it is legal in most parts of the Republic of the Congo, where hunters may stalk wildlife parks that are not heavily guarded.

Even after several outbreaks of the deadly Ebola virus linked to eating bushmeat, the practice remains widespread. Scientists warned that eating bushmeat was a potential health hazard. Malcolm Bennett, of the United Kingdom's National Centre for Zoonosis Research at the University of Liverpool, said bushmeat had a high risk of bacteria like salmonella and might also be carrying new diseases.

Nina Marano, chief of the quarantine unit at the United States Centers for Disease Control and Prevention, said similar underground markets for bushmeat exist across America. "We have to be culturally sensitive and recognize this is important for some African communities," she said. "But there are no regulations for the preparation of meat from wildlife to render it safe."

The scale of Europe's illicit bushmeat trade suggests the emergence of a luxury market. Prices can be as high as USD18/pound (30 euros/kg), double that of more mundane supermarket meats. (*Source*: *Business Daily* [Kenya], 23 June 2010.)

Bushmeat: beyond the ecological crisis

Contemporary African societies are a mix of modernized Western society and traditional African roots. Those traditions mean that people – rural and urban – still consume bushmeat for reasons linked to culture, taste and attachment to healthy, natural products.

However, the scale of hunting occurring in Central Africa poses a threat to many tropical forest species. The response to this has typically been legal: ban the trade in bushmeat and criminalize the hunters and consumers.

This, said Nathalie Van Vliet, bushmeat strategic advisor for TRAFFIC, has not been terribly effective. The trade continues to flourish but in a hidden economy that makes it more difficult to manage or control.

"Those in the bushmeat trade who make money out of the commercialization of rare species for the healthy urban markets need to be strictly controlled. However, those who eat bushmeat for their own nutrition or sell bushmeat to pay for medicines or school fees, should not be presented as criminals," she says.

Dr Van Vliet will coordinate a session dealing with the hunting of bushmeat in Central Africa at the 2010 IUFRO World Congress in Seoul. She hopes her session will reach beyond conservationists to integrate the input of social, health and economic stakeholders to help develop more integrated bushmeat strategies and policies. (*Source*: *IUFRO News*, 29: 2, 2010.)

Rare animals being "eaten to extinction" in the Congo Basin

Research in the Congo Basin in Africa has found that more than three million tonnes of bushmeat are being extracted from the area every year. Most of the animals are small antelopes such as the blue duiker or rodents such as porcupines, but larger mammals such as monkeys and even gorillas are also taken.

The study published in *Mammal Review* found the rate of hunting is higher than ever because of malnutrition in the area and is calling for more funding to help the local community find alternative sources of food.

Bushmeat is one of the most important sources of protein for many people around the world, especially in Africa. But in a 500 million-acre (202 343-ha) region of the Congo Basin stretching into eight countries, hunting has reached an unprecedented scale.

Researchers from the Overseas Development Institute calculated that 3.4 million tonnes of bushmeat are removed every year from that area alone, equivalent to the weight of 40.7 million men.

John Fa, Chief Conservation Officer at the Durrell Wildlife Conservation Trust, said it

was "unsustainable". He pointed out that illegal logging is also destroying habitats, and predators such as leopards will be unable to survive without prey. "People are taking rare animals out of the forest at an enormous rate yet we know very little about them," he said.

The animals most vulnerable to extinction by hunting include the Drill baboon, red colobus monkey, black colobus monkey, Preuss's guenon monkey, moustached guenon monkey, crowned guenon monkey, gorillas and chimpanzees. (*Source*: *The Telegraph* [United Kingdom], 23 March 2010.)

CAMEROON REGULATES TRADE OF BUSHMEAT

In an attempt to preserve endangered animal species in Cameroon, the Ministry of Forestry and Wildlife has authorized the sale of wildlife meat, or bushmeat, on designated markets. The government hopes to get a grip on the rampant selling, trading and trafficking of bushmeat in Cameroon.

The authorization of the bushmeat sales on designated markets will allow sellers to distinguish themselves from those who are illegally trading in seriously endangered wildlife species.

The Last Great Ape (LAGA), a wildlife law enforcement organization that fights "the commercial poaching with its related trade of protected species", applauds the decision to regulate the bushmeat trade. "I believe that it will go a long way to start better enforcement of the wildlife law for the benefit of all; the benefit of wildlife in the country and the benefit of the sellers themselves," said Ofir Drori, Director of LAGA.

The hunting and trading of bushmeat are ingrained in society to the extent that these activities have become the sole source of income for many local residents. The government has set up projects to offer alternative ways to make a living. Drori says that it is in fact the rich people who benefit from the illegal trade, whereas the poor are exploited. (*Source: Epoch Times* [United States of America], 17 February 2010.)

Carissa

CARISSA

***Carissa:* a neglected fruit of the forest**

India is rich in plant diversity. An estimated 15 000 species can be found in different climatic zones, 1 000 of which are edible. Many of them are popular fruits among tribal and forest dwellers.

Carissa is a genus of 20–30 species of shrubs or small trees native to the tropical and subtropical regions of Africa, Australia and Asia. It belongs to the Apocynaceae family. The species can range between 2 and 10 m in height, with spiny branches. The leaves are thick and waxy, typically between 3 and 8 cm long. The flowers are produced throughout most of the year; they range between 1 and 5 cm in diameter, with a five-lobed white or pink corolla. The fruit is a plum-shaped berry, and can be red or dark purple depending on the species. It can contain as many as 16 flat brown seeds. Only the fruit of the plant is edible.

Conservation strategies ought to include the protection of less popular fruits such as *Carissa*, because they are an important source of nutrition for forest peoples.

The most important *Carissa* species commonly consumed by tribal peoples include *C. acuminata, C. arduina, C. bispinosa, C. boiviniana, C. carandas, C. macrocarpa, C. oblongifolia, C. opaca, C. septentrionalis* and *C. spinarum*.

The uses of some of these *Carissa* plants are described below.

- ***Carissa bispinosa*** can grow up to 5 m tall. The plants need moderate watering and grow best in partial shade and sunny conditions. They are particularly resistant to windy conditions, are moderately drought resistant, and are best suited for warmer and coastal areas. Traditionally, the plants are not only valued for their edible fruits, used in jams and jellies, but also for their roots, which traditional peoples have long used to treat toothache.
- ***Carissa carandas*** is commonly known as *caronda* and is eaten raw and in jams, jellies and sherbet. The sweeter fruits may be eaten raw but the more acidic ones are best boiled with plenty of sugar. The fruit produces a gummy latex when cooked and the rich red juice is used in cold beverages. In India, the ripe fruits are utilized in curries, tarts, puddings and chutney. When the fruits are not yet mature, they are often picked to make a jelly.
- ***Carissa macrocarpa***, commonly called the Natal plum, is a shrub native to South Africa, where it is known as the large *num-num*. It grows well in salt-laden winds, which makes it well-suited for coastal areas. It is commonly found in the coastal bush of the Eastern Cape and Natal. It grows to heights of 0.6–2.15 m, reaching a width of 2.15–3.05 m. Natal plums produce shiny, deep green leaves and snowy white flowers, whose scent intensifies at night. Like other *Carissa* species, this is also a spiny, evergreen shrub containing latex. The plump, round, crimson fruit appears in summer and autumn when it blooms. In moderate, coastal areas the fruit can appear throughout the year. It can be eaten freshly picked or made into pies, jams, jellies and sauces. The fruit is the only part of the plant that is edible.

(*Source*: Kavya Dashora, Reshma Shaheen, Anjali Gupta and Meenakshi Bhardwaj in *MFP News*, XX: 2, 2010.)

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CORK

Cork, plastic or twist? The cork industry tightens the screws on the wine industry

More wineries are moving towards plastic bottles and aluminium caps and away from cork stoppers.

Some would say this is unfortunate for a host of reasons. Harvesting cork is an ancient practice that keeps a cluster of cork trees – which are almost entirely in Portugal and Spain – alive.

More winemakers around the world, however, are turning to synthetic alternatives. Wineries in Australia and New Zealand gravitate towards metal caps because importing cork is expensive. Some would argue that synthetics avoid cork mould that can taint wine while providing an easier way to seal a bottle.

While many high-end vintners still use cork, synthetics are still gaining in popularity, so now the cork industry is pressuring winemakers and distributors to stay with cork for environmental and economic reasons.

Corticeira Amorim, a leading Portuguese cork manufacturer, has launched a Web site detailing all sorts of facts and statistics. The company touts a PricewaterhouseCoopers study explaining that synthetic corks create a carbon footprint exponentially higher than that of naturally derived cork. Other studies explain that cork taint is overhyped, outline Amorim's efforts to reduce greenhouse gas emissions and articulate how cork recycling is increasing and how the results of this are beneficial for the planet. All these reports and campaigns have the purpose of pressuring winemakers to turn away from synthetics and return to cork.

The environmental and social impacts of cork's decline are clear: cork provides some of the world's few remaining high-paying agricultural jobs. A decline in cork production could devastate cork forests, which house trees hundreds of years old and contain rare ecosystems that would disappear should cork production cease. Finally, much of the Mediterranean has suffered from drought – cork trees protect local soil from drying out and halt erosion. (*Source*: Environmental News Network, 23 July 2010.)

Key facts about cork and its use

Following are some key facts about cork and its main applications, from bottle stoppers to the aerospace industry.

- Cork is made from the bark of the cork oak (*Quercus suber*) – the predominant tree species in Portugal. Portugal accounts for just over half of the world's cork output, producing 157 000 tonnes annually. There are also plantations in France, Spain, Italy, Algeria, Morocco and Tunisia.
- Over 100 000 people depend on cork growing and processing in these countries.
- The bark is harvested for the first time when the tree is 25 years old. It is then removed every 9–12 years without ever damaging the tree, which lives for more than 200 years. Cork only has the qualities needed for the production of wine bottle stoppers – its main application – after the third harvesting.
- The ancient Greeks and Romans used cork in combination with natural resins to stopper wine and oil amphorae. Now, some 70 percent of all cork produced is used to make wine bottle stoppers. Portugal alone makes 40 million stoppers per day.
- The tree's acorns are used to feed the pigs that make some of the cured ham for which Spain and Portugal are famous.
- Thanks to cork's cell-like structure, the material is elastic, resilient and highly impermeable.
- Ground-up cork is "baked" and compressed to make floor and wall tiles, good for acoustic isolation. Granulated cork is added to concrete for thermal insulation and reduced weight. Shredded cork is used in ablative thermal protection coating on booster rockets, including the Space Shuttle's external tank, which is jettisoned as it leaves the Earth's atmosphere.

(*Source*: Reuters India, 1 February 2010.)

Cork aeroplanes could prop up bottle-shocked industry

The old pilot's rule of "eight hours from bottle to throttle" will take on a new meaning if researchers in Portugal find a way to make aeroplanes out of cork. With the wine industry turning to alternative ways of capping a bottle, Portugal is scrambling to find new markets for its huge cork industry. The country produces about half of the world's cork supply. Because the material is lightweight and naturally resistant to fire, one idea is to redirect the country's USD1.4 billion cork industry from wine bottles to aeroplane parts.

The French aircraft manufacturer DynAero hopes to develop two- and four-seater aeroplanes, using cork as a substitute for other composite materials, according to Reuters. While the idea of flying in a cork aeroplane may not inspire much confidence, we are not talking about a rickety ultralight model. DynAero plans to wrap a cork core with carbon fibre, in much the same way as lightweight plastic foams are wrapped in aircraft today.

With decades of interesting ideas having come and gone, it is surprising that cork – which is used as insulation on the Space Shuttle's external fuel tank – has not been used more often. DynAero, which has a factory in Portugal's central-south Alentejo region, says the carbon fibre-cork composite could be used in airframe parts such as the fuselage and wings. The material would be lightweight and fire retardant, two important, if not obvious, factors in aeroplane design. (*Source*: www.wired.com, 4 February 2010.)

FERNS

Breakthrough breast cancer treatment

The next treatment for breast cancer could stem from a fern. "The fact is ferns had to adapt to land conditions and make some major biochemical adaptations for purposes of protection from predators," explained Dr Sarah Crawford, who oversees research at Southern Connecticut State University (SCSU) in New Haven (Connecticut, United States of America).

So far, the medicinal properties of the fern are showing promising results in the fight against aggressive forms of breast cancer. "What we've found is that our concentrated extract works at least as well, conservatively speaking, if not better than Taxol and some of the standard chemotherapy currently used in the treatment of the disease," Dr Crawford explained.

In short, the highly concentrated fern extract interferes with cancer cells.

"Attachment is essential for viability of the cells, so if the chemicals in the plants interfere with that attachment, that will then start to kill the cancer cells," said Deana Diamond, SCSU.

The evidence is in the tumours, which are grown outside the body in a laboratory practice that is becoming standard. "It actually disrupts the solid mass that we see in the dish, we can actually see it broken apart," said Rafaela Penarreta,

SCSU. And it appears the extract has a less toxic side effect.

Next week, Dr Crawford and her students will travel to Washington, DC to present their findings before the American Association for Cancer Research. (*Source*: www.wtnh.com, 8 April 2010.)

FRANKINCENSE

Could frankincense be a cure for cancer?

Oman's land of frankincense is an 11-hour drive southwards from the capital, Muscat. Warm winters and showery summers are the perfect conditions for the *Boswellia sacra* tree to produce the sap called frankincense. These trees grow wild in Dhofar. Wadi Dawkah, a valley 20 km inland from the main city of Salalah, has a forest of them.

"Records show that frankincense was produced here as far back as 7 000 BC," says tour guide Mohammed Al-Shahri. Most of the *B. sacra* trees grow on public land, but custom dictates that each forest is given to one of the local families to farm, and Wadi Dawkah is his turf.

Immunologist Mahmoud Suhail is hoping to open a new chapter in the history of frankincense. Scientists have observed that there is some agent within frankincense that stops cancer spreading and induces cancerous cells to close themselves down. He is trying to find out what this is.

"Cancer starts when the DNA code within the cell's nucleus becomes corrupted," he says. "It seems frankincense has a reset function. It can tell the cell what the right DNA code should be. Frankincense separates the 'brain' of the cancerous cell – the nucleus – from the 'body' – the cytoplasm, and closes down the nucleus to stop it reproducing corrupted DNA codes."

Working with frankincense could revolutionize the treatment of cancer. Currently, with chemotherapy, doctors blast the area around a tumour to kill the cancer, but that also kills healthy cells and weakens the patient. Treatment with frankincense could eradicate the cancerous cells alone and let the others live.

The task now is to isolate the agent within frankincense which, apparently, works this wonder. Some ingredients of frankincense are allergenic, so you cannot give a patient the whole thing.

Dr Suhail has teamed up with medical scientists from the University of Oklahoma, United States of America, for the task. In his laboratory in Salalah, he extracts the essential oil from locally produced frankincense. Then he separates the oil into its constituent agents, such as Boswellic acid.

"There are 17 active agents in frankincense essential oil," says Dr Suhail. "We are using a process of elimination. We have cancer sufferers – for example, a horse in South Africa – and we are giving them tiny doses of each agent until we find the one that works."

"Some scientists think Boswellic acid is the key ingredient. But I think this is wrong. Many other essential oils – such as oil from sandalwood – contain Boswellic acid, but they don't have this effect on cancer cells. So we are starting afresh."

The trials will take months to conduct and whatever results come out of them will take longer still to be verified. But this is a blink of the eye in the history of frankincense.

Nine thousand years ago, Omanis gathered frankincense and burnt it for its curative and cleansing properties. It could be a key to the medical science of tomorrow. (*Source*: BBC News, 9 February 2010.)

HONEY AND BEE PRODUCTS

Doctors find the health benefits of manuka honey to be buzz-worthy

Since the dawn of time, honey has been used for medical purposes. Honey is an ideal natural medicine, mostly because of its antibacterial properties. In the mid-1940s, when antibiotics were invented, doctors assumed they were a better treatment option than honey. Even today, most Western doctors are trained to believe in pharmaceuticals, not natural alternatives. However, with the dilemma of infections caused by antibiotic-resistant strains of bacteria, the medical community is desperate for other solutions.

In addition to antibiotic resistance and an array of negative side effects, antibiotics have another downside. They are indiscriminate killers, destroying as much bacteria in the body as they can. This removes the good bacteria along with the bad. The body contains intestinal flora that is necessary for normal functioning. Honey offers a better solution by destroying only the harmful, infectious bacteria and leaving good bacteria.

There are many different types of honey. It is important to know that some honeys have more healing properties than others; this depends on the floral nectar used by the bees that produced it. Manuka honey from New Zealand has been found to have a significantly higher level of antibacterial activity than any other type of honey.

However, even manuka honey should be chosen wisely. In New Zealand, a rating system exists for manuka, e.g. manuka honey with a unique manuka factor (UMF) rating of between 10 and 16 is ideal for medicinal use; less than UMF 10 it is not potent enough; and more than UMF 16 is too potent and usually overpriced. Using manuka honey without an active UMF rating is not recommended.

When using an active, medical-grade manuka honey, it is possible to treat effectively conditions such as sore throats, strep throat, stomach ulcers, cold and flu symptoms, acid reflux disease, heartburn, irritable bowel syndrome and gastritis. Manuka honey can also be used topically on the skin to treat infected wounds, acne, ringworm, cold sores, pressure sores, skin ulcers and MRSA. (*Source*: SBWire.com, 12 January 2010.)

Bee decline linked to cell phones

London, United Kingdom. A new study has suggested that cell phone radiation may be contributing to declines in bee populations in some areas of the world. Bee populations dropped 17 percent in the United Kingdom last year, according to the British Bee Association, and nearly 30 percent in the United States of America, says the US Department of Agriculture.

Parasitic mites called varroa, agricultural pesticides and the effects of climate change have all been implicated in what has been dubbed "colony collapse disorder" (CCD).

But researchers in India believe cell phones could also be to blame for some of the losses.

In a study at Panjab University in Chandigarh, northern India, researchers

fitted cell phones to a hive and powered them up for two 15-minute periods each day. After three months, they found the bees stopped producing honey, egg production by the queen bee halved, and the size of the hive was dramatically reduced.

Andrew Goldsworthy, a biologist at the United Kingdom's Imperial College, London, has studied the biological effects of electromagnetic fields. He thinks it is possible that bees could be affected by cell phone radiation. The reason, Goldsworthy says, could hinge on a pigment in bees called cryptochrome. "Animals, including insects, use cryptochrome for navigation," Goldsworthy told CNN. "They use it to sense the direction of the earth's magnetic field and their ability to do this is compromised by radiation from [cell] phones and their base stations. So basically bees do not find their way back to the hive."

Goldsworthy has written to the United Kingdom's communications regulator OFCOM suggesting that a change of phone frequencies would stop the bees being confused. But the United Kingdom's Mobile Operators Association – which represents the country's five mobile network operators – told CNN: "Research scientists have already considered possible factors involved in CCD and have identified the areas for research into the causes of CCD which do not include exposure to radio waves".

Norman Carreck, Scientific Director of the International Bee Research Association at the University of Sussex in the United Kingdom says it is still not clear how much radio waves affect bees. "We know they are sensitive to magnetic fields. What we don't know is what use they actually make of them. And no one has yet demonstrated that honey bees use the Earth's magnetic field when navigating," Carreck said. (*Source*: CNN, 30 June 2010.)

RESOURCES FROM BEES *FOR* DEVELOPMENT

Bees *for* Development helps beekeeping projects and groups in developing countries by sending out resource boxes – a pack of publications and materials for use for a training course or workshop.

Beekeeping Training Modules are new. Designed for use by trainers in Africa, each one is a 16-page booklet that provides one day of training on one topic. These are: (i) value and life of the honey bee; (ii) choosing and making a beehive; (iii) harvesting and processing beeswax; (iv) harvesting and processing honey; and (v) honey bee colony management.

The modules are accompanied by **Training Cards**. The set of nine double-sided A4 cards provides over 60 illustrations and plans. These are laminated to provide durability for long-term use. The subjects covered are pests and predators; biology of the honey bee; choosing a beehive; beekeeping diary; comb; separating honey; rendering beeswax; hives in Africa; and top-bar hive dimensions.

In addition, there are the **Beekeeping and Development Guides** – 32-page illustrated booklets, also intended for use in Africa. These address *Market access for beekeeping* and *Information for honey packers*.

Resource boxes also include copies of the *Bees* for *Development Journal*, information posters (available in English, French, Mandarin, Portuguese and Spanish) and other booklets.

Projects and associations in developing countries can apply for a sponsored resource box by completing an application form available on the Bees for Development Web site or by requesting a form by post or e-mail. Projects in other areas can purchase resource boxes and the items described above through the Web site store.

For more information, please contact: Bees *for* Development, PO Box 105, Monmouth NP25 9AA, United Kingdom. E-mail: info@beesfordevelopment.org; www.beesfordevelopment.org

DVD – Honey hunters of the Blue Mountains, India

Honey hunters of the Blue Mountains is a film that has been shot over three years to document in detail the lives of the last honey hunters and their intricate relationship with *Apis dorsata* (giant rock bee), in the Nilgiri hills of southern India. The film has been made by Riverbank Studios, a professional group from New Delhi. It is headed by Mike Pandey, a noted wildlife film-maker.

The Kurumbas of the film have been associated with the Keystone Foundation – a group that works with indigenous bees and people in the Nilgiri hills – since 1995. Keystone has tried to understand them closely in order to design and implement appropriate interventions for development. This film project is an outcome of that interaction – to bring to the world a whiff of the lives of these indigenous people, who are struggling to keep in tune with forests.

The film tries to capture the very essence of living with bees and the myths surrounding the honey hunter. On the natural history aspect, the film has some breathtaking images of *A. dorsata*. The film is of interest to the bee lover, scientist and the development planner wanting to address the issues of indigenous people in a changing environment. It will also appeal to others interested in learning, looking and understanding a little more about this Earth and its people.

Part of the proceeds from the sale of the film will go towards "The Honey Hunters Development Fund" set up by Keystone.

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MAPLE SYRUP

Research reveals impact of climate change

Even though the maple syrup you drizzle on your stack of pancakes may taste as sweet as ever, the tasty condiment is actually undergoing changes that may shed light on the impact of climate change.

According to a new study by William Peck, Colgate University Associate Professor of Geology, and student co-author Stephanie Tubman, the burning of fossil fuels is altering the chemical composition of syrup as well as other

foods. Their research, funded by Colgate's Upstate Institute, was published in the *Journal of Agricultural and Food Chemistry* and reported recently in *Nature*.

What began as a laboratory demonstration to teach Colgate students about isotope analysis led to the findings, which could have implications for food quality control. The students got a surprise when they compared the samples against isotope values of maple syrup from the late 1970s and early 1980s. Their research revealed a change in the chemical composition of the syrups, which Peck suspected could be attributed to environmental factors. Upon further analyses of samples from a 36-year time period, Peck's suspicion was confirmed. The research team found increased amounts of carbon-12, the isotopic form of carbon that is released through burning fossil fuels.

This research is significant because isotope analysis plays a key role in food regulation; regulators use the isotope makeup to determine whether fillers have been added to foods such as maple syrup, honey and fruit juices.

As a result of the impact of environmental change on the chemical composition of food, it may become more difficult for regulators to determine the quality of food products. The *Nature* article noted that "the findings raise the possibility that producers of foods that are monitored ... might be able to add cheap sweeteners without being caught". (*Source*: Ascribe Newswire, 18 February 2010.)

Scientists highlight health benefits of pure maple syrup

Scientists have revealed that pure maple syrup is good for health, encouraging its use.

Researcher Navindra Seeram from the University of Rhode Island (United States of America), who specializes in the research of medicinal plants, has discovered that there are over 20 compounds in Canadian maple syrup that can be directly linked to human health, with 13 of these compounds being discovered for the first time ever. Also, eight of the said compounds have been discovered in the *Acer* (maple) genus for the first time.

Many of these antioxidant compounds that have been discovered in maple syrup reportedly contain anticancer, antibacterial and antidiabetic properties as well. (*Source*: www.topnews.us, 22 March 2010.)

Mild weather zaps sap of maple syrup farmers in New England, United States of America

The unusually tepid spring in New England has been a problem for maple syrup producers. The quick warm-up this spring switched sugar maple trees from sap producing to bud popping, lowering maple syrup production.

In New York, there was a 30 percent decline in maple syrup production from last year, and Maine's production dropped 22 percent. In Vermont, maple syrup production suffered a 3 percent drop. (*Source*: USA Today, 28 June 2010.)

MAYA NUT

Maya nut: an ancient food for a healthy future

Maya nut (*Brosimum alicastrum*) – or *ramon, ojoche, masica, ujuxte, ojushte, ojite, ash, ox, capomo, mojo* and breadnut – is a delicious, nutritious, abundant Neotropical rain forest tree that provided a staple food for pre-Columbian hunter gatherers.

Maya nuts are exceptionally nutritious, providing high-quality protein, calcium, iron, folate, fibre and vitamins A, E, C and B. They are also one of the best native forage species and show great promise to provide ecological alternatives to pasture for cattle ranches in the Neotropics.

In recent history, the Maya nut has been critical to rural food security; thousands of villages throughout Central America and Mexico have survived drought and famine by eating the nuts when no other food was available.

Unfortunately, knowledge about Maya nuts is being lost as globalization, export crops, and deforestation negatively impact indigenous cultures and the forests that sustain them.

As a result of this loss of indigenous knowledge, people cut Maya nut trees for firewood and burn forests to plant maize, beans and other crops. The Maya nut tree is in danger of extinction throughout its range, a situation that threatens the food security of both human and animal populations.

The Equilibrium Fund's Maya Nut programme is working to rescue lost traditional knowledge about the tree for food, fodder and ecosystem services. Since its inception in 2001, the programme has trained more than 8 000 women from 450 communities in Honduras, Nicaragua, Guatemala, El Salvador and Mexico. It has resulted in the conservation of more than 400 000 ha of Maya nut forests and the planting of more than 800 000 new seedlings.

The programme focuses on women as the caretakers of the family and the environment, and addresses key factors for sustainable livelihoods – sociocultural, environmental and economic – by creating leadership, educational and economic opportunities for women and girls.

The Equilibrium Fund's newest programme, "Healthy Kids, Healthy Forests" (Bosques Sanos, Niños Sanos), aims to provide Maya nut-based school lunches for rural children. Starting in Guatemala in 2008, it is feeding 8 124 children from 46 communities in the Petén region of Guatemala. These communities are planting more than 300 000 new Maya nut trees as "food forests" to sustain the programme in the future. (*Source*: Eco-Index, 7 January 2010.)

MORINGA OLEIFERA

Seeds from the *moringa* tree can be used for water purification

Pure water is a key requirement for good health and alternative cheap and safe methods are required in many countries. In a paper that has just been published in the leading American Chemical Society Journal on interfaces, *Langmuir*, researchers from Uppsala University, Sweden, in cooperation with the University of Botswana, describe how extracts from seeds of the *Moringa oleifera* tree can be used for water purification.

Flocculation of particulate impurities is a common first stage in purification of water. This often uses addition of either aluminium or iron salts. Aluminium,

particularly, has undesirable health implications. An alternative procedure that uses a natural extract from seeds of the *M. oleifera* tree is used in Africa.

Cooperation with the University of Botswana, where there is a long interest in exploiting natural products, has led to a research project that provides important insights into the way that protein molecules from *M. oleifera* seeds interact, binding strongly both to each other and surfaces so as to cause aggregation into large lumps that are readily removed from the water.

"It is nice to see how the basic interactions of molecules can play a role in solving practical problems," says Adrian Rennie, Professor at the Department of Physics and Astronomy at Uppsala University. "Understanding of the process may lead to further development in water purification with materials that are locally available and environmentally friendly." (*Source:* Uppsala University News [Sweden], 18 February 2010.)

Fight malnutrition by eating *moringa*

Veena S. Rao, a former secretary to the Government of India, in her book *Malnutrition, an emergency: what it costs the nation*, estimated that malnutrition has led to a loss of 4 percent in the gross domestic product (GDP) of India. Stressing that malnutrition was a huge human resource calamity, she called for making "high-energy, low-cost food" available to the poor.

This is precisely where *Moringa oleifera*, the "miracle tree", our humble drumstick tree, has a role. The tree is increasingly considered one of the world's most valuable natural resources, since its main constituents have several nutritive ingredients. Its leaves, pods and flowers are considered good sources of vitamins A, B, B_2, B_3, B_6 and C, folic acid, ascorbic acid, beta-carotene, calcium, iron and amino acids. More important, its leaves are highly nutritious, being a significant source of beta-carotene, vitamin C, protein, iron and potassium.

It has been claimed that the *moringa* tree provides seven times the Vitamin C in oranges, four times the calcium in milk and Vitamin A in carrots, twice the protein in milk and three times the potassium in bananas.

A versatile plant with a multitude of natural attributes, *moringa* is great food for humans and animals alike. Its leaves, flowers and fruits are all edible. Its leaves, dried and powdered, when added to the diet of undernourished children enhance their appetite and increase their weight. Among nursing mothers it markedly increases lactation, providing greater nutrition for infants. It also makes great fodder for cattle. Studies have revealed that the weight of livestock increased up to 32 percent through *moringa* feed, increasing their milk by 43 percent.

Native to India and widely distributed in the country in virtually every region, it can grow quickly and under any conditions. It is drought resistant and has remarkable survival instincts. *Moringa* can also grow in the semi-arid regions of the country, rendering several benefits for local communities. (*Source*: *Central Chronicle* [India], 12 March 2010.)

POOR MISSING OUT ON THE WATER-PURIFYING POWERS OF *MORINGA* SEEDS

Michael Lea of Clearinghouse, a Canadian organization that investigates low-cost water purification technologies, has published a step-by-step procedure online (www.jalmandir.com/moringa/moringa-seeds.html) that shows how the seeds from *Moringa oleifera* can be crushed to produce a natural flocculant – a substance that aggregates suspended particles. He hopes that making the technique freely available in this way will facilitate dissemination to those who need it the most; the role of the seeds in purification has been known for centuries but use has been limited.

Writing in *Current Protocols in Microbiology*, he said that the seeds can provide a low-cost, accessible purification method for poor communities where diarrhoea caused by waterborne bacteria is the biggest killer of children aged five and under. "*M. oleifera* is the only indigenous treatment technology that addresses poverty and nutrition while also providing potable water."

Vallantino Emongor, a *M. oleifera* expert at the University of Botswana, said: "What is exciting is that this tree is drought resistant and is accessible throughout Africa and India. Communities need to learn what the seeds can do". Some countries, including Burkina Faso, Benin, Ghana, Ethiopia, Kenya and Uganda, have formed associations to facilitate this. (*Source*: SciDev.Net, 24 March 2010.)

MUSHROOMS

Rare fungus on Tibetan plateau faces extinction

Every summer since he was 18, Ma Youcai has combed the craggy, barren slopes of the mountains that surround his village in rural Qinghai province for *dongchongxiacao*, a rare, insect-like fungus used in traditional Chinese medicine.

A parasite that attacks and eventually kills moth larvae on the Qinghai-Tibet plateau, just a few grams of the fungus can be ground into powder and dissolved to make a tonic that is believed to boost energy.

But as Ma prepares for yet another summer search, the 40-year-old goat herder fears this valuable fungus, which provides almost half of his annual income, is in danger of disappearing forever. Last year, he found only half as many fungi as he did a decade ago. In some areas, the population has dropped almost tenfold in the last five years, according to Guo Jinling, an expert on medicinal plants and a professor at the Chengdu University of Traditional Chinese Medicine.

Scientists say the decline is largely a result of habitat loss and overharvesting, which is being driven by skyrocketing demand for costly and exotic herbal remedies among China's growing middle and upper classes. "Animals and plants need time to grow. When demand causes them to be harvested too fast, they can't keep up and their populations decline," said Long Chunlin, a professor at the Kunming Institute of Botany in Yunnan province.

Although classified as a mushroom, caterpillar fungus (*Cordyceps sinensis*) – or *dongchongxiacao*, which literally means "winter insect, summer grass" – is a parasite that attacks moth larvae. It slowly grows inside them until it kills and mummifies them, eventually producing a fruiting body that releases spores that infect other caterpillars. The fungus is harvested in May and early June, just before the spores are released. If consumed, it is said to boost stamina, as well as strengthen the immune system, lungs and kidneys.

Caterpillar fungus only grows at high altitudes on the Tibetan plateau in an area that stretches from Nepal, through northern Sichuan province and into Qinghai province. However, warming temperatures and overharvesting have caused populations to fall by nearly 90 percent in some areas, say experts.

As a result, it is one of the most valuable medicinal products on the market today. One jin – roughly equal to 500 g – sells for up to 80 000 yuan (USD12 000), with some experts claiming prices can top 100 000 yuan. The largest markets for the fungus tend to be in South China and around Shanghai. (*Source*: *China Daily* in China Tibet Online, 16 April 2010.)

Japanese delicacy grows like weed in Sweden

DNA analysis has revealed that Japan's second-most expensive gourmet mushroom is actually pretty common in Sweden.

The *hon-shimeji* mushroom – *Lyophyllum shimeji* – costs about USD5 000/kg in Japan, and is by all accounts jolly tasty. Until this discovery, it was thought to grow nowhere else. But, it seems, people had been trampling the things underfoot in Sweden under the impression that they were another related species.

"We were visited by a Japanese mycologist who found a fungus on a pine heath outside Skellefteå which she thought was similar to *hon-shimeji*," says Henrik Sundberg, a student at the University of Gothenburg. "Using molecular techniques, we've now been able to show that this northern Swedish fungus is identical to the Japanese one."

Hon-shimeji has become rarer and rarer in Japan, probably because of pests attacking host trees and changes in forestry. Wild *hon-shimeji* is currently sold only by a few specialist dealers and served at the very smartest restaurants.

But if the fabulous fungi are found in Japan and Sweden, says the team, they might grow in forests at similar latitudes everywhere else as well. (*Source*: www.techeye.net, 28 June 2010.)

PALMS

Nutty jewellery made from the tagua palm

In the village of Ivoryton (United States of America), small images of elephants adorn shop signs. For almost 100 years, some 90 percent of all the ivory imported to the country from Africa was shipped to factories in Ivoryton or the nearby Deep River. By 1850, a few small companies were using elephant tusks to make combs, toiletries, billiard balls and sewing implements. The business grew into making piano keys, fuelled by a national demand for a piano in every parlour during the Victorian period.

These days, plastic materials have replaced ivory in manufacturing many of these products, but consumer demand for ivory remains in some parts of the world. Although the international commercial ivory trade was banned in 1989, poaching continues to threaten the endangered animals.

Ivoryton resident Desiree Richardell could help change that. Originally from Ecuador, Richardell is part of a family business that is marketing "vegetable ivory" as an alternative to the real thing.

Richardell makes jewellery from the tagua palm tree (*Phytelephas aequatorialis*) that grows in the forests of South America. It is the only plant product that produces a material so white, durable and pure, she says. The plant version, however, is lighter, harder and less porous than real ivory. During the First and Second World Wars, tagua was used for buttons on United States army uniforms, making it a major industry in

Colombia and Ecuador. It, too, fell out of use in lieu of plastic, but it is coming back into use for various crafts.

When Richardell's family came to the United States of America about ten years ago, her aunt wanted to start a business that would also help their home country. She discovered the tagua nut. Her extended family, along with six other families, lives in the rain forest and collects the tagua seeds, which fall naturally so the harvest does not harm the trees. The seeds then have to dry in the sun for six to ten months.

The nuts are sent to her aunt, whose husband is a woodcarver. He carves them into pieces, polishing some, dyeing some and leaving others in a natural form. Richardell then turns the pieces into chunky bracelets, necklaces, earrings and rings, some wrapped in wire designs.

Richardell said the families in Ecuador are paid a salary, so they have a monthly income, which is important to her because the poverty rate in her home country is about 38 percent.

"I know I'm not changing the world, but this is something that can help," Richardell said. (*Source*: *The Day* [United States of America], 21 March 2010.)

The new economics of babassu palm forests in Brazil

Contemporary societies everywhere live under the aegis of convergence, where all systems and processes may be integrated as one. This new kind of complexity is daily present in economy and markets, science, research, technology and even in political institutions.

In economy and markets, convergence has blurred sectorial divisions towards an integrated system of management. Integrated forest and land-based industry respond to this new technological imperative where the same economic cluster processes wood and other materials for timber, non-timber, energy, chip pellets, composites, carbon sink and other environmental services.

In this way, after 30 years of crisis and decline, the market for products from the babassu palm (*Orbignya* spp.) forests of the Brazilian tropics has been reborn and is growing again, led by new demands, such as activated charcoal, green markets, biofuels, veneers and chip pellets.

This large set of demands requires a refined system of pricing and marketing strategies. There are many market segments and niches that intertwine,

interchange and trade off, which in turn require sophisticated business strategies to position both product and service. Therefore, it is not so simple to put babassu products into this new set of converged market opportunities. New technologies, innovation of old products and services, and the creation of new ones are needed.

Technology innovation is the keyword for the construction of a new forestry based on sustainable patterns of management – innovation from procurement and harvest to sales and delivery of forest products. That is the entire supply and value chain.

Below we analyse seven new trends of the babassu pod markets in the Brazilian Amazon.

The ban in burning the entire pod. Addressing the claims from industry, Tocantins state bans by law the industrial processing of the entire babassu pod for charcoal-making and chip pellets for heating. It is mistaken since this law creates a negative market distortion. Free prices for the babassu pod and its parts could signal correctly to markets. In this way, industrial demand to process the pod separately should have to compete with charcoal-making and other energy demands that process the pod entirely.

Today large amounts of pods are left aside and rot in the forest because of a lack of markets. However, charcoal from the entire pod has much tar because of the high content of oil, which makes it less efficient for heating.

The charcoal manufacturing cluster. After the crisis of the oil industry resulting from the increasing open market for importing palm oil from Asia and the boost to *Elaeis guineensis* palm crops in Pará state, babassu pods have been largely used to prepare charcoal to fuel the production of pig iron and alumina in the mineral cluster of Grande Carajás. There is today a new cluster of small- and medium-sized enterprises involved in the manufacturing of charcoal from babassu pods. This must not be seen as a problem but a new opportunity to trade the pods. Charcoal from the endocarp (lignin) of babassu pods could produce 615 MW of energy yearly.

Minimum price security policy. In September 2008, the Brazilian Government launched a new price policy to subsidize NTFPs by making their harvest and commercialization financially worthwhile for the extractive population of the Amazon. The price for the trade of babassu pods is regulated at R$1.46 (USD0.60) per kilogram of nut debarked. It is twice the price of R$0.50 (USD 0.20) per kilogram paid by markets today for pod-break women. However, this price will be paid by the National Company of Food (Conab).

The new demand for biodiesel and special oils. In February 2008, a Virgin Atlantic aircraft made a test flight between London and Amsterdam fuelled by biodiesel from the babassu nut. The technology to use babassu oil as feedstock for jet fuel, as a way to increase combustion and reduce carbon emissions was developed by Professor Expedito Parente, from TecBio. This project is funded by a consortium formed by Boeing, General Electric Aviation, NASA and Imperium Renewables. The B20 from babassu nut oil is the result of a blend with 80 percent of kerosene by transesterification.

The potential of babassu for biodiesel is huge, since its productivity and production per hectare is very competitive in comparison with other oleaginous crops.

Activated charcoal and market niches. Activated charcoal for industrial filters has also been addressed by babassu pod industrialization. This is the principal market niche for Tobasa AS. However, in Brazil this is a very small market niche and is not enough to require a large amount of pods.

New technologies for small- and medium-sized enterprises (SMEs). The unique competitive and worthwhile technology to process babassu nuts entirely is used by Tobasa AS in the city of Tocantinópolis, Tocantins. This process is patented and is an industrial secret. However, the Mussambê Foundation, in the northeastern state of Ceará, promoted the creation of a new technology for SMEs to process the nut entirely and so extract the epicarp separately to produce fibres; the endocarp to produce flour, amid and starch; the mesocarp to produce charcoal; and the nut to produce oil.

This new process has been successfully implemented in the state of Ceará. The challenge now is to make this new technology or industrial process widely available to be transferred and absorbed by others interested in processing babassu pods.

It is known that technology innovation by disruption or radical organizational change is not easy. Especially in areas such as the Amazon, where market asymmetries are huge, information is very costly, and knowledge and human capital are not adequately managed by enterprises and industry. Besides, Brazil has no national or regional innovation system and policy to make these changes faster, safer and competitively efficient for stakeholders.

Land conflict and natural resources management. These new markets and utilities for babassu pods have brought up ancient social problems concerning the use of natural resources in the Amazon. Around 400 000 women still have income expectations from the breaking of babassu pods and the extraction and sale of the nut. In addition to the classic problem related to access to the land and its resources, they now face competition from alternative uses for babassu pods: charcoal, liquid biofuels and chip pellets.

Today, land conflict between the charcoal industry, landowners and pod collectors on the one side, and pod-break women on the other, has been increasing. Charcoal companies have rented large areas of babassu to collect the pods, which reduces the stock of pods to be broken by the women, as well as reduce the prices of the nuts of the pods they sell.

Conclusions. The sustainable management of the babassu palm forest requires new technologies, market perspectives and marketing and business strategies. We believe that all these already exist. What is lacking is making this innovation happen in practice.

To do this would need a regional entrepreneurial system of innovation and technology transfer directed to make this new cluster of babassu businesses solid, competitive, lucrative and for jobs, investments and people, able to create and distribute wealth and well-being in the region.

It is clear that is not easy to conciliate multiple land uses, land rights, social fairness and sustainable natural resources management. However, it is also clear that efficient technologies are the vector to

reconcile use, protection and conservation everywhere.

This research was funded by the Freezailah Fellowship Programme of the International Tropical Timber Organization (ITTO).

(***Contributed by***: Vag-Lan Borges, Forest Life; Mônica Sousa Ferreira, Forestry Student, Federal University of Tocantins [UFT]; and Gustavo Félix, Environmental Technician Student, Technical Federal School of Maranhão, Brazil.)

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Palm fronds point the way to integrated forest management

In the days leading up to Palm Sunday, planes loaded with greenery take off from Guatemala bound for the United States of America and Canada. Every year, 30 million *xaté* palm fronds (*Chamaedorea* spp.) are exported from Guatemala to North America. Demand peaks around Palm Sunday, when congregations decorate their churches with fronds; the floral industry also uses palms all year. The trade contributes millions of dollars to the Guatemalan economy.

Xaté fronds are one of an increasing number of products, besides timber, being profitably harvested from forests. In Guatemala, the financial benefits of *xaté* collection have long been recognized. When community forest concessions were set up in the department of Petén in the early 1990s, multiple forest use, harvesting both timber and *xaté*, was explicitly incorporated into management plans. (*Source*: *Thinking beyond the canopy*, 5 March 2010.)

RATTAN

Rattan used for transplants

Scientists are working on a process that turns rattan into a bone-like material that is almost like human tissue and can bond to human bone.

Italian scientists say that a method for creating replacement bones for humans might be only a few years away. Right now, the scientists are doing trials involving sheep that have had the new material implanted.

The scientists use tubular sections of rattan wood that is cut into smaller pieces and then heated in a furnace in a process that adds carbon and calcium to the wood. Then the wood is heated under pressure with a phosphate solution. After ten days, the material is bonelike and ready to be used.

Scientists say that the material eventually fuses to bone and is capable of carrying loads without breaking, just like real bone. In addition, because rattan is porous, it is able to have blood and nerves travel through it.

Sheep with the transplanted rattan have had the material fuse to their existing bone within a matter of a few months with a barely perceptible seam. The fused rattan material has functioned just like the sheep's original bone, scientists say.

Funding for the project is being provided by the European Union. (*Source*: AllHeadlineNews [United States of America], 12 January 2010.)

Vietnamese rattan companies learn about sustainable farming in the Lao People's Democratic Republic

Nine rattan companies from Viet Nam, where rattan availability has fallen dramatically because of high demand and unsustainable exploitation, visited the Sustainable Rattan Management Area in the Lao People's Democratic Republic earlier this month. The area is maintained by the Agriculture and Forestry Office (DAFO), Khamkeut district, Borikhamxay province and the World Wide Fund for Nature (WWF).

The sustainable rattan model has proved such a success that DAFO plans to replicate it in other areas to improve local livelihoods, support poverty elimination and achieve sustainable rattan management.

WWF plans to have this area certified by the end of 2011 and will share its successes and achievements with partners in the rattan industry around the world.

Viet Nam imports more than 40 percent of its needs from the Lao People's Democratic Republic and also sources significant amounts from Cambodia. It has a significant shortage of commercially valuable rattan species such as those available in the Lao PDR, particularly those in the rattan project areas.

"Normally we import 5–7 000 tonnes of rattan a year from the Lao PDR, but none is from sustainable management areas," Nguyen Truong Thien, Director of the Au Co Rattan – Bamboo Export Enterprise, said. "After learning about WWF's rattan project, we understand more about sustainable harvesting."

WWF's Viet Nam Rattan Project Manager, Vu Que Anh, said: "The important species of rattan are now rare and often bought from the Lao PDR. Rattan processors in the south of Viet Nam have now started to subcontract to northern processors, or stop operations altogether". (*Source*: Viet Nam News Online, 29 May 2010.)

SAFFRON

Saffron: hard to produce and more costly than gold, but there's nothing else like it

Saffron is the stigma of a very pretty crocus native to a strip of west Asia. The modern plant is sterile, the hard-won result of cross-breeding and human-led Darwinism. Every year, people have to dig it up, split the bulb-like corms that form part of its root and replant them. The flowers bloom in October, pushing out two or three fragile, wispy stigmas that can only be harvested by hand, and pickers work throughout the night to catch these at their best.

It is punishing, fiddly work. So saffron is notoriously the most expensive spice, its retail price, pound for pound, often exceeding that of gold.

For as long as there have been people, people have known about saffron. A dye from its stigmas colours 50 000-year-old cave paintings in what is now Iraq. Ancient frescoes on the Greek island of Santorini depict a goddess watching – or perhaps blessing – a woman picking saffron, presumably for medicine. The spice also appears in the sybaritic verses of the Song of Solomon and in Chinese writings dating back to 1600 BC.

The Romans grew saffron in Gaul but when the Empire fell, so did the civilized taste for the spice. The Moors reintroduced saffron to a benighted continent in the eighth and ninth centuries. Basel was the centre of the European saffron industry in the Middle Ages, and unscrupulous dealers would,

under local law, be burned alive for selling an adulterated product. Then, as now, cheap imitations based on turmeric and safflower tempted the chancers and cheats.

Saffron's popularity had waned by the eighteenth century as foods such as vanilla, cocoa and coffee emerged to titillate the palates of the rich. That is why comparatively few classic European dishes feature saffron – and those that do, such as paella and bouillabaisse, almost invariably come from saffron-producing regions, as in Provence or Valencia.

Cornish saffron cake, however, is a classic English dish with an uncertain history. Saffron grew most successfully in the east, particularly in Norfolk, Cambridgeshire and Essex (Saffron Walden is named after the crop that, for a time, made it rich, and a crocus still appears on its coat of arms). Nobody knows why saffron cake should have come from Cornwall. It has been posited that the Cornish, who were trading tin with foreign merchants – possibly Phoenicians – as early as 400 BC, bought saffron at the time and retained it in their cooking. If this is true, England is almost unique in Europe, having cooked with saffron for more than two millennia.

The Islamic Republic of Iran now produces around 90 percent of the world's saffron. The EU has tried and largely failed to persuade Afghan poppy farmers to switch to saffron; although the spice is quite lucrative and well-suited to most Afghan land, farmers earn only half as much for it as they do for opium. Producing saffron has always been difficult, and few countries do not even attempt it today. (*Source*: www.guardian.co.uk, 29 June 2010.) (*Please see page 41 for more information on saffron in Afghanistan.*)

Saffron (*Crocus sativus*) antioxidant properties may reverse age-related macular degeneration (AMD)

Saffron (*keshar*) is well known for its use in colouring food, as a spice and in traditional medicine for its antioxidant properties. Researchers have now found that saffron also helps keep vision sharp, and can prevent AMD – a common cause of blindness in people of 60 years of age and older.

Professor Silvia Bisti of the University of Sydney is the first to look at saffron's effect on eyesight. Patients suffering from AMD were given a saffron supplement daily for three months followed by a placebo for a further three months. A second group took the supplements in reverse order. When individuals were tested with traditional eye charts, a number of them could read one or two lines smaller than before assuming the pill, while others could read books and newspapers again.

All patients experienced improvements in their vision while taking the saffron supplement. But when they stopped taking it, the benefits quickly disappeared.

AMD is a disease affecting the macula (the part of the eye that allows one to see), associated with ageing that gradually destroys vision. There are few treatments for the disease. Saffron affects the amount of fat stored by the eye, making vision cells tougher and more resilient. It has been used in traditional medicine for centuries to treat a range of ailments including cancerous tumours and depression. The spice also has properties that encourage oxygen flow and prevent cell death. (*Source*: The Times of Doon, 11 April 2010 in *MFP News*, XX: 2, 2010.)

SEA BUCKTHORN (*HIPPOPHAE RHAMNOIDES*)

Sea buckthorn to green cold deserts in Himalayan states

The cold deserts of the Indian Himalayas where the survival of many flora species is minimal may soon see massive plantations of sea buckthorn, a medicinally rich plant, in a move that is expected to help check soil erosion and benefit farmers economically.

A long-term national policy aims to start sea buckthorn plantations in high-altitude areas of India spanning 75 000 km² in Himachal Pradesh, Uttarakhand, Jammu and Kashmir, Sikkim and Arunachal Pradesh.

The policy has been prepared jointly by scientists of the Defence Research and Development Organisation (DRDO) and the Palampur-based Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishwavidyalaya. According to Virendra Singh, a senior sea buckthorn scientist at the Vishwavidyalaya, "sea buckthorn afforestation will not only help in the conservation of the Himalayas by checking soil erosion but its commercial cultivation will also be economically beneficial for farmers because of its medicinal properties. Its extract is used for making life-saving drugs for cardiovascular diseases, ulcer and cancer". The problem of soil erosion is acute in most rivers originating from the Himalayas such as the Satlej, Indus and Chenab, especially during the rainy season, he said.

Globally, some 40 countries have in the past 20 years joined in the race for sea buckthorn development and its commercial utilization.

"Huge chunks of barren land in the possession of forest departments in the Himalayan states would also be used for sea buckthorn plantations and it would accelerate the ecological rehabilitation of degraded mountainous lands," Singh said. Aerial seeding, participation of the local communities in the programme and commercial utilization for the benefits of the farmers are among the issues to be discussed in finalizing the national plan, he added.

Forest ministers of the five beneficiary Himalayan states, together with officials, vice chancellors, directors and sea buckthorn experts of various research and development institutions have been invited for a 25 June meeting to formulate the sea buckthorn development plan. (*Source*: Bombay News.Net, 8 June 2010.)

Hippophae rhamnoides

Tibet boasts ancient sea buckthorn forest

Along the Niangmu river valley in the Cona county of Lhoka Prefecture, lies the sea buckthorn forest, covering 2 000 mu (more than 3 000 acres/1 214 ha) with trees over 15 m high and thousands of years old.

Nyima, leader of Chomo village in Cona county, said: "In ancient times, Tibetans protected the sea buckthorn forest, which had been called in Tibetan '*La xin*' (the plants with souls). I hope in future, the fruits of sea buckthorn could bring profits for local Tibetans". (*Source*: China Tibet Online, 1 June 2010.)

SHEA NUT

Shea production vital to women's incomes

Across the semi-arid Sahel region of West Africa, the shea tree (*Butyrospermum parkii*) is prized by women who produce a butter from its nuts that is a key ingredient in food and cosmetics. However, drought and diseases threaten this source of income.

"Shea represents 80 percent of rural women's income," says Fatoumata Coulibaly, explaining how women go out to collect the nuts and later process them to make shea butter. Coulibaly is a member of La Maison du Karité ("the House of Shea"), a women's group in Siby, a village in southern Mali. IPS spoke to the young woman during Global Shea, an international forum on shea trade that took place in mid-March in Bamako, the Malian capital.

Shea trees grow wild in West Africa. According to experts, they take 25 years to reach maturity and their lifetime can span two centuries. In the rainy season, women pick the fruit: a sweet pulp wrapped around an oily kernel. In the dry season, they sell a portion of their nuts to international companies and process the rest themselves for sale on the local market.

In West Africa, shea butter is used in cooking by nearly 80 percent of the rural population. It is also used in traditional medicine, and the wood from the tree is prized as fuel.

The many uses of the trees have assured its protection for centuries by local populations, some of whom even consider it sacred. "We treat shea with respect. That is why we organize ceremonies when shea trees reach maturity," said Nayouma Coulibaly, a woman from Tioribougou, a village in southern Mali.

But now, according to the Albert Schweitzer Ecological Centre, a Swiss-based NGO, shea trees face many threats such as drought, diseases and overuse as a source of firewood.

Not all observers agree that there is a problem. "I don't think there's cause to worry. Actually, the number of shea trees is on the rise, because people have now started planting them. I've done so myself," said Seydou Kone, a trade technician with AMEPROC, Mali's association of exporters of agricultural products, headquartered in Bamako. AMEPROC is combating shea tree disappearance and disease by conducting public education in rural areas where shea trees are threatened, training local populations on shea planting and protection.

Among the roughly 16 countries where shea grows, Burkina Faso, Mali, Benin and Nigeria represent the bulk of world production. Mali occupies an important position in the market. "With nearly 150 million shea trees, Mali is ranked the second largest producer after Burkina Faso with an output of about 60 000 tonnes per year," said Kadidiatou Lah, a shea butter exporter based in Bamako. She is also the President of Mali's National Federation of Shea Exporters, which trains rural women in shea tree planting.

The growth of international demand for shea outside Africa is explained in part by its expanded use by the food industry in some developed countries. In 2000, a decree came into effect in Europe allowing chocolate manufacturers to use a limited amount of fat other than cocoa butter in their products, up to five percent.

This change in regulations, which had previously been the case in Japan, the United States of America and Eastern Europe, has opened up new opportunities for shea. "Today countries from all continents import shea butter or shea nuts to extract butter," confirmed Lah.

Local shea producers have no influence over the price fetched by shea nuts and butter internationally. "The prices change frequently on the international market, but at the moment a kilogram of shea nuts costs between 500 and 600 CFA francs (just over USD1)," said Kone.

Large companies prefer to buy their shea nuts from villages through local buyers who roam the countryside. However, these intermediaries make far more profit from the trade than rural women producers. (*Source*: Inter Press Service News Agency [IPS], 9 April 2010.)

Global Shea

Global Shea, the Trade Hub shea brand, represents industry aspirations: improved quality and expanding markets. With Trade Hub assistance, the shea industry is expanding, creating jobs and improving livelihoods.

Just a year after Sekaf Ghana inaugurated its first shea butter village near Tamale in northern Ghana, creating 40 jobs for women, the facility now employs 250 women. And Sekaf is building two others like it in collaboration with international buyers. "Buyers like our approach," Senyo Kpelly of Sekaf Ghana said. "We have our own improved method of processing for the butter. We've seen things getting better and a lot of repeat customers."

Kpelly's experience is just one reflection of how well the shea industry is doing. Trade Hub shea expert Dr Peter Lovett, a biochemist intimately familiar with the product's valuable properties, has helped dozens of companies and producer groups across West Africa improve the quality of

SHEA BUTTER: A NATURAL MOISTURIZER THAT'S FOOD FOR THE SKIN

Shea butter is fantastically versatile, especially the raw unrefined variety. A real skin food, it is good for dry and sensitive skin, soothing for sore, cracked skin and its anti-inflammatory properties make it useful for sunburn, itchiness, insect bites, rashes and eczema. It is rich in natural vitamins that promote healthy skin and cell repair.

Derived from the nuts of the African karité tree (*Butyrospermum parkii*), shea butter has been used as an African skincare and healing ingredient for centuries. Now a widely used cosmetic ingredient, it is an important resource and source of income for local communities.

Historically, the women who gather shea nuts have received very little pay for their labour, particularly when the nuts are exported and processed abroad. Increasingly, however, shea butter is available to buy as a certified fairtrade or as a "fairly traded" ingredient.

In its most pure, untreated state, virgin shea butter looks like lumps of hard caramel ice cream. Just warm it up in your hands until it melts and softens and massage it gently into the skin.

When buying branded body butters or creams containing shea, beware: not all shea is the same quality. Most shea butter on the market has been extracted with a chemical solvent and "refined", which not only removes the natural scent and colour of the natural butter but also many of its beneficial properties. The best shea is obtained using a traditional method of extraction, cold pressed without the use of solvents. (*Source*: *The Ecologist*, 1 June 2010.)

their shea butter and link to international buyers.

Indeed, major international buyers of shea nuts and makers of speciality fats are looking closely at opportunities in Nigeria. In October 2009, a new exporter from Benin attended her first trade show. And shea stakeholders in Mali established an association in November 2009 as Trade Hub began organizing the third annual international conference for the industry, which took place from 16 to 19 March in Bamako, the country's capital.

Kpelly's company employs women who make shea butter much as it has been for generations. Elsewhere, several high-technology processing facilities are producing tonnes of shea butter for the international speciality fats industry. 3Fs, an international speciality fats manufacturer, opened its facility in 2009 in Ghana; it now employs over 600 people.

Trade Hub efforts have improved the quality of shea butter made by women's groups in villages and of shea nuts traded in international markets, and expanded markets for producers through participation in international trade shows. Trade Hub's access to finance programmes has opened banks' doors to the shea industry. And Trade Hub is developing branding to bring the industry together and increase consumer demand in end markets. The result is more jobs and higher incomes over the past three years.

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STEVIA

EU could approve stevia sweetener by 2011

Stevia (*Stevia rebaudiana*), a natural sweetener derived from the sunflower plant, could receive European Union (EU)-wide approval for use in food by next year, an EU executive said on Friday.

The European Commission and EU countries will begin discussing whether to authorize stevia in the coming weeks, after an opinion from the European Food Safety Authority (EFSA) on Wednesday said that it was safe for human consumption.

The Commission will "take note" of EFSA's warning that its "acceptable daily intake" level of 4 milligrams per kg of body weight set for stevia could be exceeded by both adults and children if the sweetener is used at the maximum levels proposed by its makers.

The value of the global sweetener market was estimated at about USD58.3 billion in 2009. The current global stevia market is worth about USD500 million, but is expected to reach USD2 billion by the end of 2011. (*Source*: Reuters, 16 April 2010.)

TRUFFLES

Truffles serve up environmental information

Truffles play a part in environmental research by attracting animals that scientists need to observe.

Quality truffles can sell for more than USD1 000 a pound (0.45 kg). They are also valuable in environmental research, work that is discussed in an article called "The hidden life of truffles" in the April issue of *Scientific American* magazine, by Oregon State University's James Trappe and Andrew Claridge, Visiting Fellow at the University of New South Wales in Australia.

Claridge is getting better estimates of Australian endangered species populations, thanks to truffles. Some marsupials are as crazy for truffles as some humans. Claridge soaked foam pads with olive oil infused with the scent of European black Périgord truffles, and left the pads near motion-sensing cameras. The animals came in droves, with 50 times as many individuals counted as with other techniques. Claridge used the European truffle product because it was easy to get; his team will next see the reaction of the animals to native truffles.

Meanwhile, if you want spotted owls in the Pacific Northwest, you need flying squirrels, the bird's favourite food. Which means you need an environment rich in the squirrel's favourite food: truffles. (*Source*: *Scientific American*, 6 April 2010.)

Researchers unlock truffle genome

The genome of the black, golf ball-sized edible mushroom known as the Périgord truffle (*Tuber melanosporum*) has been successfully decoded by French and Italian researchers, a step that experts believe will cut down in fraudulent sales of *T. melanosporum* impostors.

In a 28 March press release, officials from the French National Institute for Agricultural Research (INRA), who worked alongside officials from the Universities of Lorraine and the Mediterranean and scientists at laboratories in Turin, Parma, Urbino, Rome and elsewhere in Italy, announced that they had published a paper discussing the sequencing and decoding of the "black diamond" fungus.

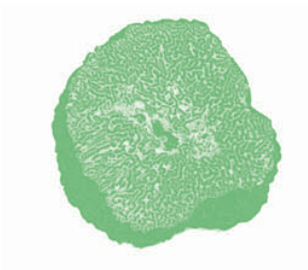
The paper, which was published online in *Nature*, found that 6 000 of the truffle's 7 500 protein-coding genes were similar to other mushrooms, but that "several hundred genes are unique to the truffle and play a fundamental role in mushroom formation and symbiosis with the host plant".

"Studying them will reveal the mechanisms behind the formation of this peculiar underground fructification," INRA officials said in their press release. "The relevance of the study goes beyond the purely academic," the researchers claim. "Full sequencing of the black Périgord truffle genome has also allowed the development of specialized diagnostic tools for genetic polymorphism of this valuable product."

"DNA sequencing also made it possible to spot several thousand genetic markers in the genome. About a dozen of these are currently being used to create a DNA fingerprint file of some 50 populations of *T. melanosporum* from Italy, Spain and France," they added. "The DNA fingerprints make it easier to carry out 'typing' of the geographic origin of harvested truffles, and allow the use of product certification and fraud detection tools."

Truffles can reach prices of more than US1 300 per pound (0.45 kg), and they are often the target of fraud as individuals try

to pass off cheap imitations as the immensely valuable *T. melanosporum*. (*Source*: www.redorbit.com, 29 March 2010.)



The trouble with Oregon's truffles

Truffles and Oregon are becoming synonymous – at least on the West Coast of the United States of America. This is where many chefs appreciate the culinary value of Oregon truffles – and harvesters their cash value. But is this resource sustainable?

In Oregon, and elsewhere across the country, commercial harvesters rake truffles from the soil with a garden cultivator, sometimes called a potato fork, in a mostly indiscriminate fashion. This method procures more truffles in the shortest amount of time, and with the least effort. But it yields both mature (ripe) and young (not so ripe) truffles. For culinary purposes, only mature truffles are worth their full value, both monetarily and gastronomically.

The reason commercial harvesters use this method is twofold. First, it is about the money – more truffles mean higher cash returns. Second, there is no other method readily available. Unscrupulous truffle hunters hurt the land with their metal forks. A walk through any accessible, coastal tree farm reveals the scars: trenches run deep along tree roots; dirt mounds, piled in high rows, look like a battleground cemetery; the once-sparse vegetation is gone; and erosion is severe. In some forest stands, the truffles are gone, too. Decades of abuse have devastated the truffle's mycorrhizal network. That abuse also threatens the continuance of Oregon's truffle industry.

But there is hope. Oregon truffles, despite decades of haphazard harvest methods, finally have a reprieve: the increasing use of dogs to locate truffles is replacing the potato fork. Using dogs instead of rakes ensures that only truffles at their peak ripeness are dug up.

But the use of dogs to find truffles in the United States of America is in its infancy, and places that train and sell dogs for the purpose are rare.

Recent news stories about truffle thieves and the damage they cause to young forest stands highlight the need for state-wide regulation of this resource. Stricter trespassing laws will not help alleviate theft; truffles, apparently, are worth the risk. Nevertheless, new laws and regulations are needed and must focus on truffle buyers, sellers and harvesters.

A state-mandated Oregon truffle season, in tandem with a permitting system akin to hunting and fishing licences sold by the state, is necessary. Without adequate regulations and enforcement of truffle resources, on both public and private lands, landowners will continue to incur damage to their property and lost revenues in the form of dead trees. (*Source*: www.oregonlive.com, 19 March 2010.)

WATTLE

Wattle (Australian *acacia*) comes to Africa

A traditional Aboriginal food has become part of the staple diet of African communities. The seeds of Australian *acacia*, commonly called wattles, are tasty, high in protein (25 percent) and carbohydrates (40 percent) and easily made into flour.

In the Niger, wattle has become a local legend. The seeds are used in over 40 local dishes. In fact, village consumers say that eating wattle increases strength, improves eyesight, cures night blindness and stimulates milk let down in new mothers.

Since the global food crisis of 2008, a heightened sense of urgency has driven the search for better sources of nutrition. Following a famine in 1984, the Christian organization Serving in Mission (SIM) began a concerted effort to promote wattle-growing in the Niger and *acacia* seeds became popular. Between 2006 and 2009, over 50 000 *acacia* trees were planted on 480 farms in 33 villages and more trees are being planted each year.

World Vision is now promoting wattle seeds in Senegal, Mali and Chad. Many of these projects have been funded through child sponsorship from World Vision Australia. (*Source*: http://eternity.biz, 9 April 2010.)

WILDLIFE

Coping with raiding elephants and hippos. FAO tests toolkit to lessen human and wildlife conflict

Rome. Are raiding elephants bothering you? No problem. Drive them off with pepper spray. Are lions, cheetahs or spotted hyenas attacking your farm animals? Consider a guard donkey. Marauding baboons giving you a hard time? Offer them a snake sandwich.

These are some of the colourful tips contained in a toolkit produced by FAO to help resolve, prevent and mitigate the growing problem of conflict between humans and wild animals. And while the measures suggested may raise a smile, there is nothing light-hearted about the problem they are designed to address.

With the world's population growing at some 75 million a year, humans and wildlife are having to squeeze ever more tightly together, increasing the risk of conflict between them. The result is a growing threat to people's lives and livelihoods and to their health from animal-borne diseases.

Competition between humans and wildlife goes back to the dawn of humanity. Fossil records show that the first hominids fell prey to the animals with which they shared their habitats.

"But now," says FAO Forestry and Wildlife Officer René Czudek, "things may be getting worse, particularly in Africa". The population of the continent, which has the world's largest reserves of wildlife, is set to double from one to two billion in the next 40 years. Africans will not only be packing more tightly into the cities – they and their crops will also be increasingly pressing up against territory populated by wildlife.

FAO's human-wildlife conflict mitigation toolkit thus largely focuses on problem-solving in Africa. It is designed not only to help protect people, their livestock and their crops from animals but, just as important, to safeguard animals from people. It suggests policies, strategies and practical tips to make increasingly tight cohabitation safer for everyone.

According to the Southern African Development Community's (SADC) Technical Committee on Wildlife, wild animals represent the number one problem for Africa's rural populations both in terms of personal security and because of the economic damage they can cause.

Generally speaking, however, the best way to reduce the problems that humans face from wildlife, and vice versa, is to educate farmers and villagers – and also policy-makers – to perceive wild animals as an asset rather than as a threat to be eliminated. Awareness and training in how people can live better – alongside wild animals – are fundamental to the use of human-wildlife conflict tools and in building local capacity for conflict prevention and resolution.

But obviously villagers will only stop seeing wild animals as a nuisance or worse if rural communities receive some tangible advantage from living cheek by jowl with animal populations. Paying them a percentage of the revenue derived from tourism would be one way, while payments for the environmental services they provide is another. Compensation for damage to crops, injury or loss of life should also be considered.

"Whatever the specific measures taken, it is important that they are introduced soon and properly implemented," says Czudek. "The alternative could be the progressive loss of wildlife as we know it across much of Africa – representing a tragic loss to us all."

The human-wildlife conflict toolkit, currently being tested in southern Africa, was prepared in collaboration with CIRAD (the Agricultural Research for Development Centre), WWF (World Wide Fund for Nature), CAMPFIRE (Communal Areas Management Programme for Indigenous Resources) and other partners. (*Source*: FAO Media Centre, 19 July 2010.)

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Internet is biggest threat to endangered species, say conservationists

The Internet has emerged as one of the greatest threats to rare species, fuelling the illegal wildlife trade and making it easier to buy everything from live lion cubs to wine made from tiger bones, conservationists said today.

The Internet's impact was made clear at the meeting of the 175-nation Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Delegates voted overwhelmingly today to ban trade of Kaiser's spotted newt, which the World Wide Fund for Nature says has been devastated by the Internet trade.

Trade on the Internet poses one of the biggest challenges facing CITES, said Paul Todd, a campaign manager for the International Fund for Animal Welfare. "The Internet is becoming the dominant factor overall in the global trade in protected species," he said. "There will come a time when country to country trade of large shipments between big buyers and big sellers in different countries is a thing of the past."

Most of the illegal trade is in African ivory, but the group has also found exotic birds along with rare products such as tiger-bone wine and pelts from protected species such as polar bears and leopards. "As the Internet knows no borders, it causes several new problems regarding the enforcement of the protection of endangered species," the group said in its report.

"The Internet itself isn't the threat, but it's another way to market the product," said Ernie Cooper, who spearheads the investigation for TRAFFIC Canada. (*Source*: www.guardian.co.uk, 21 March 2010.)

How the pet trade's greed is emptying Southeast Asia's forests

Countries across Southeast Asia are being systematically drained of wildlife to meet a booming demand for exotic pets in Europe and Japan and for traditional medicine in China – posing a greater threat to many species than habitat loss or global warming.

More than 35 million animals were legally exported from the region over the past decade, official figures show, and hundreds of millions more could have been taken illegally. Almost half of those traded were seahorses and more than 17 million were reptiles. About one million birds and 400 000 mammals were traded, along with 18 million pieces of coral.

The situation is so serious that experts have invented a new term – empty forest syndrome – to describe the gaping holes in biodiversity left behind.

"There's lots of forest where there are just no big animals left," says Chris Shepherd of TRAFFIC. "There are some forests where you don't even hear birds."

Vincent Nijman, a researcher at the United Kingdom's Oxford Brookes University who has investigated the trade, said that "in Asia, everybody knows the value of wildlife, so people go into the forest and, whatever they encounter, they know it has a value and that there is someone they can sell it to".

Nijman's research offers the first glimpse of the size of this widespread trade. While most people are aware of illegal sales of rhino horn and ivory, he says it is the scale of the movement of lesser-known species that is most disturbing.

The bulk of seahorses traded were in the form of dried specimens for Chinese medicine. "The moment you look into the wildlife trade in Southeast Asia, China is the biggest challenge, because they can use everything and they will use everything." (*Source*: *The Guardian* [United Kingdom], 21 February 2010.) ♣

There is one thing alone that stands the brunt of life throughout its length: a quiet conscience.

Euripides

AFGHANISTAN

Saffron being promoted as alternative to poppy in Afghanistan

"When we look at the farmers who make a living from growing poppy, we don't support the active eradication because when you eradicate their fields they don't have an income any more," the commander of Netherlands forces in Uruzgan province, Brigadier General Marc van Uhm, told AFP. "If they can't feed their families, then what we do is alienate them from us, they blame us."

The Netherlands is the lead nation for NATO's coalition troops in southern Uruzgan province, one of the poorest in Afghanistan – and the fourth largest producer of poppy. Wiping out the crop has been part of efforts to stabilize Afghanistan. But Afghanistan still produces more than 90 percent of the opium base used to manufacture heroin worldwide – worth some USD2.8 billion in 2009, according to United Nations figures.

The poppies, which provide rich pickings in one of the world's poorest countries, also play a large part in the corruption that plagues Afghan life at every level, from district to national government. With so many people profiting from poppies on both sides of the war, efforts to wean farmers off a crop that provides them with an income several times higher than they could earn from wheat or other mainstream produce is not easy.

The chief civil representative on Task Force Uruzgan, Michel Rentenaar, says the Netherlands aim to encourage farmers to turn to alternative crops, such as saffron and fruit and nut trees. "Our effort is to supply an alternative livelihood. We have had success with introducing saffron in the province; the harvest has increased every year for the past three years."

"Saffron is incredibly expensive and its yield is about two to three times higher than poppy. But it is slow to convince farmers to change."

The 2008/2009 harvest was 50 kg, while this year's is expected to be almost double that, and of better quality. While the figures are small, saffron has long been the world's most expensive spice by weight and a total of some 500 farmers are now growing it in Uruzgan, with a Netherlands firm buying a large chunk of the harvest. In comparison, however, 1.6 million people were involved in producing 6 900 tonnes of opium in 2009, the UN Office on Drugs and Crime says – mostly in the southern provinces worst hit by the insurgency. (*Source*: AFP, 1 February 2010.)

ARGENTINA

Productos forestales no madereros: su potencialidad en el Chaco Semiárido

Los ecosistemas forestales continúan siendo degradados a causa de la incorrecta intervención del ser humano en la explotación de sus recursos. Durante muchas décadas, el sector forestal industrial ha llevado adelante una explotación selectiva, modalidad que, además del casi extermino de la especie explotada, impulsó la degradación de la mayoría de los componentes naturales del sistema. Esta desnaturalización del medio ha llevado a la desvalorización relativa de la actividad forestal frente a otras actividades productivas como la agricultura y la ganadería. Así es como actualmente, profundizando la irracionalidad, las actividades agropecuarias están terminando de arrasar los ecosistemas forestales, y con ello también la degradación de las clases campesinas y de los pueblos originarios.

Este problema es grave y complejo por lo que su solución requiere de cambios en el campo técnico, económico y sobre todo modificaciones estructurales del modelo global de desarrollo.

Este artículo pretende resaltar la importancia del aprovechamiento integral y múltiple como medio para revertir, en parte, la degradación de los ecosistemas y contribuir a la sostenibilidad económica, social y ecológica de un ambiente natural.

Los productos forestales no madereros (PFNM) son fundamentales a la hora de proponer modelos de desarrollo sostenibles ya que: a) la mayoría de ellos están arraigados en la cultura local, por lo que cuentan con el conocimiento, reconocimiento y aceptación de la población; b) un alto porcentaje de los PFNM satisfacen inmediatamente necesidades primarias de los pobladores, como la alimentación y la salud; c) la producción de los mismos contribuyen al resguardo de valores y hábitos propios de una cultura; d) en muchos casos, se rescatan conocimientos ancestrales; y e) su consumo es más bien regional y no global, es decir más compatible con la productividad de un ecosistema rico en biodiversidad.

En el Parque Chaqueño Semiárido argentino no existen actualmente áreas vírgenes; sus bienes se encuentran degradados en diferentes intensidades. Frente a esta realidad es necesario, de manera urgente, plantear y aplicar sólo modelos de aprovechamiento basados en el desarrollo sostenible.

Son numerosos los PFNM que se pueden extraer de este ecosistema forestal. Alguno de ellos, pocos, se producen y comercializan, incluso a nivel internacional. Otros, más numerosos, se producen y consumen en el mercado nacional, y especialmente en la región. Una cantidad muy importante de los PFNM están en fase de investigación y desarrollo. Hasta ahora su aprovechamiento, salvo excepciones, no se ha realizado dentro de un sistema de aprovechamiento múltiple.

En un reciente trabajo se ha recopilado e ilustrado una cantidad importante de PFNM presentes en la Región Chaqueña Semiárida argentina, así como sus usos. Entre los más usados de origen vegetal se pueden nombrar a los obtenidos del **algarrobo blanco** (*Prosopis alba*), árbol de cuyas flores se produce un tipo de miel monofloral y de sus vainas ricas en azúcares, proteínas, sales minerales que se consume en estado natural (crudo) también se elaboran bebidas refrescantes como la «añapa» y la «aloja», esta última se obtiene de la fermentación de las mismas en agua. Con la fruta del **vinal** (*Prosopis ruscifolia*) y del **algarrobo negro** (*Prosopis nigra H.*) al igual que del algarrobo blanco se preparan harinas. Los frutos del **chañar** (*Geoffroea decorticans*) poseen propiedades alimenticias, medicinales, melíferas, tintóreas y forrajeras.

Otro PFNM es el **mistol** (*Ziziphus mistol*) cuya madera tiene poco valor comercial pero sus raíces se usan como jabón y con la corteza se colorea la lana de color marrón. Su floración es abundante e importante para la elaboración de miel. Su fruto es alimento para personas y forraje para los animales, también las hojas y frutos de la **tusca** (*Acacia aroma*) y del **guayacán** (*Caesalpinea paraguarienses*) se usan como alimentos y medicinas. La corteza de la **brea** (*Cercidium australe*) exuda una goma-resina de valor comercial. La **jatropha** (*Jatropha macrocarpa*) provee de un aceite, posible sucedáneo del aceite de

Stetsonia coryne

ricino. El **cardón** (*Stetsonia coryne*), el **quimil** (*Opuntia quimilo*), el **ucle** (*Cereus forbesii*), el **quishcaloro** (*Opuntia anacantha var retrorsa*) poseen frutos que sirven para la alimentación humana.

Entre los PFNM de origen animal más comercializados y que se usan como mascota son el **loro hablador** (*Amazona festiva*), el **suri o ñandú** (*Rhea americana*) que proveer de carne, huevos, cuero y plumas. Así también la **iguana** (*Tupinambis rufescens, Tupinambis marinae, Tupinambis teguixin*), especies cazadas para la explotación del cuero, carne para alimentación y la grasa para fines medicinales.

El trabajo delinea un modelo de aprovechamiento múltiple a partir del uso simultáneo de madera y de los PFNM. Se explica como este modelo sirve para la valorización relativa de la actividad forestal industrial frente a modelos agropecuarios y para contribuir al desarrollo sostenible en términos ambientales.

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ARMENIA

How trees are restoring hope

Armenia has learned the hard way what it means for a country to lose its forests – and the huge backbreaking effort required to replant them. But in its struggle and determination to restore its trees, Armenia is an inspiration for the rest of the planet.

The endeavour to bring trees back to Armenia is thanks mostly to an initiative called the "Armenia Tree Project", a programme supported by the international conservation charity WWF and BMU/KfW, the German Development Bank.

The Armenia Tree Project has been raising and planting trees throughout the country for almost 16 years. Last year, one million trees were planted, a record that brings the total of trees planted over the life of the project to about 3.5 million. All this is done by individuals determined that their trees will become forests to sustain livelihoods and restore a vibrant environment to Armenia.

What happened to Armenia and its trees, and what is being done to reverse the devastation of its forests? Jason Sohigian, Deputy Director of the Armenia Tree Project, says the lack of alternative fuel sources caused the loss of Armenia's forests, especially during the years after independence from the Soviet Union in 1991, when people had no other way to keep warm than to cut down trees for fuel.

Ideally, forests should cover 25 percent of Armenia, Sohigian said. But now, even after a big replanting effort, the country's tree cover is in the range of only 7 or 8 percent. Where the trees have been cut, the land is often degraded and desertification has set in as topsoil washes away.

To make matters worse, the changing global climate threatens the last fragments of forest, especially if rainfall declines.

The Armenia Tree Project works to afforest Armenia with natural forests, planting a mixture of native trees that should in time expand and regenerate forests naturally. "We are really trying to recreate natural forests, rather than plantations for harvesting," Sohigian said.

Fruit and nut trees are also provided by the Armenia Tree Project to people in urban areas, so that individuals may plant trees on the streets or in their yards. This provides food to eat and trade as well as a more pleasant, landscaped environment.

The massive tree planting programme has also stimulated employment for Armenians, from the cultivation of seedlings to planting and protection of the nascent forests. (*Source*: National Geographic Online, 13 March 2010.)

BANGLADESH

Sundarban honey wisdom

The Sundarbans are the largest single block of tidal halophytic mangrove forest in the world.

Local people call the forest *badaban*. It spans 10 000 km², about 6 000 km² of which are in Bangladesh. The Sundarbans were inscribed as a UNESCO World Heritage Site in 1997 and were declared as the first Ramsar site in Bangladesh on 21 May 1992.

The Sundarbans consist of two ecoregions: freshwater swamp forests and mangrove forests. Very rich in floral diversity with about 334 plant species, they are also known for faunal diversity (375 animals, of which 35 reptiles, 41 mammals, 210 fish, 14 crab and 43 mollusc species). The Bengal tiger (*Panthera tigris*) and the *Sundari* tree (*Heritiera fomes*) are among the most significant species.

Meanwhile, about a million people are dependent on the Sundarbans' resources. The forest people include *mawali* (honey collectors), *bawali* (leaf collectors), *jeley* (fishers) and crab collectors, as well as the indigenous Munda, Mahato and Bagdi people.

The Bangladesh Resource Centre for Indigenous Knowledge (BARCIK) started to work in the area in 2001. From its inception, BARCIK has strived to understand the state of biodiversity, local knowledge and practices, as well as how local people cope with natural calamities or developmental destruction by their own methods and resources. One key area here is that of livelihood rights.

BARCIK has taken an important step through a new project "Advocacy on Sustainable Resource Management and Livelihood Improvement of Mawalis in the Sundarbans". The project started in

SUPPRESSED WOMEN'S VOICES, NOW UNITED

In the Sundarbans, women collect various forest resources for their family's daily needs. Women also face many threats every day: wild animals such as tigers, crocodiles and snakes; robbers; unjust forest rules; and the male-dominant system. Until today, women's forest resource rights in the Sundarban areas have remained largely unrecognized. Through BARCIK, the women have organized themselves and formed a group named *Sundarban Mahila Samiti*. Women are now trying to develop NTFP-based cottage industries, including pickled *kewra* fruit and *golpata* handicrafts, as well as soap and candles made of wax.

September 2008. Funded by the International Union for Conservation of Nature (IUCN) Netherlands (NL), it considers the local context and aims at a comprehensive community-led programme, focusing on: (i) ecology and biodiversity conservation; (ii) NTFP-dependent livelihoods; and (iii) ecological markets in the Sundarbans region.

Traditionally, a *mawali* group – composed of seven to nine persons – is formed during the honey collection season. The group leader, called *sajuni*, coordinates and operates the whole process. After the harvest, the people no longer work together in the same group or in any activities requiring teamwork. However, through BARCIK, NTFP collectors formed nine groups from 81 families.

Surprisingly, these groups continue to work together and even formed the Sundarban Sustainable Comanagement Committee, which functions as a comanagement system. This committee involves not only *mawali* but forest dwellers, women, members of local government, teachers, journalists, members of the local market committee and the Forest Department. The committee functions not only during the honey season, but also during bargaining in the market, assessment of the honey market, and ecological education activities in schools. Even family and social problems are being managed and solved jointly.

This process has mobilized and empowered the people to claim access to permitted forest resources. (*Source: Voices from the Forest*, Edition No.18, April 2010.)

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NINE *MAWALI* GROUPS BREAK THE SILENCE

Nine *mawali* groups have collected about 5 600 kg of honey and 280 kg of wax in an ecologically friendly process. Women are also involved in forest honey processing. Both female and male forest dwellers assess the honey market from local to national levels and sell their own collection at a fair price, which they decided for themselves for the first time.

A decade ago, no one would believe that the *mawali* would have their own bank account and savings. Forest people used to depend on loans from the *mahajan* (traditional moneylender) and microcredit-based NGOs. Today, the group members have their own bank accounts and have saved a total of more than one lac taka (USD1 500). Although on a small scale, it is proof that the previously marginalized *mawali* have been able to break the unjust social power structure for their survival.

BRAZIL

Saving plants that save lives and livelihoods

AVIVE (Associação Vida Verde da Amazônia) is a women's association that was established in Silves, Brazil, in 1999, with the aim of developing natural products from the sustainable wild collection of native medicinal and aromatic plants. The group subsequently set up a cooperative, COPRONAT, to sell the finished products, which are mainly obtained from collectors and producers from different communities. In some cases, traditional knowledge (TK) is associated with the access and use of such species. AVIVE has established a relationship with the government, NGOs, academic and private sectors for different activities related to their work.

Although there is a lack of clarity regarding the scope of Access and Benefit-sharing (ABS) regulations in relation to the use of biological resources, good ABS practices – as well as those relating to protection, recognition and compensation of TK – are key for the commercialization of medicinal and aromatic plants and to avoid misperceptions of biopiracy or misappropriation of activities towards promoting their sustainable use and trade.

Different sectors need to increase their knowledge of these issues and their importance. Experts recommend that each user obtain clear information from each institute before beginning access, use and trade activities. But it is not that simple. AVIVE as collector, producer, supplier and trader will have to learn how to negotiate with different interested parties, following current guidance and models and take appropriate legal and technical advice.

"Saving plants that save lives and livelihoods" is a project undertaken by TRAFFIC, WWF and IUCN, financed by BMZ and implemented in Brazil by the IUCN Regional Office for South America and AVIVE. One specific recommendation from the project has been for AVIVE to develop its own policy to deal with these issues and to protect its TK. The same recommendations are applicable for other parties involved. (*Source*: *TRAFFIC Bulletin*, 22: 3, 2010).

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BRUNEI DARUSSALAM

Sultanate must guard against illegal wildlife trafficking

Brunei has not been spared from the illegal wildlife trade, which is rampant in Southeast Asia, said the training and capacity building coordinator of TRAFFIC Southeast Asia. Claire Beastall, speaker at the Borneo Customs Workshop on Wildlife Crime, said that Brunei is one of the most biodiverse places in the world, but there are people who are exploiting the Sultanate's animals and plants. Even though it is difficult to determine the seriousness of the illegal wildlife trade in Brunei compared with other countries in the region, illegal wildlife trade happens throughout Southeast Asia.

The two-day workshop (18–19 April), coorganized by TRAFFIC Southeast Asia and Brunei's Forestry Department, focused on issues such as the Heart of Borneo Network Initiative, wildlife trade in

Borneo and commonly traded species in Southeast Asia.

The workshop also touched on identifying commonly traded wildlife species such as green turtles and their eggs, orangutans, pangolins (anteaters) and the *gaharu* tree – best known as the main source of agarwood (fragrant wood). "All of these are either traded in Borneo or they leave the island. This is an illegal and unsustainable trade," she said. "Some of the commodities that you find in trade reach quite high prices, which is an incentive for smugglers."

Beastall said that TRAFFIC monitors wildlife trade throughout the region and works closely with the Asean Wildlife Enforcement Network (Asean-Wen) for countries of the Association of Southeast Asian Nations. Asean-Wen coordinates the regional response to illegal trade in protected species, which threatens biodiversity, endangers public health and undermines economic well-being. (*Source*: www.bruneidirect.com, 19 April 2010.)

CAMBODIA

Cambodian villagers turn from hunting to ecotourism

Biodiversity in Southeast Asia suffers from an onslaught of habitat loss, climate change and overexploitation. A few organizations are determined to develop strategies aimed at helping people to live in better harmony with nature.

One of these groups is the Siem Reap-based Sam Veasna Centre (SVC), which manages bird-watching day trips and itineraries to eight Wildlife Conservation Society (WCS) conservation projects across Cambodia. Nick Butler, the coordinator of the centre, said one of their main strategies for saving Cambodia's wilderness areas is promoting ecotourism. "Ecotourism works by providing local communities with alternative and sustainable livelihoods, linking education, as well as no-hunting and land use agreements, with the conservation of their local environment," he said.

Butler said the involvement of local communities at a very early stage in developing ecotourism projects was crucial. "We do two things. The first is that we manage the ecotourism business by trying to get international bird-watchers to visit the WCS project sites across Cambodia," he said. "The second part of our business is to train villagers who live near the conservation area in the provision of ecotourism services. The result is that villagers are able to make an income by providing accommodation, food and guiding services for visitors. In return, they sign agreements not to hunt animals, not to cut down the forest and not to harm their environment."

As part of its effort to help maintain biodiversity in Cambodia, SVC has developed a flagship project in Tmatboey village in Preah Vihear province, where the signing of successful no-hunting and land conservation agreements between WCS and the village committee has made it a model of community-based ecotourism. Butler said the main objective of the project was to conserve critically endangered bird species breeding in the area.

Another WCS conservation site where SVC manages ecotourism services is the Prek Toal core area of the Tonle Sap Biosphere Reserve in Battambang province. Seven water bird species of "global significance" have been found breeding in the area. (*Source: Phnom Penh Post*, 22 March 2010.)

Mondulkiri wild: protecting people and biodiversity

Mondulkiri in northeast Cambodia is rich in forest and natural resources. It is also home to the Bunong indigenous communities.

NTFPs are viewed as a key means to improve the livelihood of the Bunong but also to ensure their direct participation in the conservation of the province's remaining forests of about 1.2 million ha. However, the Bunong currently face challenges to their way of life and their efforts at protecting their forest, culture and livelihoods.

WWF Cambodia and the Non-Timber Forest Products Exchange Programme (NTFP-EP) are working together with Bunong communities with the aim of sustaining community benefits from the forest. One of their outputs is *Mondulkiri wild: protecting people and biodiversity*, a DVD (PAL) produced by NTFP-EP, WWF and the Gekko Studio. It is available in English and Khmer and runs for 27 minutes.

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CAMEROON

Stratégies de commercialisation des PFNL à l'échelle communale: cas de la région de l'Est

La question de la commercialisation de l'ebaie, de la mangue sauvage ou du *ndjansang* (*Pentaclethra macrophylla, Irvingia gabonensis* et *Ricinodendron heudelotii*) ne se posait pas à priori lorsque, dans les années 1990, le législateur camerounais définissait le régime de commercialisation des produits forestiers issus de l'espace national (loi n°94/01 du 20 janvier portant régime des forêts, de la faune et de la pêche au Cameroun; décret n°95/531/PM du 23 août 1995 fixant les modalités d'application du régime des forêts). Pourtant, la demande de produits forestiers non ligneux (PFNL) comme ceux-ci reste importante sur le marché national et sous-régional. Leur valorisation par les communautés locales est devenue l'un des champs de bataille des Organisations non gouvernementales (ONG) camerounaises et des organismes de développement internationaux. Cet article revient sur des réflexions issues d'expériences de terrain réalisées dans le cadre du ProPSFE (Programme d'appui de l'Office allemand de la coopération technique [GTZ] au Programme sectoriel forêts-environnement) et du Centre technique de la forêt communale (CTFC).

Le Système d'information des marchés (SIM) des PFNL a été développé dans la région de l'Est par le CTFC, sur la base des expériences de divers partenaires au développement tels que la FAO. Des stratégies de commercialisation des PFNL végétaux à l'échelle communale ont été identifiées pour mieux agencer l'action du

CTFC dans le domaine, afin d'ajuster l'activité du SIM PFNL de la région à la législation. Ces stratégies illustrent des voies permettant aux PFNL, ramassés au titre du droit d'usage ou simplement collectés, d'entrer dans un circuit légal de commercialisation.

La première stratégie est valable pour la récolte des PFNL sur l'ensemble du territoire communal, sans distinction de type de forêt. Dans cette optique, **une entité juridique communale est titulaire du permis d'exploitation des PFNL**. Trois options sont envisageables: soit la commune dispose d'un titre d'exploitation et sous-traite l'activité de collecte aux Groupements d'intérêts communs (GIC) et aux fédérations communales; soit elle s'en approprie; soit enfin une union/fédération de GIC à l'échelle communale dispose d'un titre d'exploitation.

La deuxième stratégie est circonscrite aux types de titres forestiers. Dans ce cas, **les PFNL collectés et commercialisés proviennent exclusivement des forêts communales et des forêts communautaires**.

La troisième stratégie, enfin, est liée à la mise en place d'une activité génératrice de revenus (AGR) locale. Elle propose ainsi que **les PFNL collectés au titre du droit d'usage soient valorisés et transformés au niveau local**. La valeur ajoutée du produit devient de la sorte commercialisable, constituant une forme d'exception à l'interdiction de commercialiser le droit d'usage.

Une bonne organisation socioéconomique et le respect des normes d'exploitation forestière sont des conditions indispensables de mise en œuvre. L'option idéale serait certes que toutes ces stratégies fonctionnent simultanément sur le territoire communal, en attendant la consécration législative des différents avis sur les PFNL émis à ce jour. (***Contribution de***: Fernande Abanda, doctorante en droit forestier, Université de Yaoundé II, BP 18, Soa, Cameroun.) Courriel: fernandeabanda@yahoo.fr)

Microentreprise forestière communautaire: huile de mubala

La Forêt modèle du Dja et Mpomo (FOMOD) regorge de multiples PFNL (tiges de jeunes arbustes, écorces, racines, fruits, sève, feuilles, fleurs, pollen, nectar, etc.). L'usage de certains de ces produits a parfois exigé un savoir spécifique et des formes d'initiation culturelle.

Penthaclethra macrophylla

Traditionnellement, la connaissance de tous ces produits et de leurs vertus permettait d'apporter des solutions à de nombreuses situations. Or, on constate aujourd'hui une perte de connaissances à cet égard. En même temps, certains PFNL négligés dans le contexte traditionnel prennent une importance considérable. Tel est le cas du *Penthaclethra macrophylla*, communément appelé *mubala*. Au Nigéria, par exemple, sa valorisation par les petites et moyennes entreprises a permis à ce PFNL de devenir numéro un en une année. D'après les informations recueillies, il produirait de l'huile végétale en grande quantité, et ses tourteaux seraient très nourrissants pour les porcs.

Au sein de la FOMOD, le *mubala* constitue une forte source potentielle de redistribution des bénéfices, du fait de son abondance et de son mode de prélèvement accessible à tous, essentiellement le ramassage. Eu égard à cette position de force et aux impacts socioéconomiques actuels et escomptés, la FOMOD se propose d'accorder une importance particulière à ce PFNL, en évaluant la possibilité de faciliter l'installation d'une microentreprise forestière communautaire de production d'huile et de tourteaux de *mubala* dans la zone. (***Contribution de***: Patrice Pa'ah, Secrétaire exécutif, Forêt modèle du Dja et Mpomo, Cameroun. Dans *NTFP Newsletter*, Volume 1:4, Natural Resources Canada and Royal Roads University, juin 2010.)

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***Eru* market chain baseline (*Gnetum* spp.) in the Southwest and Littoral regions**

Eru (either of two species, *Gnetum africanum* or *G. buchholzianum*) is a leafy vine found in the tropical humid forests of Central Africa, including Cameroon. The leaves are harvested and traded principally as a vegetable, which is an important source of protein and nutrients, used in popular dishes in Cameroon and neighbouring Nigeria.

From March to October 2009, a baseline assessment (involving focus groups, questionnaires, interviews and visits, as well as secondary data) of the *Gnetum* spp. market chain was conducted in the Southwest and Littoral regions of Cameroon, extending into the Cross River and Akwa Ibom states of Nigeria.

The Manyu, Kupe-Manengouba and Ndian divisions in the Southwest and Mungo division in the Littoral region were selected as important production areas, based on a situational analysis and rapid assessment that were carried out prior to field work.

The research indicates that seven main market channels exist, linking up to seven types of actors, from consumers to traders, exporters and importers in major markets in Cameroon and the high volume market in Nigeria, with the major production harvesters in the Southwest and Littoral regions of Cameroon. An estimated 1 885 people work in the chain (including 759 producers, 60 traders, 138 exporters, 141 importers, 267 retailers and 330 in support services).

As most harvesters and traders in Cameroon do not belong to an organization or association, only a limited number of small- and medium-sized enterprises (16) appear active in the sector. In Nigeria, strong associations and unions are more common, with 18 organizations noted.

Gnetum contributes to 25 percent of producers' NTFP-related income in the Manyu division and up to 62 percent of NTFP-related income in the Mungo division.

Producers, traders, exporters, intermediaries, restaurant operators and processors make an average profit margin of CFAF220, 495, 232, 50, 550 and 150–500 per kg, respectively. Producers in the Manyu division make an annual average profit of CFAF598 729 and those in the Mungo division CFAF526 867.

Eru contributes to 75 percent of a retailer's income, on average CFAF729 327, and 58 percent of an exporter's income, on

average CFAF3 million. An exporter at Idenau made an annual average profit margin of CFAF357 148 750 in 2008 from the *eru* trade.

The *eru* market in Nigeria provides higher returns than the Cameroonian market, with a Nigerian wholesaler's average profit margin of CFAF425/kg for fresh *eru* while their Cameroonian suppliers make CFAF232 /kg. The differences can be explained by a number of factors: actors in Cameroon are not as organized as those in Nigeria, coupled with poor roads, high levels of corruption and taxes that reduce their profit margins.

Almost all *Gnetum* traded originated from the forest, the majority (41 percent) from its preferred shady habitat in well-drained, primary and secondary forest. Domestication schemes in eight villages have not yet matured to enter the markets on any significant scale. Despite high demand, the quantity produced in the study area in 2008 was 336 tonnes less than in 2007.

While a regulatory framework for *Gnetum* does exist, as it is classed as a Special Forestry Product requiring a permit for trade, the majority of harvesters and traders do not possess a permit. Increasing harvests, combined with the lack of regulatory or any customary control coupled with no enforcement of harvest permits, a very low level of domestication and increasing consumer demand have led to a situation of long-term unsustainable harvest. Correspondingly, the price of *eru* has increased with time, with an average increase of CFAF100/kg in production zones during the period 2007–2009. While the *Gnetum* trade is essential in providing cash income to harvesters and traders to meet their basic needs in health, education and housing – helping meet Millennium Development Goals in the study area – its exploitation is failing to contribute to meet the environmental sustainability goal.

This study, taking into consideration the views of actors, concludes that a more efficient market structure of the chain in Cameroon could enable them to benefit from higher profit margins. Domestication and awareness-raising programmes could lessen the pressure on an already depleted resource base and effective regulatory and customary control measures – if implemented and enforced – could limit overexploitation and enhance sustainable trade. (*Source*: summary of L. Ndumbe, V. Ingram *et al.* 2010. *Market baseline study on* Gnetum *spp. in the Southwest and Littoral regions*, Cameroon. Yaoundé, Cameroon, FAO-CIFOR-SNV-World Agroforestry Centre- COMIFAC: 142.)

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ECUADOR

Environmental inspection in the Yasuni National Park

Representatives of Ecuador's ombudsman's office and environmental groups have visited the Yasuni National Park, home to some of the world's last indigenous people still living in voluntary isolation, in order to verify reports of illegal activity by oil companies.

Ecuador's new constitution bans oil drilling in the "untouchable zone" declared by the government in the southern part of the park to ensure the survival of the Tagaeri and Taromenane indigenous communities, who have shunned contact with society and are highly vulnerable to introduced diseases. The untouchable zone – where no logging companies or other extractive industries can operate – was declared in 1999, although the boundaries were not fully defined until 2006.

Despite the ban on activities in the area, construction of an oil pipeline that would connect currently operating oilfields with possible deposits in the park has continued, said Esperanza Martínez, head of the "Amazonia por la Vida – Salvemos al Yasuní" campaign carried out by Acción Ecológica, a local environmental group.

Meanwhile, Minister of Non-Renewable Natural Resources Germánico Pinto said that President Rafael Correa had approved the terms of a trust fund to finance the decision to leave the oil underground in the Yasuni Park. Under the innovative plan, the government will issue bonds in exchange for a commitment to forego drilling in Yasuni, where there are an estimated 850 million barrels of crude, and to preserve the park's rain forest, while preventing the release of some 400 million tonnes of emissions of carbon dioxide, the main greenhouse gas.

The initiative is known as the Yasuni-ITT project because it involves the Ishpingo, Tambococha and Tiputini oilfields, which partly overlap with the untouchable zone in the southern part of the park, one of the most species-rich areas in the world.

The megadiverse Yasuni Park, the largest national park in this South American country, was declared a world biosphere reserve by UNESCO in 1989.

Pinto added that the trust fund would be negotiated again with the United Nations Development Programme (UNDP), which the government hopes will administer the project.

Yasuni, declared a national park in 1979, is in the heart of Ecuador's Amazon rain forest, in the eastern provinces of Orellana and Pastaza. More than 1 760 species of trees and bushes have been identified on its 982 000 ha. The park is also one of the areas in the world with the greatest variety of bird species, and nearly 40 percent of all species of mammals that inhabit the Amazon jungle can be found there. (*Source*: Amazon News, 15 April 2010.)

NATIONAL PARK CONTAINS WORLD'S HIGHEST BIODIVERSITY

More trees grow in a single hectare of upland rain forest in Yasuni – 655 species – than in the continental United States of America and Canada combined. In 25 ha, the number of tree species rises to 1 100. "In just one hectare in Yasuni, there are more tree, shrub, and liana (woody vines) species than anywhere else in the world," said Gorky Villa, an Ecuadorian botanist working with both the Smithsonian Institution and the conservation organization with offices in Maryland and Quito, Ecuador.

The same incredibly high diversity applies to amphibians; the 150 species documented to date throughout Yasuni are a world record for an area of this size. However, the numbers of insects in Yasuni may eclipse all of these: a single hectare of rain forest may contain as many as 100 000 unique insect species. This estimate is the highest per unit area in the world for any taxa, plant or animal. (*Source*: Mongabay.com, 19 January 2010.)

ETHIOPIA

White honey grows scarce as bees abandon Ethiopia's parched peaks

The truffle of the apiary world – rare white honey from Ethiopia's highest peaks – is in danger of disappearing, according to beekeepers in the Tigray region. "No rain for the flowers," said Ashenaf Abera as he stood on his rocky, parched slope in the northern Ethiopian region. "The bees need high-altitude flowers for the white honey. When they cannot find them, they go to other plants and produce yellow honey."

Abera is paid £65 a month to mind 270 hives for the Asira Metira monastery, one of a dozen religious centres in an area whose fourth-century rock churches are among the wonders of the world. "We know about bees," said honey seller Sheikh Mohamed Ahamedin. He grips a large screwdriver with both hands to ladle a dollop of thick and lumpy white honey out of a plastic bucket. It is snow-white and tastes sweet and more waxy than yellow honey.

"The price is the highest it has ever been this year, because of scarcity," said Ahamedin, who sells white honey for £7.75/kg. Last year he charged £4.50/kg.

Ethiopia is Africa's largest honey producer and the world's fourth biggest beeswax exporter. After coffee, gold and cowhide, bee products are major contributors to the economy, especially through exports to Italy, where white honey is considered a delicacy.

Bee products are the only export item produced by Tigray's impoverished 4.6 million people, whose region is said to be one of the worst-hit in the world by climate change.

Such is Ethiopians' love of honey that apitherapy clinics offer treatments for many ailments. The national drink is *tej* – honey mead. (*Source*: *The Guardian* [United Kingdom], 18 April 2010.)

FRANCE

France's best honey: from the Paris rooftops?

Parisians and tourists enjoying a meal at one of the restaurants in the famous "Fauchon" gourmet shop in central Paris might be surprised at the freshness of the honey served with their tea and other meals.

It is fresh and delicious because it comes from the roof of the nearby Paris Opera.

The beehives on top of the Opéra Garnier are just one of an increasing set of hives sprouting on roofs around Paris in an effort to save bees, their honey and their impact on our food and environment.

The Opera beehives belong to Jean Paucton, 77, who still likes to climb up to the rooftop of the Opéra in the centre of Paris to visit his bees. "Paris is perfect for them," Paucton explained. "The average temperature during the year is 13° C and there are lots of gardens: the Tuileries, the Luxembourg Gardens, La Villette basin, the Bois de Boulogne ..."

Paucton was not always a beekeeper. He used to be an Opéra props man. It was then that he bought his first beehive, and put it on the balcony of his Parisian apartment. But his neighbours were not too happy. A friend of his told him to put the hive on the roof of the Opéra so that the bees would not bother anyone anymore. He did so, and a few weeks later, a friend of a friend came up to take a picture of the beehive. "It turned out it was the famous French photographer Yann Arthus-Bertand!" The photo was published in the French magazine *Paris Match*.

Paucton's rooftop beekeeping idea has become a trend and now beehives are located all over Paris. They have taken up residence on the roof of the newly renovated Grand Palais on the Champs Elysée, the brainstorm of beekeeper Nicolas Géant.

Géant owns a shop where he sells beehives to other Parisians. "Urban beekeeping is the future of apiculture," he said. "Most of the beekeepers have taken their hives back to the city because they realized bees were dying 30 percent more in the countryside."

It may seem paradoxical but pollution in the countryside is more toxic to bees than in the cities, especially in Paris. "For ten years now, the city of Paris has banned all chemical products from its gardens," Géant explained.

As beekeepers, both Nicolas Géant and Paucton are well aware of the damage caused to bees by chemical products. They try to increase the public's awareness of their disappearance and its consequences by organizing visits to their beehives.

Still, there is a tendency to think that the honey made in the city cannot be as good as that harvested in the countryside. Analyses made on the honey of the Grand Palais showed that there were traces of dandelions in last year's harvest. "There are lime trees, chestnuts, acacias in Paris. It's a diversity you can't find anywhere else," Jean Paucton added. In the countryside, the honey is made of only one species because of single-crop farming. That is why the honey of the Opéra is known for its flavour.

The price of that taste is a bit more than USD18 for barely 4 ounces (113.4 g). In other words: very expensive. (*Source*: www.globalpost.com, 28 June 2010.)

GHANA

Traditional plants at risk of disappearing

The Fante-Akan people of Ghana have a traditional knowledge of ritual plants used to cure people of mental and physical ills, but these sacred plants are in danger of vanishing as their surrounding forests diminish.

"Certain important medicinal plants are no longer available," Dr Tinde van Andel, of the Netherlands Centre for Biodiversity Naturalis, told MediaGlobal. As an ethnobotanist, it is van Andel's job to study how cultures utilize indigenous plants and prevent such practices from being lost.

In June, van Andel will travel to Ghana to conduct fieldwork documenting the traditional knowledge of the Fante-Akan people. Van Andel warns of the many consequences that may occur if this traditional knowledge fails to be preserved. "If people do not know their useful plants anymore, or if the plants are gone, people will lose a major source of wild food, medicine, shelter, craft material, fodder, and cash income."

Commercially valuable plants are being overharvested. As a result, the Fante-Akan people now have to walk further in order find the medicine they need, affecting both their health and survival. Van Andel will specify priority species that are critical to the Fante-Akan people's social well-being, cultural diversity and history, which will help in the conservation of these plants.

Millions of Africans rely on traditional herbal medicine for their primary health care needs simply because they lack access to forms of Western medicine. The indigenous plants used by these cultures contain a myriad of natural chemicals, antibiotic or antifungal properties, essential oils, and tannins, all of which are effective remedies.

Certain plants are also used in centuries-old traditions and rituals. The Ashanti people of Ghana use a specific tree bark to dye the clothing of someone who has died. "The colour of the dye depends on the age and social status of the deceased; each colour comes from a different type of bark," van Andel added. "Even Ghanaians who have migrated to the Netherlands go to great lengths to obtain this dye in Europe, so they can bury their relatives according to tradition."

The protection of Africa's biodiversity is crucial to conserving the cultural heritage of people that depend on plants as part of their way of life. There are many plants that still need to be identified, along with the roles they play in indigenous cultures.

"It is not only essential to preserve traditional knowledge about plants and forests, but also very important to train young scientists in the taxonomy of tropical plants," van Andel said. "Too few botanists or biologists are trained nowadays in collecting, identifying and describing tropical plants." Identifying and protecting plants that are an important part of people's traditions will take time, money and cooperation between governments and academia, van Andel acknowledged. (*Source*: MediaGlobal in *Traditional Knowledge Bulletin*, 2 June 2010.)

GUATEMALA

Revalorization of indigenous knowledge

Wildlife hunting for domestic consumption (subsistence hunting) is a very common activity that is part of the cultural identity of many indigenous communities in Guatemala's rural area, yet it has been poorly studied in our country. However, unmanaged subsistence hunting is a serious threat for wild animal populations and can cause drastic effects and negative alterations in the natural dynamics of ecosystem.

The Ecoregión Lachua is home to 55 Maya-Q´eqchi´ communities that still have agriculture and forest use practices, such as wildlife hunting, which are traditionally

carried out in a way that contributes to the sustainability of these natural resources. The Maya-Q´eqchi´ cosmovision has many traditional elements that promote and favour a responsible and respectful use of nature.

In 2000, the School of Biology of the University of San Carlos in Guatemala started a subsistence hunting characterization project in communities neighbouring the Laguna Lachua National Park (LLNP) to determine its local tendencies. This study initially started with nine local hunters from five communities who collaborated with the project by filling out forms with the biological information about the animals they hunted.

The result of analyses showed that subsistence hunting is a very important activity for the Maya-Q´eqchi´ communities of the study area, because it provides economic and social benefits. As main products of the analysis of these hunting tendencies, a Wildlife reproduction calendar and a Preliminary proposal for subsistence hunting management in local communities of the Ecoregión Lachua were formulated.

The research team began promoting and carrying out participative efforts guided towards establishing a communitarian subsistence hunting management system. These efforts led to the First Communitarian Agreements for Subsistence Hunting Management, which were proposed and signed by leaders/authorities of 15 local communities.

Currently, the staff are carrying out a long-term Participative Bilingual Environmental Education Programme – PBEEP – that emerged from a local initiative. PBEEP aims to give continuance to previous research and management phases through an education, awareness and dissemination phase of the efforts carried out until today regarding conservation, communitarian management and sustainable use of wildlife.

A main cornerstone of PBEEP, which biologists Marleny Rosales-Meda and Maria Susana Hermes carry out with Maya-Q´eqchi´ communities that neighbour LLNP, is linking scientific and traditional knowledge to favour the long-term conservation and sustainable use of natural resources in the Ecoregión Lachua. A key objective of this innovative programme is to promote the rescue and revalorization of ancestral Q´eqchi´ knowledge that is strongly related to the respectful and responsible use of nature.

Rosales and Hermes, coordinators of PBEEP, proposed to elders and LLNP managers to carry out a different kind of reforestation activity guided towards rescuing and transmitting traditional tree-planting values and wisdom to children and teenagers from five communities of the Ecoregión Lachua. For this purpose, park rangers from LLNP constructed a plant nursery with 1 800 native trees that have important uses (wood, food, medicine) and special meaning for Q´eqchi´ people.

This activity is a pioneer reforestation effort where biologists, park managers, elders and the youth of the Ecoregión Lachua work hand in hand in favour of the conservation and good use of trees, considering ancestral respect towards Mother Nature as a cross-cutting topic. (*Source*: The Guatemala Times in the *Traditional Knowledge Bulletin*, 17 February 2010.)

INDIA

Indian government to promote cultivation of medicinal plants

The Hill state government in India has decided to promote cultivation of medicinal plants on a commercial scale in view of the increasing popularity of the traditional system of medicine. The Hill state accounts for over 7 percent of the nation's biodiversity which – if harnessed – can help preserve vanishing herbs and also generate additional income for the people.

According to a survey by the World Health Organization, about 80 percent of the population of developing countries still rely on traditional herbs for primary health care needs. Keeping in view the vast potential for cultivation of some rare Himalayan herbs, the government has taken several initiatives. A separate Herbal Medicine Plant Board has been set up to carry forward such activities in a big way.

A road map has been prepared for large-scale cultivation of medicinal plants, to give thrust to herbiculture, under which 37 herbal and aromatic species of medicinal plants have been selected. Farmers will be able to profit by cultivating these varieties of herbs from their small landholdings.

The state horticulture, forest and Ayurveda departments will be involved in the programme to help farmers grow herbs on private land and in forests and herbal gardens. The government is also providing technical assistance to individuals and cooperative societies for the purpose. The produce will be supplied to pharmaceutical companies manufacturing Ayurvedic and allopathic medicines.

Flora of the state consist of around 3 500 species of plants, of which about 800 species are rich in medicinal value and 165 species are collected for commercial purposes.

The total cultivable wasteland in the state is about 123 000 ha, and growing herbs will go a long way in further strengthening the state's economy. The state is the largest supplier of *chilgoza, kuth, dioscoria, dhoop, picrorrhiza, valeriana* and *ephedera* in the country. (*Source*: Tribune News Service [India], 20 June 2010.)

Fair price for forest yield

Tribal villagers who make a living out of forest produce will no longer be at the mercy of intermediaries. The government moved to ensure a fair price for minor forest products such as tamarind, mango pulp, *mahua* (*Madhuca longifolia*) and *chiraunji* (seeds of *Buchanania lanzan*) this summer.

Jharkhand State Minor Forest Produce Cooperative Development Marketing Federation Limited (Jhamfcofed) has already purchased numerous tonnes of these products from villagers.

"But more remains to be done. We will purchase 200 tonnes of *mahua*, 20 tonnes of natural gum, 50 tonnes of *chiraunji* nuts and 50 tonnes of half-dry mango flesh this summer," said Ratnesh Chaturvedi, the Managing Director of Jhamfcofed.

The state marketing body was formed in 2007, a year after the Scheduled Tribe and Other Traditional Forest Dwellers (Recognition of Rights) Act gave villagers the right to collect minor forest produce. Jhamfcofed, however, took time to create its network and began business in 2009.

Jharkhand's forests yield huge amounts of minor forest products, the prices of which run into several crores of rupees. But the market has so far been monopolized by intermediaries who purchase these products, especially from tribals, at throwaway prices.

Jhamfcofed has already purchased 88.2 tonnes of tamarind from villagers at a rate of Rs20/kg. The price in the open market is around Rs15/kg.

The state body has also bought 267.24 tonnes of *mahua* at a handsome rate of Rs22/kg and 30 tonnes of natural gum at Rs40/kg.

"Jharkhand has a collective minor forest produce market of Rs700–800 crore. But, so far, we have been able to tap a market of Rs1 crore. Large areas remain untapped," Chaturvedi said.

Tamarind, mango and *chiraunji* are processed into food items such as pickles. Besides these, forests produce millions of tonnes of *amla, aloevera, karanj, saal* seed, etc.

Jhamfcofed sells the same to food-processing units. Chaturvedi said that last year, it had earned a profit of Rs10 lakh after doing business worth Rs1 crore. This year, the target is Rs30 lakh with a total investment of about Rs2 crore. (*Source: The Telegraph* [Calcutta, India], 20 May 2010.)

Tamarind

Chitral has vast potential in NTFPs

Exploitation of vast resources of NTFPs in Chitral can help fight poverty and raise the living standard of the people. The Deputy Director of NTFPs of Khyber Pakhtunkhwa Forest Department, Iftikhar Ahmed, added that efforts were in progress to exploit the resources on a sustainable basis and for this purpose a complex was being set up in the district for which land had been acquired. The active participation of the local communities must be enlisted and a comprehensive training on natural resource management must be imparted to them.

He said that the villagers would be able to earn a livelihood by using the natural items that otherwise went to waste. He described the medicinal plants in the pastures and forests, honey beekeeping and sericulture as the potential sources, adding that forest conservation was possible only when the locals derived full advantage from the NTFPs. (*Source*: Chitraltoday Web site, 13 June 2010.)

Action to support "pro-poor" forests

In Orissa, India, IUCN member Winrock International India (WII) is working with local communities to manage forests better within a wider agricultural landscape. In a zone between the Simlipal Tiger Reserve and the plain areas, WII plays an active role in the development of forest resources and livelihoods of the forest-dependent people in Orissa. Here, forests contribute about 25 percent of the average income, mostly through NTFPs, of which the income from the sale of sal leaves accounts for more than 90 percent.

WII's work has evolved over time from merely promoting NTFP livelihoods and the conservation of forests to promoting integrated natural resource management in government planning and programmes. With the support of the Ford Foundation, this work has been extended to assist the coordination of forest protection groups and community-based organizations into a federation of local NGOs, called MASS (the Mayurbhanj Swechasevi Samkhya), which today covers around 800 villages in the district. (*Source*: IUCN Monthly Update, 29 January 2010.)

INDONESIA

Bioprospecting: a priority for Indonesia

Scientists from the Indonesian Institute of Sciences (LIPI), Conservation International (CI) and other scientific institutions continue to find exciting new species in both our oceans and forests. We can reflect on how our rich biodiversity can benefit Indonesia after these initial discoveries are made.

Scientists work on two levels: those who catalogue the species they find and those who look for scientific innovations based on the unique characteristics of the new species. Biodiversity prospecting or "bioprospecting" seeks to develop commercial uses for these unique genetic characteristics. Examples include quinine

to treat malaria, or new drugs to fight cancer now or in the future.

Bioprospecting is a market-based approach that could support long-term sustainable economic development in a biodiversity-rich country. It can also provide incentives to conserve nature.

However, this can only be done with an honest partnership between local communities – which are the traditional owners of these plants and animals – the private sector and international organizations involved in research and development. In many cases, traditional knowledge includes an understanding of the benefits that different plants and animals provide for humans.

What is needed is a systematic recording of their uses – and the patents or licensing to ensure that the local people who own these resources receive a real, long-term reward for conserving the natural ecosystem that provides such valuable natural products.

If scientists have the task of finding new species and identifying their current or future uses, the government is expected to manage biodiversity, to ensure that species do not disappear. The government is supposed to use these resources to promote national welfare and prevent exploitation. We need to create a harmonized clear government regulation on biodiversity research, development and conservation.

There are two immediate priorities for this legislation.

First, there is a need to form an interministerial commission made up of representatives from the ministries involved in conservation of natural resources and trade.

Second, this commission needs to have one representative with the authority to negotiate terms with pharmaceutical companies and others interested in bioprospecting in Indonesia. At present, there are several agencies in charge of conserving our biological and genetic resources, which creates opportunities for foreign parties to exploit the system for access. Even a third party can approach local people without asking for a permit from an authorized agency. This overlapping management and lack of a legal basis is a barrier to the conservation and protection of Indonesia's biological resources. In addition, permits granted through the proper channels can take months to acquire and, typically, by the time they are granted, researchers have to return home before their research has even begun.

Together with the governmental involvement in formulating a bioprospecting policy, Indonesia has a tremendous resource in its non-governmental organizations (NGOs). There are well-qualified NGOs working across Indonesia, in hundreds of distinct indigenous communities that each possess their own culture, language group and knowledge of natural resources. We are only just beginning to understand the value and varied applications of indigenous knowledge.

Indonesia has all the tools necessary to make bioprospecting work. It has rich biodiversity, a population both dependent on and traditionally knowledgeable about this biodiversity, a strong NGO community, government institutions working in different areas of the environment, and a developed traditional medicine industry, which puts Indonesia one step ahead of the rest of the world in the exploitation of its biological resources. It also has foreign arboretums and corporations willing to cooperate to make bioprospecting work. What it does not have is the proper arrangement of these elements into one efficiently functioning system. (*Source: The Jakarta Post*, 16 June 2010.)

LIBERIA

Liberian leader bans exportation of bushmeat and wild animals

Liberian President Ellen Johnson Sirleaf has banned the exportation of wild animals and bushmeat from Liberia.

A Foreign Ministry press statement issued in Monrovia on 28 June says the ban will remain in force pending the passage of a proposed legislation to be submitted to the national legislature for enactment.

The statement said that President Sirleaf is accordingly warning all those involved in the illegal exportation of bushmeat and wild animals to desist with immediate effect or face the consequences. It said the ban is aimed at preserving Liberia's wildlife since certain species of wildlife are under threat of extinction.

The government's ban comes in the wake of reports of an increase in cross-border trade in wild animals and bushmeat from Liberia. (*Source*: African Press Agency, 29 June 2010.)

MEXICO

Limitantes del marco normativo sobre los productos forestales no madereros en México

En México los productos forestales no madereros (PFNM) son fuente de ingreso y empleo importante para familias y sectores marginales de la población. Representan recursos que aportan a la calidad de vida y seguridad alimentaria y ayudan a reducir la vulnerabilidad. Son aprovechados de forma silvestre y/o semidomesticada y han contribuido a mantener masas forestales. Son la base material de muchas manifestaciones culturales y forman parte de la identidad cultural regional y nacional.

Reconociendo la importancia de contar con un marco normativo que fomente el buen manejo, es necesario reconocer que actualmente la leyes y su aplicación, en su gran mayoría, están representando barreras y obstáculos para el manejo sostenible y para que los beneficios del aprovechamiento de los PFNM beneficien a sus legítimos poseedores.

Ante la carencia de una reglamentación acorde con el aprovechamiento y uso de los PFNM desde la perspectiva de las comunidades, es necesaria una política pública clara, que reconozca y proteja a los conocedores locales y los involucre centralmente a lo largo de todos los procesos de aprovechamiento.

Como parte del análisis realizado en el simposio sobre los PFNM, en el I° Congreso Latinoamericano de Etnobiología / VII Congreso Mexicano de Etnobiología (realizado en Pachuca, Hidalgo, del 2 al 6 de noviembre de 2009) y tomando en cuenta la opinión de especialistas en el tema, destacamos la existencia de las siguientes fallas

relativas a la regulación actual de estos recursos en su relación con las comunidades y la responsabilidad social y ética de instituciones educativas-académicas con las comunidades:

- Existen leyes y reglas, son excesivas y no necesariamente garantizan sostenibilidad. Se ocupan más de los trámites que de garantizar las buenas prácticas. Generan altos costos y dependencia de servicios externos.
- Muchas veces hay contradicción entre las leyes y los reglamentos, o poca claridad. Algunas son muy generales, otras demasiado específicas a una realidad, pero no aplicables a otra (como el caso de especies que están en peligro de extinción en una región, pero no en otra).
- La regulación es inaccesible y excluyente.
- El actual esquema de los «prestadores de servicios» propicia el desempeño irregular y no supervisado. En este marco, se ha desmantelado la tradición del extensionismo agropecuario. Se ha insertado en el proceso de aprovechamiento de los PFNM, a través de la figura de los «prestadores de servicios»; una instancia de interés privado financiado con recursos públicos, a costa de un rubro de apoyo, cuya operación compete al Estado como parte de su responsabilidad social. Los «prestadores de servicios» han desplazado a muchos egresados universitarios de un espacio de servicio público que debe ser técnicamente competente, éticamente riguroso y metodológicamente dialógico y participativo.
- Las leyes oficiales, en general, no reconocen ni dialogan con las reglas comunitarias. Las instituciones locales (asambleas, consejos de ancianos, rituales, etc) son fundamentales en el diseño, instrumentación y cambio de las reglas comunitarias. A menudo, en las comunidades, sobre todo cuando se trata de recursos de importancia cultural, existen conocimientos, prácticas y reglas para manejarlos. Es frecuente que dichas reglas incluyan elementos éticos de equidad y cuidado de la Tierra. Hay varios ejemplos de especies y ecosistemas que se han manejado de manera sostenible por cientos de años, basados en este conocimiento tradicional.
- En la mayoría de los casos existe poca o ninguna información científica sobre la cual basar planes de manejo. Falta apoyo para realizar la investigación básica necesaria para fundamentar buenos planes de manejo. Pero para que sea útil, esta investigación debe poner en el centro a las comunidades y sus necesidades; es necesario realizar una investigación participativa, involucrando a los usuarios en cada fase de los estudios, a partir de su diseño.
- Como parte del problema, en cuanto al papel de las instituciones de investigación – que muchas veces reciben dinero de las empresas – el medio académico, en general, no incide de manera asertiva en la regulación de los PFNM. Llega a describir fenómenos pero no pugna por operacionalizar recomendaciones conjuntamente con los involucrados en las iniciativas. Esta automarginación hace que las iniciativas locales de aprovechamiento de los PFNM se nutran poco de fuentes académicas.

Tomando en cuenta lo expuesto anteriormente se proponen las siguientes acciones:

- Se requieren políticas públicas encaminadas a fortalecer las capacidades locales y desarrollar incentivos para comunidades que han mostrado que sus prácticas de aprovechamiento tienen un impacto positivo sobre la conservación, y que esto se valore como elemento determinante en la autorización de permisos de aprovechamiento.
- Es necesario revisar a fondo el esquema actual de selección y operación de los "prestadores de servicios" para que sean las instancias gubernamentales mismas en una relación directa con los pobladores, las que realicen labores de apoyo técnico a los grupos e iniciativas locales de aprovechamiento sostenible de los PFNM, teniendo en cuenta la preeminencia de los actores y saberes locales.
- No se niega el papel del conocimiento científico que permite avanzar hacia respuestas técnicas puntuales, es decir, a un aspecto del manejo; por el contrario, se sugiere la investigación científica aplicada que tenga incidencia real sobre el aprovechamiento comunitario de los PFNM y otros aspectos. Fomentar también el diálogo de saberes, que permita tomar lo mejor de cada sistema de conocimiento.
- Dada la actual crisis económica y los escasos recursos que se asignan a la ciencia y al desarrollo de tecnología en México, es necesario supervisar las propuestas de investigación y proyectos sobre manejo de recursos naturales, de manera que respondan a las necesidades reales, sentidas y expresadas por los pobladores rurales, para mantener o recuperar sus complejos sistemas productivos, cuya eficacia ha sido probada por generaciones y cuya afectación actual es propiciada por una regulación excluyente o por una instrumentación excluyente de la normativa actual. La condición actual y el futuro de los PFNM está ligado directamente a las condiciones de vida de la población; la desigualdad social y la exclusión que repercuten en la actualidad directamente en la viabilidad de los recursos naturales.

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NEPAL

Medicinal and aromatic plants and their role in attaining food security in the high hills of Nepal: an experience from Baitadi and Darchula

Medicinal and aromatic plants (MAPs) are an integral component of the rich biodiversity of Asia, especially the Hindu Kush-Himalayan region and the other highland systems in South Asia. MAPs are attracting an increasing attention of both development planners as well as environmentalists because of their multiple functions and potential contribution to improving livelihoods of rural and marginalized communities. MAPs are an integral source of income, medicine, dyes, nutraceuticals, food products and cosmeceuticals, benefiting the poor and landless in mountain and highland regions. The earnings from MAPs have been utilized mainly in gaining food security by most of the people living in the high mountain areas of Nepal.

Baitadi and Darchula are located in the far western part of Nepal and, according to national indicators, are the country's least developed districts. Geographic complexity/remoteness, poverty, food scarcity, illiteracy, fewer economic opportunities, absence of land transportation and communication facilities are the major challenges for development in the district.

A study was carried out using a participatory, consultative and multiperspective (polyvocal) approach, combining both qualitative and quantitative data collection methods. The primary data were collected through 16 key informant interviews, three focus group discussions, 52 household-level questionnaire surveys (21 female and 31 male respondents) and direct observation.

The studies showed that the main source of household production is agriculture and livestock, with MAPs contributing around 12 percent in total household production (5 percent in Baitadi and 18 percent in Darchula). Most of the households agreed that the contribution of MAPs to household production is high. Thirty-nine percent of the respondents agreed that it made a moderate change to their food security, followed by significant change (25 percent), no change (24 percent) and minimum change (12 percent), with no responses for highly significant.

MAPs collection has a significant impact on food security for poor and MAP-dependent people. Similarly, among ten options provided (improved livelihoods; diversified livelihoods; increase in marketing access; increased incomes; increase in knowledge; food security; increase in bargaining power; improved health conditions; improved well-being; and women's status), respondents ranked food security in the first four. Overall food security and increased incomes were ranked first.

It is obvious that the collection and sale of MAPs has a positive impact on food security for the people living in the high mountain areas of Nepal. MAPs are especially important for the poor and for those holding less land; they are one way or the other dependent on MAPs for their daily livelihood.

Some of the major problems encountered by MAPs collectors were improper prices for their collected goods, lack of proper market information, inadequate value addition technology, and inadequate physical infrastructures such as roads and warehouses.

With a better management of MAPs, there would be more possibilities for marginalized and poor households to attain greater food security.

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BAMBOO HOUSES COULD HELP ALLEVIATE POVERTY

Together with providing low-cost and environmentally friendly houses, construction of houses made of bamboo could potentially lead to poverty reduction and employment generation in Nepal.

The Agro Enterprise Centre (AEC), affiliated to the Federation of Nepalese Chambers of Commerce and Industry (FNCCI), has entered into an agreement with the International Network for Bamboo and Rattan (INBAR) for the promotion of bamboo house construction in Nepal. These projects will be undertaken with financial aid from the Common Fund for Commodities (CFC).

These prefabricated bamboo houses are affordable, quick to construct and durable. They can also provide cheap shelter for the relatively poor population of Nepal.

Bamboo houses require minimum technology. Most of the bamboo houses are based on existing local technology, which does not require high-technology tools for construction.

Similarly, these houses can help generate employment opportunities as a greater number of locals can be engaged in their production – from the plantation of bamboo to the construction of houses.

The promoters have also emphasized that these houses can decrease the current dependency on importing foreign raw materials used in construction. The bamboo structures use local materials that do not harm human health and the environment, employing energy-efficient designs. They also employ more people.

Since bamboo can be used as a substitute for timber, it will also help to decrease deforestation. Moreover, bamboo is highly sustainable as it can be regenerated within two to three years, while timber could take longer than 25 years. (*Source*: Himalayan News Service, 18 April 2010.)

NIGERIA

The potential of neem

Neem is ubiquitous in northern Nigeria, and yet the neem tree's medicinal and economic values remain underexploited. The neem tree (*Azadirachta indica*), popularly referred to in the Hausa language as *Dogon Yaro*, is a tree of the mahogany family with a broad dark-brown stem and widely spread branches. It grows to over 15–20 m in height and produces evergreen leaves with white fragrant flowers and fruits. It is also drought resistant.

Curiously, the tree is everywhere in the northern part of the country: on streets, around houses and in the forests. *Dogon*

Yaro does not require any special cultivation techniques or efforts because it grows in the wild. This single quality makes it easy to cultivate and capable of multiplying without difficulty.

The neem tree has both enormous scientific and traditional uses. Almost every part of it is useful: the seed, leaves, bark and trunk. These parts are used in the manufacture of organic fertilizers, pesticides, pharmaceutical products, cosmetics, traditional herbal medicines and animal feed. In countries such as India, neem is used in the manufacture of pharmaceutical products to fight parasitic, fungal, bacterial and viral infections. It has also proved successful in the manufacture of drugs to cure diabetes, infertility and skin diseases.

Dr Yusuf Lawan Idrisa of the Department of Agricultural Economics and Extension Services at the University of Maiduguri is an expert in technology adoption and impact studies. He said his studies show that neem "can also be used to control field pests on farms. It only involves drying the leaves and then grinding them into powder and mixing with water," adding that "neem-based pesticides can be used to reduce the incidences of systemic diseases such as cancer, kidney and liver diseases that arise as a consequence of using chemical-based (non-decomposing) pesticides that leave behind harmful but unnoticed residues".

Neem-leaf based pesticides are biodegradable and have no harmful effects on humans. The bitter taste can be washed away with water.

However, of major importance is the seed from which oil and organic fertilizer can be extracted. The oil can be used in the manufacture of pesticides, pharmaceutical products and traditional herbal medicines. (*Source*: www.allafrica.com, 6 April 2010.)

PANAMA

Conserving endangered orchids

APROVACA is a non-profit grassroots organization of El Valle de Anton that is dedicated to the conservation of endangered native species of orchids, many of which are believed to be on their way to extinction.

Estimates vary, but it is generally considered that Panama is home to no less than 1 500 species of orchids, making it one of the most orchid-rich countries in the world. However, the destruction of rain forests, accelerated by the recent rapid economic growth of the country, is depriving these flowers of their habitat. In El Valle, in particular, poverty plaguing the local population has led some to pick endangered species in the woods illegally and sell them on the market, posing a real and imminent threat to the orchids.

Concerned about such a situation, APROVACA was created in 2001 in order to protect the flowers from extinction and seek a more sustainable way of development. A number of orchid conservation activities are carried out to achieve this objective, including reintroduction of endangered orchids into their original habitat, environmental education for the public and reforestation. The APROVACA Web site reports: "We grow both the endangered endemic species and non-local horticultural ones in our nursery for different motives. We try to conserve the former by reproducing them, while selling the latter to visitors to raise funds for our ecofriendly activities and to make the very act of gathering wild orchids for profits redundant. Overall, we aim to conserve the local biodiversity and promote an environmentally conscious and sustainable form of tourism."

Because of its unique geographic characteristics – the isthmus connecting North and South America – Panama boasts exceptional biodiversity. Indeed, Panama's estimated 1 500 species of orchids is a far greater number than that of the United States of America and Canada combined, and many of these species are endemic to Panama.

The APROVACA Web site features over 200 photographs of Panamanian orchids.

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PARAGUAY

Bamboo against deforestation

Uncontrolled expansion of cattle farming in Paraguay has led to rampant deforestation and introduction of "exotic" varieties says environmentalist Guillermo Gayo. To put a halt to this practice in the southern department of Paraguarí, the foundation he heads has implemented what is known as "permaculture".

A decade ago, the Takuara Renda Foundation ("the bamboo place" in the Guaraní language) settled near the town of Sapucái, on a hilltop that forms part of a remnant of the Atlantic Forest, which extends through parts of Argentina, Brazil and Paraguay, with just 7 percent of its original coverage remaining. The foundation chose an area that had been severely degraded by forest fires and logging. It promotes permaculture, which is the design and maintenance of small productive ecosystems, including the harmonic integration of people and their homes, in order to meet their needs in a sustainable way.

This approach utilizes materials such as *tacuara* cane, a type of bamboo, and plant fibres for bioconstruction. Gayo is not trying to establish bamboo as a crop in the area, but rather is using it to help the degraded forest to recover. "If you cut a branch off the bamboo, another grows in its place. That is how we are replacing the wood," he said.

The foundation's landholding is just 6 ha, but its efforts are felt far beyond. On 25 surrounding hectares, a process has begun to expand the forest with larger tree and bush species, and there is an emphasis on preventing fires and halting extensive cattle operations.

"I was surprised by the house made from *tacuara* cane and its furniture," said Myriam Ramírez, a young student from a nearby community who visited the foundation with classmates. Ramírez also participated in workshops about bioconstruction, where she learned about building structures out of bamboo. (*Source*: Tierramerica in Inter Press Service News Agency [IPS], 19 April 2010.)

PHILIPPINES

***Monom:* the Téduray weaving tradition**

Daily life for the Téduray revolves around their *safad* or plants, which are considered the extension of the human or animal body; the *barandiya* or things crafted by the Téduray from the materials around them for

various uses; and the *késukat* or means of livelihood to maintain a free, peaceful and progressive society.

Estimates of the Téduray population vary widely, ranging from the 56 000 of a 2004 survey to the approximately 200 000 estimated by the NGO Lumad Development Center, Inc. (LDCI).

One can easily recognize a Téduray household in any community because of the unfailing presence of their traditional baskets. They are known as the symbol of the Téduray, a lasting display of their artistry and flair for craftsmanship.

The general term for weaving is *monom* and includes all kinds of woven handicrafts. The Téduray use the following materials in their weaving: *pawa*, a type of bamboo used for the basket body; *teel*, a type of rattan used for the rim of the basket; *nito*, a type of vine used to sew the rim to the body, and also to make the strap; and *buring*, a dye made of ash from burned tyres or soot from pots used in wood-fired stoves, and mixed with the sap from plants that serves as a fixative.

Commercial logging has denuded the remaining forest in the ancestral home of the Téduray and Lambangian of Upin, resulting in displacement, conflict in the community and a threat to the survival of the indigenous peoples.

LDCI has been promoting weaving as a means to provide income for the people (without cutting trees), while at the same time raising awareness about the importance of the forest and the need to preserve their vanishing weaving culture.

One of the initiatives was to produce *Monom*, a small illustrated booklet highlighting the skills involved in the Téduray weaving tradition. This was only possible with funding support from IUCN's Ecosystems Grant Programme and the Non-Timber Forest Products Exchange Programme – together with the willingness of the tribal leaders and weavers who shared their ideas and expertise.

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SOUTH AFRICA

The socio-economic status of the NTFP subsector in Swaziland

A wide spectrum of NTFPs generally makes a remarkable contribution to the household economy in rural areas, with most communities making a living either from their domestic or commercial use.

The objective of a recent study by Cliff S. Dlamini and Coert J. Geldenhuys of the University of Stellenbosch was to review the current status of the NTFP sector and further compile an up-to-date list of major use categories of NTFPs.

A review of past studies on NTFPs in the four ecological zones of Swaziland indicates the annual economic value of food and drinks, household items, medicinal plants and fuelwood to be at USD1.7, 1.7, 32.1 and 13.8 million, respectively. An analysis of the study on natural resources accounting for the contribution of forests and woodland resources shows that the total value of fuelwood, thatch, edibles, medicines, craft wood, weaving and fodder stand at USD29.6, 1.33, 0.24, 0.10, 0.06, 0.50 and 0.99 million/year, respectively.

This study reviewed past national, regional and international studies and developed a new list of 18 NTFP use categories subdivided into direct, indirect and intermediate uses. Subsequently, a matrix of commonly used botanical NTFPs was designed and includes species such as *Sclerocarya birrea, Bauhinia galpini, Berchemia zeyheri, Dichrostachys cinerea* and others.

However, the study concluded that there is still a profound lack of information on the status and total value of NTFPs and recommended that governments, NGOs, the private sector, communities and other interested and affected parties (including resource users) should work together to conduct research in order to generate, compile and disseminate information on the quantitative and qualitative statistical data on NTFPs, their socio-economic uses and ecological and environmental values.

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SUDAN

Beekeeping and the Bongo people

Beekeeping is the principal activity of the Bongo people in Aguko village in Warrap state, southern Sudan. Chief Sultan Arkanzelo and local beekeepers showed some of their hives and how they are made.

Hives are constructed from split bamboo woven into a cylinder 2 m long and 30 cm wide. This is then coated with mud mixed with the fibres of a creeper called *luyu* (possibly a *Cissus* species). The fibres are slippery and make the mud stick to the bamboo. The hive is then covered with a layer of grass and a second woven bamboo cover is constructed around it. This three to four layer hive ensures that, even if it is put in a tree with little foliage, it will not be affected by heat from the sun. Each end is closed with a palm leaf circle made from *Borassus aethiopum*. A third entrance may be made halfway along on larger hives.

When the hive is complete, a hole is made in the ground and the bark of *Vitellaria paradoxa* (shea butter tree) is burned and the smoke allowed to infuse the hive for 24 hours. Hives will last five to eight years if well made. The hive is placed horizontally about 4 m high in a tree to avoid damage when the grass is burned. Hives are placed at any time of year and bees normally enter fairly soon. After about one year of being occupied, the first harvest can be made, with a further two later on. Harvesting usually takes place in March, May and September, with a total of about 10 litres of honey being obtained per year. A special grass is used to produce smoke, and at each harvest, combs are only taken from one half of the hive. A central core of comb is left and, as far as possible, only ripe honey is harvested.

Honey forms the main currency for the Bongo people, with any remaining comb being used for brewing. Beekeeping is done only by men, as is all the hive construction work. Honey is sold for approximately SDD4 (USD1.50) per 500 ml bottle and beekeepers have no difficulty in selling it. (*Source*: *Bees* for *Development Journal*, Issue No. 95, June 2010.)

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SYRIAN ARAB REPUBLIC

Nature reserves maintain biodiversity, activate ecotourism in Tartous

Nature reserves play an important role in achieving sustainable development and preserving the stability and balance of the environment in the coastal Syrian province of Tartous. They also provide a suitable environment for conducting scientific research and protecting biological diversity.

Tartous province is famous for its natural and artificial forests which extend over the western cliff of the coastal mountains, since the province embraces four nature reserves: East al-Shaara, al-Nabi (Prophet) Matta, Qarkafti and al-Kahf (Cave) Forest. The Director of the Biological Diversity and Nature Reserve Department in Tartous, Hiba Salhab, said the reserves were established because they enjoy a rich biological diversity, hosting various rare plants, while surrounded by several archaeological monuments.

Salhab pointed to the key role of the reserves in activating ecotourism, while preserving these natural areas. She underlined the importance of forests in the reserves in cleaning the air of pollutants and industrial gases.

The Director of Tartous Forest Department, Hassan Salih, said "the reserve of East al-Sharaa was established to preserve oak and terebinth trees, in addition to protecting rare plant species such as maple, Syrian pear, fir trees and some species of oak trees".

The reserve was established with the aim of preserving the mountainous ecosystem and the forests in the area and protecting endangered animals, as well as increasing animal diversity and protecting the perennial medicinal and seasonal plants. Medicinal plants growing in the reserve include thyme, wild garlic, hyssop, dandelion, narcissus, *Artemisia* and lilies.

The reserve is also a destination for ecotourism. (*Source*: Syrian Arab News Agency, 22 June 2010.)

TAJIKISTAN

Mulberry on the roof of the world

There still exist pristine places without industry and pollution where people live in harmony with their environment. One of them is the autonomous province of Gorno-Badakhshan in Tajikistan. Although its area (about 65 000 km²) extends over half the country, only 3 percent is habitable. Most of it is covered by the Pamir Mountains, sometimes called the "roof of the world". The few villages are sited in valleys beside rivers and the population tries to cultivate every piece of available land.

The mulberry is an important food for these valleys. Introduced from China via the Silk Route, it is perfectly adapted to the difficult mountain environment, where it grows between 1 100 and 2 400 m (replacing crops such as wheat and barley that cannot be grown at these altitudes).

There are now more than 60 varieties of mulberry in the Pamir region, the result of centuries of selection and adaptation. They can be eaten raw or transformed into jam, syrups or *pikht* – a flour – which is usually mixed with other seeds and cereals.

The local inhabitants mainly grow mulberry for family consumption: in summer, families put as many as 20–30 sacks of dried mulberry aside as a reserve for the winter. In the local culture, the mulberry tree and fruit are associated with beauty: the berries are traditionally given to a couple to make their life sweeter and, before starting to build a new house, a mulberry tree is planted.

During some crisis periods, such as the Second World War or the extended civil war that afflicted the country until 1997, mulberry played a crucial role in providing the main nutrition for the local population. The community of mulberry producers from Khorog has been part of the Terra Madre network (Slow Food) since 2004 and is working to defend the traditional Pamir customs of eating mulberry, which have significantly decreased in recent years with the spread of industrial products. (*Source*: *Platform for Agrobiodiversity Research*, 5th Newsletter, 24 March 2010.)

THAILAND

Poachers turn fungi farmers to save forests

Nuan Muangchan began to log rosewood illegally as a teenager, creeping at night into Thailand's largest national park and hiding from animals and rangers to smuggle out her loot. Thailand's lush jungles are under daily attack by illegal loggers and poachers, but conservationists in the country's northeast are turning to an unlikely remedy – the common mushroom.

A project that turns former wildlife criminals into fungi farmers is proving a surprising success, giving villagers a decent wage while helping to slow the destruction of forests in the Khao Yai National Park, a World Heritage Site. Under the scheme, set up by Thailand's Freeland Foundation, Nuan now has her own business as a mushroom farmer and no longer relies on precious rosewood, prized for its perfumed sap, as her only means of regular income. And she has persuaded her 33-year-old nephew Boonrod to join her in abandoning the illegal work. Boonrod said he earns USD300 a month from his mushroom farm – a relatively good income in this impoverished rural belt and enough, he said, to stop logging.

Education levels are low in the northeastern region of Isan and most villagers are landless, with many relying on daily hire for farm or construction work to provide for their families. As well as giving potential mushroom farmers all the start-up tools they need, the Freeland

Foundation also trains park rangers, who arrest an average of two poachers or loggers every week. But they said that prosecution alone has not been effective in reducing wildlife crime. "We have to use two strategies: push and pull. The rangers push the poachers out of the forest but we need to pull the villagers into an alternative occupation and convince them to change," said Mukda Thongnaitham from Freeland.

In its efforts to reduce these illegal activities, the Freeland project consulted villagers on their skills and surveyed the local market to see what would sell, before plumping for mushrooms as an alternative income source. The organic oyster mushrooms are sold at the local market and have proved so popular that the farmers cannot grow enough. "At this stage we still cannot meet market demand so we need to expand this project to other villages," said Mukda, who hopes to begin growing *yanagi* or straw mushrooms, and shiitake, which can fetch a higher price. (*Source*: AFP, 21 January 2010.)

TRINIDAD AND TOBAGO

Forests ... much more than timber

In observing World Forestry Day on 21 March, the Environmental Management Authority (EMA) encouraged the people of Trinidad and Tobago to take time to appreciate the value of the country's forest resources. Historically, forests have played important social and cultural roles in the lives of many people, especially those of indigenous communities.

Today, many are realizing that forests offer much more than just timber. Forests provide recreational opportunities and contribute to health and well-being, as well as the regulation of local temperatures and protection of drinking-water supplies. Trees form the foundation of many natural systems and, as such, provide a wide range of products (timber, fruit, medicine, beverages, fodder) and services (carbon sequestration, windbreaks, water quality and quantity control, coastal protection, shade, beautification, erosion control and soil fertility). The forests of Trinidad and Tobago are home to a wide variety of faunal biodiversity, which facilitate pollination, seed dispersal and germination.

This internationally recognized environmental day is also set aside to promote education and awareness of the importance of forests and the benefits of planting trees. Examples of biodiverse forests in the country include the Matura National Park, which was declared an environmentally sensitive area in 2004, and Main Ridge Forest Reserve in Tobago, which is the oldest protected watershed in the western hemisphere, declared in 1776.

For these reasons, EMA embraced the opportunity to collaborate in a project with the Ministry of Planning, Housing and the Environment; the Forestry Division of the Ministry of Agriculture, Land and Marine Resources; the University of the West Indies; and the Institute of Marine Affairs, among others. The project is called the Nariva Restoration and Carbon Sequestration and Livelihoods Project.

This project will ultimately see the replanting of 1 300 ha of the Nariva Swamp, in areas that were formerly deforested by large-scale rice farmers more than a decade ago. Nariva Swamp, the country's largest and most biodiverse wetland, was declared an environmentally sensitive area under the Environmentally Sensitive Area Rules, 2001. It has the most varied vegetation of all wetlands in Trinidad and Tobago, with distinct zones of tropical rain forest, palm forests, mangroves and grass savannah/marsh. (*Source*: *The Guardian* [Trinidad and Tobago], 20 March 2010.)

Coffea spp.

UGANDA

Important woody species, their management and conservation status in Uganda: a case study of Balawoli sub-county

Woody species are threatened everywhere in the world. Loss of species such as these can lead to much suffering among the people who traditionally rely on them to satisfy their needs. To safeguard livelihoods, therefore, it is important that these species are protected.

The aim of this study was to generate information that would contribute to the design of robust management plans for the conservation, and increase, of woody species cover in Uganda. The study was conducted in Balawoli sub-county, in eastern Uganda, between July 2009 and January 2010, and addressed the following questions. (1) Which species are most preferred? (2) What is the conservation status of woody species and for which species have changes in local availability been observed? (3) What tree management practices exist? (4) Which tenure rights exist for trees?

Data were generated through both ethnobotanical and ecological surveys by interviewing respondents and conducting measurements on trees in plots selected at random in the landscape.

Analysis of the respondents' responses showed that 17 species are valued most highly within the community. The priority species are multipurpose and commonly have more than three uses. Altogether, these species have 25 different values for the community. The most frequently harvested products from the woody species are edible fruits, firewood and timber. The value of these species as a source of income appears to be low (only 4 percent of the respondents mentioned it).

Eighty-five woody species were found in the ecological survey. Of these, 17 appear to have a good conservation status because they were fairly well distributed and relatively abundant. Only six of the highly valued species had a good conservation status.

According to local perceptions, the species *Milicia excelsa* (uvule), *Albizia coriaria* (musita), *Combretum molle* (ndaha), *Terminalia glaucescens* (musasa), *Coffea* spp. (mwanyi), *Combretum collinum* (mukoolakoola) and *Citrus* spp. (mangada) are becoming scarce. On the other hand, the species *Artocarpus*

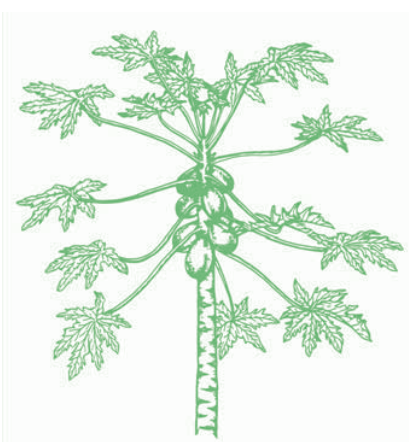
Priority woody species of Balawoli sub-county

Species (and local name)	Main products	Other products
Mangifera indica (muyembe)	Edible fruit, firewood	Medicine, shade, income, charcoal
Maesopsis eminii (musizi)	Timber, firewood	Income, poles, shade, soil fertility, medicine
Artocarpus heterophyllus (fene)	Edible fruit	Firewood, timber, shade
Citrus aurantium (mucungwa)	Edible fruit	Firewood, income
Milicia excelsa (muvule)	Timber	Firewood, charcoal, construction, shade, rain formation, medicine
Ficus natalensis (mugaire)	Shade	Bark cloth, fodder, firewood, timber, edible fruit, poles, charcoal, windbreak. Does not out-compete crops
Coffea spp. (mwanyi, coffee)	Income	Edible fruit
Eucalyptus spp. (kalitunsi)	Timber	Poles, firewood, income, medicine, windbreak
Albizia coriaria (musita)	Timber	Firewood, charcoal, construction, medicine
Pinus spp. (pine)	Timber	Income, firewood, edible fruit
Persea americana (ovacado)	Edible fruit	Firewood, medicine
Carica papaya (papali)	Edible fruit	
Ficus sycomorous (mukunyu)	Shade	Timber, firewood, charcoal, intercropping, construction, windbreak
Senna siamea (gassia seed)	Firewood	Shade, poles, timber, beautifying compound
Markhamia lutea (musambya)	Poles	Firewood, timber, shade
Citrus reticulata (mangada)	Edible fruit	Medicine
Citrus limon (nimu)	Edible fruit	Medicine, firewood, timber, income

heterophyllus (fene), *Mangifera indica* (muyembe), *Ficus natalensis* (mugaire), *Citrus aurantium* (mucungwa), *Acacia* sp. (miwa), *Senna siamea* (gassia seed), *Eucalyptus* spp. (kalitunsi), *Pinus* spp. (pine), *Carica papaya* (papali) and *Lantana camara* (kapanga) are known to be increasing in their availability. There was low consensus between community perceptions and the results of the ecological survey about which species were declining or which were increasing in availability.

The main factors believed to be leading to the disappearance of some species, according to the respondents, include overharvesting; destructive harvesting to produce charcoal, firewood, timber and poles; attacks by pests; non-planting of trees by farmers; and droughts. On the other hand, the key factors leading to the success of some species are that they are planted because they are useful; are drought resistant; regenerate naturally; are easy to manage; mature quickly; and their seedlings are available.

Farmers stated that they maintain many woody species (51) that they plant or retain when found growing naturally on their land. The common tree husbandry practices are planting, protecting trees against damage and pruning to encourage sprouting. Trees are propagated mostly from seedlings. Some farmers are constrained in planting trees by lack of seedlings, by pests, drought and lack of land. Species are managed mostly in crop fields, courtyards and home gardens. Men own trees in the homestead, and are more involved in tree management and the sale of tree products than women.



Carica papaya

In conclusion, many woody species, including the most highly valued ones, appear to be declining in availability. Efforts by extension workers and others interested in maintaining trees on farms should focus on the 17 priority species identified in the table. Second, there is a need to address the key threats identified here, namely poor markets for tree products, destructive harvesting for timber, and wood for construction and charcoal-making. The existing opportunities that have led to increases in some woody species in the area should be exploited.

One specific and pragmatic action to stimulate tree planting should be to increase the motivation of farmers to plant trees by promoting and creating markets for tree products. Improvement of markets or creation of markets will call for investigations into value chains of selected species/products. Additionally, and following respondents' suggestions, there is a need to improve access to water, access to planting material, and to control pests. There is also a need to improve understanding of the germination and seedling establishment behaviour of the priority species by conducting investigations both in experimental gardens and on farms.

The collaboration of farmers in tree planting is likely to lead to increased availability of the priority species without increasing the diversity of woody species. The protection of this diversity, therefore, remains the responsibility of the local administration, which should undertake, among other actions, the reafforestation of its district reserves and tree planting on public lands such as road reserves.

Lastly, this study was conducted in eastern Uganda, but the loss of species is occurring all over Uganda. It is necessary to have the study replicated in the different agro-ecological regions of Uganda in order to capture the entire diversity of priority woody species for the country.

The study was funded by the International Foundation for Science (IFS) Grant No. S/4644-1. Makerere University provided additional support.

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UNITED KINGDOM

Bees *for* Development helps African beekeepers to trade their way out of poverty

First Minister, Carwyn Jones, last week visited Bees *for* Development's Cameroon Honey Trade Project under way in partnership with the Welsh company Tropical Forest Products Ltd. Bees *for* Development is an international development organization based in Monmouth, Wales, United Kingdom, working to help African beekeepers trade their way out of poverty through selling honey and beeswax.

The Welsh Assembly Government's "Wales for Africa Grant Scheme" is funding Bees *for* Development to work with Tropical Forest Products Ltd in this project, which aims to produce a Welsh-designed honeycomb separator that will assist Cameroonian beekeepers to improve the quality and yield of their honey and beeswax.

Michael Tchana, Director of the Cameroonian organization Guiding Hope, visited Wales in March to work on the honeycomb separator, with the aim of increasing honey and beeswax exports to Wales in the forthcoming months.

The products will be sold through Tropical Forest Products Ltd, Wales' only registered fairtrade importer. The project outcomes will be shared widely with other beekeepers in Africa and Wales through the information network of Bees *for* Development.

With the United Kingdom producing less than one-third of the honey it eats, the honey trade presents a real economic opportunity for people in developing countries endowed with natural resources, but with limited financial capital. Bee diseases are highly prevalent in industrialized countries and most beeswax produced is contaminated with the chemical residues of bee medications. African beekeepers have a strong comparative advantage, as they are custodians of the largest remaining wild honey-bee populations in the world, thriving and free from introduced pests and diseases. (*Source*: press release, 14 April 2010, Bees *for* Development.)

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UNITED STATES OF AMERICA

Totems of Georgia's turpentiners

The turpentine industry was central to life in south Georgia for 100 years. The work and the profits are gone now, but George Music, Jr is determined to maintain the face of his occupational legacy.

On George Music Road on the outskirts of Waycross, Georgia, a chute of dirt and sand leads into what feels like an infinite pine forest. At the end of the road – and at the centre of this forest – sits the century-old home to three generations of turpentiners in the Music family. Close by is the mobile home of 50-year-old George Music, Jr, the only remaining member of the Music family to have worked in the turpentine woods. These woods and the old home are Music's birthplace.

In the 1970s, the livelihood of turpentining, the only work many people here had ever known, became unreliable, then impossible, a consequence of new technologies, alternative industrial sources of turpentine, and cheaper foreign labour. George Music and his father were forced to acknowledge that the dwindling returns they were receiving per barrel of pine resin would not be enough to sustain their family business much longer.

Today, George Music's forest stands much as it would have before turpentiners ever ventured into this part of the American South. The woods sit silent and empty, devoid of the labour that for so long clattered here. Yet Music's land still bears evidence that his forest was, for nearly a century, devoted to the extraction of crude gum for producing turpentine. Most striking about his property today is that seemingly every other tree in this forest is missing much of its bark. In its place is a gash extending vertically as much as 10–12 feet (3–3.6 m) from the base of the tree.

Working turpentine required a unique scarification of the tree trunks: using a combination of hacks, turpentiners removed the pine bark to tap into the "veins" of the tree. Once wounded, pine trees secrete resin on to the surface of the wound as a protective coat to seal the opening, prevent sap loss, and resist exposure to pathogenic micro-organisms. Turpentiners wounded trees in V-shaped streaks down the length of the trunks so as to channel resin into cups, where it was collected and processed into the spirits of turpentine. The V-shaped streaks – called "catfaces" for their resemblance to a cat's whiskers – are unmistakably the marks of a turpentiner. Half a century ago, most counties in the southern half of Georgia maintained at least 100 000 faces, and some kept over 500 000 in production.

Over the last several decades, however, these telltale signs have become increasingly scarce, as the turpentine industry has declined and timber and construction companies have cleared the forests. At alarming rates, catfaced trees have been sawn down, turned to paper, crumpled, and tossed into garbage cans. Those that do remain are few and far between.

Today, Music stands firm against pressures to surrender his vast extent of natural standing timber for commercial use.

In most forests of what was once the turpentine belt, the sounds of turpentiners' hand tools have been replaced by the racket of mechanized timbering and the frenzy of industrial deforestation. Pine forests today crack with the force of bulldozers, the buzz of

saws and clatter of rattling chains. But not on George Music's land. Indeed, both Music himself and the thick forest that envelops his homestead represent an unusual set of circumstances.

When entrepreneurs dealing in naval stores (turpentine and other resinous products used on wooden ships) first arrived along the Georgia-Florida border, they ventured into old-growth pine woods much like George Music's – forests of virgin timber that had stood for hundreds of centuries, never planted by human hands. Over time, forest after forest toppled like dominos, and naval stores operations were continuously forced to locate new stands of timber in order to survive. It was not until turpentiners had migrated from points north into the pine belt of south Georgia and north Florida that forest researchers discovered how to grow pine trees quickly enough to generate renewable stands of timber.

Most estimates suggest that a sprawling 156 million acres (63 130 960 ha) of natural-standing pine once blanketed the American South, before humans exploited the forests for industry. In the centuries prior to European settlement in south Georgia and north Florida, Native populations of Oconee, Apalachee, Creek and Timucua found their expansive forests a source of food and shelter, defining wealth in terms of what the forests willingly bestowed rather than by what they could seize from the pines. Since at least the 1600s, however, the region's old-growth forests have fallen victim to the monetary value of their resinous properties and, most destructively, of their own lumber. For centuries now, old-growth pines have been negligently sawn, chopped, hacked, and plucked from the earth. The damage was such that by 1952 just 72 million acres (29 137 366 ha) of natural standing timber remained on the southern landscape – less than half of the pine cover from presettlement times. (*Source*: Daily Yonder [Texas, United States of America], 10 June 2010.)

Trees offer many immigrants a taste of home

The rush-hour rainstorm did not faze Sara Shokravi as she parked in Rosslyn, Washington, DC. Shokravi, a 27-year-old consultant, pulled out a plastic bag, stopped at a tree laden with red and black berries, and started picking.

It would not have been a strange sight in her native country, the Islamic Republic of Iran, where at this time of year entire families can be seen laying out sheets and shaking trees to collect the berries, which they eat fresh, dried or blended into juice. Here, she acknowledged, her foraging prompts "funny looks". "This is Washington, DC – people aren't going to go out of their way to get something if it's not in a store."

They do not know what they are missing, say mulberry fans, most of whom are immigrants. Just the sight of fruit-laden trees can conjure up sweet memories for people who grew up in the Middle East, Central Asia, the Caucasus and the Far East.

Mir Farid Hashimi, 39, a native of Afghanistan who lives in Woodbridge, said his family makes a day of picking the berries in Maryland parks.

Yet, despite its firm place in nursery rhymes, the fruit of the mulberry bush, or tree, has never caught on in the United States of America. One reason may be that its thin skin makes it hard to transport commercially: the berries taste best immediately after picking. The white ones are light and subtle, almost perky, but the black ones, the ones that stain fingers and lips, are luscious and dissolve on the tongue in a sweet, dusky swirl.

Most people in the Washington area do not know this. Nevertheless, most Americans, if they think about mulberries at all, see them as a nuisance. The soft berries squish underfoot, splat on to cars, and carpet sidewalks and driveways with a sticky mash that, as summer heats up, emits a cloying scent of decay. In the District, the trees are considered a weed. They grow quickly, often sprouting in untended areas, such as between chain-link fences or along road embankments.

"I didn't even know the fruit was edible to the human," said John Thomas, Associate Director of the District's Urban Forestry Administration. "We allow people to remove mulberry trees without any permit because it's such an invasive tree."

The British were partly responsible for that invasion. Although the Washington area has a native red mulberry tree, the most common ones in town are descendants of trees brought over by colonists eager to compete with the silk industry of the Far East. Silkworms feed on the shiny, heart-shaped leaves, especially those on the white trees, said Alan Whittemore, a botanist at the US National Arboretum.

"For many years, it was a requirement," he said. "If you owned property in the Virginia area, you were required to plant a certain number of mulberry trees each year." The experiment fizzled: silk production required labour that was cheap but skilled, and tobacco proved more profitable.

But the mulberry trees liked Washington and, with the help of birds, who eat the berries and expel the seeds, their population swelled. They now number in the thousands.

Mulberries are not the only "secret harvest" known mostly to immigrants. Natives of East Asia flock to ginkgo trees to harvest the seeds, said Yao Afantchao, ethnic and speciality crops specialist at the University of the District of Columbia, and immigrants from West Africa gather wild amaranth to cook as greens.

In some cities, including San Francisco, New York and Portland, Oregon, the trend has expanded beyond ethnic communities, with urban foraging tours pointing out such delicacies as mustard greens, edible mushrooms and snails. (*Source*: *Washington Post*, 7 June 2010.)

VIET NAM

Illegal bushmeat, wildlife trafficking at alarming levels

Viet Nam's ecosystems are being seriously threatened by the widespread consumption of wild meat and trafficking of wildlife, experts said at a recent conference. Urgent action is needed on several fronts to prevent this destruction of the nation's wildlife and their habitat, they said. They called for strengthened, more effective public awareness campaigns against hunting and trafficking in wild animals and for the inclusion of this subject in the school curriculum, especially in rural areas.

Tom Osbon of the Viet Nam-based Wildlife Management Office stressed the need to legalize multisectoral cooperation in preventing, discovering and punishing forest violations in order to protect wild animals effectively. "It is also very important to establish special inspectors in localities which record a high number of violations," he added.

Dr Scott Roberton, head of the Wildlife Conservation Society (WCS), said that hunting wild animals for meat and trafficking had been happening in many countries, especially developing ones. In Viet Nam, hunting and trade in wild animals had been alarming, he said.

A WCS study conducted at 200 restaurants in the central region found they consumed nearly two million wild animals per year. Among them, stags and wild boars accounted for around 70 percent of the consumed meat, followed by turtles, snakes, foxes and porcupines.

The study estimated the demand of wild animal consumption nationwide at nearly 4 500 tonnes per year.

The Forest Protection Department discovered 1 042 violations of wild animal protection laws last year, a decrease of 400 cases over 2008. Dr Nguyen Viet Dung, deputy head of the Centre for People and Nature Reconciliation, said that the real number was much higher.

Roberton added that Viet Nam was also an important link in the international wild animal trafficking chain. Last year, authorities found more than six tonnes of elephant tusks trafficked from Africa to Hai Phong City. (*Source*: *Viet Nam News*, 22 March 2010.)

ZAMBIA

The untapped fruit potential

Fruit is an important food security commodity. Not only does it provide the necessary nutrients for both rural and urban households, but it is also a source of extra income through sales conducted almost all year round.

Zambia is endowed with different varieties of fruit trees, both exotic and indigenous. The tropical climatic conditions in the country provide opportunities for the cultivation of various types of fruit species such as mango, papaya, bananas, guava, passion fruit, loquat, pineapples, avocado, citrus fruit, apples, pears, peaches, pomegranates, apricots, plums and grapes.

Beyond the cultivated species, there are a large number of indigenous fruit species such as *masuku, mabungo, monsoso*, cashew nuts, *masau* and *mpundu* which, if exploited, could contribute to the economic development of the country and reduce poverty mainly in rural areas.

These fruits, especially indigenous species, are well adapted and can ensure household food security during periods of natural disasters such as droughts.

The production and processing of fruits are labour intensive and therefore provide employment for a large segment of the population.

According to the FAO paper on NWFPs in Zambia, exotic fruit trees such as mango, guava, papaya, avocado and mulberry have been a permanent feature in homesteads and some even grow naturally in open areas without any human interference. These, together with a number of wild fruits, form a nutritious supplementary food in seasons when agricultural crops become scarce.

Species such as *Anisophyllea* and *Uapaca* are common features along main roads and at markets between October to January, when they are offered for sale. The other species that are offered for sale include *Annona senegalensis, Azanza garckeana, Diospyros mesipiliformis, Flacourtia indica, Strychnos cocculoides, Strychnos spinosa, Tamarindus indica* and *syzygiums*.

Almost all exotic fruits have been on the market and still continue to command a place in almost every market countrywide.

With the present harsh economic conditions, many more fruits are entering into the trade market and are gaining importance as major household income and food security commodities.

Trade in fruits and fruit trees could, therefore, create employment for many Zambians and offer a potential commodity that could break into international markets if well researched.

Many of these are highly consumed in numerous rural and some urban settings but have not been offered for sale previously because of the great abundance in past years when they could not fetch a good price.

However, most fruit trees are becoming significant trade commodities as many species continue to become scarce at the local level because of deforestation brought about by the demand for woodfuel and agricultural expansion.

The future is, therefore, expected to be an upward trend in sales of many fruit trees, both exotic and indigenous, as the population increases and alternative income sources become scarce. (*Source*: allafrica.com, 20 February 2010.)

An individual has not started living until he can rise above the narrow confines of his individualistic concerns to the broader concerns of all humanity.

Martin Luther King, Jr

ACTO DEBATE ACTION PLAN TO PROTECT BIODIVERSITY

The member countries of the Amazon Cooperation Treaty Organization (ACTO) – Bolivia (Plurinational State of), Brazil, Peru, Ecuador, Colombia, Venezuela (Bolivarian Republic of), Guyana and Suriname – will work together on conservation and the sustainable use of biodiversity in the Amazon rain forest.

On 6 and 7 May, representatives from these countries met in Lima (Peru) to negotiate a Biodiversity Action Plan. The initiative encourages the exchange of experiences. One of the most debated topics was the management of protected areas.

The proposal of an action plan to be implemented in the region contributes to the preparations for the United Nations Conference on Biodiversity (COP-10), which will take place later this year in Nagoya, Japan.

"The countries will arrive in Nagoya with a plan specifically directed to the Amazon, responding to the desires of the members of ACTO and strengthening the regional vision, with a focus on the sovereignty of each nation," explains the Director of the Department of Coordination of Policies for the Amazon at the Brazilian Ministry of the Environment (MMA), Mauro Pires. The plan will include research, technology and innovation in biodiversity; protected areas management; and monitoring and control of endangered species of wild fauna and flora.

For Giovanna Palazzi, from the Chico Mendes Institute for Biodiversity Conservation (ICMBio), the action plan will strengthen national systems of protected areas. The plan will also encourage collaborative management, particularly in frontier areas. "Biodiversity knows no political boundaries," stated Palazzi. (*Source*: MMA – Ministério do Meio Ambiente [Brazil], 17 May 2010.)

CHINA, NEPAL REACH HISTORIC BIODIVERSITY AGREEMENT

China and Nepal have signed a Memorandum of Understanding on environment and biodiversity conservation. The agreement was made between the State Forestry Administration of the People's Republic of China and the Ministry of Forests and Soil Conservation of the Government of Nepal.

The World Wide Fund for Nature (WWF) notes that this is a historic moment for both countries as their governments have joined hands for the first time to promote cooperation in the field of biodiversity conservation, management of forest resources and protection of wildlife.

The two countries agreed to implement the obligations of international multilateral environmental agreements and conventions to protect the environment and conserve biodiversity. (*Source*: WWF, 9 June 2010.)

ECOLOGISTS UNVEIL PLAN FOR "BAROMETER OF LIFE"

An ambitious project to create a "barometer of life" to track the changing fortunes of the natural world will be set out tomorrow by some of the world's leading ecologists.

The plan is for thousands of scientists to collect information on 160 000 of the world's nearly 2 million known species – from great mammals, fish and birds to obscure insects and fungi – chosen to be representative of life on Earth.

The index would more than triple the scope of what is already the world's biggest scheme – the International Union for Conservation of Nature (IUCN) Red List of Threatened Species – and would be updated every five years.

The cost of building the database would be about USD60 million (£39.3 million), but this would be "one of the best investments

for the good of humanity" says the proposal, published in the journal *Science* and co-authored by the great American ecologist and writer Professor Edward O. Wilson at Harvard University.

"The more we learn about indicator species (which can provide information on the quality of the environment around them), the more we know about the status of the living environment that sustains us all," said Wilson. "Threatened species, in particular, need to be targeted to enable better conservation and policy decisions."

The figures could be used to help companies carry out environmental impact assessments, allow national and international organizations to prioritize spending, and draw public attention to problems as a way of building support for policies to protect and improve biodiversity, said Simon Stuart, Chair of the IUCN's species survival commission, and the paper's lead author.

"Just think of the other uses USD60 million are put to by the world, and the amount of money spent on wars or banks, or advertising," Stuart told *The Guardian*. "We can put our hands on our hearts and say this would be better for the good of humanity. First of all, it's an indicator of the health of the planet. Second, in many parts of the world people depend on biodiversity for food or clean water or living wages. Third, I'd say because of their intrinsic value: there's something inspirational about ecosystems and species being in good shape, and the diversity of them."

The idea – informally titled the "barometer of life" – is supported by the IUCN and nine partner organizations, including Kew Gardens in London, and the Zoological Society of London.

Scientists have so far described 1.9 million of the estimated up to 10 million species of vertebrates, invertebrates, plants, fungi and other groups on Earth, and possibly tens of millions more bacteria and archeans. (*Source*: *The Guardian* [United Kingdom], 8 April 2010.)

EXTINCTION OF SEED DISPERSERS THREAT TO FORESTS AND FOREST COMMUNITIES

There are few areas of research in tropical biology more exciting and more important than seed dispersal. Seed dispersal – the process by which seeds are spread from parent trees to new sprouting ground – underpins the ecology of forests worldwide. In temperate forests, seeds are often spread by wind and water, although sometimes by animals such as squirrels and birds. But in the tropics the emphasis is far heavier on the latter, as Dr Pierre-Michel Forget explains to mongabay.com/

"[In rain forests], a majority of plants, trees, lianas, epiphytes, and herbs are dispersed by fruit-eating animals. [...] As seed size varies from tiny seeds less than 1 mm to several centimetres in length or diameter, then a variety of animals are required to disperse such a continuum and variety of seed size, the smaller being transported by ants and dung beetles, the larger swallowed by cassowary, tapir and elephant, for instance."

Forget, a French tropical ecologist, is chairing the Fifth Frugivore and Seed Dispersal International Symposium in Montpellier, France from 13 to 18 June. He has studied the relation between seeds and fruit-eating species both in South America and Central Africa, focusing mostly on mammals. "Indeed, when you observe the understorey and see that profusion of seedlings, it is not always obvious that there is some type of order, seedlings being not really randomly dispersed, rather directed-dispersed at some peculiar microhabitats," he says.

Yet, the species so important to spreading tropical seeds successfully are also some of the most threatened. Their decline – and in some case absence altogether – spells a fall in forest richness.

"If you consider large-bodied, plant-dependent and seed-dispersing animals, they are all threatened by hunting,

deforestation, fragmentation, mining, dam and road construction," Forget says. "Many fragmented forests, even some natural parks and reserves, now lack the large ungulates, primates and birds that disperse seeds. Extinction is sometimes very recent due to uncontrolled development of large-scale agriculture, poaching and logging."

Forget points out that when it comes to seed dispersers, it is not global extinction that one must focus on, but local extinction and even a decline in wildlife abundance.

"If spider monkeys are protected in a remote forest of the Peruvian Amazon, it won't much help those trees of French Guiana," he says. "Additionally, when large frugivores are exterminated, because it's also an important source of protein for native people inhabiting the rain forest, we are also endangering the survival of autochthonous populations. And that has to be considered in conservation plans. Not only will we lose natural diversity, but humanity will also lose cultural diversity."

Forget argues that to date the role of seed dispersers has largely been left out of conservation discussions, even though these species' actions underpin entire ecological communities. (*Source*: www.mongabay.com, 7 March 2010.)

"REWILDING" THE WORLD: A BRIGHT SPOT FOR BIODIVERSITY

Despite numerous campaigns by the United Nations and other organizations to stem the loss of habitat and species, the world's biodiversity – and the ecosystem services supported by it, including carbon sequestration and flood control – is approaching what the United Kingdom's Environment Secretary, has called "a point of no return".

Happily, however, there is more to the story. A group of solutions is emerging under the rubric of "rewilding", and this new movement has made considerable progress over the past decade. A Marshall Plan for the environment, rewilding promotes the expansion of core wilderness areas on a vast scale, the restoration of corridors between them (to fight the "island" effect of isolated parks and protected areas), and the reintroduction or protection of top predators.

Known by a shorthand formula – "cores, corridors and carnivores" – rewilding was first proposed in 1998 by the founder of

conservation biology, Michael Soulé, and his fellow conservation biologist, Reed Noss. It was quickly adopted by grassroots initiatives, such as the Yellowstone to Yukon Conservation Initiative (Y2Y), a plan to protect and restore connectivity of ecosystems throughout the Rocky Mountains.

Since then, its central tenets have found their way into the programmes of international conservation organizations, which have embraced "continental-scale" conservation and growing bolder in the size of their preservationist programmes. As both a conservation method and a grassroots movement, rewilding has taken hold in every inhabited continent, with projects stretching from densely populated Western Europe (the European Green Belt, on the path of the former Iron Curtain) to the remote reaches of southern Africa. What's more, it has proved to be an adaptable model, bringing conservation to people and places outside the traditional system of parks and protected areas that lack the resources to succeed on their own.

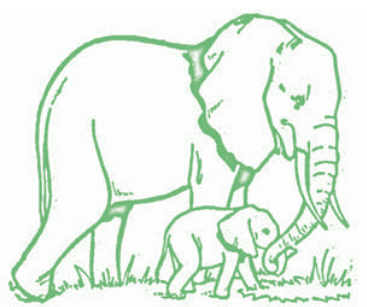
Encouraging new revenue streams and conservation on private lands, rewilding has achieved notable successes, along with instructive failures. In northern Kenya, an area plagued by lawlessness and drought, the Craig family turned their struggling cattle ranch into the Lewa Wildlife Conservancy, protecting endangered rhinos and building a popular ecotourism business. Eleven group ranches have since joined the Northern Rangelands Trust, with eight of those creating their own conservancies, setting aside a percentage of their grazing land for wildlife and planning ecolodges. Those with lodges have already dedicated revenue for community improvements, such as schools and medical clinics. A million-and-a-half acres (607 028 ha) of northern Kenya have thus been set aside for wildlife management, and security for people and wildlife has improved.

Conservationists in Kenya are seeing a marked improvement in formerly

overgrazed areas. Elephants have rebounded from the poaching of years past, resuming their migratory routes, and the highly endangered Grevy's zebra – which suffered severe habitat loss in recent decades – is returning to old haunts. Lewa now serves as a model for other conservancies in southern Kenya, and visitors from Uganda, the United Republic of Tanzania and Ethiopia have come to study it. A similar community forestry programme in Nepal is restoring corridors there for tigers, the one-horned rhino and the Asian elephant.

Breaking away from the standard fund-raising model – a never-ending cycle, since most money is spent immediately on short-term grants and projects – several rewilding groups have embraced the endowment as a way of supporting conservation's long-term needs. University of Pennsylvania biologist Daniel Janzen has been instrumental in the phenomenal success of the Area de Conservación Guanacaste (ACG) in northwestern Costa Rica, which accomplished what was once thought impossible by restoring former cattle ranches to dry tropical forest and rain forest.

But rewilding's greatest potential may lie in the creation of green jobs. ACG pioneered "parataxonomy", providing local people with a six-month "bioliteracy" training course in collecting and processing insect specimens that could then be passed on to taxonomists for identification. The parataxonomists are valued contributors to Costa Rica's National Biodiversity Institute and instrumental in the country's massive effort to compile an inventory of its extraordinary biodiversity. They have served as foot soldiers in "bioprospecting" the collection of specimens that may prove useful in medicines or cosmetics. Extracts from the quassia tree, for example, have yielded both a treatment for stomach-aches and a promising natural pesticide. The parataxonomy programme has been copied in other biodiverse areas in Central Africa and Papua New Guinea. (*Source*: Yale Environment 360, 11 February 2010.)



THE KEYS TO FOREST CONSERVATION

Daniel Janzen – conservation biologist – made his name in 1965 by discovering the extraordinary coevolution and "mutualism" between two rain forest species, a study so well-known it goes by its own shorthand: "the ant and the acacia". In the ensuing decades, Janzen has gone on to additional groundbreaking research in the forests of Central America.

But, by the mid-1980s, Janzen had grown so alarmed at the rapid rate at which forests were disappearing in the region that he and his wife and research partner, Winifred Hallwachs, threw themselves into conservation projects. They worked to expand a small national park in northwestern Costa Rica into a 300 000-acre (121 405-ha) reserve – the Area de Conservación Guanacaste (ACG) – encompassing dry tropical forest, rain forest, cloud forest and marine areas. With Costa Rican colleagues, including President Oscar Arias, Janzen demonstrated that denuded tropical forest can be regrown, a landmark achievement in ecological restoration.

Janzen – who leveraged a USD3.5 million donation into a permanent USD30 million endowment for the park – recently set the ambitious goal of raising half a billion dollars to endow the entire Costa Rican park system in perpetuity.

Now 71 – and still pursuing a decades-long inventory of moths, butterflies and caterpillars of the ACG – Janzen has recently turned to another significant endeavour: the development of a "barcorder" device, a kind of taxonomic iPod designed to identify quickly the world's organisms (viruses, invertebrates, plants, animals and birds) by their DNA in conjunction with a vast database to deliver that information to users. Janzen and his partner, Paul Hebert, have championed the device as a way to open the public's eyes to the world's biodiversity and the growing threats to it.

Speaking on REDD (Reducing Emissions from Deforestation and Forest Degradation), Janzen says: "If the world

does get serious about what is packaged under the acronym of REDD and puts in a big bucket of money that is used to lock down big chunks of forest in a permanent carbon storage state, that has the potential – and I have to underline the word 'potential' – for truly saving big blocks of wild areas. And there are a lot of ifs between the big picture wish or international agreements and actual on-the-ground doing it."

"But if there were a bucket like that available so that people like me, who are seriously out there trying to lock down big chunks of forest, that could become a financial instrument for actually doing it."

"My feeling is that all the science I see says that the only places that are going to survive in the long run are big conserved pieces. Small pieces may be very pretty, but they die, just because of insularity." (*Source*: www.mongabay.com, 23 March 2010.) ♣

Nothing is more expensive than a missed opportunity.

H. Jackson Brown Jr

FAO

"One billion hungry project" aims to blow whistle on hunger

A global campaign on behalf of the world's one billion people living in chronic hunger was launched in a ceremony at FAO headquarters in Rome, Italy on Tuesday 11 May, with parallel events taking place in cities across the world. From Paris to New York to Yokohama, hundreds of thousands are signing FAO's online petition calling on people to "get mad" at the fact that still today, some one billion people suffer from hunger.

The online petition calls on national and international leaders to move the eradication of hunger to the top of the political agenda.

Of the estimated one billion hungry people, 642 million live in Asia and the Pacific, 265 million in sub-Saharan Africa, 53 million in Latin America and the Caribbean, 42 in the Near East and North Africa and 15 million in developed countries.

A yellow whistle – a symbol of the petition – is emblematic of FAO's whistle-blowing campaign. (*Source*: www.fao.org/news/newsroom-home/en/)

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Sign the petition at: www.1billionhungry.org
(Please see page 75 for more information.)

New theme for World Food Day: United against Hunger

Each year on 16 October – the day on which FAO was founded – the Organization celebrates World Food Day to promote public awareness on the problems of world hunger, malnutrition and poverty. The year 2010 will mark FAO's 65th anniversary and the 30th observance of World Food Day. Cumulatively over the years, more than 150 countries have been involved in observing the event. This year, the theme chosen for World Food Day is "United Against Hunger". The events set to take place include a ceremony at FAO headquarters in Rome, Italy on Friday, 15 October and one at the United Nations in New York on Thursday, 28 October.

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FAO policy on indigenous and tribal peoples

Consistent with its mandate to pursue a world free from hunger and malnutrition, and grounded in the utmost respect for universal human rights, FAO has developed a policy to ensure the Organization will make all due efforts to respect, include and promote indigenous issues in its overall work. It is motivated by the fundamental fact that indigenous communities make up a substantial portion of the world's food insecure, that respect for indigenous knowledge, cultures and traditional practices contributes to sustainable and equitable development, and by recognition of the benefits that arise from closer collaboration. At the same time, it responds to the explicit request made by the UN Permanent Forum on Indigenous Issues (UNPFII), by fellow UN agencies and by indigenous peoples themselves to develop a framework for ensuring that the needs and concerns of indigenous peoples are effectively considered.

The purpose of this policy is to provide FAO with a framework to guide its work on indigenous issues. As current activities follow no systematic course of action, they will benefit greatly from the delineation of a common direction and approach. At the same time, it is also of relevance to indigenous peoples themselves, in order to communicate and clarify what can reasonably be expected from the Organization.

The document highlights some of the key areas covered by FAO's mandate, and addresses the motivations as well as the advantages of such a partnership. It is the result of a series of consultations with leaders of indigenous peoples, UNPFII, the Inter-Agency Support Group on Indigenous Issues (IASG), as well as members of FAO's professional body. As such, it addresses a diverse set of outlooks and feasible opportunities for future work. (*Source*: FAO Working Group on Indigenous Peoples.)

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FORESTRY DEPARTMENT

FAO publishes key findings of global forest resources assessment

Globally, around 13 million ha of forests were converted to other uses or lost through natural causes each year between 2000 and 2010 as compared with around 16 million ha per year during the 1990s, according to the key findings of FAO's most comprehensive forest review to date, *The Global Forest Resources Assessment 2010*. The study covers 233 countries and areas.

FAO's Global Forest Resources Assessments are published every five years. More than 900 specialists from 178 countries were involved in *The Global Forest Resources Assessment 2010*. The full report of this assessment will be released in October 2010.

Key findings. Brazil and Indonesia, which had the highest loss of forests in the 1990s, have significantly reduced their deforestation rates. In addition, ambitious tree planting programmes in countries such as China, India, the United States of America and Viet Nam – combined with natural expansion of forests in some regions – have added more than seven million ha of new forests annually. As a result, the net loss of forest area was reduced to 5.2 million ha per year between 2000 and 2010, down from 8.3 million ha annually in the 1990s.

The world's total forest area is just over four billion ha or 31 percent of the total land

area. The net annual loss of forests (when the sum of all gains in forest area is smaller than all losses) in 2000–2010 is equivalent to an area about the size of Costa Rica.

South America and Africa had the highest net annual loss of forests in 2000–2010, with four and 3.4 million ha, respectively. Oceania also registered a net loss, partly as a result of severe drought in Australia since 2000.

Asia, on the other hand, registered a net gain of some 2.2 million ha annually in the last decade, mainly because of large-scale afforestation programmes in China, India and Viet Nam, which have expanded their forest area by a total of close to four million ha annually in the last five years. However, conversion of forested lands to other uses continued at high rates in many countries.

In North and Central America, the forest area remained fairly stable, while in Europe it continued to expand, although at a slower rate than previously.

"For the first time, we are able to show that the rate of deforestation has decreased globally as a result of concerted efforts taken both at local and international level," said Eduardo Rojas, Assistant Director-General of FAO's Forestry Department.

"Not only have countries improved their forest policies and legislation, they have also allocated forests for use by local communities and indigenous peoples and for the conservation of biological diversity and other environmental functions. This is a very welcoming message in 2010 – the International Year of Biodiversity."

"However, the rate of deforestation is still very high in many countries and the area of primary forest – forests undisturbed by human activity – continues to decrease, so countries must further strengthen their efforts to better conserve and manage them," he added. (*Source*: FAO Media Centre, 25 March 2010.)

FAO IN THE FIELD

Nouvelles du projet PFNL et sécurité alimentaire en Afrique centrale

Après la mise en place institutionnelle de sa coordination régionale au Cameroun et de ses équipes au Gabon, en République centrafricaine (RCA) et en République du Congo, le projet GCP/RAF/441/GER «Renforcement de la sécurité alimentaire en Afrique centrale à travers la gestion durable des produits forestiers non ligneux (PFNL)», financé par le gouvernement allemand pour une période de trois ans, a tenu son atelier de lancement en février 2010 à Brazzaville, Congo. Cet atelier a permis d'informer les parties prenantes sur le projet et d'identifier, présenter et affiner les activités à mettre en œuvre en 2010. En outre, le Représentant de la FAO au Congo, M. Dieudonné Koguiyagda, a profité de cette occasion pour remettre officiellement à M. Lambert Imbalo, Directeur de cabinet du Ministère du développement durable, de l'économie forestière et de l'environnement du Congo, le document «Stratégie nationale et plan d'action pour le développement du secteur PFNL au Congo», élaboré avec l'appui de la FAO – à travers le projet GCP/RAF/398/GER «Renforcement de la sécurité alimentaire en Afrique centrale à travers l'utilisation et la gestion durable des produits forestiers non ligneux».

Les activités prioritaires du projet GCP/RAF/441/GER pour l'année 2010 sont les suivantes: élaborer des stratégies nationales pour le secteur PFNL au Gabon et en RCA; internaliser les directives sous-régionales relatives à la gestion durable des PFNL d'origine végétale de la Commission en charge des forêts d'Afrique centrale (COMIFAC) dans les législations nationales du Gabon, du Congo et de la RCA; élaborer une boîte à outils sur les PFNL, la sécurité alimentaire et le droit à l'alimentation en Afrique centrale; créer un sous-groupe de travail PFNL (SGT-PFNL) au sein de la COMIFAC; enfin, lancer des études de base sur les six sites pilotes retenus par le projet, afin de définir les priorités en matière de renforcement des capacités des communautés locales.

L'équipe du projet a profité de son séjour à Brazzaville pour animer un événement parallèle lors de la 17e Session de la Commission des forêts et de la faune sauvage pour l'Afrique (CFFSA), tenue du 22 au 26 février 2010. Le thème traité portait sur l'importance des PFNL pour la sécurité alimentaire et la réduction de la pauvreté dans les communautés forestières d'Afrique centrale. Modérée par M. Honoré Tabuna, Chef de la Division de la biodiversité à la Communauté économique des Etats d'Afrique Centrale (CEEAC), la session parallèle a vu la participation de plus d'une soixantaine de personnes. Quatre programmes ou instances ont été présentés: le projet PFNL de la FAO; le Réseau sur la gomme arabique et les résines (NGARA); le projet d'appui à la valorisation des PFNL au Congo et le Centre de coopération internationale en recherche agronomique pour le développement (CIRAD).

Il est possible de consulter le site Internet du projet, lancé récemment: www.fao.org/forestry/nwfp/55079/en/. Inscrivez-vous sur le site et recevez automatiquement par courriel des mises à jour sur le projet, les activités actuelles ou les publications.

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Démarche pour la relecture de la politique forestière et des textes d'application sur les aspects relatifs aux PFNL au Cameroun

Le Ministère des forêts et de la faune (MINFOF) du Cameroun a lancé un processus de relecture de la politique forestière, de la loi n° 94/01 du 20 janvier 1994 portant régime des forêts, de la faune et de la pêche, et de ses décrets d'application. Dans ce cadre, la FAO a engagé une démarche visant à proposer des améliorations de la loi et de ses décrets d'application en matière de PFNL, à travers le projet GCP/RAF/408/EC «Mobilisation et renforcement des capacités des petites et moyennes entreprises impliquées dans les filières PFNL en Afrique centrale», financé par l'Union européenne.

Cette démarche doit s'appuyer sur divers documents: a) les «Directives sous-régionales relatives à la gestion durable des PFNL d'origine végétale en Afrique Centrale», adoptées par la COMIFAC lors d'une session extraordinaire du Conseil des Ministres tenue du 26 au 27 octobre 2008 à Brazzaville, République du Congo; b) « le document de vulgarisation du cadre légal régissant l'exploitation et la

commercialisation des PFNL au Cameroun» et c) un répertoire des articles à amender élaboré dans le cadre du projet susmentionné. L'approche sera consolidée par l'organisation de réunions de concertation, la première s'étant tenue à Bamenda du 3 au 6 mai 2010.

Cette réunion a rassemblé 80 participants représentant tous les acteurs des secteurs concernés, et les autorités administratives des régions du Nord-Ouest et du Sud-Ouest du Cameroun. Des présentations des activités du projet et des principaux résultats escomptés, ainsi que du contexte menant à l'organisation de ces réunions, ont donné aux participants un éclairage leur permettant de mieux canaliser leurs contributions au processus de mise à jour. Informés sur les objectifs et réalisations du projet de la FAO relatifs aux PFNL au Cameroun, les participants ont été sensibilisés aux différentes initiatives et au processus de révision de la loi forestière en cours. Répartis dans cinq groupes de travail, ils ont pleinement apporté leur contribution, suggérant d'améliorer la loi concernée en préconisant de:

- établir une meilleure définition et une catégorisation cohérentes et consistantes des PFNL;
- assurer un accès aux PFNL et un droit d'usage commercial aux populations qui vivent dans les zones forestières;
- améliorer les procédures administratives de façon à faciliter la commercialisation des PFNL sur les marchés locaux, régionaux et internationaux;
- améliorer les conditions de culture, de transformation, de transport, de stockage et de commercialisation des PFNL;
- soutenir la gestion durable des PFNL au Cameroun.

Grâce aux résultats du projet GCP/RAF/408/EC et aux contributions reçues lors des réunions de concertation, la FAO pourra proposer des textes législatifs qui permettront d'améliorer la composante PFNL de la nouvelle loi forestière. La prochaine réunion se tiendra à Ebolowa, dans la région du Sud, en présence des représentants de six autres régions du Cameroun.

(***Contribution de***: Équipe de coordination du projet GCP/RAF/408/EC, FAO, Yaounde, Cameroun.)

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CITES

What is CITES?

CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) is an international agreement between governments. Because the trade in wild animals and plants crosses borders between countries, the effort to regulate it requires international cooperation to safeguard certain species from overexploitation. CITES was conceived in the spirit of such cooperation. Today, it accords varying degrees of protection to more than 30 000 species of animals and plants. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival.

CITES was drafted as a result of a resolution adopted in 1963 at a meeting of members of IUCN (the International Union for Conservation of Nature). The text of the Convention finally entered into force on 1 July 1975. At the time when the ideas for CITES were first formed, international discussion of the regulation of wildlife trade for conservation purposes was something relatively new.

Today, CITES is among the conservation agreements with the largest membership, counting 175 Parties.

The species covered by CITES are listed in three Appendices, according to the degree of protection they need (see Box).

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Two South American trees to obtain CITES listing

The Fifteenth Conference of the Parties (COP15) Meeting of the Convention in International Trade in Doha, Quatar decided in March this year (2010) that two South American trees, overexploited by essential oil traders for the perfumery and cosmetics market, will be listed under Appendix II of the CITES species listing.

Trade controls (international commercial trading strictly by CITES export

CITES APPENDICES

APPENDIX I includes species threatened with extinction which are or may be threatened by trade. Trade in specimens of these species is permitted only in exceptional circumstances. An export permit from the country of origin (or a re-export certificate from other exporting countries) and an import permit from the country of importation are required.
APPENDIX II includes species not necessarily yet threatened, but which could become so if trade is not strictly controlled. Species are also included in Appendix II if they are difficult to distinguish from other species in Appendix II, in order to make it more difficult for illegal trade to take place through misidentification or mislabelling. An export permit from the country of origin (or a re-export certificate from other exporting countries) is required, but not an import permit.
APPENDIX III includes species that any Party identifies as being subject to regulation within its jurisdiction for the purpose of preventing or restricting exploitation and as needing the cooperation of other Parties in the control of trade. Imports require a certificate of origin and, if the importation is from the state that has included the species in Appendix III, an export permit is required.

All imports into the European Union of CITES Appendix II-listed species require both an export permit/re-export certificate and an import permit.

or re-export permit only) were stated to apply within 90 days for *Aniba rosaedora* (Brazilian rosewood) proposed for listing by Brazil, which would apply to logs, sawn wood, veneer sheets, plywood and the essential oil, but excluding finished products packaged and ready for retail trade, and for *Bulnesia sarmientoi* (holywood) from the Gran Chaco region of Central America (proposed for listing by Argentina). *Bulnesia sarmientoi* is the species from which guaiacwood oil, acetylated guaiacwood oil and guaiyl acetate are produced, and the Appendix II listing would apply to logs, sawn wood, veneer sheets, plywood, powder and "extracts", but excluding finished products packaged and ready for the retail trade.

The CITES Web site posting now sets out the revised Appendix I,II and III species listings post the COP 15 Meeting, and indicates that trade controls for these ingredients will enter into force on 23 June 2010. In the EU, the annexes to Council Regulation EC 338/97 re the Protection of species of wild fauna and flora by regulating trade therein, are expected to be modified accordingly, as well as in the United States of America.

But will these listings make any real difference? A CITES Appendix I listing would have been far more effective, especially in the case of the rosewood tree, whose survival has been much more in the hands of lawless loggers than anything else. Rosewood oil from unlicensed stills deep in the forest continues to find its way into the essential oils market, although some imported batches show unusual compositions, suggesting adulteration, and prompting queries about its source species, or whether it is 100 percent derived from the named botanical species as stated.

As for guaiacwood, there is some confusion over the legal definition of the term "extracts". Will guaiacwood oil from Paraguay continue to be legally available with the correct documentation and permits, or is it just Argentine origins that will become unavailable? Time will tell, but these CITES listings are, at least, a step in the right direction. (*Source*: *Cropwatch Newsletter*, June 2010.)

Seizures and prosecutions from around the world

The cases reported below represent a selection of recent seizures and prosecutions that have taken place around the world. The CITES Appendix listing for each species is placed in parentheses, where appropriate.

Cameroon

- On 1 February 2010, police seized more than 1 000 grey parrots *Psittacus erithacus* (CITES II) at Douala Airport as they were about to be smuggled out of the country to Kuwait and Bahrain. No CITES documentation accompanied the shipment. Many of the parrots were dead; the surviving specimens were delivered to the Limbe Wildlife Centre. This is the third major seizure of grey parrots in Cameroon in the past two years.

China

- On 19 October 2009, after five months of careful investigation, Hengyang forest police, Hunan province, seized 24 live pangolins *Manis* (CITES II), and arrested three suspects. The animals had been transported from southwest China and were thought to be bound for Guangdong province. The animals were sent to the local wildlife rescue centre and the suspects were detained.
- On 13 January 2010, the Tengchong branch of Kunming Customs seized 946 g of rhinoceros horn from a vehicle. Two suspects claimed that they had purchased the horn in Myanmar and had smuggled it through the border. The case is under investigation.

Thailand

- On 20 January 2010, following a 17-month investigation involving the first collaboration between United States of America and Thai law enforcement authorities, a Thai national was charged with trafficking ivory. Earlier in the week, Thailand's nature crime police also raided ivory shops, seized tusks and arrested two other dealers.

United Arab Emirates

- The Dubai municipality has seized animal skins during an inspection of various veterinary establishments and antique shops, including those of four pythons Pythonidae (CITES I/II) and two Nile crocodiles *Crocodylus niloticus* (I/II). The skins were up to 9 m in length. The Veterinary Services Section plays an important role in implementing the terms of CITES. The Section takes extra efforts to educate the public and those who work in pet shops and shops that sell souvenirs on the provisions of CITES, endangered animals, the purpose of protecting these animals and organizing their trade through the provision of CITES certificates.

United Kingdom

- On 20 August 2009, the Metropolitan Police's Wildlife Crime Unit raided a shop in London's Chinatown and seized over 200 medicinal products claiming to contain the following ingredients: leopards *Panthera pardus* and tigers *P. tigris* (both CITES I), musk deer Moschus (I/II) and costus root *Saussurea costus* (I).
- Between September and November 2009 at the port of Felixstowe, United Kingdom Border Agency (UKBA) officers seized 13 large drums of oil of guaiacwood or *palo santo Bulnesia sarmientoi* (CITES III) in three separate seizures (2 375 kg). The oil was being imported from Paraguay without the requisite CITES documentation and certificate of origin. Paraguay had a moratorium on exports at the time of export.

(*Source*: *TRAFFIC Bulletin*, 22: 3, 2010).

FOR MORE INFORMATION, PLEASE CONTACT: TRAFFIC International, 219a Huntingdon Road, Cambridge CB3 ODL, United Kingdom. Fax: +4401223 277237; e-mail: traffic@traffic.org; www.traffic.org ♣

The United Nations is our one great hope for a peaceful and free world.

Ralph Bunche

IX CONGRESO INTERNACIONAL DE MANEJO DE FAUNA DE LA AMAZONÍA Y AMÉRICA LATINA

SANTA CRUZ, ESTADO PLURINACIONAL DE BOLIVIA
10-15 MAYO DE 2010

El Congreso Internacional de Manejo de Fauna de la Amazonía y América Latina ha tratado los siguientes temas:

- Manejo de fauna silvestre para la subsistencia y la seguridad alimentaria (información básica sobre especies de cacería de subsistencia, manejo de fauna para la subsistencia comunitaria, organización - gobernanza para el manejo comunitario, planificación y gestión territorial para incluir el manejo de la fauna para la subsistencia, y cambio climático, reducción de la pobreza, objetivos del milenio);
- Manejo de fauna silvestre para asegurar la calidad ambiental (información básica sobre especies amenazadas y en vía de extinción, manejo de fauna en áreas protegidas, el calentamiento global y sus efectos sobre poblaciones y especies de fauna silvestre, contaminación y sus efectos sobre la fauna silvestre, el rol de la fauna en el mantenimiento de la calidad ambiental, el manejo de la fauna y servicios ecosistemicos, la gestión de fauna a escala de paisajes, las enfermedades de la fauna silvestre, el cambio climático y la salud humana); y;
- Manejo de fauna silvestre para la producción comercial (manejo de fauna *in situ* para la producción comercial sostenible, manejo de fauna silvestre *ex situ*, organización/ administración comunitaria para el manejo de fauna silvestre para el comercio, zoocría de fauna silvestre, mecanismos de control de tráfico illegal, biocomercio, manejo de fauna y turismo, y rol de los zoológicos en el manejo de fauna silvestre).

PARA MÁS INFORMACIÓN, DIRIGIRSE A: MSc. Mariana Escobar, Av. Irala 565 - Casilla 2489, Santa Cruz, Estado Pluriennal de Bolivia. Fax: (591-3) 3366574; correo electrónico: mescobar@museonoelkempff.org *o* ixcimfauna.bol@gmail.com; www.ixcimfauna-bol.museonoelkempff.org/

APICULTURE: STOCK-TAKING AND PROJECTING THE HONEY VALUE CHAIN INTO THE FUTURE IN WEST AND CENTRAL AFRICA

FOUMBAN, CAMEROON
1–3 JUNE 2010

The honey value chain as a key NTFP in West and Central Africa has attracted the attention of a host of research, academic and development actors. While in some cases the emerging knowledge is discussed, documented and shared within institutional circles, it often remains inaccessible to a range of development actors. At the global level, discussions on climate change have perceived bee farming as one of the mitigation options for reducing forest deforestation and degradation. All these trends justify the organization of a knowledge-sharing event focusing on apiculture in order to make projections into the future.

The SNV (Netherlands Development Organization) Forestry Knowledge Network organized this two-day event with the objectives of: (i) sharing emerging knowledge on the honey value chain; (ii) demonstrating how interventions in the honey value chain have improved or can improve people's sustainable livelihood systems; and (ii) outlining a regional partnership and resource mobilization strategy for the honey value chain in West and Central Africa.

FOR MORE INFORMATION, PLEASE CONTACT: Nadège Nzoyem Saha, Ingénieur des Eaux et Forêts, BP 1239 Yaoundé, Cameroun. E-mail: horlyna@yahoo.fr

INTERNATIONAL CONFERENCE ON BIODIVERSITY CONSERVATION IN TRANSBOUNDARY TROPICAL FORESTS

QUITO, ECUADOR
14–17 JULY 2010

The need to maintain large areas of tropical forests through the establishment of transboundary conservation areas (TBCAs) has long been recognized as an important activity to perpetuate ecosystems and biodiversity resources, as well as the environmental services and socio-economic benefits they provide. Recognizing that countries have sovereign rights over their biological resources, international agreements such as the Convention on Biological Diversity (CBD) and the International Tropical Timber Agreement (ITTA) are committed to enhancing technical and scientific cooperation, training and information exchange on conservation and sustainable use of biodiversity in tropical forests.

The recently intensified debate on REDD-plus has introduced additional opportunities and challenges for the conservation of forests in the context of carbon stocking in countries and regions. National and regional demonstration activities for REDD-plus are being discussed and implemented to meet the challenges for climate change mitigation and adaptation. Likewise, national and regional activities to promote forest law enforcement, governance and trade (FLEGT) represent opportunities and challenges to develop further and finance the management of transboundary conservation areas for their effective contribution to long-term development at local, national and regional levels.

This conference allowed for an in-depth discussion of lessons learned, benefits generated and challenges to enhance the contribution of TBCAs to biodiversity and environmental services, to indigenous and local livelihoods, and to the sustainable development of the countries and regions involved.

FOR MORE INFORMATION, PLEASE CONTACT: Dr Hwan Ok Ma *or* Mr John Leigh, Reforestation and Forest Management Division, International Tropical Timber Organization (ITTO), Yokohama, Japan. Fax: (81-45) 223-1111; e-mail: rfm@itto.int *or* Mr Tim Christophersen, Programme Officer for Forest Biodiversity, Secretariat of the Convention on Biological Diversity, United Nations Environment Programme, 413 St Jacques O., Suite 800, Montreal QC, H2Y 1N9, Canada. Fax: +1 514 288 6588; e-mail: Tim.Christophersen@cbd.int; www.cbd.int/forest/doc/Announcement-Quito-Conference-14-17-July-2010-en.pdf

XXIII IUFRO WORLD CONGRESS: FORESTS FOR THE FUTURE: SUSTAINING SOCIETY AND THE ENVIRONMENT

SEOUL, REPUBLIC OF KOREA
23–28 AUGUST 2010

Established in 1892, the International Union of Forest Research Organizations (IUFRO) is one of the world's oldest and largest international institutions, counting more than 700 member institutes and universities in 110 countries. The 23rd World Congress of IUFRO – held every four to five years – will convene in Asia for the third time in its history to discuss the following themes: keep Asia green; forests and climate change; frontiers in forest and tree health; forest environmental services; biodiversity conservation and sustainable use of forest resources; forests, communities and cultures; emerging technologies in the forest sector; forest products and production processes for a greener future; and forests, human health and environmental security.

FOR MORE INFORMATION, PLEASE CONTACT:
IUFRO headquarters – Secretariat, International Union of Forest Research Organizations, Mariabrunn (BFW), Hauptstrasse 7, A 1140 Vienna, Austria. Fax: +43-1-877 0151-50; e-mail: office@iufro.org; www.iufro2010.com *or* www.iufro.org

INTERNATIONAL TRAINING WORKSHOP ON NTFP INDUSTRIAL AND COMMERCIAL DEVELOPMENT

ZHEJIANG PROVINCE, CHINA
7–27 SEPTEMBER 2010

The development of NTFPs is identified as one of the most significant solutions for the conflict between forest sustainable management and local community socio-economic development. It does not only include NWFP utilization, but also other resources derived from the sustainable management of the forests, such as ecotourism, which utilizes the unique geographic features of the forest area.

China is well known worldwide for its traditional and developed NTFP industry. NTFP development in China is a combination of sustainable resource cultivation, highly efficient industrial processing and smooth marketing networks. NTFPs and their production have become one of the supporting pillars of the economic development in the forest areas of China.

This workshop is sponsored by the Chinese Ministry of Science and Technology (MOST) and coorganized by the International Network for Bamboo and Rattan (INBAR) and the Lin Modern Forestry Technology Service Center (LMFTSC). The workshop is dedicated to promoting the exchange of NTFP development technologies and products through providing a platform for China and other developing countries to learn from each other. Participants at the workshop will not only be provided with opportunities to learn about the experiences and technologies of China, but also share with other countries information in the development and utilization of NTFPs, sustainable development, management of forests and the production, utilization and marketing technologies of NTFPs.

FOR MORE INFORMATION, PLEASE CONTACT:
Jin Wei, Public Awareness Officer, 8, Futong Dong Da Jie, Wangjing, Chaoyang District, PO Box 100102-86, Beijing 100102, China. Fax: +86-10-64702166; e-mail: wjin@inbar.int; www.inbar.int/show.asp?BoardID=171&NewsID=625

SUMMIT ON WHO WILL OWN THE FOREST

PORTLAND, OREGON,
UNITED STATES OF AMERICA
20–22 SEPTEMBER 2010

Forest land is attracting interest from institutional investors wanting diversification, an inflation hedge and an alternative to stocks and bonds. Join the professionals as they discuss the drivers, trends, challenges and opportunities to investing in this unique asset class. This is North America's best attended annual event on forest land investing.

FOR MORE INFORMATION, PLEASE CONTACT:
World Forestry Center, 4033 SW Canyon Road, Portland, Oregon 97221, United States of America. E-mail Sara Wu: swu@worldforestry.org; http://wwotf.worldforestry.org/wwotf6/

INTERNATIONAL SYMPOSIUM ON INTEGRATED SUSTAINABLE LIVELIHOOD DEVELOPMENT IN MOUNTAIN FOREST AREAS

ZHEJIANG PROVINCE, CHINA
22–25 SEPTEMBER 2010

With abundant forests, water and natural resources, hills and mountainous regions are often havens of biodiversity and the birthplaces of cultures. In many nations, especially in those that are developing rapidly, hill and mountain people are some of the poorest, in part because of the destruction of forests, degeneration of their ecosystems, frequency of natural disasters and undeveloped economies. In China, hills and mountains cover 69 percent of the whole land area and of the 592 counties that are classified as poor, 490 are located in mountainous areas (83 percent). There is a pressing need to increase the capacity of hill and mountain peoples to adopt and promote measures for economic and environmental development, and to explore an integrated sustainable developing model.

Systematic development of ecosystems and social economics in China and many other countries has been very successful and has produced many new development models, such as those of Zhejiang province in China. With 30 years of work since the 1970s' reforms, environment and economic policies have brought balanced and sustainable improvements to the lives of local people.

There are successful examples of integrated development in many other areas of the world too; the symposium will be dedicated to sharing successful stories and learning from each others' past experiences.

FOR MORE INFORMATION, PLEASE CONTACT:
Jin Wei, Public Awareness Officer, 8, Futong Dong Da Jie, Wangjing, Chaoyang District, PO Box 100102-86, Beijing 100102, China. Fax: +86-10-64702166; e-mail: wjin@inbar.int; inbar.int/show.asp?BoardID=171&NewsID=625

20TH SESSION OF THE COMMITTEE ON FORESTRY (COFO)

FAO HEADQUARTERS, ROME, ITALY
4–8 OCTOBER 2010

The Committee on Forestry (COFO) is the highest forestry statutory body of FAO. The biennial sessions of COFO (held at FAO headquarters in Rome, Italy) bring together heads of forest services and other senior government officials to identify emerging policy and technical issues, to seek solutions and to advise FAO and others on appropriate action. Other international organizations and, increasingly, NGOs participate in COFO. Participation in COFO is open to all FAO member countries.

FOR MORE INFORMATION, PLEASE CONTACT: Forestry Department, FAO, Viale delle Terme di Caracalla, 00153 Rome, Italy. Fax: (+39) 06 570 53152; e-mail: COFO-2010@fao.org; www.fao.org/forestry/cofo/en/

CONVENTION ON BIOLOGICAL DIVERSITY: TENTH MEETING OF THE CONFERENCE OF PARTIES

NAGOYA, AICHI PREFECTURE, JAPAN
18–29 OCTOBER 2010

The Conference of the Parties (COP) is the governing body of the Convention on Biological Diversity (CBD), which entered into force in 1992 to promote and pursue three main objectives: (i) the conservation of biological diversity; (ii) the sustainable use of the components of biological diversity; and (ii) the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

COP works to implement the Convention through the decisions it takes at its periodic meetings.

The agenda of COP meetings is vast. A number of thematic work programmes – including "Forest Biodiversity" – and a series of key cross-cutting issues relevant to all work programmes have been identified and will be discussed. In particular, strategic issues for evaluating progress and supporting implementation of the Convention will be considered and it is anticipated that the negotiations to conclude an International Regime on Access and Benefit-sharing will result in the adoption of an instrument on Access and Benefit-sharing.

FOR MORE INFORMATION, PLEASE CONTACT THE CONFERENCE ORGANIZERS: Secretariat of the Convention on Biological Diversity, 413 St Jacques O., Suite 800, Montreal QC, H2Y 1N9, Canada. Fax: +1514 288 6588; e-mail: secretariat@cbd.int; www.cbd.int

INTERNATIONAL CONFERENCE ON CURRENT TRENDS IN MEDICINAL PLANT RESEARCH AND MICROBIOLOGICAL APPLICATIONS

ALEXANDRIA, EGYPT
27–29 OCTOBER 2010

The Egyptian Botanical Society and the Botany and Microbiology Department, Faculty of Science, Alexandria University are organizing an International Conference on trends in medicinal plant research and microbiological applications.

The two main objectives of this conference are:

- elucidating the recent research trends in the field of cultivation, safety control, diversity, conservation, biotechnology, cytogenetics and phytochemistry of medicinal plants; and
- revealing diversity of pathogenic micro-organisms as well as industrial and marine microbiology.

The conference will tackle 11 major themes, including new approaches in cultivation of medicinal plants; safety control art of herbal medicine; environmental stresses on medicinal plants; and ecology, diversity and conservation of medicinal plants.

FOR MORE INFORMATION, PLEASE CONTACT: Prof. Dr Salama M. El-Darier, Alexandria University, Faculty of Science, Geology Department, Moharam Bey, Alexandria, Egypt. Fax: +2 033911794; e-mail: salama_eldarier@yahoo.com; www.sci.alex.edu.eg

SIXTH CARIBBEAN BEEKEEPING CONGRESS

GRENADA, WEST INDIES
8–13 NOVEMBER 2010

Convened by the Government of Grenada and the Grenada Association of Beekeepers, in collaboration with the Association of Caribbean Beekeeping Organizations, this is a unique opportunity to share the latest apicultural information, ideas and experiences throughout the Caribbean and wider region.

FOR MORE INFORMATION, PLEASE CONTACT: Grenada Association of Beekeepers (GAB), Eastern Agricultural District Office, Seaton James Street, Grenville St Andrew's, Grenada, West Indies. Fax: 1 473 442 4615; e-mail: info@beekeepers.gd; www.6cbcgrenada.gd/Home.aspx

THIRTEENTH BIENNIAL CONFERENCE OF THE INTERNATIONAL ASSOCIATION FOR THE STUDY OF COMMONS (IASC)

HYDERABAD, INDIA
10–14 JANUARY 2011

The theme of this event, hosted by the Foundation for Ecological Security, is Sustaining commons: sustaining our future.

The conference will deal with physical common resources, such as forests, grazing resources, protected areas, water resources, fisheries, coastal commons, lagoon commons, irrigation systems, livestock and commons, as well as new commons such as information commons, cultural commons, genetic resources, patents, climate, etc.

FOR MORE INFORMATION, PLEASE CONTACT: Subrat Singh, Foundation for Ecological Security, PO Box 29, NDDB Campus, Anand, Gujarat-388001, India. Fax: 91 2692 262087/262196; e-mail: subrat@fes.org.in; www.iasc2011.fes.org.in ♣

Have confidence that if you have done a little thing well, you can do a bigger thing well too.

David Storey

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NEW PUBLICATIONS FROM FAO'S NON-WOOD FOREST PRODUCTS PROGRAMME

Tropical palms, 2010 revision

Palms, belonging to the Arecaceae family, are among the most common plants in tropical countries and provide a vast assortment of products ranging from food to construction materials, fibre and fuel.

Tropical palms, originally published in 1998 as the tenth volume in FAO's NWFP series, has been updated in 2010 to include the most recent information and developments regarding the conservation status and use of various tropical palm species. It describes the many uses of the products derived from palms and provides updated references and sources of additional information. Palm products are considered both at the subsistence and commercial levels. Using this publication, readers will be able to assess the role of palms and their products within forest management, reforestation, agriculture and nature conservation activities.

The publication in its revised version is only available in an electronic format; it can be accessed at www.fao.org/docrep/012/i1590e/i1590e00.htm

Copies of the original 1998 version can be purchased from FAO's Sales and Marketing Group at publications-sales@fao.org/

Pipeline publications

A new title – *Fruit trees and useful plants in Amazonian life* – will shortly be added to FAO's NWFP series. It will be a richly illustrated joint publication of FAO and the Center for International Forestry Research (CIFOR).

OTHER RECENT PUBLICATIONS

Edible forest insects. Humans bite back!

Disgusting or delicious? The idea of eating insects nearly always brings about an immediate reaction. While some people find the very thought of eating a beetle or other insect revolting, others smile and smack their lips, perhaps recalling the roasted grubs their mothers prepared as childhood treats or their favourite deep-fried grasshopper snack that accompanied drinks with friends.

Humans have been eating insects for millennia and, even today, the practice remains far more widespread than is generally believed. Although modern society has largely shunned insects from the dinner table, entomophagy – the practice of eating insects – is getting renewed attention from nutritionists, food security experts, environmentalists and rural development specialists.

Based on contributions from some of the world's leading experts on entomophagy, this publication highlights the potential of edible forest insects as a current and future food source, documents their contribution to rural livelihoods and highlights important linkages between edible forest insects and forest management.

For copies of the report, please write to: Patrick B. Durst, Senior Forestry Officer, FAO Regional Office for Asia and the Pacific, 39 Phra Atit Road, Bangkok 10200, Thailand. Fax: (66-2) 697 4445; e-mail: patrick.durst@fao.org (*Photographs from this publication have been used to illustrate the back cover of this issue of* Non-Wood News. *Please also see pages 4,6-7,8 for extracts*.) ♣

If a man empties his purse into his head no one can take it away from him. An investment in knowledge always pays the best interest.

Benjamin Franklin

FAO'S NWFP HOME PAGE

Please help us make our Web site a rich resource by continuing to send us (non-wood-news@fao.org) your NWFP Web sites and 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

Advancing the application of assisted natural regeneration (ANR) for effective low-cost forest restoration
A new Web portal has been launched by FAO to highlight the importance of restoring degraded forests through simple, cost-effective interventions to assist natural regeneration.
www.fao.org/forestry/59218/en/

Cane and Bamboo Technology Centre
www.caneandbamboo.org;
www.bamboobazar.com

Carbon, biodiversity and ecosystem services: exploring co-benefits
www.carbon-biodiversity.net

Cropwatch
Cropwatch is an independent watchdog for natural aromatic products used in the aroma (fragrance/cosmetics, flavour, aromatherapy), traditional herbal medicine and phytochemical industries.
www.cropwatch.org

Journals

◆ **Free access to Earthscan journals for developing countries**
Earthscan has made a selection of their development journals free to access for researchers and academics in developing countries through the **Online Access to Research in the Environment** (OARE) and the **Access to Global Online Research in Agriculture** (AGORA) databases.

The Earthscan journals included in the initiative are:

- *Climate and Development* (www.earthscan.co.uk/?tabid=29957)
- *Climate Policy* (www.earthscan.co.uk/?tabid=480)
- *International Journal of Agricultural Sustainability (www.earthscan.co.uk/JournalsHome/IJAS/tabid/503/Default.aspx)*
- *Environmental Hazards: Human and Policy Dimensions* www.earthscan.co.uk/JournalsHome/EHAZ/tabid/37213/Default.aspx)

www.earthscan.co.uk/journals

Newsletters/e-zines

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◆ **The Ecologist e-zine**
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◆ **Tradewinds**
To subscribe to this monthly e-newsletter produced by the Shea West Africa Trade Hub, please visit:
www.watradehub.com/activities/tradewinds/apr10/shea-2010-tremendous-potential-west-africa

Southern forests for the future
The World Resources Institute has launched a Web site that maps forests in the southern United States of America. Using satellite imagery, GoogleEarth technology and decades of forest data, the site depicts threats to the region's forests, including pest and pathogen outbreaks, wildfire, logging and human development, the leading cause of deforestation in the South.
www.seesouthernforests.org

The British Wildlife Wiki
Launched by The Woodlands Wildlife Council, the aim of this Wiki is to make a concise British Wildlife Encyclopaedia that includes all the species of the British Isles that anyone can edit.
http://thewwcbritishwildlife.wikia.com/wiki/British_Wildlife_Wiki

The Field Museum, the Philippines
http://fieldmuseum.org

The Latin-American Forum on REDD
www.forumredd.org

The National Biodiversity Indicators Portal
www.bipnational.net/

The North American Truffle Society
www.natruffling.org/

Torah flora
Torahflora.org is a Web site devoted to Biblical and Talmudic botany, the study of plants and nature in Torah and Jewish tradition. To receive announcements of new articles on Torahflora.org and related events such as botanical garden tours and public speaking events by Biblical and Talmudic botanist Dr Jon Greenberg, please send an e-mail to jon@torahflora.org;
www.torahflora.org/

Video links

◆ **Edible insects in the Lao People's Democratic Republic**
www.youtube.com/watch?v=ZkBpN_Boxhk

◆ **Guatemala's Tree of Life**
http://english.aljazeera.net/news/americas/2010/06/201062815449882349.html

◆ ***Moringa oleifera* seeds**
www.jalmandir.com/moringa/moringa-seeds.htmla

UN data
Users can now search and download a variety of statistical resources of the UN system.
http://data.un.org/

World Bamboo Organization
www.worldbamboo.net

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* ♣

Please sign FAO's 1billionhungry campaign

"One child dies every six seconds and 5 million children every year," said FAO's Director-General Jacques Diouf. "We should be extremely angry for the outrageous fact that our fellow human beings continue to suffer from hunger. If you feel the same way, I want you to voice that anger. All of you, rich and poor, young and old, in developing and developed countries, express your anger about world hunger by adding your names to the global 1billion hungry petition at www.1billionhungry.org," he said.

The online petition calls on national and international leaders to move the eradication of hunger to the top of the political agenda. FAO hopes the petition will spread through social media sites such as Facebook, Twitter and YouTube.

Please help FAO by signing the petition at www.1billionhungry.org org

(*Please see page 64 for more information.*)

Five million children die each year from chronic hunger, 15 000 children each day, one child every six seconds.

Why does hunger exist? Lack of food is not the problem. Enough food is produced in the world today for everyone to be properly nourished and lead a healthy and productive life. Hunger exists because of poverty. It exists because natural disasters, such as earthquakes, floods and droughts, sometimes occur in places where poor people have little or no means to rebuild once the damage is done. It exists because in many countries women, although they do much of the farming, do not have as much access as men to training, credit or land. Hunger exists because of conflict. It exists because poor people do not have access to land or solid agricultural infrastructure to produce viable crops or keep livestock, or to steady work that would otherwise allow them access to food. It exists because people sometimes use natural resources in ways that are not sustainable. It exists because there is not enough investment in the rural sector. Hunger exists because financial and economic crises affect the poor most of all by reducing or eliminating the sources of income they depend on to survive.

Comments received

Reader from the Philippines

I must congratulate you for the always up to date information on NWFPs. I am sure I will be able to pick up so much new information from your publication, which is really good.

Reader from Italy

It was worth waiting for the bamboo publication to arrive: it came with a treasure of printed material I really appreciate. You see, I'm not (yet) 100 percent digital, and it's a pleasure to browse through articles, topics and features the old way.

Reader from India

We (myself and my labmates) received the 20th issue and are highly grateful to you. Please accept our hearty congratulations to you and your team working for *Non-Wood News* for covering information from throughout the world, including the workshops/conferences/seminars, etc. The list of publications is also helpful to the members to purchase. I express my deep sense of gratitude for publication of my article on *Pimpinella tirupatiensis*.

Reader from Nepal

Thank you very much for regularly sending NTFPs information for me. This news is very important to know world activities on MAPs.

Reader from Germany

It is always a pleasure to receive *Non-Wood News*.

Reader from the United States of America

Hello and congratulations on the 20th Anniversary of your *Non-Wood News*! I really look forward to receiving it and keeping up to date with this important aspect of ethnobotany.

You have and continue to produce a rich variety of articles on non-timber forest products, enriching the understanding and knowledge of this important field on a global basis.

Reader from Mexico

I know the bulletin *Non-Wood News*; this is an excellent material for my academic field.

Reader from Italy

À tous les membres de l'équipe de rédaction de la revue *Non-Wood News*, mes chaleureux remerciements pour la production et l'envoi de votre revue, que je lis toujours avec beaucoup d'intérêt.

Reader from Germany

Again I have the pleasure to thank you for the informative last issue of *Non-Wood News*. Let me assure you that your work is highly appreciated and of value to the many interested ones who would never get access to this manifold information. ♣

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 200–500 words.

The deadline for contributions for *Non-Wood News* 21 is 15 January 2011.

For more information, please contact: Tina Etherington at the address on the front page or by e-mail to: non-wood-news@fao.org

Edible insects

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There are nearly 1 700 edible insect species worldwide. Edible insects are nutritious and provide a plentiful and excellent protein source for many people of the world and their animals.

From left to right: Local insect market in northern Thailand; a plate of grasshoppers, Lao PDR; ecotourist eating a live caterpillar; bushman with honeycomb in the United Republic of Tanzania; and sago grubs for sale in Borneo.

PRINTED ON ECOLOGICAL PAPER

I1810E/1/10.10