

# non-wood

# news

## EDITORIAL

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

More and more information is being made available in the media on all aspects of non-wood forest products. Scientific journals, newspapers, e-zines and Web sites cover their economic value, marketing instruments used, traditional knowledge of their use, the variety of product uses, and biodiversity issues in general. It is, consequently, becoming a real – but exciting – challenge to select the most pertinent news and views from the variety of NWFP articles from all across the globe in order to give you, our readers, a clear idea of trends and research from the world of NWFPs.

We believe that this increasing global attention is reflecting the growing relevance of both the social and economic importance of NWFPs, as can be seen, for example, from their use in economically important global markets such as the cosmetics and pharmaceutical industries; their value and role in sustainable forest management; and their essential contribution to the lives of forest-dependent communities as sources of food security and health care.

In this issue of *Non-Wood News* we have covered a broad spectrum of these facets: from their use in securing livelihood opportunities (e.g. economic benefits from bamboo projects and sale of camu camu) to the role of specific products in everyday lives (e.g. *Artemesia annua* and its use in the fight against malaria; chicle in the chewing gum industry) and the potential risks to traditional knowledge and benefit-sharing through biopiracy. We have also highlighted how NWFPs are helping women – and consequently the well-being of their children – to benefit through various livelihood-building small-scale initiatives in Latin America (pine products in Honduras), Africa (shea butter in Burkina Faso), Asia (weaving bamboo in the Lao People's Democratic Republic) and the Near East (medicinal plants in Israel). We have also highlighted the 2009 International Year of Natural Fibres, an area where NWFPs can have an important input, particularly at the local level. The two special features in this issue provide coverage of NWFP use and markets in the Amazonian subregion, and a brief on whether NWFPs can help countries to achieve their MDGs.

Starting with this issue, *Non-Wood News* is including a new feature: a guest article. This will be written/authored by a senior scientist and an acknowledged expert in his/her field. The first guest author is Dr Cherukat Chandrasekharan – the founder of both FAO's NWFP Programme and *Non-Wood News* – whose article on participatory enterprise models for NWFP development seeks to open a debate on this important subject. We look forward to receiving your comments on his article.



## NON-WOOD NEWS

is compiled and coordinated by Tina Etherington, Forest Products Service of the FAO Forest Products and Industries Division. For this issue, editing support was provided by Sandra Rivero; language editing by Roberta Mitchell 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 October 2007, to:

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*Non-Wood News* 15 is also full of your contributions – we would like to thank the many contributors who have provided insights into NWFPs from countries as diverse as India, Scotland, Cameroon and Saint Lucia. We would also like to thank the many authors who have permitted us to use extracts from their work (on subjects such as medicinal mushrooms, collectible insects and NWFPs of the Pacific Islands), as well as all the readers who have contacted us with comments and suggestions.

There have been a number of personnel changes affecting our NWFP Programme in the last six months. Mr Hikojiro Katsuhisa has returned to his home country after three years as Chief of our Forest Products Service. We have also said “arrivederci” to Sven Walter, who worked with the NWFP Programme here in Rome, before taking on the role of Technical Adviser of a regional NWFP project based in Cameroon and who has now taken up a new position at the International Fund for Agricultural Development (IFAD). On the other hand, we have seen the return of our NWFP Officer, Paul Vantomme, after a two-year secondment to ITTO in Japan.

Finally, it is our hope that you will find reflected in this issue of *Non-Wood News* the sheer variety of NWFPs, the new ideas in the field of NWFP research and the enthusiasm in identifying suitable ways to improve people’s lives through the help of NWFPs.



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



## PARTICIPATORY ENTERPRISE MODELS FOR NWFP DEVELOPMENT

### Attributes of NWFPs

NWFPs are an important natural resource that influenced the early progress of human society. They are among the earliest traded products, and earliest of those to be domesticated, leading to agricultural revolution. For most of recorded history, people have valued the forests not so much for timber, but for NWFPs.

As industrial revolution followed agricultural revolution, colonial influence expanded in various parts of the world and cheap synthetic substitutes became available, NWFPs lost their primacy and timber came into prominence. NWFPs were collectively categorized as minor forest products (MFPs). Arboreal abundance gave way to ecological degradation, a result of excessive logging and improper land use changes, and so the natural resources of NWFPs also suffered relative depletion.

For millions of forest-dependent indigenous and poor people, NWFPs remained a major source of subsistence. The value of this subsistence has been estimated at about US\$120 billion, globally. However, in this role, several NWFPs were mainly of local importance.

Some experts suggest that the future of forestry will depend more and more on NWFPs, because of their special attributes and environmental friendliness. These assertions, nevertheless, are not matched by institutional changes that ensure effective action.



*"Riches of the forest: food, spices, crafts and resins of Asia"*

### Nature of institutions

With economic development linked more and more to markets and trade, activities have been categorized into sectors for the purposes of management and control.

The overall objective of an institutional system for specific sectors is to facilitate development within the framework of defined policies. It covers instruments (in the form of laws, rules and regulations) for translating policy into action, and organizational arrangements for effective implementation of policy instruments. Organizations of a sector can be broadly categorized as governance organizations (carrying out authority functions) and enterprise organizations (carrying out development functions).

Governance organizations are essential for providing policy guidance, enforcing instruments and facilitating sectoral development. Enterprise organizations are of various types – public, private, non-governmental, participatory, cooperative, collaborative, etc. – to suit the situation and achieve goals. By nature and purpose, enterprises should be flexible and result-oriented and vested with full autonomy. Authority/governance, in contrast, focuses mainly on ensuring rule of law in business dealings and tends to be process-oriented.

Experience has shown that where government agencies such as forest departments implement both enterprise and authority functions, they tend to become inefficient and corrupt and be destructive of people's resources. These functions could be more effectively carried out, if they were to be separated.

### Blind spots

There are no institutional systems and organizational arrangements specifically designed for NWFPs. Relegated to minor status, NWFPs are treated as incidental appendages to timber-based forestry. In most forest policies, NWFPs get, at best, a mention in passing. Rules and regulations developed for wood products are applied to NWFPs, often inappropriately. The existing institutional system in most cases has consistently failed to achieve the development potentials of NWFPs. In terms of strengthened and innovative institutions for NWFPs, there are only few replicable initiatives that can serve as models.

Apart from the institutional anomalies and deficiencies, other important weaknesses affecting NWFPs include lack

of adequate market orientation and inadequate value addition.

This is changing in some cases: NWFPs have re-emerged from relative obscurity, and their development has gained some momentum.

Occurrence in all types of (primary and secondary) forests; amenability for domestication and cultivation; a role in conserving biodiversity; an ability to meet increasing demand for organic products and green consumerism; an ability to sustain the chemical treasure in plants; a capacity to support poverty reduction; and improve livelihoods are attributes favouring awareness about NWFPs and their re-emergence.

A bright outlook for NWFPs hinges on addressing entrenched institutional blind spots, with emphasis on research, technology transfer, skill developments, improved information, flexible credit services and, above all, people's participation.



### Innovative enterprise models

NWFP-based enterprises can take useful lessons from other sectors where shortcomings have spurred the emergence of new innovative institutional models, such as autonomous enterprises that break free of sluggish bureaucratic operational styles. Some have been launched by governments while others have been undertaken with the support of non-governmental organizations and donors. A few have been self-initiated. They are characterized by functional and financial autonomy. These mechanisms include commodity boards, autonomous commissions, public-private partnerships, company-community collaborations, fair trade networks, self-help groups and cooperatives.



"Riches of the forest: for health, life and spirit in Africa"

Innovations in developing countries tend to be participatory/cooperative or partnership models. These help increase marketing strength, enhance bargaining power, eliminate intermediaries, enable professional management, conserve resources, empower people and improve viability of the enterprise.

The successful Anand Milk Marketing Union Limited (AMUL) model for milk production/processing and marketing in the Gujarat state of India is considered by experts as appropriate for NWFP development, ensuring participation of stakeholders at all operational levels.

AMUL was started in 1946 to stop exploitation of milk producers at the hands of intermediaries. It began with two village societies and 247 litres of milk. It expanded and grew into the Gujarat Cooperative Milk Marketing Federation by 1973. Following the AMUL model, today, there are 22 state-level federations in India, with 176 district unions, over 100 000 village societies and some 11 million members involved in production and marketing of a large number of milk products. The main characteristics of the AMUL model are professional management and leadership, in-house research, non-acceptance of subsidies, avoidance of external influence and member centrality.

The AMUL concept has been extended to sugar, fish, fibre and other consumable products that are produced in large quantities, involving significant numbers of people. Many NWFPs, particularly biodiesels, mulch, medicinal plants, bamboo, rattan, resins and essential oils are involved.

The bottom line for effective participation is popular sovereignty and decentralization, which will facilitate people to acquire the freedom and capability to decide on development initiatives and the power to carry out these decisions.

A few NWFP-based participatory enterprises have emerged in the recent past in different parts of the world. Their nature and structure vary: most are small, self-help entities, such as local associations and village cooperatives. They are often based on specific products (such as cardamom, mushroom, sea buckthorn, bamboo products, shea butter), and mostly involved in cooperative marketing. Others are medium enterprises formed into cooperative corporations/companies involved in production/processing and marketing of one or more products.

Company-farmer/artisan collaboration is a form of participatory arrangement. Examples include farmers supplying medicinal plants to indigenous drug companies and large rattan-ware units serving as a nucleus for collecting and marketing of production from small producers in a locality.

By forming into hierarchic, multitiered systems, participatory ventures can become progressively efficient and powerful. One such case, exclusively covering NWFPs, is the Minor Forest Produce Cooperative Federation of Madhya Pradesh state in India. Following a three-tier pyramidal structure, it is responsible for resource management, harvesting, trading and development of NWFPs.

The system of Village Forestry Associations (VFAs) and Forestry Cooperatives of the Republic of Korea covers the whole country and deals with both wood and NWFPs. The system of VFAs started with government support in the early 1970s, comprising a hierarchy of forestry associations. The system was further strengthened in the 1980s by converting the VFAs into self-propelling cooperatives of homogenous membership.

As can be noted, waves of changes are sweeping over and altering the overall sociopolitical environment of forestry (and NWFPs). Interacting factors drive these changes. There has been a transition to an open society, democratic and decentralized institutions and a market economy. And new and larger markets have opened. Strategies for integrated development of NWFPs need adequate institutional underpinning with broad-based, willing and organized participation.

#### The issue needs debate

In closing, it is underlined that the intention of this short note is not to suggest guidelines for NWFP institutions, but only

to incite meaningful debate in that regard. (Contributed by: Cherukat Chandrasekharan, F1, Althara Nagar, Trivandrum – 695 010, India; e-mail: cherukat@asianetindia.com) (Mr Chandrasekharan was the founder of FAO's NWFP Programme and the editor of Non-Wood News until his retirement in 1995. How appropriate, therefore, that he should inaugurate a new feature of Non-Wood News: our "Guest article".) ♣





## NWFP USE AND MARKETS IN THE AMAZONIAN SUBREGION OF BOLIVIA, BRAZIL, COLOMBIA, ECUADOR, PERU AND THE BOLIVARIAN REPUBLIC OF VENEZUELA

### Consumo y comercio de los Productos Forestales no Madereros (PFNM) en la Subregión Amazónica

De acuerdo al Informe de la Subregión Amazónica preparado por la FAO, los productos forestales no madereros (PFNM) son de gran importancia a escala social y económica para las poblaciones de estos países (Bolivia, Brasil, Colombia, Ecuador, Perú y Venezuela). En el citado estudio se evalúa que en los próximos años aumentará el interés sobre los mismos incluso a escala industrial.

Los PFNM que verificarán un mayor incremento en la producción serán el caucho (*Hevea Brasiliensis*) y la yerba mate (*Ilex paraguarensis*). La producción de caucho en la subregión viene creciendo en la última década, principalmente a causa del incremento en la producción del Brasil (también se elabora en Bolivia, Colombia y Perú). Sin embargo se percibe una competencia por parte de la oferta proveniente de las plantaciones en Malasia por los sustitutos sintéticos. La yerba mate es una de las bebidas más populares consumidas en el sur y sudeste del Brasil; proviene principalmente de los bosques naturales de los estados del sur (Paraná, Santa Catarina y Rio Grande do Sul) y en el oeste del Estado de Mato Grosso do Sul.

Los productos comestibles más importantes para esta subregión en términos de cantidades son las castañas y el palmito. Estos continuarán a mediano plazo, participando a baja escala en el comercio internacional; la producción del palmito se concentra principalmente en el Brasil, Bolivia y el Ecuador. Los hongos silvestres en el Ecuador, el achiote (*Bixa orellana*) en Venezuela y la canangucha (*Mauritia flexuosa*) en Colombia. También el aceite de copaiba (*Copaifera* spp.), la uña de gato (*Uncaria tomentosa*), el bambú (*Guadua* spp., *Chusquea* spp.) mantendrán su importancia. Estímulos gubernamentales a las exportaciones podrían impactar el comercio de estos productos creándose nichos de mercado y canales que estimulen su mercadeo.

La producción de castaña de Pará (*Bertholletia excelsa*), viene sufriendo

variaciones a lo largo de los últimos años. En la última década se ha verificado una disminución en la producción en esta región, a excepción del Brasil y Bolivia. La mayor parte de la producción del Brasil se consume internamente (aproximadamente el 70%) y el 30% restante se comercializa internacionalmente. Se calcula que en 2002 las exportaciones han sido de aproximadamente 10 000 toneladas mientras que el consumo interno alcanzó las 20 000 toneladas. En Bolivia su comercialización se efectúa de dos modos con cáscara o deshidratada, y se exporta en su mayoría. Su consumo interno es bajo mientras que la exportación se ha incrementado significativamente en los últimos años. Algunas publicaciones presentan el Brasil como el principal exportador mundial. Otras fuentes mencionan que Bolivia es el principal exportador de este producto y el Perú se encuentra en el tercer lugar.

En el Ecuador, los hongos silvestres (*Boletus* spp.) asociados a las plantaciones de pino, constituyen un importante PFNM a nivel nacional. Su aprovechamiento comenzó en la década de los ochenta; su procesamiento industrial (secado, fraccionado, empaquetado) inició en 1991.

El achiote (*Bixa orellana*) constituye otro importante PFNM para Venezuela: se usa como colorante en comidas, se cultiva en huertos caseros y en plantaciones, y también se industrializa. Sin embargo, no existen datos de la producción.

Las algarrobos, frutos del *Prosopis pallida*, es un alimento bastante importante en el Perú, aún si se trata de pequeñas cantidades, es importante como alimento para el ganado y la producción de algarrobita (café de algarrobo). El bosque seco de la costa norte de este país es el hábitat natural de esta especie (más de 1,3 millones de ha). La tala de este árbol está actualmente en veda, pero existe una gran presión social sobre el mismo, lo que genera con mucha frecuencia su tala ilegal para producir leña y carbón. De acuerdo al INRENA (Instituto Nacional de Recursos Naturales), la producción total se estima en 2 millones de toneladas anuales. El 60% lo consume el ganado, el 20% se comercializa en agroindustria para producir algarrobita y el 20% restante se pierde.

Son muy numerosas las plantas medicinales obtenidas en los bosques de la subregión amazónica. Entre las más importantes se encuentran: la uña de gato (*Uncaria tomentosa*) y el aceite de copaiba (*Copaifera multijuga* o *Copaifera langsdorffii*). Del tronco de cinchona

(*Cinchona pubescens*), especie que crece en Bolivia y en Colombia, se extrae como materia prima una droga contra la malaria (quinino). También en Colombia, la palma canangucha (*Mauritia flexuosa*), de cuya planta se extrae el aceite de alma canangucha o moriche, se exporta. Los datos disponibles para este país señalan exportaciones de alrededor de 110 000 toneladas de aceite de palma en 1999, de las cuales 93 000 se vendieron en crudo y el restante como fracciones o incorporadas en productos procesados. El valor de las exportaciones se estima en 58 millones de dólares.

En Colombia y Venezuela, la palma chiqui-chiqui (*Leopoldina piassaba*) es usada para utensilios, artesanía y como material de construcción. Otro PFNM es el bambú (*Guadua* spp.), ampliamente utilizado en la construcción civil, en la fabricación de muebles y para artesanías en el Ecuador, Colombia y Venezuela. En el Ecuador, el uso de este producto se ha incrementado, según datos de la Guía nacional de artesanía. Se han individuado 19 talleres artesanales que elaboran juguetes y otros productos en las provincias de Azuay y Esmeraldas. En la región de la costa ecuatoriana, el principal consumidor de estos productos es la construcción civil.

Otros importantes PFNM son las resinas obtenidas de las plantaciones de pino (*Pinus* spp.). Los principales países productores de estos productos son Venezuela y el Brasil. En la década de los noventa Venezuela producía 7 000 toneladas de resina cruda de *Pinus caribaea*. A mediados de esa década, el Brasil producía aproximadamente de 60 a 65 000 toneladas.

El estudio menciona la dificultad de analizar el comercio de los PFNM y sus tendencias a causa de la escasa disponibilidad de la información estadística presentada de manera sistemática. Si se considera aisladamente el Brasil, las tendencias de los mismos definen las siguientes perspectivas para el año 2020:

- en lo que concierne al caucho, se espera un crecimiento importante de las importaciones, puesto que el consumo interno crecerá debido al aumento de la demanda del mismo por parte de la industria automotriz y el país aún no será autosuficiente; se calcula que para el año 2020 las importaciones de caucho podrían alcanzar las 250 000 toneladas. La

producción provendrá principalmente de áreas naturales de la región norte. Las demás regiones contemplan básicamente valores de producción de caucho natural a partir de áreas plantadas.

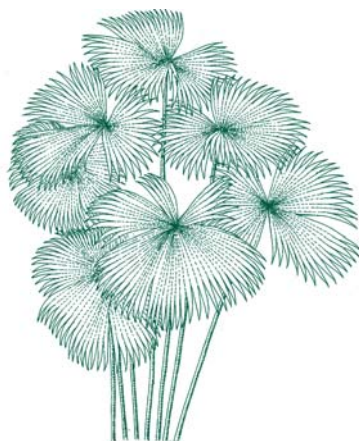
- las exportaciones de yerba mate también aumentarán debido al incremento de la demanda de los mercados de los países vecinos, se prevé que en 2020 cerca de 55 000 toneladas serán orientadas al mercado internacional. Se presume un aumento en la demanda de este producto, a causa principalmente, de su precio competitivo con relación a otras infusiones de uso similar.

En síntesis, en esta subregión el mercado de los PFM se viene desarrollando desde hace muchos años a escala informal. Sin embargo se ha manifestado interés por parte de los actores relacionado con los mismos países como Brasil, Colombia, Ecuador y Perú donde se están implementando Iniciativas de Biocomercio (UNCTAD), mediante programas nacionales y además existen herramientas que se proyectan a nivel regional. Se han conformado grupos de trabajo y estructuras específicas para establecer estrategias de implementación, tales como las Directrices Mundiales de Conservación de Plantas Medicinales (OMS/UICN/WWF/TRAFFIC) y el Estándar de Recolección Silvestre Sostenible de Plantas Medicinales y Aromáticas de BfN/UICN/WWF/TRAFFIC (ISSC-MAP, siglas en inglés), ampliamente consultados y en fase de implementación inicial. También se puede mencionar el Ecuador, como país que ha manifestado gran interés en esta área a escala internacional, hospedando la sede para América Latina de la UICN (Unión Mundial para la Naturaleza), y la oficina Regional para Latinoamérica y el Caribe del INBAR (Red Internacional del Bambú y Ratán), ambas entidades se encuentran ampliamente relacionadas con los PFM, promoviendo programas de desarrollo sostenible de las especies que suministran estos productos, facilitando el intercambio y la difusión de información y tecnologías sobre las mismas.

*Fuente:* Informe de la subregión amazónica ESFAL/SR/1; disponible electrónicamente: <http://www.fao.org/docrep/009/j7353s/j7353s00.htm>. Aportado por Sandra Inés Rivero, Consultora, Departamento Forestal, FAO, [Sandra.Rivero@fao.org](mailto:Sandra.Rivero@fao.org)

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**PARA MAYOR INFORMACIÓN SOBRE LOS ESTUDIOS Y POR COPIAS DE LOS MISMOS DIRIGIRSE A:**

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*Carludovica palmata*

**Bolivia takes its hat off to Jipi japa  
 (*Carludovica palmata*)**

Jipi japa (*Carludovica palmata*), a palm-like species that grows wild in tropical and subtropical forests in Central and South America, has woven itself deep into the everyday lives of Bolivian villages. A wide array of goods is produced from its fine, white fibres – including the famous Panama hat.

The Panama hat originated in Ecuador. Jesuit missionaries introduced the weaving techniques used to make hats and baskets into Bolivia in 1908. Over time, the artisans expanded their skills in processing and handling jipi japa fibres to include the manufacturing of wallets, decorative figures, purses and various utensils for kitchens and tables.

Today jipi japa handicrafts are manufactured by indigenous people in the lowland communities of northeast Bolivia. These remote communities are developing stronger relationships with the outside world as their manufacturing of jipi japa handicrafts expands. As a result, some artisans are forming collectives to assist the commercialization process.

Jipi japa plants grow in humid tropical and subtropical forests, but they can also be found growing wild in agricultural fields, on communal lands, along the banks of rivers and in ravines. Jipi japa is generally

harvested from wild stocks. The species is rarely cultivated in Bolivia as villagers have had limited success because of the low survival rates of the plants; however, Ecuadorians have managed to establish productive plantations.

In some cases, jipi japa harvesters, mainly men, carry out the weaving. In other cases they sell the fibres to artisans who produce the various handicrafts. Most of these are sold within Bolivia, although the artisan association in Chapare, in Cochabamba, has been exploring the export market. It is difficult to estimate the total value of jipi japa production since the raw material is incorporated in many different products, which are commercialized in various ways. At the household level, jipi japa may represent anywhere between 15 and 80 percent of the total family income. The influencing factors include the distance to market, the number of people in the family involved in the jipi japa trade and whether or not they belong to one of the associations.

There are two main negative factors affecting the production of jipi japa handicrafts: i) in some areas, jipi japa shoots are being harvested more quickly than the plants can regenerate, reducing Bolivia's wild populations of the plant. Almost half of the original Bolivian jipi japa population has already disappeared, largely as a result of changing land use patterns; ii) new associations are being set up with government or foreign support. Building up the capacity to promote the production of jipi japa handicrafts without ensuring there is an adequate consumer demand results in a saturated market and lower prices for harvesters and processors.

These factors need to be taken into account to ensure that jipi japa populations can survive in Bolivia and continue to provide benefits for the harvesters and weavers who work with this palm-like plant. (*Source:* Case study on Jipi japa fibre, handicrafts, by Erik Arancibia and Fausto López [in *Riches of the forest: fruits, remedies and handicrafts in Latin America*, eds C. López, P. Shanley and A.C. Fantini].)



"Riches of the forest: fruits, remedies and handicrafts in Latin America"

### Brazil: Baú indigenous land makes its first sale of certified Brazil nut oil

The Baú Indigenous Land enterprise has just made its first sale of Forest Stewardship Council (FSC) labelled Brazil nut oil. Members of the Kayapó tribe closed a deal with the vegetable oil processing company, Beraca, immediately after receiving FSC label and IBD (organic) certification

Beraca provides processed raw materials to the cosmetics industry, and purchased the entire certified production of the Kayapó, some 750 litres. Beraca director, João Matos, said that for forest products to become increasingly incorporated into the cosmetics and hygiene industry in general, in addition to the high quality of raw material, there has to be a guarantee of constant supply. On this point, the management plan required for FSC certification includes planning to enable continuous production.

The Kayapó invited business people to contact them so that, together, they might conduct prospecting as to the economic feasibility of other potential raw materials for the industry. [Source: Amazonia.org.br, 15 December 2006.]

### Brazil: bamboo project in the Vale do Alto Rio das Velhas region

The Centro de ecología humana (Centre of Human Ecology) seeks to establish a sustainable development project for the Vale do Alto Rio das Velhas region in Brazil by using bamboo to decontaminate the river. This project will be executed in the municipalities of Jaboticatubas and Lagoa Santa in Belo Horizonte, Brazil, and will propose developing sustainable use methodologies in adjacent areas. The project will serve as a model for other regions.

Project objectives include introducing bamboo as a decontaminator in order to protect rivers of the state of Minas Gerais, and promoting bamboo as a sustainable product of high value for architecture, engineering and furniture construction. [Source: Eco-Index Monthly Update, February 2007.]

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### Colombia: los PFNM y los bosques plantados para su producción

De acuerdo al Informe Nacional de Colombia se presentan dos casos donde plantaciones forestales con manejo especial producen tanto madera como resina (y mediante un proceso industrial se elabora colofonia).

En el primer caso se puede mencionar una plantación de 8 000 ha de pino caribe (*Pinus Caribaea*) con fines de resinación y producción de 500 toneladas/año de colofonia, oferta que está siendo consumida totalmente por el mercado nacional.

El segundo caso trata de plantaciones de *Hevea Brasiliensis* para la producción de caucho, 5 000 ha en producción y 5 000 ha en crecimiento.

A pesar de que muchos otros PFNM llegan al mercado, es difícil encontrar información sobre valores de producción a escala nacional, localización y prácticas de manejo del bosque para lograr un aprovechamiento sostenible de los mismos. Se sabe, sin embargo, que a escala social y en el comercio local, especialmente para las regiones con poblaciones autóctonas que viven cerca al bosque, estos productos son de gran valor. Las perspectivas, basadas en la inclusión de estos productos dentro del Plan Nacional de Desarrollo Forestal para ser trabajados dentro del Subprograma de Manejo y Aprovechamiento del Bosque Natural, indican que para el año 2020, este sector estará más estructurado y definido. Fuente: Informe Nacional de Colombia ESFAL/N/8, disponible electrónicamente: [www.fao.org/docrep/007/j4192s/j4192s00.htm](http://www.fao.org/docrep/007/j4192s/j4192s00.htm)



"Riches of the forest: food, spices, crafts and resins of Asia"

### Ecuador: making a difference for small-scale bamboo producers

Like most small-scale farmers in Ecuador, Jhony Moreno relies on diversity – should one crop fail there is always something to fall back on. Traditionally that has meant cattle, some annual crops, coffee, cacao and bananas. But, with the help of the International Network for Bamboo and Rattan (INBAR), he has started growing *Guadua angustifolia* bamboo to produce split canes and bamboo, which now provide a secure income for his family (and local workers who depend upon him), as the figures below show.

	US\$ per year	Total costs	Net profit
Bamboo	2 241	1 542	699
Milk	1 971	1 971	0
Maize	263	309	-46
Cassava	341	603	392
Bananas	383	392	-9

After his initial training through INBAR, Mr Moreno went on to develop his own improved production techniques, sharing his knowledge with other farmers. He now markets his own bamboo products and has earned enough in the last 18 months to build a house. His farm has become a centre for demonstrations, training workshops and exchange opportunities between farmers and bamboo experts. He has also begun to advise other communities on managing their own bamboo stands to produce split canes. [Source: *In partnership for a better world – strategy to the year 2015*. 2006. Beijing, China, INBAR.]

### Ecuador: palm fibre (*Aphandra natalia*) – its management and benefits

In the 1970s, the weak agriculture-based family economy that affected the region of Sevilla de Oro motivated the migration of many families to the Ecuadorian Amazon, to a small village called Chinimbimi, where they bought land with the idea of establishing cattle farms. As most of the farms still had a high percentage of primary forest, one of the first activities to generate a cash income was the extraction of the valuable timber as part of the process of clearing the forest to establish pastures.

Farmers then started to extract and manage the non-timber forest resource, palm fibre, produced from the leaves of *Aphandra natalia*, a native palm of the

forests originally exploited for its timber. It was known that in a nearby village, palm fibre was flown out to Guayaquil to make brooms. When the palm fibre was valued as a resource that could be produced in the long term (production starts after ten years), the owners of the farms started to manage the palm, sowing seeds to increase its density on the farms to ensure continuous production of the fibre in the future. Farmers also left palms that had grown from natural regeneration when clearing the understorey of the forest.

Over the years the farmers established a production system including pastureland combined with a few dispersed trees of non-commercial value and palms that are left standing and managed by cutting two to four leaves to harvest their fibre while leaving at least five leaves to guarantee the survival and next production cycle of fibre after six months.

Currently, within 0.5 km from the centre of Chinimbimí, where the palm is mainly concentrated, 16 colonist family farmers own an average of 40 ha. For them, the extraction of palm fibre is a continuous source of cash income (on average each family receives a monthly net income of US\$482 from the sale of approximately 14 quintals of fibre). This level of production is obtained by harvesting about 700 palms per month from an area of around 1.5 ha, employing local labour from the village.

The low cost of the initial investment in terms of input and labour required to maintain the palm and the continuous production of the fibre are determining factors in converting the palm into a pillar of the family economy for the majority of the inhabitants of Chinimbimí over the past 20 years, relegating cattle to second place. (Source: *ForLive Highlights*, 3, February 2007.)

#### Peru: Camu camu fruit exports increased by 134.5 percent

Peruvian exports of the camu camu fruit (*Myrciaria dubia*), which is marketed as a health food, increased by 134.5 percent in 2006. Exports totalled US\$2.126 million, compared with US\$906.585 in 2005.

The product is for sale mostly in processed forms, creating added value. The most important market for the fruit from the Amazon jungle was Japan, with 80 percent of the total, followed by the United States of America (12 percent), the Netherlands (4 percent), Canada (1 percent) and Hong Kong (1 percent).

Demand for the product is largely a result of its high vitamin C content, which is 50 times more than that of oranges.

In 2007 exports of US\$3 million are expected. (Source: *FreshPlaza*, the Netherlands, 2 March 2007.)



*Myrciaria dubia*

#### Peruvian Brazil nut collectors take control of their future

In Peru, recent laws have required that anyone harvesting and selling Brazil nuts must obtain a Non-Timber Forest Product Concession Contract. To obtain a concession, Brazil nut collectors must develop and comply with a forest management plan, which regulates the harvest, collection and transport of the nuts.

In Madre de Dios, 335 families saw an opportunity in these new laws to take control of their future. They requested titles to their land so that they could obtain concessions. The families then grouped themselves into associations, according to the size of the concession plot sought. Now they sell Brazil nuts directly to exporters and are no longer dependent on the prices that local brokers offer. (Source: *Field guide to the future. Four ways for communities to think ahead*. 2006. K. Evans et al. ([www.asb.cgiar.org/ma/scenarios/](http://www.asb.cgiar.org/ma/scenarios/)))

#### La República Bolivariana de Venezuela y sus PFM

En los últimos años en varias zonas de este país, según el Informe Nacional de Venezuela, se ha observado un mercado desarrollo en la elaboración de productos provenientes del bosque, tal es el caso de la utilización de madera de pequeñas dimensiones y de los PFM como hojas, frutos, semillas, lianas, bejucos, fibras y hierbas, entre otros, para la producción de artesanías. Esto constituye una fuente de ingresos de importancia local, así como también una fuente generadora de empleos.

El origen de los productos es diverso, pero la tendencia que domina es la recolección en bosques naturales, matorrales, árboles y arbustos aislados, vegetación aledaña a cauces de ríos y lagunas, y en menor grado, bosques plantados y otras áreas dedicadas a la producción forestal. Los productos elaborados también son muy diversos, destacándose la cestería, tejidos, figuras religiosas e históricas, bateas, tazas, platos, arreglos florales, tallas en madera, útiles de trabajo, juguetes e instrumentos musicales. La información sobre especies usadas en la elaboración de las artesanías es bastante escasa, pero los trabajos realizados indican que se utiliza una amplia gama de vegetales que comprende árboles, arbustos, gramíneas, palmas bejucos y lianas.

En Venezuela el uso del bambú y el de especies similares, es poco difundido, pero en los últimos años el encarecimiento de los costos de fabricación de muebles con maderas tradicionales, ha popularizado el uso de estas especies. La *Guadua* (*Guadua* spp.) y *Guafa* (especie de la familia de Bambuseae) está en el orden de 564 940 unidades y 124 550 unidades por año, respectivamente.

También se menciona la producción de sustancias aromáticas, provenientes de plantaciones de sarrapia (*Dipteryx odorata*) establecidas con el objeto de aprovechar el fruto para la extracción de cumarina, la cual es una materia prima fundamental para la industria de la perfumería. Las comunidades campesinas de la Reserva Forestal El Caura desarrollaron plantaciones de esta especie con una superficie y antigüedad no registradas. Se estima que son varios miles de hectáreas plantadas hace unos 70 años. El mercado de la cumarina está dominado por transacciones internacionales donde es fundamental garantizar una calidad y flujo constantes. Al no cumplir estas condiciones, los productores de El Caura dejaron de ser competitivos, además, la cumarina actualmente tiene competidores de origen industrial. Además este recurso puede ser aprovechable de manera sostenida, existe experiencia, tradición y la madera se puede usar en la construcción naval, durmientes de ferrocarril y ebanistería de alta calidad.

Fuente: Informe Nacional de Venezuela ESFAL/N/12, disponible electrónicamente: [http://www.fao.org/docrep/008/j5484s/j5484s07.htm#P1490\\_62004](http://www.fao.org/docrep/008/j5484s/j5484s07.htm#P1490_62004)

"Riches of the forest: fruits, remedies and handicrafts in Latin America"



## CAN NWFPs HELP IN ACHIEVING THE MILLENNIUM DEVELOPMENT GOALS?

The United Nations Millennium Development Goals (MDGs) are common objectives that provide a framework to meet the basic needs and rights of millions of people in the developing world. There are eight goals with 18 targets and over 40 indicators that help to monitor and achieve the goals.

### The Millennium Development Goals

- Goal 1. Eradicate extreme poverty and hunger
- Goal 2. Achieve universal primary education
- Goal 3. Promote gender equality and empower women
- Goal 4. Reduce child mortality
- Goal 5. Improve maternal health
- Goal 6. Combat HIV/AIDS, malaria and other diseases
- Goal 7. Ensure environmental sustainability
- Goal 8. Develop a global partnership for development

(Source: [www.undp.org/mdga](http://www.undp.org/mdga))

In 2000, the Millennium Declaration was agreed upon by world leaders to aim to achieve the MDGs by 2015. The objective of this policy brief is to explore whether it is possible for forest resources, particularly non-wood forest products (NWFPs), to help to achieve the MDGs.

There are over 3.4 billion ha of forests on which 1.6 billion people in the developing world depend directly or indirectly on forest

resources. Ironically, NWFPs have been considered to be minor products compared with other forest resources. However, it will be shown that NWFPs can play a significant role in contributing to achieving the goals, although there are challenges. This policy brief will ultimately advocate a synergistic approach to achieving the goals where several goals are combined into one effort. Investing in NWFPs through careful planning may help to achieve several goals simultaneously.

### Eradicate extreme poverty and hunger (Goal 1)

The target of this goal is to halve the proportion of people who earn less than a dollar a day. Selling forest products is known to reduce extreme levels of poverty. It has been estimated that 12.9 million people are employed in the industrial forestry sector and twice as many in the informal forestry sector, suggesting that forest products could help to achieve this goal. Although NWFPs are not usually the main source of income for harvesters, they play a crucial role in preventing worsening poverty by creating safety nets. This role should not be underestimated. Especially in times of need, harvesting NWFPs still remains a popular option for many poor forest-dependent people because it requires low levels of skill and there are few barriers to entry into the subsector. It is also a relatively easy source of income for those without access to capital or credit to invest in other more lucrative income-earning opportunities. Moreover, NWFPs can be safety nets during seasonal shortfalls and emergency periods. Nevertheless, before investing in NWFPs it is important to be aware of the challenges that they bring, which may create poverty traps.

There are three reasons why NWFPs may be poverty traps rather than safety nets and may be considered to have anti-poor elements. The first regards the economics of NWFPs, which generally elicit low returns since the density of available NWFPs is low, thus meaning that one has to travel far to collect a handful of certain NWFPs, making harvesting costs high and returns low. Second, access to markets is minimal, either because of poor infrastructure or because markets are too far away, preventing the sale of what has been collected. Third, harvesters may receive a very small portion of returns because of exploitive market chains and

lack of access to market information since they tend to live in remote areas. The poor are more likely to suffer from such negative scenarios, but NWFPs can mean the difference between life and death when eradicating hunger is concerned, which is the second part of this goal.

Currently 852 million people suffer from hunger because of poverty and lack of access to food. It is clear that NWFPs alone cannot prevent millions from being hungry. However, in times of emergencies and seasonal shortfalls of agricultural products, NWFPs can be a source of food security and offer an alternative means of preventing hunger, in addition to being a supplementary source of food. NWFPs such as bushmeat, leaves, wild flowers, fruits, wild roots and tubers can provide rich sources of energy, which are especially important in preventing hunger and reducing vulnerability.



### ONLINE ATLAS OF THE MILLENNIUM DEVELOPMENT GOALS (MDGS)

The World Bank has launched a Web site (<http://devdata.worldbank.org/atlas-mdg/>) that translates data on some of the world's development challenges into maps designed for a lay audience. The maps are derived from the Bank's World Development Indicators database, and depict progress towards meeting the MDGs. (Source: *Earth Negotiations Bulletin*, 19 April 2007.)

Food security and nutrition can be sustained by many wild plants and animals, which often play a critical role for the poorest groups, particularly during times of drought or food insecurity. The South African Millennium Ecosystem Assessment estimates, for example, that the value of day-to-day wild resource consumption is around US\$800 million per annum.

(Source: *IIED Briefing Paper*, Dilys Roe, Ivan Bond, 2007. [www.iied.org/pubs/display.php?o=11070IIED](http://www.iied.org/pubs/display.php?o=11070IIED))

### Promote gender equality and empower women (Goal 3)

This goal aims to target elimination of gender disparity in primary and secondary education. Monitoring the goal includes measuring the ratio of girls to boys in different levels of education and the share of women in wage employment in non-agricultural sectors. The target could be expanded to include promoting empowerment of women by measuring their access to harvesting NWFPs and the level of financial empowerment they can achieve.

Many women are involved in harvesting NWFPs for commercial purposes, especially because of the low entry thresholds. NWFPs can be collected near women's homes so that they can combine making a small but significant income while managing their household responsibilities. Women are also involved in organized small enterprises where income that they earn is often reinvested for family needs such as food, clothing and schooling. It is the commercial aspects of NWFPs that could help women become more financially empowered and diversify the sources of household income, leading to indirect impacts on education.

(See pages 16-18 for information on female entrepreneurs.)

### Reduce child mortality (Goal 4)

Currently 11 million children under the age of five die every year. NWFPs in terms of forest food are sources of rich nutrients that can act as a means of reducing illness and mortality among children. They can provide essential nutrients, especially for those who are poor and live in remote areas, away from alternative sources of food.

Although the contribution of forest foods to the household diet varies depending on the context, NWFPs such as stems, roots and tubers can provide starch to the diet. For instance, forest foods such as the oil-rich seeds of *Geoffroea decorticans* and the protein-rich leaves of baobab can help reduce protein-energy malnutrition that can lead to reduced growth and susceptibility to infection. Vitamin A deficiency, which can cause death, can be prevented through the leaves of *Pterocarpus* sp. and bee larvae. Iron deficiency, which particularly affects women and children, can be prevented through eating wild animals or insects, such as tree ants, as well as mushrooms. Niacin deficiency, which can cause diarrhoea that can lead to death among children, can be prevented through forest fruits and leaves of

niacin-rich *Adansonia digitata* and seeds of *Parkia* sp. NWFPs act as safety nets in vulnerable times and could help to prevent child mortality by not only being a source of food, but also by preventing malnutrition and strengthening the body's defence system to some extent.

### MORINGA TO ASSIST MALNOURISHED CHILDREN IN GHANA

The Adventist Development and Relief Agency (ADRA) Ghana, is embarking on a programme to assist 5 000 malnourished children in 58 communities in the central region to improve their health conditions. ADRA is assisting the communities to grow the *Moringa oleifera* plant, which has been found to contain high nutritious and medicinal properties and it has appealed to the communities to use it in the preparation of their food. According to ADRA's Winneba area Field Project Officer, the 12-month programme would cover malnourished children between the ages of six and 59 months. (Source: Joy Online, Ghana, 12 March 2007.)



"Family nutrition guide"

### Combat HIV/AIDS, malaria and other diseases (Goal 6)

Medicinal plants have been used for centuries to treat illnesses. Many people still rely on them for health care, especially in rural areas where access to clinics is difficult. The World Health Organization states that globally 80 percent of people still depend on medicinal plants for health care. Although the efficacy of some medicinal plants is yet to be proved, some have demonstrated high concentrations of chemicals that are needed for modern drugs, as well as high concentrations of

vitamins and minerals needed to improve human immunity to diseases.

One of the targets of this goal is to halt and reverse the incidence of malaria, which will be monitored by death rates resulting from malaria and the proportion of the population in malaria-prone areas using malaria treatment. More than 50 percent of the world's population is exposed to malaria, which kills 1.1 to 2.7 million people per year, mostly women and children. Yet medicinal plants can help to cure these debilitating diseases. Today, antimalarial research is focused on the medicinal plant *Artemisia annua* L., which could be three times more effective than quinine. (See page 31 for more information on *Artemisia annua*.)

Finding the cure for HIV/AIDS, however, is an ongoing process. The target in relation to this goal is to halt and reverse the spread of HIV/AIDS by monitoring the HIV prevalence among pregnant women and the ratio of AIDS orphans who attend school. In sub-Saharan Africa, where 25 million people are affected with HIV, it has been predicted that more and more will become further dependent on forest resources, such as NWFPs for food and income, as agricultural productivity decreases and poverty increases as a result of poor health. Dependency on medicinal plants to cure the side effects of HIV/AIDS will also increase the potential to cure HIV/AIDS through medicinal plants that are still being researched.

In addition to HIV/AIDS and malaria, there are other diseases that can potentially be cured by medicinal plants. For example, 1.6 million deaths result from unclean water and 3 900 children die every day from preventable waterborne diseases. These diseases could be treated by the seeds of *Moringa* sp., which can clarify turbid water, resulting in a 98-99 percent elimination of indicator bacteria. *Moringa* is a low-cost water treatment technology that helps to decrease exposure to waterborne diseases and is a form of safe drinking-water.

The fruits of *Balanites aegyptiaca* and *Swartzia madagascarensis* contain saponins that kill snails that carry waterborne fleas. NWFPs such as *Moringa*, *Balanites aegyptiaca* and *S. madagascarensis* can help target Goal 7, which calls for access to safe and improved drinking-water.

Finally, tuberculosis, which kills 2 million people every year, of which 12 percent are related to HIV-positive cases, could be treated with the medicinal plant *Hyposis* sp.

### THE ROLE OF *MORINGA OLEIFERA* IN REACHING THE MDGS IN NIGERIA

A water filter, which uses the local plant *Moringa oleifera*, has been developed by the non-governmental organization (NGO) Rural Africa Water Development Project (RAWDP) to help purify water for domestic use in several communities (both rural and urban) in the Niger delta area of Nigeria. *Moringa oleifera*, which grows widely in several parts of the country, is known in the Yoruba language as *ewe ile*; *gawara* in Fulani; *bagar-rumar maka* in Hausa; while the Ibos call it *odudu oyibo*.

The project involves the production of sand water filters and the use of natural coagulative properties in the powdered seeds of the *Moringa oleifera* tree to purify water for use by poor households. The Project Coordinator of RAWDP believes that the filter technology developed by the organization is key to achieving the water MDGs in Nigeria. He says, "We have about 63 million Nigerians without access to clean water". He believes that the Nigerian Government should encourage the massive cultivation of *Moringa* trees by all households and the empowerment of people to produce the Mor Sands Water Filters. "Everybody should plant a *Moringa* tree in their compound, so that when it grows, its fruits can be used to filter unclean water."

The *Moringa* tree can be planted anywhere, it grows wild and has the benefit of stopping erosion. It has fibrous roots and leaves an antibiotic effect on the soil. Its bark and roots also have medicinal properties. (Source: *This Day*, Nigeria, 10 April 2007.)

### Ensure environmental sustainability (Goal 7)

This goal relates to the protection of the resource base, without which it may not be possible to reach the other goals through the use of NWFPs. The goal suggests the need to integrate principles of sustainable development into country policies and reverse the loss of natural resources. There are several indicators for the goal and target but the most pertinent one in

relation to NWFPs is the proportion of land covered by forests and the ratio of area protected to maintain biological diversity.

Many NWFPs are found in forested areas and therefore forest resources should be harvested in a sustainable manner. The environmental impact of extracting NWFPs is dependent on the species, the parts harvested and the relationship between plants and animals in an ecosystem. Forest and biodiversity sustainability can be ensured through conducting resource inventories. Growth and yield models can also help to determine sustainable harvesting levels. Such biometrics are necessary to help maintain species, avoid overharvesting and plan and prioritize harvesting of NWFPs.

Environmental sustainability is also linked with economic and social sustainability. A sudden demand for a product and the promise of short-term gains and poor environmental information could lead to the extinction of certain species. Therefore, before supplying species to meet market demand and ensure their sustainability, subsector market analysis could be used. For instance, a market analysis and development plan could be used to assess what potential customers want to buy and then decide how to proceed to producing, processing, promoting and distributing the product. It is a good tool to assess potential beneficiaries, partners, human resources, physical infrastructure and communication networks in order that producers and consumers can benefit from NWFPs through an efficient and ecologically less harmful way of marketing such resources. Various economic analyses can also be conducted before deciding to harvest NWFPs such as profit, cost and revenue analysis.

Environmental sustainability is also dependent upon the relationship between different actors with different interests. Various social impact assessments can help determine not only what resources are used by whom, but also how people relate to one another that suggest how economic benefits are distributed among households, for instance. Understanding land tenure, for example, can help determine who are able to benefit from what types of resources and, thereby, assessment of the type and extent to which a resource can be extracted. The relationship between people and resources serves as a window to understanding environmental sustainability. Social impact assessments could be carried out in the form of baseline

studies to obtain information on the condition of the setting with more detailed studies analysing issues of well-being, equity and risks involved in using NWFPs.

### Develop a global partnership for development (Goal 8)

One of the targets of this goal is to develop an open, rule-based, predictable and non-discriminatory trading system that includes aspects of good governance, development and poverty reduction. The second target, which relates to addressing special needs to least developed countries that takes into account tariff and quota-free access for least developed countries' exports, is also applicable, especially since NWFPs face both tariff and non-tariff barriers in international markets. Tariffs, safety regulations, quotas and technical standards are the most common barriers placed on the south by the north. However, developing countries of the south also impose barriers, such as tariffs that are four times higher than those in developed countries, which restrict export trade in order to raise revenue for the government.

There are also various international trade agreements that could impose restrictions and also promote opportunities such as the World Trade Organization. With regard to non-tariff measures, species protection and health and safety regulations can be imposed. For instance, the Convention on International Trade in Endangered Species (CITES) of Wild Fauna and Flora regulates the trade of threatened plants and animals. The Convention on Biological Diversity (CBD) focuses on biodiversity conservation while promoting sharing of benefits from the use of genetic resources. In order to ensure health and safety regulations, phytosanitary regulations are placed on exporting countries. And finally, bans and boycotts can also play a restrictive role.



"Family nutrition guide"

### Links between non-wood forest products and Millennium Development Goals

MDG no.	Goal	Positive NWFP/MDG links
1	Eradicate extreme poverty and hunger	Safety nets to prevent extreme poverty and hunger
3	Promote gender equality and empower women	Financial empowerment of women
4	Reduce child mortality	Nutritional intake from edible NWFPs
6	Combat HIV/AIDS, malaria and other diseases	Medicinal plants could be cures; NWFPs could be easy and fast sources of nutrition and income
7	Ensure environmental sustainability	Possible to assess sustainability
8	Develop a global partnership for development	Development of international NWFP market

### Conclusions and future steps

The MDGs that have been addressed are inextricably linked. There is more to gain from synergistic efforts to achieve the goals so that they are not treated individually and competitively. Therefore, the most important policy recommendation is to develop cross-sectoral policies. For instance, developing the harvesting and processing of a major NWFP not only has the potential to help harvesters move away from a poverty trap situation (Goal 1), but also to increase incomes from a product with a strong local and international market. If efforts are made to improve an NWFP through building global partnerships (Goal 7), incomes could potentially rise while ensuring environmental sustainability (Goal 8) through certification programmes. Secure resource access could allow children to have nutritious edible NWFPs to prevent hunger and disease (Goals 1 and 4). If women could gain access to income-earning opportunities (Goal 3), they would be able not only to escape from extreme poverty (Goal 1) but also to reinvest their incomes and, for example, send their children to school (Goal 2) and improve the family diet to lower child mortality (Goal 4). Finally, in order to combat diseases such as malaria and HIV/AIDS, a sustainable resource base is needed because NWFPs, such as medicinal plants, could be a source of direct or indirect treatment, especially if their efficacy is proven. In addition to protecting the resource base (Goal 7), it is crucial to invest in women's income-earning opportunities to prevent increasing poverty and hunger (Goals 1 and 3), especially if the women's husbands are ill or have died from HIV/AIDS, thus eliminating the possibility of earning an income.

A cross-sectoral policy approach will help target several goals at the same time. With this approach, certain goals may have greater impact than others through the use of NWFPs. Using NWFPs to help achieve the MDGs should be prioritized as follows.

- Eradicating poverty will have a positive impact on the other goals. By conducting market research and connecting local and international markets, marginal groups, particularly women, could have access to income-earning opportunities. Finding resources to sell would be extremely beneficial as incomes could be reinvested into other goals such as education and better access to nutrition and health.
- Another objective to be prioritized for multiple goals to be achieved is the financial empowerment of women. If financial resources and marketing skills were to be transferred to women as a form of empowerment, poverty and hunger would decrease since studies have shown that women tend to reinvest their income to improve their families' living standards through better nutrition and education, especially targeting children. Investing in women would also decrease the impact on families who lose their male breadwinner to illnesses such as HIV/AIDS.
- The third objective, of equal importance to the above, is environmental sustainability. If natural resources are destroyed, none of the other goals can be achieved through NWFPs. Ensuring environmental sustainability involves obtaining biometric information to determine to what extent an NWFP can be harvested

and in what manner. However, environmental sustainability must also be linked with economic and social sustainability.

There is a great deal of potential in using NWFPs to target almost all the MDGs. By using a cross-sectoral policy approach, it is more likely that many goals will be achieved simultaneously, if carefully planned.

Achieving the MDGs through NWFPs will be a challenge, but not an impossible one. (Source: Policy brief researched and written by M. Chaudhury while working as a volunteer with FAO's NWFP Programme.)

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"Riches of the forest: for health, life and spirit in Africa"

“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)



## BIODIVERSITY AND THE DIETS AND HEALTH OF FOREST DWELLERS

Most societies recognize that food, medicine and health are interrelated. Food is typically associated with cultural identity and social well-being. Indigenous peoples' foods form part of rich knowledge systems. Traditional food systems typically draw on local biodiversity and are based on local production and management of land and specific environments.

Ethnobiological literature documents the historical and current importance of an array of resources consumed by communities living in and around the world's forests. It also demonstrates the richness of the traditional knowledge of indigenous and local communities related to the gathering and hunting of plant and animal foods and the medicinal value of forest species. From a wide range of ecosystems, some 7 000 of the earth's plant species have been documented as gathered or grown for food, and thousands more have medicinal properties.

From a nutritional perspective, forest environments offer ample sources of animal (vertebrate and invertebrate) protein and fat, complemented by plant-derived carbohydrates from fruits and tubers and they provide diverse options for obtaining a balance of essential vitamins and minerals from leafy vegetables, fruits, nuts and other plant parts. Although many forest types have scant wild sources of carbohydrates, this lack can be overcome

through forest-based agricultural production of cereals (such as maize), roots and tubers (such as cassava and yams) or bananas. Similarly, traditional cultivation systems drawing on agrobiodiversity can make adequate food available in spite of potential intermittent and seasonal shortages of many forest foods. Thus forest food resources can provide a valuable safety net when there is a shortage of food crops. Undoubtedly forest biodiversity is the basis of nutritional sufficiency for some populations. Forest products such as the fruits of *Mauritia vinifera* and other Brazilian palms rich in provitamin A (beta-carotene and other carotenoids), are recognized as exceptional nutrient sources. However, the nutrient composition of most wild species and minor crops has been poorly studied.

Links between food and health are increasingly understood in terms of the functional benefits provided by phytochemicals, including numerous carotenoids and phenolics, apart from their value as essential nutrients. Stimulants of immunity and antioxidant, glycaemic and lipidaemic agents can moderate communicable and non-communicable diseases such as diabetes, cancer and cardiovascular illness. Guava, for example, is rich in the antioxidant lycopene, which has recognized anticancer properties. Many nuts have a high content of specific oils such as omega-3 fatty acids (walnuts) and mono-unsaturated fatty acids (almonds, macadamias, pistachios, hazelnuts) that reduce the risk of cardiovascular and other diseases. Argan nuts (*Argania spinosa*) from the southwestern part of Morocco offer similar benefits, but many forest species with commercial potential have not been characterized for their specific fatty acid composition. The leaves of many forest species are rich sources of xanthophylls that contribute to optimal eye function. Examples include leaves of *Gnetum* spp. and *Adansonia digitata* (baobab), which are widely eaten in sub-Saharan Africa, and *Cnidioscolus acontifolius*, which is locally important as a vegetable in Central America.

While these kinds of functional properties of foods are seldom recognized by local communities without the benefit of scientific analyses, people often attribute value in treating or preventing disease to particular foods. Indeed the distinction between food and medicine that

characterizes scientific perspectives stands in contrast with traditional concepts of health that recognize the therapeutic and sustaining values of food more holistically.

The widespread use of roots, barks and other forest plant parts as medicines appears to offer public health benefits, but these are difficult to validate scientifically. Ethnobotanical studies in tropical forest areas typically document knowledge of hundreds of species within local communities and the widespread use of plants in primary health care. Much of the recorded data on the use of medicinal plants are anecdotal and idiosyncratic, and their specific contribution to the health of individuals cannot be effectively evaluated without controlled investigations. Ethnopharmacological research, including clinical studies, demonstrates the efficacy of many traditional remedies while failing to substantiate the pharmacological value of many others. Long-term epidemiological studies would be needed to confirm the contribution of specific remedies, phytomedicines or foods to the health of populations. Even these remain inadequate to measure the efficacy and contributions of traditional healing practices to physical and mental health.

Nonetheless, for forest-based societies that draw on traditional knowledge for most of their subsistence needs, the use of a diversity of resources can be expected to contribute to health. Although many traditional subsistence systems depend on one or more staples such as cassava, sago, rice or maize, these diets are kept diverse and balanced through small but complementary amounts of animal-source foods including birds, fish, insects and molluscs, as well as sauces, condiments, snacks and beverages obtained from plants. (Source: *Unasylva*, 57(224): 34–36.)



*Adansonia digitata*

## BIOPROSPECTING/ BENEFIT SHARING OR BIOPIRACY?

### Brazil regains açai trademark from Japan

*Açai* once again belongs to Brazil. This typical fruit from Amazonia was registered in Japan in 2003 as a trademark of the K.K. Eyela Corporation. Early this month, the Genetic Heritage Department of the Ministry of the Environment stated that the açai trademark had been cancelled by order of the Japan Patent Office, the agency responsible for trademarks in Japan. The decision is not final – the company still has 30 days in which it can file an appeal. If the company fails to counterclaim the trademark, the case is closed.

The Government has produced a long list of 3 000 scientific names of plants of Brazilian biodiversity, together with their common names, which swells the list to 5 000 names, and has distributed it to trademark registrars throughout the world in order to prevent another case like this one appearing. [Source: *O Estado de São Paulo*, 21 February 2007.]

### Es hora de registrar los conocimientos tradicionales de Bolivia para enfrentar a la biopiratería

El Servicio Nacional de Propiedad Intelectual (SENAPI) se ha propuesto sistematizar y registrar los conocimientos tradicionales, las expresiones del folklore, los ritos y rituales e inclusive la artesanía boliviana con el fin de proteger estos aportes históricos de las comunidades indígenas que corren el riesgo de fragmentarse, desaparecer o hasta sucumbir ante la biopiratería.

En su milenaria convivencia con sus hábitats, los pueblos indígenas y campesinos han ido desarrollado experiencias sostenibles de manejo de los recursos naturales, y sobre todo han aprendido a dar varios usos a las especies de animales y vegetales. Los conocimientos tradicionales están estrechamente vinculados a la noción de territorio.

El consultor de la Organización Mundial de Propiedad Intelectual (OMPI) Javier Corro fue contratado por el SENAPI para realizar un diagnóstico sobre la protección de este tipo de conocimientos en Bolivia con el objetivo de crear, a mediano y largo plazo, una Unidad de Registro de Conocimientos Tradicionales.

Se trata de una titánica labor tomando en cuenta que en Bolivia habitan más de 30

grupos étnicos, los cuales poseen identidades culturales diversas y varias formas de relación con el territorio y la biodiversidad. En términos biológicos, Bolivia es un país megadiverso. Existen más de 14 mil especies catalogadas sólo en plantas vasculares, es decir plantas superiores y no se sabe cuántas de éstas plantas tienen relación cultural con poblaciones humanas.

Fuente: Bolpress, La Paz, 27 de febrero 2007.



“Riches of the forest: for health, life and spirit in Africa”

### Hands off our genes, say Pacific islanders

Pacific islanders are demanding the power to restrict patenting of their human, plant and animal genes, even if they run foul of international patent laws. A new book documents 16 “acrimonious” encounters between scientific researchers and indigenous communities and calls for Pacific states to take a united approach to gaining control over such patents in the region.

The book, *Pacific genes and life patents*, is published by the international indigenous activist group Call of the Earth and the United Nations University in Tokyo. Coeditor of the book, Aroha Mead of the Victoria University of Wellington in New Zealand, says that lack of regulation and knowledge about the latest genetic technologies and intellectual patent law has made the region a major target for commercial gene hunters. The book says a major problem is that communities involved in research often do not give informed consent.

Scientific research and patenting may offend deeply held cultural values, says coeditor Dr Steven Ratuva, of the University of the South Pacific in Fiji. He says that patents on genes in medicinal plants conflict with the traditional view that these plants are common property, available for

all. While fair compensation for exploiting indigenous knowledge can be important, there are other issues at stake, says Ratuva. “It’s not only a matter of money,” he says. “There are certain aspects of the culture which a lot of communities think cannot be bought or sold.” He says that recognition of local people’s world view must be part of the process in working out any patent or bioprospecting agreements.

*Pacific genes and life patents* can be downloaded from: [www.earthcall.org/en/publications/index.html](http://www.earthcall.org/en/publications/index.html) [Source: ABC Science Online, 20 March 2007.]

### China moves to protect traditional knowledge

Legislators in southwest China’s Guizhou province are mulling a regulation aimed at protecting property rights for traditional knowledge, especially that relating to biological resources.

For centuries the Miao ethnic group in southwestern China extracted herbal remedies to combat colds, coughs and pneumonia from a type of grass called *guanyin cao*. But their failure to patent their traditional knowledge has seen them deprived of the chance to profit from it, said An Shouhai, vice-head of the Guizhou provincial bureau of intellectual property rights. The case of the Miao is an example of biopiracy, said An. A foreign company preempted the Miao by patenting the remedies derived from *guanyin cao* and is now making a fortune from it.

The forthcoming regulation is an effort to fight against biopiracy. China currently has no laws and regulations to protect traditional knowledge or species such as *guanyin cao*. [Source: Xinhua [China], 3 March 2007.]

### Peru creates online biodiversity register

Peru has created an online system with full public access to regulate biodiversity research. The measure should ensure Peru’s authority over its native genetic heritage, according to a press release from the National Institute of Natural Resources (INRENA), which will run the system.

INRENA is already working on implementing the system, which should be completely operational in two months. It includes a database showing in real time the national and international research being done with genetic resources native to Peru.

The system will include a register of researchers who have applied for a permit to work in protected sites, forests and wildlife habitats. Both local and

international researchers will be asked to provide a research proposal and a letter of authority from their supporting institution. If the application is accepted, a permit will be automatically issued within two weeks. INRENA will work with the relevant authorities to decide what information will be requested from researchers. This system will enable the tracking of scientific collection activities both inside and outside protected areas. And by centralizing information about research on genetic resources, it should also allow authorities to prioritize proposed research.

Brazil announced a similar system earlier this month. [Source: *SciDev.Net*, 22 March 2007.]

## BIRCH DISTILLATE HELPS IN CONTROLLING AGRICULTURAL WEEDS AND PESTS

MTT Agrifood Research Finland is studying the possibilities of distillate made of birch in controlling agricultural weeds and pests.

Originally birch distillate was a by-product in charcoal production. The first idea of using the distillate in controlling pests was found in national traditions. For Charcoal Finland, birch distillate is no longer only a by-product but is a very good product for preventing the smell of compost. Moreover, painting a paddock fence with birch distillate stops horses from gnawing the fence. Farmers who have trouble with elks have found it useful to moisten wood pellets with birch distillate and hang them from the branches of trees. However, it is not possible to claim publicly that elks or other animals can be controlled with birch distillate, because its actual composition is not known. This is what MTT Agrifood Research Finland plans to discover.

The amount of birch distillate produced in connection with charcoal production is not negligible: 1 000 litres of distillate from 20 m<sup>3</sup> of birch used. MTT Agrifood Research Finland is working on the best ways of using birch distillate. Judging by the tests it has made, both in greenhouses and on open fields, birch distillate has a wide scope. It destroys weeds found with carrots with no detriment to the carrot. It also repels pests, such as molluscs, gastropods and snails.

There are almost no negative effects found in birch distillate. Living organisms in the soil are not harmed by it, but instead



may actually benefit in one way or another. The chemical alternatives of birch distillate are much more harmful, for example, for water insects and plants, as well as for fish. It is harmless for humans.

It will take about three years to analyse the composition of birch distillate and to register it as a pesticide will take a few more years. Only after registration can it be marketed as a pesticide. [Source: Hannes Mäntyranta, forest.fi, 10 January 2007.]

## CHEWING GUM

### Chewing gum market

Gum is big business – and it is getting bigger. The global chewing and bubble gum market is now worth around UK£10 billion, according to Cadbury Schweppes's director of global gum.

It is growing at 8 percent per year – double the rate of the sweets market and significantly higher than chocolate's 5 percent. In most countries, sales are surging, driven by gum's popularity as a preferable alternative to high-calorie snacks and cigarettes, as well as improved gum recipes and packaging.

That is why Cadbury, which entered the gum business after buying Adams, the American confectionery group, for £2.7 billion in 2003, is so keen to expand its chewing gum activities. This month it entered the United Kingdom with the launch of Trident, taking the fight to Wrigley, the market leader. [Source: Times Online, 2 April 2007.]

### Chewing gum timeline

The ancient Greeks chewed *mastiche* – a chewing gum made from the resin of the mastic tree. The ancient Mayans chewed *chicle* which is the sap from the sapodilla tree. North American Indians chewed the sap from spruce trees and passed the habit along to the settlers. Early American

settlers made a chewing gum from spruce sap and beeswax.

In 1848, John B. Curtis made and sold the first commercial chewing gum called the State of Maine Pure Spruce Gum. In 1850, Curtis started selling flavoured paraffin gums that became more popular than spruce gums. On 28 December 1869, William Finley Semple became the first person to patent a chewing gum – US patent no. 98 304.

In 1871, Thomas Adams patented a machine for the manufacture of gum. In 1880, John Colgan invented a way to make chewing gum taste better for a longer period of time while being chewed. By 1888, an Adams' chewing gum called Tutti-Frutti became the first to be sold in a vending machine. [Source: <http://inventors.about.com/od/gstartinventions/a/gum.htm>]

### Chewing gum in prehistoric times

It is quite difficult to imagine that chewing gum is one of the oldest types of sweet in the world. Archaeologists have actually found evidence that prehistoric men and women used to chew on tree resin because of its flavour. This was more than a thousand years ago. It was also discovered that many cultures chewed on some form of gum. The ancient Greeks called tree resin *mastiche* and chewed it to clean their teeth and freshen their breath. [Source: Business Portal 24 [press release], 30 March 2007.]

### Chicle: how gum works

Americans spend something like US\$2 billion a year on gum. The average American munches more than a pound (0.45 kg) of it every year.

The original chewing gum is a natural product. It is made from a rubbery compound called chicle that comes from the sapodilla tree. A cut into its bark produces a rubbery sap, which is the base for natural chewing gum. In the same way that one could chew on a rubber band all day long without it disappearing, you can chew on chicle all day long. Chicle is a natural rubber.

In the late 1800s, people discovered that you can flavour chicle. You take a chunk of chicle, heat it up a bit to melt it, and then start mixing sugar and flavours into it.

The only problem with chicle is that there is not enough of it to go around. There are not nearly enough sapodilla trees to

supply the world with gum base. Today just about every piece of chewing gum on the market contains an artificial gum base instead of chicle. The gum base is just like any other plastic or synthetic rubber in use today. The goal is to create a tasteless, artificial rubber that has the same kind of temperature profile and consistency as natural chicle. [Source: HowStuffWorks.com [*in* Belleville News-Democrat, United States of America], 27 March 2007.]

## ENTREPRENEURS DON'T GROW ON TREES

Entrepreneurs don't grow on trees – but with a little help from FAO, poor families around the world are starting their own small forest businesses.

An innovative new approach from FAO is helping poor people around the world to turn trees into cash income, without felling trees. "It's not just timber companies that benefit from forests – about 1.6 billion people worldwide depend on them for all or part of their livelihoods," says Sophie Grouwels of FAO's Forestry Department. "And they often do so in ways that don't always involve cutting down trees, but through harvesting of renewable, non-wood forest products."

Fruits, nuts, herbs and spices, resins, gums, fibres – all these non-wood forest products provide poor families around the world with food, nutrition and income. Indeed, some 80 percent of the population of developing countries use such products in one way or another to meet health and nutritional needs.

"We believe that people could do even more with these renewable resources in order to fight hunger and poverty," says Grouwels. "Perhaps there are more efficient ways to harvest them. Maybe they could be processed into a product that sells for more in local markets, or even marketed overseas."

That is why FAO's Forestry Department established its Community-based Tree and Forest Enterprise Development (CBED) Programme with funding from the Norwegian Government. The project helps poor communities set up and sustain small businesses while giving them incentives to manage and protect their resource base better, allowing them to tap the wealth of nearby forest resources without depleting them.

In CBED projects, FAO teams up with government extension agents and NGOs to

work with forest communities and learn how they are making use of available forest products. Using a participatory learning process, detailed surveys of local forest resources are conducted, studies of local and regional markets are undertaken and new product, manufacturing and marketing opportunities are identified. At the same time, the communities draw up management plans for the sustainable use of the targeted natural resources and develop business plans for pilot enterprises, which run from harvesting, production and processing to marketing.

FAO recently collaborated with the Government of the Lao People's Democratic Republic to implement a CBED project in that country, where 41 percent of the national territory is covered by forests and 80 percent of the population live in rural areas. Six pilot projects were established in the poorest part of the country, where annual household incomes average from US\$200 to \$800. The project's results so far have been extremely encouraging. In Ban Lack village, where a grassroots cooperative was already engaged in manufacturing rattan table and chair sets, project participants learned new designs and bettered their production techniques in order to improve product quality and lower production costs. Now they are earning 20 percent more on each set that they sell, and are earning more thanks to a new roadside sales point. A group of women in the nearby Ban Nathong village have identified a new market for mushrooms, established a growing house, made connections with retailers and boosted their monthly incomes by US\$108.

All in all, ten community-level businesses employing 239 people were established. Increases in the incomes of participating households ranged from US\$5 to \$70 per month – 15 to 50 percent more than they were making before. At the same time, small village development funds were established using the profits as a way to provide locals with access to the credit needed to create new or scale-up existing operations. Grouwels hopes that these ten pilot projects will be the inspiration for many more.

Helping forest communities to help themselves is only part of the solution, according to Grouwels. Governments need to make a more explicit link between antipoverty efforts, forest resource management and economic development programmes. This is why FAO's CBED project brings national and local officials into the process early on, to educate them and

provide them with the awareness and knowledge needed to continue providing communities with the necessary support. Once pilot projects have been established, FAO meets with policy-makers and planners to talk about larger structural and legal bottlenecks that inhibit small-scale forest enterprise development, with a view to effecting reforms.

[Source: FAO Newsroom, 13 February 2007.]

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"Riches of the forest: for health, life and spirit in Africa"

## FEMALE ENTREPRENEURS IN THE NWFP WORLD

### Israel's Bedouin women turn desert plants into skin remedies

The Bedouin town of Tel Sheva in the Negev desert was founded in 1968 as part of a government project to settle Bedouins in permanent communities. Unemployment among the town's 30 000 inhabitants is running high and there is little urban or industrial infrastructure. So why has this settlement been attracting so many visitors? The reason is a new project to help Bedouin women turn native plants and flowers into skin remedies.

Set up two years ago, Asala Desert Nature is nearing its commercial launch, with a range of unique skin care products based on traditional Bedouin herbal lore, due to reach the Israeli market in the next four to six months. Sales to Europe will begin hopefully next year.



The Asala project was founded when the local community centre in Tel Sheva approached the Center for Jewish-Arab Economic Development (CJAED), a non-profit organization founded in 1988 to promote economic cooperation between Israel's Jews and Arabs, with the idea of setting up a training programme for women using desert plants found in the Negev.

The CJAED's Women's Empowerment Unit trained women from scratch, teaching them everything they might need to know in order to run a successful business in the field. To learn more about the plants and their role in Bedouin life, the women interviewed their mothers, grandmothers and other elderly female relatives. To strengthen this folk knowledge, the women also underwent a training programme in medicinal plants.

Though the group plans eventually to create a line of medicinal, nutritional and skin care products, they decided to focus at first on skin care. "If you live in the Negev desert, the conditions are very harsh on your skin and you have to look after it," explains Kiram Baloum, the director of the Women's Unit. "That's their niche."

Originally the women of Asala planned to build their own laboratory, but they discovered it was going to be too expensive. Instead they contacted Hlavin, an international cosmetics manufacturer and exporter, which agreed to let Asala use its laboratories in Ra'anana. Hlavin carried out a feasibility study of its own, which showed a promising market for Asala products in Europe.

The goal now is for the women to grow the plants and condense them into a formula of either olive oil or alcohol. Hlavin will take these formulas and turn them into a range of products that Asala will then market under its own name.

Most of the women involved in the project are married with children and all have the support of their husbands. (Source: Israel 21C, 19 February 2007.)

### Jagriti

Jagriti is a community-based women's organization in Kullu, Himachal Pradesh, India. It consists of over 900 poor hill women organized into savings and credit groups. One of the areas of activity and interest is value addition to the fruits of wild apricot, peach and walnut. The organization is now making cold pressed oil from the kernels of these wild species. The women members are engaged in this process and are



*Dioscorea deltoidea*

encouraged to plant these trees in their marginal lands with a view to boosting production of wild or semi-wild fruits.

In addition, the organization is growing nurseries of medicinal plants that are threatened in the wild, such as *Picrorhiza kurroa*, *Dioscorea deltoidea*, aconites and valerians of two species.

We feel that women's economic situations can be vastly improved through systematic conservation and value addition

to NWFPs. (Contributed by: Mamta Chandar, Director, Jagriti, # 341, Ward 12, Shishamati, Kullu 175101, HP, India. Tel./fax: 91-1902-226537.

E-mail: info@jagritikullu.org; jagritiorg@sancharnet.in; www.jagritikullu.org)

### Using knowledge handed down from generations to produce commercial products

Knowledge and skills handed down from generation to generation have found a new lease of life in the production of marketable goods to provide much-needed cash for local producers.

During the Committee on Forestry (COFO), which took place at FAO headquarters from 13 to 16 March 2007, FAO distributed folders and other materials made by villagers in the Lao People's Democratic Republic and Guatemala using local handicrafts.

Weaving bamboo to produce mats is a traditional knowledge in the Lao People's Democratic Republic, handed down from generation to generation by women. It is a valuable tangible national heritage that the government is making efforts to preserve.

Tapping into this knowledge, FAO asked the villagers of Ban Lak 62 to produce folders for COFO made of bamboo sheets. The initiative is part of an FAO project launched in 2004 to help local communities develop businesses and market their products to obtain greater profit for artisans themselves. Thongdeuane Keomany, who has studied bamboo handicrafts for more than ten years, taught the women in the village of Ban Lak 62 the basics of bamboo weaving – a tradition that was in danger of being lost. She then helped the women to produce not only simple items but also more complex products of a quality that would be good enough to meet international market requirements.

At the same time, FAO has helped the women to establish links with national and regional markets to buy the products. The result has been that the weavers have been able to increase their incomes from 40 to 50 percent. Another positive outcome is that the villagers have started to pay more attention to how they manage bamboo as a valuable natural resource on a sustainable basis.

Symbolically, a woven mat is synonymous to a "council" in pre-Columbian Maya culture, where dignitaries discussed public matters while squatting on a woven mat.

### AFRICAN WOMEN'S DEVELOPMENT FUND

The African Women's Development Fund (AWDF) funds local, national, subregional and regional organizations in Africa working towards women's empowerment. It is an institutional capacity-building and programme development fund, which aims to help build a culture of learning and partnerships within the African women's movement. In addition to awarding grants, the AWDF attempts to strengthen the organizational capacities of its grantees. It funds work in five thematic areas: women's human rights; political participation; peace building; health and reproductive rights; and HIV/AIDS economic empowerment. The AWDF gives grants in three cycles every year. Applications can be sent in at any time.

#### FOR MORE INFORMATION, PLEASE CONTACT:

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Similarly, FAO involved a local village in Guatemala in the production of cords for building passes for participants attending COFO using local skills, with the help of Maya Republic, a local NGO.

Hand weaving, using waist looms, is a traditional practice of Mayan women in Guatemala. Originally, this was done to create fine traditional cloth. However, the beauty, high quality of the textile and tourism have helped to diversify and open markets for products made using this ancient technique. For the production of the cords, 80 women from the village of San Antonio Aguacalientes worked in their spare time. The colours used to make the cords came from natural ingredients found in the woods: green and blue were extracted from tree bark, fruits, leaves and herbs; and red, orange and brown were extracted from an insect that lives in a local cactus.

Beyond their use at this international committee meeting, the cords are being marketed as a new product introduced to the local market to enhance further the preservation and use of Mayan traditional knowledge and culture. (Source: FAO Forestry Newsroom, 5 March 2007.)

### Shea butter sales change African women's plight

Little do buyers of cosmetics containing shea butter realize that sales of this age-old beauty-boosting nut are helping legions of African women to feed their children and send them to school.

Off a dirt track in the shanty town of Gounghin, on the edge of the capital of Burkina Faso, Evelyn Kabole and Honorine Ilboudo haul heavy buckets of water and knead shea paste in large plastic basins. Both are widows with six mouths to feed. They belong to the Songtaab-Yalgre Association, which in the language of the local Mossi people means "help each other".

Set up in 1990 to teach women to read and write, the association is now dedicated to shea butter production. It has 1 174 members, 60 of whom live in Gounghin and the others in villages outside the capital Ouagadougou.

Shea butter, commonly known as karité, derives from a fruit that grows on the shea nut tree (*Butyrospermum parkii*) found only in Africa's dry Sahel belt from Cape Verde to Chad. The tall sacred trees scattered around villages cannot be planted. They grow alone, bearing fruit only after 25 years and then only once every three seasons, but their lifespan is about two hundred years.

For as long as anyone can remember, African women have been using butter made from the seed found inside the shea nut for cooking, healing and moisturizing skin and hair. Rich in vitamins A, E and F, all antiwrinkle, moisturizing and skin regeneration agents, the seed also contains latex, which is good for skin elasticity, as well as steroids for muscles and it protects against the sun.

Promoted by cosmetics brands such as L'Oréal, the Body Shop and L'Occitane, the popularity of shea butter products has increased considerably over the years, with Nigeria, Mali and Burkina Faso as the top producers. For Burkina Faso, shea butter is the second export item after cotton.

"Women in villages across the country harvest the nuts," Kassoum Soudre, the finance officer for the country's Project Karité, said. "We try to organize them in groups, provide them with equipment or credits and help them improve production."



"Riches of the forest: for health, life and spirit in Africa"

In the Gounghin women's self-help cooperative, the nuts, once shaken off the trees and dried in the sun, are pounded in electric grinders to separate the seeds from the shells. They are then ground into a paste. Bent in two, women workers beat the paste by hand for 20 minutes until it becomes butter. Once separated, it is heated, filtered, cooled and either sold as butter or made into soaps and creams.

Most of the work is done by hand; profits are shared and the association is run by the women themselves. With no intermediaries involved, domestic and foreign sales comply with fair trade conditions.

The initiative is in line with the tenets upheld on International Women's Day, celebrated each year on 8 March. In developing countries the day has focused notably on empowering women to take part in the economic as well as the political life of their countries. (Source: The Peninsula online, Qatar, 7 March 2007.) (See page 36 for information on female entrepreneurs in Honduras.)

### HISTORY OF FORESTRY AS IT DEVELOPED IN CENTRAL EUROPE

For the first time, FAO has displayed a historical collection of rare forestry books dating back to the eighteenth century that provide a snapshot in time of the state of forest research as it first developed in Central Europe and evolved through the beginning of the twentieth century.

Acquired from the International Center of Silviculture (CIS), the first permanent international forestry organization founded in Berlin in 1939, the collection is the first ever attempt to document worldwide all publications related to forestry by scientists. The goal of the library was to establish annual updated bibliographies of forest-related literature from European countries.

With a considerable number of valuable books, mostly in German, dating back to the eighteenth century, the collection offers a unique glimpse into the beginnings of forestry as a science as it first developed in Central Europe.

The collection is also special in that it survived the Second World War. Scientists made arduous efforts to protect it from the war by asking extraterritorial rights for the library and the protection of the Swedish embassy. In 1944, with the assistance of the centre's Secretary General, scientists themselves drove and moved the books in lorries at their own risk, from Berlin to Salzburg. When fighting seemed imminent in Salzburg in 1945, the scientists moved the books again to a castle, a mine and some to Ramsau in Austria, to keep them protected. Most of the collection therefore remained intact throughout the war. Eventually in 1951, at the end of the war, the collection was transferred to the FAO premises in Rome, which succeeded the CIS.

The collection is significant for its historical and scientific value. It includes books authored by renowned scientists who established forestry as a science, such as Humboldt, Brehm, Cotta, Hartig, Pfeil, Pressler and Brandis. It also covers botany, zoology, silviculture, growth and yield, and forest engineering.

"No other such collection exists in any other library worldwide," said Elizabeth Johann, an expert in forestry history, who reviewed and assessed the collection and organized the exhibit. "It demonstrates that sustainable forest management dates back to the eighteenth century and that international collaboration within the

scientific community continued even in times of war and national disagreements." (Source: FAO Forestry Newsroom, 5 March 2007.)

## MAN FINDS WAY TO GROW FAMED FRENCH TRUFFLE

The legendary French Périgord truffle (*Tuber melanosporum*) has found its way to East Tennessee (United States of America), the first in the state. Thomas Michaels, a botanist with a Ph.D. and a plant pathologist, has figured out how to grow the famed fungi in the tree root system of hazel nut and oak trees. He has harvested his first crop. Knoxville chefs were his first customers, paying about \$800 per pound (0.45 kg), which is cheap considering the world market price is more than \$2 000 per pound.

The Périgord truffle, also known as the Black Diamond, is hard to grow, requiring the right soil, climate and tree root for colonizing. *T. melanosporum* varies in size from a pea to a chicken egg. It will only grow in loose, humid, sun-drenched soil and needs cool wet nights, where its mycelium (tiny hair-like filaments) nestle and find nourishment in tree roots.

Michaels says his harvesting season (January to end February) has just ended. By March, the odd-looking, knobbly, coal-black mushrooms have faded and are in their tree root homes.

The smelly but celestial-tasting fungi were once prevalent in southern France and were harvested in tonnes. Today, the yield is down to 10–50 tonnes per year worldwide.

Michaels planted his trees in 2000, starting with plants that were about 16 inches (40.6 cm) tall. The hazel nuts are now 10–12 feet (approximately 3–3.6 m) tall, and the soil around them bubbles with birth. According to Michaels, a good orchard can produce maybe 50 pounds (22.7 kg) per acre (0.4 ha). A normal yield, he says, is 10–20 pounds (approximately 4.5–9.0 kg) per acre. (Source: *Knoxville News Sentinel* [United States of America], 25 March 2007.)

## MANGROVE FORESTS, SEA ALGAE AND CORALS HELP TO COMBAT TSUNAMIS

All the coastal regions in the Pacific, Arabian Sea and Bay of Bengal are vulnerable to a tsunami disaster. Mangroves (the vegetation found in and

along the coast) function as a natural shield in lowering the intensity of sea tides, as well as providing a variety of economic uses. Sea algae and coral reefs also play an important role in averting the severity of natural disasters. These mangroves, sea algae and coral reefs are valuable non-timber forest resources (NTFRs) occurring along the seashore.

Mangrove forests have a symbiotic relationship with all creatures. Mangrove plant species have multiple economic uses and based on these the tree species yield very useful industrial timber, wood fuel and charcoal of high calorific value. Most of the tree and shrub species are also sources of NTFRs, such as edible fruits and leaves, indigenous medicines, tannin, seed fatty oils, thatching materials and sedges fencing material, fibres from palms and grasses, honey, fodder and manure. In addition to these uses and the fact that they can provide protective walls against tidal waves, they act as another conservation mechanism for ecological balance.

It is therefore essential to conserve these NTFRs. A list of plant species that occur naturally in and around the sea is available from the author to help scientists to propagate them sustainably, manage and harvest NTFRs for the uses given above, avoid their extinction through scientific and environmentally sound harvesting practices and replenish the dwindling resources to obtain multiple uses. (Contributed by: Ms Alka Shiva, President and Managing Director, Centre of Minor Forest Products (COMFORPTS), HIG - 2, No. 8, Indirapuram, GMS Road, PO Majra, Dehra Dun - 248 171, India. E-mail : shivamfp@nde.vsnl.net.in; <http://www.angelfire.com/ma/MinorForestProducts>)

## MEDICINAL USES OF NWFPS

### Medicinal products from forests

Many forest plants and animals produce poisons, fungicides, antibiotics and other biologically active compounds as defence mechanisms, and many of these have medicinal uses. Compounds that have common medicinal uses such as cola nuts, caffeine, chocolate, chilli peppers and cocaine are found in forest areas. Many western pharmaceutical products derive from tropical forest species, e.g. quinine from *Cinchona* spp.; cancer-treating drugs



*Cinchona calisaya*

from rosy periwinkle (*Catharanthus roseus*); treatments for enlarged prostate glands from *Prunus africana*; forskolin, which has a variety of medicinal uses, from the root of *Coleus forskohlii*; medicines for treating diabetes from *Dioscorea dumetorum* and *Harungana vismia*; and several medicines based on leaves of the succulents of the Mesembryanthemaceae family. Some of these products are now synthesized, but others are still collected from the wild. The economic value of traditional medicines is considerable, with reports that the bark of *Prunus africana* alone is worth US\$220 million annually for the pharmaceutical industry.

Traditional health care systems are based on significant local knowledge of medicinal plants in all major tropical areas. These systems are important, particularly where formal health care services are absent. The market for traditional medicines is large and expanding, and much of it is in the hands of women, particularly that involving less commercially valuable medicinal plants. There is also growing scientific evidence of the efficacy of some of these widely used traditional remedies.

At the same time, medicinal plants are threatened globally. Some of the threats include slow growth patterns of desirable species, loss of traditional mechanisms that contributed to sustainable use and competing uses of the same species, in tandem with growing commercialization and global markets. Certification of medicinal plants and better forest management techniques offer two possible partial solutions.

Pharmaceutical companies have sometimes been charged with reaping unacceptably large benefits from forest peoples' knowledge, given the widespread poverty in forested areas. Attempts to establish collaboration between the pharmaceutical industry and local communities in bioprospecting have had mixed results. [Source: *Unasylva*, 57[224]: 7.]

#### Aussie bee honey – an antibiotic in the United Kingdom

A British hospital is using honey from Australian bees to combat superbug Methicillin-resistant *Staphylococcus aureus* (MRSA), a bacteria that is resistant to conventional antibiotics. The James Cook University Hospital in Middlesbrough has been using honey from a colony of bees only found in Queensland to clean infected wounds, along with dressings that contain gum extracted from seaweed. The honey seals the injury and the seaweed extract draws and absorbs the harmful bacteria. [Source: *Ninemsn* [Australia], 27 February 2007.]

#### *Boswellia serrata* extract scores well in COX-2 comparison

*Boswellia serrata* extract performed as well as a selective COX-2 inhibitor in a controlled clinical study to assess its effect on relieving osteoarthritis pain, researchers report in the February issue of the *Indian Journal of Pharmacology*, 39(1): 27-29.

*Boswellia serrata* has a long history of use in Ayurvedic medicine, popular in India, and its gum resin is reputed to have anti-inflammatory, antiarthritic and analgesic properties. [Source: *Nutralngredients-usa.com* [France], 20 March 2007.]

#### Cinnamon may help fight against Type 2 diabetes

Research studies have shown that cinnamon has been linked to lower blood sugar and total cholesterol levels. The research has focused on people with Type 2 diabetes. The main ingredient in cinnamon that helps people with this diabetes is proanthocyanidin. "For people who have Type 2 diabetes, insulin doesn't seem to be getting enough sugar into the cells and this is where cinnamon comes in. Cinnamon helps the cells absorb more sugar," said Robert Cullen, assistant professor of food nutrition and dietetics in Family and Consumer Sciences, who has been monitoring research studies such as these for many years.

Two types of cinnamon are used in food: *Cinnamomum verum*, which is used in many sweet baked goods and *Cinnamomum cassia*, which is a stronger spice used in foods. There is no clear answer to which cinnamon can help fight high blood sugar levels, cholesterol, Type 2 diabetes or even heart disease. There is no true answer if cinnamon at all can help with these problems, but Cullen says things look promising. [Source: *Daily Vidette* [Illinois, United States of America], 7 March 2007.]



*Cinnamomum cassia*

#### Research into medicinal value of fungi

Scientists at the University of Western Sydney, Australia, are working to see whether the medicinal fungi *Ganoderma lucidum* can reduce high blood pressure, glucose and cholesterol. When coupled with insulin resistance, these conditions bring about metabolic syndrome, a precursor to Type 2 diabetes which affects an increasing number of Australians. Also known as *reishi*, *G. lucidum* has been used as a cure for a wide range of diseases for 2 000 years.

Cultivation has increased over the last 30 years, and preliminary animal and human pilot studies seem to suggest that it can have a positive effect on blood sugar levels, cholesterol levels and blood fats.

The mushroom – an inedible fungi typically the size of a bread and butter plate – contains about 200 active chemical compounds, but researchers believe that a group called the polysaccharides are the most effective. Traditional users believe it is most potent when taken in combination with another medicinal mushroom called *Cordyceps sinensis*.

The researchers will put this theory to the test when they enlist 170 people with metabolic syndrome symptoms for a four-month trial. Participants will have either capsules of powdered reishi alone, a combination of the two mushrooms, or a placebo capsule.

If successful, this could become the first single treatment for the metabolic syndrome. [Source: *The Age* [Australia], 7 February 2007.] (See page 60 for information on medicinal fungi in Alaska.)

#### Tree bark molecule may combat malaria

A compound derived from tree bark has potential as a preventive treatment for malaria, according to a study published in the journal *PLoS Medicine*. The treatment targets the early stages of malaria infection, which would make it difficult for the parasite to develop the kind of drug resistance that hampers conventional malaria treatment programmes.

Scientists have isolated a new molecule, tazopsine, from bark collected in Madagascar's eastern rain forest. They found that N-cyclopentyl-tazopsine, a less toxic compound derived from the molecule, was effective against early liver-stage malaria parasites in animal tests. However, the compound is ineffective once infection has reached the red blood cells.

Tazopsine comes from the stem bark of the plant *Strychnopsis thouarsii* and is the sole ingredient in a traditional tea used as a treatment for malaria infection. The authors of the study hope that variants of tazopsine-related molecules can be tested to find one of low toxicity, suitable for clinical trials.

A resurgence of malaria since the 1980s, combined with a shortage of conventional drugs, has forced many Madagascans to rely on medicines from more than 200 plants to fight the disease. This has triggered scientific interest, as Madagascar's long isolation from neighbouring countries has resulted in a unique mix of plants and animals.

Tests on chimpanzees are due to begin this year in Gabon, while tests on Rhesus monkeys will be carried out in Thailand before the end of the year. [Source: *PLoS Medicine*, 2 January 2007 [in *SciDev.Net Weekly Update*].]



### Rain forest bark could destroy rare child cancer

The bark of a rain forest tree could destroy a rare childhood cancer, scientists have found.

The South American *Lapacho colorado* contains a natural plant product that shrinks eye tumours by causing cancerous cells to die. Laboratory tests show that the compound, called beta-lapachone, works at low doses, making it an ideal treatment for child patients with retinoblastoma, a malignant tumour of the retina.

The uncommon disease accounts for about 3 percent of cancers in children and remains fatal in the developing world although it is one of the most curable cancers in developed countries. But one problem that exists with the traditional approach of radiotherapy is the association of long-term ill health and even death in some cases.

Researchers at California University in the United States of America found that beta-lapachone was effective in inhibiting the growth and spread of retinoblastoma cells and actively induced their destruction. Their findings, published in the medical journal *Eye*, are consistent with those from studies of the effect of the product in other human cancers, including breast, colon and lung tumours.

*L. colorado* or red lapacho, so called because of its scarlet flowers, grows in the warmer parts of South America such as Brazil, northern Argentina, Paraguay and Bolivia. It was commonly used by the medicine people of the Indian tribes long before the advent of the Spanish in the New World. The natives use the wood to make bows for archery. [Source: national news in *Life Style Extra* [United Kingdom], 16 March 2007.]

## NON-PROFIT ORGANIZATIONS AND NGOS

### Centre for Indian Bamboo Resource and Technology (CIBART)

CIBART is a non-profit networked organization dedicated to the development of the bamboo sector in India. Its establishment was facilitated by INBAR (the International Network for Bamboo and Rattan).

CIBART serves as a catalyst for the bamboo industry in India, undertaking various collaborative livelihood development projects. It brings together

state and district level bamboo organizations and enterprises in a federating mode. It also provides project development and implementation, technical consultancy and turnkey services on all aspects of bamboo sector development in collaboration with its partners.

CIBART's main area of focus is to achieve livelihood development, ecological security and economic development through the sustainable use of bamboo and rattan. Its primary focus is to benefit poor rural communities.

Currently, CIBART has four community-owned organizations in the states of Tripura, Manipur, Maharashtra (Konkan area) and Himachal Pradesh that are not for profit companies. Within each state, the local organizations set up by CIBART have extension linkages in each village, backed up by field technical resource centres at the subdistrict level. (Contributed by: Manu Mayank, Chief Executive Officer, I-4, Jangpura – B, New Delhi – 110014, India. Fax: +91-11-24374802; www.cibart.org.)



### Fundación Zoobreviven, Ecuador

Fundación Zoobreviven is a private Ecuadorian, non-profit organization created in 1997 and recognized by the Ecuadorian Ministry for the Environment.

Its objective is to conserve the biodiversity of Ecuador through responsible use of natural resources, scientific research, environmental education, wildlife, plant and tree conservation and development of economic alternatives for local communities.

Three reserves are managed in northern Ecuador, including the 2 500-ha Alto Choco Reserve and the nearby 7 500-ha Chontal Reserve, both in the Choco bioregion. The work is to preserve these important environments through wildlife, plant and

tree conservation, community education, environmental management, volunteer projects, community ecotourism and scientific research on the flora and fauna of the region.

In addition to managing the three reserves, the foundation is currently developing management plans for the areas surrounding all three cloud forest reserves, reforestation Alto Choco and conducting environmental education in the surrounding communities.

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**www.zoobreviven.org/**

### The Finnish Nature-based Entrepreneurship Association

The Finnish Nature-based Entrepreneurship Association was founded in 2001. It is a non-governmental national organization formed by entrepreneurs and development organizations. The association collects together actors in nature-based entrepreneurship for cross-sectoral cooperation (nature tourism, handicrafts and food products) in order to integrate entrepreneurship, education, development activities and research in the sector. There are approximately 300 entrepreneurs and 100 expert organizations in the sector at the moment.

One of the main interests of the association has been to increase the ecologically friendly business culture, since the sustainable use of nature is one of the main values and marketing arguments in the sector. The association has been a partner in several project activities, both national and international. All of its activities are based on close cooperation between entrepreneurs and other actors.

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**e-mail: katri.kranni@vilman.fi;www.luontoyrittaja.net. (See page 15 of Non-Wood News 14 for more information on nature-based entrepreneurship.)**



## NTFP CURRICULUM DEVELOPMENT

Dr Eric T. Jones of the Institute for Culture and Ecology (IFCAE) is offering an online course on non-timber forest products culture and management through Oregon State University (United States of America). The course is geared to upper division students as well as professionals interested in training on NTFPs. International participants are encouraged. The course is taught twice a year in the spring and autumn. In addition to readings, videos, and engaging online discussions participants conduct a project identifying NTFPs in their local community. Results of these projects will be made available through the IFCAE Web site.

### FOR MORE INFORMATION, PLEASE CONTACT:

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projects/osuntfpcourse/index.html](http://www.ifcae.org/projects/osuntfpcourse/index.html)**

## NWFP CERTIFICATION

The harvest of NWFPs plays an important role in the sustainable management of community agriculture and forest resources worldwide. NWFPs present many new challenges and opportunities in certification because of their wide range of management practices and difficulties in monitoring harvest and processing.

The PEFC Council (Programme for the Endorsement of Forest Certification schemes) issued a technical document with specifications for the origin for the purposes of the PEFC label and declarations for NWFPs. This document is Appendix 8 to the standard that rules the traceability of certified products, from forest to the market (Annex 4 to PEFC Council Technical Document). The document is normative when the organization establishes a chain of custody for the certification of NWFPs in order to use the PEFC logo and/or declarations on NWFPs. The appendix was approved by the PEFC Council General Assembly on 27 October 2006.



At the moment, given the fact that NWFPs have only been able to be PEFC certified since November 2006, there are very few examples among the PEFC accredited schemes, even though the potential is high. These examples include:

- Cork – certified in Spain and Portugal
- Essential oil – certified in Italy
- Honey, chestnut and berries: soon to be certified in a certified Italian forest
- Truffles and mushrooms: soon to be certified in already certified forests of Italy, France and Spain
- Animal meat – there are plans for this to be certified in Italy and Spain (and possibly other countries) where there are hunting plans and fenced forests

PEFC's aim is to ensure that the world's forests are managed sustainably and that their functions are protected for present and future generations.

PEFC certified timber, non-wood and paper products are an independently verified assurance to consumers and companies that they are buying forest products from sustainably managed forests. By choosing PEFC, buyers can help combat illegal logging.

PEFC's role as an independent, non-profit NGO is to secure that the same high standards are applied by all its endorsed certification systems globally and thus by forest managers, paper and timber companies and their external certifiers. (Contributed by: Antonio Brunori, PEFC Council ASBL, 2ème étage, 17 Rue des Girondins, Merl-Hollerich, L - 1626 Luxembourg. Fax: +352 26 25 92 58; e-mail: [info@pefc.org](mailto:info@pefc.org); [www.pefc.org](http://www.pefc.org)) (See page 52 for information on NWFP certification in Nepal.)

## OLEORESINS ADD FLAVOUR TO FOOD

From mere extraction, the Rs500 crore oleoresin industry has now gone beyond diversifying into nutraceuticals and cosmeceuticals to enter the dietary supplement area, becoming a producer of food ingredients in savoury and sweet flavour items. The industry is now turning into a one-stop food and flavour solution.

India accounts for 70 percent of world oleoresin production with competition from China, the United States of America, Sri Lanka, South Africa and Latin American countries. Brazil, India and China are the market leaders, with South Africa catching

up. India has an advantage in its proximity to spice farms, with Kochi the hub of oleoresin activity, according to Synthite Industry Chemicals, which accounts for nearly half of the Indian oleoresin and spice oil extract exports.

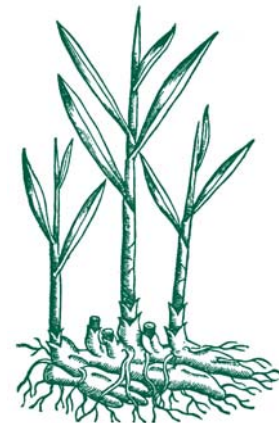
In the last fiscal year, India exported 6 225 tonnes of oleoresins and spice oils, worth Rs500 crore. According to spice board figures, within threequarters of this period, 5 010 tonnes worth Rs402 crore were shipped out and the industry is sure to improve even more.

High costs in the West have forced the industry there to outsource from India and flavour houses across the globe look to the country to source their products. The industry's major breakthrough came in the mid-1980s with the development of oleoresin paprika, followed by oleoresin chilli. The list of oleoresins from spices includes turmeric, celery, ginger, nutmeg, mace, cumin, fennel, mustard, garlic, coriander, cassia/cinnamon, clove and Mediterranean herbs such as rosemary.

Some products such as light pepper berries, not available in India, have forced the industry to import from Viet Nam. While earlier Sri Lanka was the main source for the pepper, the shift to Viet Nam was due to the price advantage.

Vanilla is the latest entrant to the industry with the development of a nature-identical vanillin oleoresin. Oleoresins from cassia/cinnamon are being consumed by the beverage industry and mustard oleoresin is another item that is making big inroads into the global market.

The process of isolating the active principle has helped in the manufacture of lutein from marigold flowers as a colouring agent. [Source: *Financial Express* (India), 25 February 2007.]



*Zingiber officinalis*

## PARTENARIAT POUR LES FORÊTS DU BASSIN DU CONGO

Le Partenariat pour les forêts du Bassin du Congo (PFBC) est une association regroupant une trentaine d'organisations gouvernementales et non gouvernementales. Il a été créé en septembre 2002, lors du Sommet mondial sur le développement durable (Johannesburg, Afrique du Sud).

Le PFBC a pour objectifs d'améliorer la communication entre ses membres et la coordination entre leurs projets, programmes et politiques afin de promouvoir une gestion durable des forêts du Bassin du Congo et d'améliorer la qualité de vie des habitants de la région. (*Contribution de:* Christophe Besacier, Conseiller régional forêt environnement Afrique centrale, Ministère français des affaires étrangères, Gabon; courriel: Christophe.Besacier@diplomatie.gouv.fr; cbfpinfo@cbfp.org; www.cbfp.org)

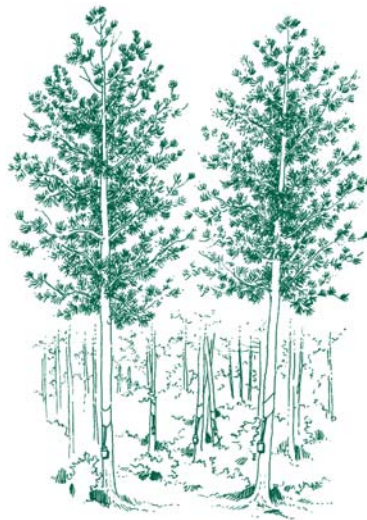
## RAIN FOREST SILK COOPERATIVE

The Rain Forest Silk Cooperative™ is a newly organized consortium of four producers of wild silk products on four continents: India, Indonesia, Madagascar and Namibia. It produces high-quality silk textiles, yarns and decorative objects from wild silk cocoons. Each member of the cooperative uses a unique species of silk moth to make the products.

The cooperative's products come from impoverished rural farmers, and primarily women. Its long-term goal is to provide new means of income generation while implementing enterprises that focus on maintaining native forests instead of cutting them down.

Current members of the cooperative include: Appropriate Technology India (atindia); the Royal Silk Project of Indonesia; the Kalahari Wild Silk, Namibia; the Ny Tanintsika silk project in Madagascar; and Conservation through Poverty Alleviation International (CPALI). The Rain Forest Silk Cooperative is a member of the Fair Trade Federation.

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[www.rainforestsilk.org/index.html](http://www.rainforestsilk.org/index.html)



"Riches of the forest: fruits, remedies and handicrafts in Latin America"

## SYNERGISTIC SUPERFRUIT: SEA BUCKTHORN

Sea buckthorn (*Hippophae rhamnoides* L.), named a "superfruit" for its robust nutritional properties, is poised to outrun many other functional foods. It has recently been rated second of ten potential superfruits, based upon four criteria including nutrient density and potential for disease impact ([www.berrydoctor.com](http://www.berrydoctor.com)).

In studying the superfood and superfruit phenomena, nutritional science is recognizing that nature is capable of providing, in such varied single foods as wheatgrass juice, garlic, blueberries and now sea buckthorn, a foodborne inoculation against ill-health that laboratories cannot match.

While the nourishing and healing properties of sea buckthorn are relatively new to the West, they have been well known in the East for hundreds of years.

Almost the entire plant is suitable for consumption and topical application. The fruit pulp, rich in such antioxidants as vitamins C and E, beta-carotene and numerous flavonoids (complementary micronutrients that work in concert with more familiar vitamins), plus the rare and valuable palmitoleic acid (known to support wound healing and cell health), can be pressed for juice, freeze dried and packaged as a supplement, and incorporated into topical skin preparations. The fruit oil can be extracted separately and taken internally or externally.

Oil from the seeds is high in several fatty acids, including omegas 3 and 6 in a critical 1:1 ratio; applied topically, the seed oil

heals radiation burns, reduces scarring, heals or improves psoriasis and a host of other skin conditions and, taken internally, has been proved to improve heart health and gastrointestinal disorders.

The leaves, high in vitamins, minerals, proteins and other natural anti-inflammatory compounds, can be dried for tea, powdered as an ingredient in soaps and creams, and steeped to make a soothing rinse for irritated skin. Studies are ongoing to determine the healing and nutritive possibilities of sea buckthorn bark.

All told, this superfruit, known to ease and soften scar tissue and arteriosclerosis, reduce inflammation and cell death and reverse burn damage, has over 191 known bioactive compounds for topical and internal applications.

While Asia and Europe have used sea buckthorn commercially for several decades, the industry is new in North America. The health and supplement industries are just starting to pay attention (and draw attention) to this plant. (*Source:* Press release, SBT Sea buckthorn International Inc., 16 April 2007.)

## TEA TREE OIL (*MELALEUCA ALTERNIFOLIA*) AND ITS RISKS

Tea tree oil, an ingredient found in many beauty products, has been named unsafe by the European Union (EU) and could be banned after research discovered that it may cause skin irritation and reduce the effectiveness of antibiotics.

Regular usage of tea tree oil, which is sometimes used undiluted to help get rid of spots, acne and insect bites, could increase the user's risk of contracting superbug infections such as methicillin-resistant *Staphylococcus aureus* (MRSA), according to research claims. Tea tree oil makes these infections more resistant to antibiotics. In addition, the EU has warned against using tea tree oil undiluted, as even small doses can cause skin rashes. However, it has said that beauty products such as shampoo, which use the oil in minute quantities, are safe.

The EU said it may ban the oil from being used in the undiluted form later this year if manufacturers fail to convince EU scientists that it is safe for human use. (*Source: Pharmaceutical Business Review* [United States of America], 19 February 2007.)


**"VOICES FROM THE FOREST"**


A recent film available from the NTFP Exchange Programme "Voices from the forest –balancing forest use and conservation in Southeast Asia" provides introductory material to the lesser-known group of NTFPs, stressing the interrelations of land rights, traditional management of resources and marketing of these various forest-derived products.

The film captures the stories of indigenous peoples living in or near tropical forests in Southeast Asia, and their dependence on NTFPs for their survival. Through their voices as well as of some of their supporters, we can share in their dreams and aspirations, together with their fears as the rapidly changing world poses new challenges to their indigenous lifestyles.

We are offered a rare insight into:

- the nomadic Penan people's reliance on sago palm in the face of threats from a large logging company (Malaysia);
- traditional and sustainable harvesting, production and marketing of wild honey in Danau Sentarum (Indonesia);
- the Ikalahan tribe's struggle to protect their traditional forest by transforming fruits of the forest into jams and jellies for the high-end niche market (the Philippines);
- the Higaonon tribe's indigenous fabric, the *hinabol*, tied to traditional management of abaca (manila hemp) and the fast-disappearing art of *hinabol* weaving (the Philippines); and
- the crucial market links provided by the Upland Marketing Foundation and the CustomMade Crafts Center, and their tireless efforts at aiding local communities to develop marketable handicrafts and food products.

(Produced by: Riak Bumi, Telapak and the NTFP Exchange Programme for South and Southeast Asia, 2005. DVD [43 minutes]. Available in English and Khmer.)

**VOICES FROM THE FOREST  
NEWSLETTER**

*Voices from the forest* is the bulletin of the NTFP Exchange Programme for South and Southeast Asia. Now published twice yearly, it highlights activities and pressing issues related to NTFPs in the region. It is available in print and online from:  
<http://ntfp.org/sub.php?gosub=info-vftf&iid=>

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**(See page 26 for information on another DVD from the NTFP Exchange Programme.)**


**WEAVERS USE DYES  
OF WILD FLOWERS TO  
COLOUR HANDSPUN  
CLOTH**

The palash flower (*Butea monosperma*), known as the "flame of the forest", remained unnoticed until Orissa's Sonepur district farmers discovered its commercial value: locals found these flowers with their red petals to be an ideal source to prepare dye for colouring fabrics.

Sambalpuri saris from western Orissa, bed sheets and mats dyed with the colours of palash flowers have become extremely popular and are in great demand.

In Birmaharajpur, Orissa, people collect these odourless flowers that grow in abundance in the countryside and earn their livelihoods by selling them to weavers. Children also help in flower collecting. "Palash blossoms in the *chaitra* (spring season). We give them to the weavers and get two to five rupees per kg," said one flower collector.

The flowers are dried (since palash is a seasonal flower it is dried for use all year round) and the colours are extracted to dye cotton, silk cloths and natural fibres;

synthetic fibres do not respond well to the dye.

Jharna, a producer of natural colours, said that saris and other fabrics coloured in palash-based dyes are not only lasting and good-looking but also safe to use.

Although the process of preparing dye from palash is quite lengthy, the weavers of Sambalpuri textiles in the Sonepur district now use it as it is more economical compared with chemical dyes.

The palash tree has many uses. The dried flowers are used as a diuretic. The gum obtained from the tree contains tannin and is used in the treatment of diarrhoea. Locals say that the seeds have deworming properties. The wood of the tree is soft and durable and is used for making boats.

According to one local, "All the parts of this tree are useful. Its seeds, flowers and even the stems have medicinal value. If only this was better known, then we could conserve it and grow more to make it a trading commodity to sell to other states." (*Source: DailyIndia.com [United States of America], 28 March 2007.*) ♣



**He that plants trees loves others  
besides himself.**

*English proverb*



 **BAMBOO**

**Botanists Identify new species of North American bamboo**

Two Iowa State University botanists and their colleague at the University of North Carolina have discovered a new species of North American bamboo in the hills of Appalachia. It is the third known native species of the hardy grass. The other two were discovered more than 200 years ago.

Lynn Clark, Iowa State professor of ecology, evolution and organismal biology, and Ph.D. student Jimmy Triplett study bamboo diversity and evolution. They first heard about "hill cane" from a botanist at the University of North Carolina. Although the plant was known to the people in the area, its distinctiveness was not recognized.

Hill cane differs from the other two native North American bamboo species – commonly known as switch cane and river cane – in an important way. It drops its leaves in autumn. "That's why it was recognized locally as being different," Clark said. "It's pretty uncommon for bamboos to drop their leaves."

Clark should know. She's an internationally recognized bamboo expert. She had previously discovered 74 new species of bamboo. Her 75th species discovery has been named *Arundinaria appalachiana*.

There are 1 400 known species of bamboo. Of these, about 900 are tropical and 500 are temperate. The bamboos of North America are found in the eastern and southeastern United States, from New Jersey south to Florida and west to Texas. Giant cane (*Arundinaria gigantea*) occurs in low woods and along riverbanks. Switch cane (*Arundinaria tecta*) is found in non-alluvial swamps, moist pine areas, live oak woods and along sandy margins of streams. "The United States' native bamboo has been a very important plant ecologically," says Clark. "And there's recent interest in using it for revegetation projects because it is native and has been used for habitat by so many different animals, especially birds."

Clark and Triplett began looking at the North American bamboos as part of a larger collaboration with botanists worldwide to develop an evolutionary family tree of bamboo species. They are using modern DNA sequencing technologies together with traditional plant taxonomy, which involve observation and description of a plant's form, anatomy, ecology and other characteristics. [Source: Iowa State University [in *Science Daily*], 13 March 2007.]

**Bamboo rice**

Hard-pressed tribals in Kerala's Wayanad district (India) are making a bountiful harvest of bamboo rice, a forest produce much in demand for its medicinal value and as an ingredient in ethnic cuisine.

With large stretches of the blossoming plant shedding its paddy-like seeds, tribal families gather in bamboo groves with brooms, baskets and sacks to collect the rice, which was a little supplementary income this year. A local Scheduled Tribe Cooperative Society is buying bamboo rice, brought mostly by the Paniya and Naika tribes in the Noolpuzha range of the Wayanad Wildlife Sanctuary.

The gruel made of bamboo rice mixed with herbs is prescribed for arthritis and rheumatic complaints in indigenous medicine. The tribal cuisine has several delicacies made of bamboo rice and wild honey, with which the rural poor survived in times of famine.

Grown in groves, bamboo has a lifespan of 12 to 36 years. The plants blossom only once in their life time and perish after shedding rice, leaving it for new shoots to come up from the stump. Local botanists say that the types of bamboo mostly found in Wayanad are *Bambusa* and *Dendrocalamus strictus*, but several other varieties also grow in the area.

A family can collect 20 to 30 kg of bamboo rice a day. The cooperative buys it for Rs10/kg, but private buyers offer higher prices. The rice is winnowed, husked and packed by the cooperative before being sold.

Bamboo blossoming also attracts tourists as vast areas of dark and shady forest turn aglow with yellowish flowers. [Source: *The Hindu* [India], 25 February 2007.]

**Hong Kong skyscrapers made of bamboo**

Hong Kong's skyscrapers proudly dot its shores, giving the island its glossy, modern image. Yet the structures, which are being built higher and faster every day, owe their identities to one of the oldest construction materials in history – bamboo.

Advances in engineering and construction have not been able to outdate bamboo, a tried and successful material used to construct buildings in China for more than a thousand years. Light and cheap bamboo, mostly from southern China, helps Hong Kong's builders sheathe entire buildings in a matter of weeks and is constantly in high demand. [Source: NDTV.com [India], 23 February 2007.]



 **BEE PRODUCTS**

**New study of Spanish varieties of honey**

According to a new study of Spanish varieties, honeydew honey has even higher levels of disease-fighting antioxidants than the honey that bees make from nectar.

But all honey, regardless of its origins, is good for you, experts say. In recent years, honey has gained a reputation as a health food, especially in the light of research suggesting that it has germ-fighting powers and is high in antioxidants and chemicals that appear to block certain types of cell damage caused by molecules called free radicals.

In 2004, researchers in the United States of America found that antioxidant levels rose in people who ate between four and ten tablespoons of honey per day, depending on their weight. It was not clear at the time, however, which varieties of honey harboured the most antioxidants.

In the new study, researchers looked at 36 varieties of Spanish honey in two groups, clover honey, made by bees from the nectar of flower blossoms and honeydew honey, made by bees from a sweet, sticky substance secreted by insects such as aphids that live off plants. Honeydew honey is only produced in a few parts of the world and is considered a delicacy in certain regions.

The researchers performed tests on the honeys and reported their findings in the February issue of the *Journal of the Science of Food and Agriculture*. According to the results, honeydew honeys had higher levels of antioxidants in general. The researchers also report that Spanish honeydew honeys tend to be darker and more acidic than clover varieties.

Study coauthor Rosa Ana Perez, a researcher with the Instituto Madrileño de

## PROPOLIS

Propolis is the sticky glue used by honey bees. It is usually coloured dark brown, although it may also be yellow, green, grey or red. Plants are literally rooted to the spot where they grow. This means that threatened by an enemy, they cannot get away. They therefore protect themselves with chemical defence systems, which include toxins, bitter tastes and stinging repellents. Tender buds provide tasty snacks for insects unless defended, and plants often protect their buds with sticky gums. When a tree is wounded it secretes resin around the wound as the first stage of the healing process.

People have great benefit from these powerful plant chemicals and many medicines and drugs are derived from the plants. Propolis is antibiotic – it has been proved to kill bacteria and there are many claims for its medicinal properties.

A bee collects propolis by biting off scraps of plant resin with its mandibles and packs them into the *corbiculae* (pollen baskets) on its hind legs. Each of these can carry about 10 mg of propolis. Because of its stickiness, gathering propolis is a slow business: it can take an hour to fill both baskets. Back at the hive, unloading can take another hour. Propolis is only collected when the temperature is above 18°C. Bees use propolis in a variety of ways, such as keeping their homes dry, cosy and hygienic.

It is not possible to define propolis any more than it is possible to define honey – it all depends on what is available for the bees. In general, propolis consists of resins, waxes, volatile oils and pollen, as well as vitamins, minerals and plant chemicals such as flavonoids. The problem for people marketing propolis commercially is to obtain a standardized product.

Depending on quality, the world price of propolis is currently around US\$50/kg. (Source: *Bees for Development*, March 2007.)

Investigación y Desarrollo Rural, Agrario y Alimentario in Madrid, said honeydew honey from outside of Spain should also show similar signs of higher levels of antioxidants. Honeydew honey is relatively rare in the United States.

Perez said, however, that honey is not a miracle food: "I don't think that a foodstuff on its own could allow the improvement of the health of anyone, or even prevent some disease." (Source: *HealthDay News, Washington Post* [United States of America], 22 February 2007.)

### Rare New Zealand honey leads to sweet importing business

The buzz about manuka honey has to do with its health benefits, not its flavourful properties in recipes. The antibacterial-rich honey is produced by bees during the few weeks a year that New Zealand's manuka bushes are in bloom and is touted as a remedy for everything from skin conditions to digestive disorders.

Known in parts of Europe, New Zealand and Australia, the product is virtually unknown in the United States of America, but Fiona Nelson wants to change all that. In October, Nelson opened Wedderspoon Organic, an importing company that is bringing the honey to the country. She currently imports and sells two products. Both are stamped with the National Organic Program of the United States Department of Agriculture (USDA).

Manuka Honey Active 16+ is equivalent to 16 percent antiseptic solution, according to a testing method developed by the University of Waikato in New Zealand. People take a spoonful of active manuka honey for such gastrointestinal disorders as acid reflux, oesophagus ulcer, heartburn, upset stomach, stomach ulcer and irritable bowel syndrome. It is also touted for external use for wound care, burns, diabetic leg and foot ulcers, bedsores and post-operative scar healing.

Nelson said the honey has no expiry date because it is organic and does not need refrigeration. Unlike processed honey bought for cooking, it does not crystallize.

The other product, Autumn Forest Honeydew Honey, is derived from the sap of beech trees. It was named by the Maoris, the indigenous people of New Zealand, for the golden colour of the beech sap in the morning light. Honeydew honey contains complex sugars in greater levels than average floral honeys. It is more readily available than manuka honey but, unlike

manuka honey, honeydew honey can be used in cooking or dribbled on pancakes or fruit. (Source: *Pottstown Mercury* [United States of America], 5 February 2007.)

## PROFITING FROM HONEY BEES



This engaging film looks into the traditional and sustainable honey harvesting methods of the communities living around Danau Sentarum in West Kalimantan, Indonesia, one of Southeast Asia's largest wetlands.

The communities harvest honey from wild honey bees (*Apis dorsata*) from the colonies that make the wetlands their home. Harvesting up to 25 tonnes of honey yearly, forest honey is a significant source of income.

The traditional *tikung* method is widely used for honey harvesting in the area. Since there are few tall trees, people facilitate conducive nesting conditions for the bees by attaching *rafters* or *tikung* to trees. A *tikung* takes about an hour to prepare and a family can have tens, or even hundreds of them, whose ownership is passed on from generation to generation.

Also described is the *periau*, or traditional regulations for the use and management of forest honey.

The film aims to underscore how supporting traditional methods of management are highly effective in ensuring the sustainability of honey in the area. (Produced by: Riak Bumi, Telapak and NTFP Exchange Programme for South and Southeast Asia, 2005. DVD [25 minutes]. In Bahasa Indonesia with English subtitles.)

### FOR MORE INFORMATION, PLEASE CONTACT:

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 (See page 24 for information on another DVD produced by the Programme.)

**Beekeepers in Australia enjoy massive honey harvest**

Tasmanian beekeepers have reaped a massive honey harvest from the state's native leatherwood trees. The trees, which mainly grow in the state's western rain forests, produce a unique flavoured honey for export and domestic markets. Yields this year are expected to be 30 to 40 percent above average. Beekeepers believe the exceptionally warm February weather has made the difference. [Source: ABC Online [Australia], 8 March 2007.]

 **BRAZIL NUTS**

**Brazil nuts' path to preservation**

Help is at hand for the Amazon rain forest and Brazil's poverty-stricken rural people, courtesy of the country's famous native nut.

Brazil nuts are a valuable food source with a huge market in Europe and North America: up to 7 000 tonnes of unshelled nuts and 20 000 tonnes of shelled nuts are shipped every year. And because the trees that supply the nuts grow wild, they offer a way for communities to make a living from the forest without destroying it, something that is now being put to use in the country.

"This is a real financial resource for communities," says Dr Rafael Salomao, who works at the Museu Goeldi, one of the most important centres for the study of the Amazon. "A tree which is over 400 years old can provide for generations and generations."

Brazil nuts are considered to be one of the most valuable products to be harvested from undisturbed rain forests. The nuts, known to Brazilians as *Castanha do para*, grow uniquely in the Amazon basin. They are hazardous to collect: each hard outer shell weighs over 1 kg. However, they offer an alternative to the way that many areas of Brazil are trying to develop, by clearing the forest to create areas suitable for grazing cattle or growing products such as soya.

For many years, this has meant the destruction of Brazil nut trees, even after they became officially protected. But forests are burned to clear the land and the Brazil nut tree is very sensitive to fire. After three years, the trees are dead. What is worse for Brazil nut collectors is that once the trees have been destroyed, there is little chance of getting them back. Attempts to replace them have been largely unsuccessful. Saplings will not grow in shade and they take up to 15 years to begin producing nuts.

However, at the end of 2006, the governor of the large state of Para announced a protected reserve of 16.4 million ha of forest, with the aim of creating a huge conservation corridor through the northern Amazon. And in the state over Para's northern border, Amapa, small communities are taking the Brazil nut to generate income from the rain forest without destroying it. "We needed to create organizations in the region in order to strengthen local production," said Ajama da Silva Mendes, from the Amapa state department of industry, commerce and minerals. "So the government gave some incentives to create cooperatives, together with the communities."

Brazil nut gatherers and their families are now able to maintain decent livelihoods. And small-scale factories have been set up to produce Brazil nut biscuits and oil, broadening the range of products available for export, meaning that there is a better way for people to obtain a fair price for their valuable resource.

But there are further problems. Subsidized production in Bolivia is challenging Brazil's dominance in the market. And when, in 2004, the European Union found that Brazil nuts with shells on had traces of aflatoxins, which can cause liver cancer, strong regulations were put in place regarding the nuts. While the American limit on aflatoxin levels in Brazil nuts is 15 parts per billion, the European limit is just four parts per billion. This has damaged Brazil nut exporters. [Source: BBC News, 28 January 2007.]

**Modelling Brazil nut subsidies and incentives**

Over the last decade, settlers have moved to Brazil's western Acre state and put significant pressure on the Amazon forests. Most settlers are clearing land for cattle pasture. However, half of the farm families maintain part of their farm as forest in order to harvest Brazil nuts. Some policy-makers have suggested subsidizing Brazil nuts to provide incentives to maintain more forest cover.

ASB (alternatives to slash and burn) researchers used a specially developed bioeconomic model that explored the interactions of labour, capital and land allocation over a 25-year period under various market and price scenarios. When they doubled the price of Brazil nuts in the model, they found that the deforestation rate would not decrease. In fact, they

projected that subsidies would potentially exacerbate deforestation because farmers would earn more cash from the Brazil nuts and then reinvest it by clearing forest for the more lucrative activity of cattle raising. [Source: *Field guide to the future. Four ways for communities to think ahead.* 2006. K. Evans *et al.*; [www.asb.cgiar.org/ma/scenarios/](http://www.asb.cgiar.org/ma/scenarios/)]



**Brazil nuts as an alternative energy source**

A study conducted by the National Research Institute of Amazonia (INPA) demonstrated that waste material from Brazil nuts can be used by industry and commerce. The material can be used to generate energy both in its natural state as well as in the form of subproducts, for example, charcoal, charcoal bricks (pieces of small charcoal compressed into blocks), tar (bio-oil) and gases.

The study, a result of the project, "Brazil nut fruit: potential use as a source of raw material for energy grid in the State of Amazonas", was prepared by INPA technician, Paulo Roberto Guedes Moura, with guidance provided by the Coordinating Office for Forest Products Research (CPPF/INPA).

The study showed that this waste material has potential for use as firewood in thermal plants, boilers, pottery works, etc. In the form of a subproduct (charcoal and bricks), the waste can be used by the steel industry in making pig (raw) iron.

Moura clarified that during his comparative analyses of basic density of the waste material with other timber species, Brazil nut acts as if it were dense wood. In his opinion, the tar is especially interesting as it is a sort of wood-based bio-oil to generate energy, or for cooking since it adds taste to smoked products. Additionally, the oil can be used in the composition of paving materials and to increase the durability of wood products. "It

is highly valuable on the consumer market," he stressed.

The study was conducted to show that value can be added to waste material that would otherwise be discarded. Moura said that there will be a lack of raw material to supply industry and commerce, as in 2004 alone, the state of Amazonas produced some 9 000 tonnes of Brazil nuts. This would generate roughly 18 000 tonnes of waste material. [Source: *Jornal da Ciência*, 24 January 2007 [in *Amazon News*].] (See page 7 for information on certified Brazil nut oil.)

## FOREST INSECTS

### Eating worms and protecting parks

In an effort to ensure that mopane worms (*Imbrassia belina*), in the Uukwaluudhi Conservancy of Namibia are not overharvested but utilized in a sustainable manner, the Uukwaluudhi Traditional Authority (UTA) has set up regulations governing the harvesting of these worms in their forests.

Before people start harvesting mopane worms, says Veikko Iishila, the Headman of Likokola district in the Uukwaluudhi area, a meeting is held to inform the people that the worms are mature and can be harvested. Each harvester has to have written permission from the UTA or from other relevant authorities at a fee. Mopane harvesting time is usually from March to April. This helps to make sure that forests are not overharvested and that immature worms are not collected.

Iishila said money levied from mopane collectors is put into the UTA under the chairmanship of King Taapopi and is used to solve community problems.

Mopane worms are large caterpillars that feed on the leaves of the mopane tree in southern Africa. They are high in fat and protein, have a gritty texture and a slightly meaty taste when fried; they are considered a delicacy by many people in Namibia, Zimbabwe, Botswana and South Africa.

The Uukwaluudhi Conservancy was established through the Community-Based Natural Resource Management programme of the Ministry of Environment and Tourism, which enables people to manage and benefit from the natural resources in their environment in a sustainable way. [Source: *The Namibian*, 15 February 2007.]



### Collectible forest insects

There are basically three reasons why people collect insects: for subsistence, for professional purposes or purely as a recreational hobby. Although collecting is occasionally broad-based, it is most often focused on specific groups of insects sought for their utilitarian, scientific, ornamental or other benefits.

#### The collectors

**Subsistence.** Some traditional cultures in Africa and elsewhere depend on hunting/gathering to some extent, including the collecting of insects and their products for food, medicinal purposes, as a source of arrow poison, as fish and bird bait, and occasionally for ornamentation (jewellery, textiles).

**Professional.** The two distinct categories of individuals who make a living collecting insects are professional entomologists (who study insects for scientific reasons) and commercial collectors (who collect or breed insects on behalf of others or who act as intermediaries in the trade of live or dead insects and their products). Live insect exhibits (butterfly houses or insect zoos) are a relatively new but dynamic development in the commercialization of insects.

**Amateur.** Insect hobbyists come in three varieties: the aestheticist, the naturalist and the trophy hunter. Most entomological hobbyists are attracted to insects for their ornamental qualities, while some aspire to owning the biggest, most bizarre or rarest specimens available. Some collectors are willing to pay thousands of dollars for certain outstanding specimens. In Japan, for instance, where some long-living beetles are very popular as pets, one trophy stag beetle sold for US\$20 000 in the mid-1990s.

#### The collected

Given the fact that the more conspicuous species of insects tend to be well documented, contemporary scientific collectors are often focused on obscure taxonomic groups of small but species-rich groups that may be useful as bioindicators.

Amateur collectors, however, still seek specimens that are large or beautiful in terms of colour, shape, texture or other things, with the highest prices going for those specimens that are rare and in mint condition. The dead stock insect trade alone runs into tens of millions of dollars annually.

The humid tropics of Southeast Asia and South America are generally the most species-rich areas and thus the most significant suppliers of collectible insects in the world. However, the United Republic of Tanzania not only has many indifferent genera of insects, but also some specifically or largely African representatives, including some of extraordinary size and beauty. As elsewhere in the tropics, the more humid parts and mountains may be the most rewarding areas in terms of collectibles, but the drier woodlands and semi-deserts also yield some remarkable specimens.

Amateur collectors everywhere are most strongly attracted to *Lepidoptera* and *Coleoptera*, but several other orders include highly sought-after specimens. [Source: Springer/Kluwer Academic Publishers, *Forest Entomology in East Africa: Forest Insects of Tanzania*. 2006. Chapter 9, Forest-based insect industries. H.G. Schabel. (With kind permission of Springer Science and Business Media.)]

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**(See page 59 for information on insect-based industries in the United Republic of Tanzania.)**





**COLLECTIBLES: BUTTERFLY RANCHING IN PAPUA NEW GUINEA**

The ranching for collectibles started in Papua New Guinea, a country that considers insects a “national resource” and in its constitution specifies insect conservation as a national objective. In 1966, seven rare and magnificent birdwing butterflies, *Ornithoptera* spp. (Papilionidae), were declared protected and a year later the world’s largest butterfly, *O. alexandrae* Roth, was proclaimed legally endangered. In 1968, a law banned the taking of any of the seven species of birdwings threatened with extinction. With these steps, Papua New Guinea tried to stop unscrupulous bioprospectors who had opportunistically exploited the country’s spectacular insect fauna with little if any benefit for the rightful owners of these resources.

In the meantime, most of the formerly threatened birdwings and other spectacular and sought-after insects of Papua New Guinea have become available through legal trade. This was made possible by the establishment of several wildlife management areas, the development of butterfly ranching for export as part of the country’s rural development programme and involvement of an Insect Farming and Trading Agency (IFTA), which has assured quality control

and the marketing of the insects produced since 1974.

In 1995, over 800 villagers in Papua New Guinea supplied stock to IFTA, whose staff fills orders from collectors worldwide (especially Japan, Germany and the United States of America), while the profits (less 25 percent for administrative costs) return to the villagers.

At present, a pair of a certain species of *Ornithoptera*, such as *O. priamus* and *O. goliath supremus f. titan*, may be worth up to \$300, but some collectors have paid thousands for outstanding specimens.

Serious butterfly ranchers in Papua New Guinea can earn US\$2 500–5 000 per year in a country where the per capita income is around US\$50/year. Villagers that earn revenue from insects are said to have shown a strong tendency to conserve forests, demonstrating the potential of such enterprises to foster ecologically sensitive economic development. (Source: Springer/Kluwer Academic Publishers, *Forest Entomology in East Africa: Forest Insects of Tanzania*. 2006. Chapter 9, Forest-based insect industries. H.G. Schabel. (With kind permission of Springer Science and Business Media).)

Because demand and competition for kroto have increased in recent years, some areas are being overharvested and as a result collectors are finding fewer larvae. To fill their baskets they work on a much shorter rotation of host trees, which in turn affects the ability of the ant populations to recover. With less intense harvesting, the ants normally rebuild and recoup quite quickly.

As kroto can only be kept fresh for two days, traders often transport boxes into the city on a daily basis. Because of increased demand and economic necessity, local traders may take 10–30 kg a day to the market. They also take some dried kroto, which is produced by collectors and can be kept for six months, but it sells at half the price of fresh supplies.

The rapid deterioration of the fresh produce and the need for immediate transport represent the biggest hurdles in marketing kroto. During the high season, traders pay collectors US\$1.20–1.40 per kg and then sell to merchants at US\$1.60–1.70 per kg, leaving little profit after transport costs. The Jakarta markets sell around 100 kg of kroto a day at US\$3.50–5.00 per kg, making the merchants the main beneficiaries in the kroto trade. To make more money, some collectors sell their daily harvests directly to small retailers, who are often willing to pay more for fresh kroto.

For many collectors, kroto represents an important or principal source of income and is regarded as one of the few ways that poor people can earn money from a free resource. Collectors use the money for subsistence needs or to save for harder times. Farmers often collect the resource as well, as a way of earning some extra money in between the two rice harvesting seasons. (Source: Case study on “Kroto, ant larvae and pupae”, by Nicolas Césard and Irdez Azhar [in *Riches of the forest: food, spices, crafts and resins of Asia*, eds C. López and P. Shanley].)

(Please see page 44 for information on snail farming in Cameroon.)

**Lac – Corrigendum**

The authors of the article “Cultivation of NTFPs as the best measure of poverty eradication of poor tribal cultivators – A case study of lac cultivation” printed on pages 28–29 of *Non-Wood News* 14 should have read: Dr S.P. Bhardwaj (Principal Scientist) and Dr S.D. Sharma (Director), Indian Agricultural Statistics Research Institute, New Delhi 110012, India.

**Kroto ant larvae and pupae: the bird food delicacy**

“Kroto” is the Javanese name given to a combination of larvae and pupae from the Asian weaver ant (mainly *Oecophylla smaragdina*). This mixture is well known to Indonesian bird lovers and local fishers, with the ant larvae being popular as a fishing bait and also as a dietary supplement to improve the performance of songbirds. Bird fanciers treat their favourite pets with the protein- and vitamin-rich kroto when preparing them to challenge other birds in singing competitions.

Weaver ants are found from India to Australia and throughout the Indonesian archipelago, within a wide range of habitats including coastal areas, secondary forests and plantations. They are well known for being aggressive predators and for building

nests in trees. The ants can invade almost any type of tree but tend to prefer fruit trees, such as the jackfruit or mango. A given colony may occupy various nests in a single tree or even several trees. Located in one of the highest nests is the queen, whose eggs are distributed to the other colony sites nearby. Weaver ants’ nests are among the most complex of ant nests, with the *Oecophylla* species using the well developed silk glands of their larvae to weave together a nest of living leaves – hence their name.

Throughout the year, kroto is harvested and sold on the islands of Java and Sumatra. Collecting kroto is a solitary job, which begins with the identification of host trees. During the dry season, the resource is less abundant but during the wet season the rice-like smaller larvae are more common, of a better quality and more highly valued.

## GINSENG

### Ginseng genome library established in China

After years of study, Liu Shuying and her team at the Institute of Applied Chemistry under the Chinese Academy of Sciences have established the first ginseng genome library in China. Including holographic material and genetic data, this library is another step forward in the modernization of traditional Chinese medicine.

Jilin province in northeast China currently produces 80 percent of all ginseng in China and 60 percent of ginseng available on the world market. (Source: People's Daily Online, 15 March 2007.)



Ginseng

### A note on ginseng terms

Wild ginseng refers to the plant as it grows in its native forest, with no help from people. Wild ginseng commands the highest price and is limited to the plant's native range. American ginseng (*Panax quinquefolius*) is found in the mountains east of the Mississippi River, although it does grow in patches as far west as Nebraska. Wild Asian ginseng (*Panax ginseng*) is found only in northeastern China, the Republic of Korea, the Democratic Republic of Korea and parts of Siberia.

Other ginseng relatives are *Panax notoginseng*, found in China as "san chi" or "tien chi" ginseng; *Panax japonicum*, or Japanese ginseng found only in Japan; and *Panax trifolium*, known as dwarf ginseng. There is a less documented basis for these plants than for the main two ginseng species, and they are not nearly so valuable. *Eleutherococcus senticosus*, sometimes called Siberian ginseng, is not a true ginseng, but a relative in the same plant family; it has almost no ginsenosides (the active chemical compounds in the

*Panax* species), and labelling rules now prohibit it from being marketed under the name "ginseng".

Cultivated ginseng is the farm-grown version, which requires shade arbours, chemical pesticides and fungicides, and intense labour. For generations it was primarily cultivated in Wisconsin (United States of America), but it is now widely grown in China and on farms around the world.

Simulated-wild ginseng is a fairly new, middle category (although experts maintain that thousands of years ago, Koreans grew simulated-wild ginseng in forests).

Promoted as an ecologically sustainable alternative to cultivated ginseng, simulated-wild plants grow from seeds sown by people in forest conditions that mimic the habitat of wild ginseng. Simulated-wild ginseng is mainly limited to areas where ginseng also grows wild – in the United States of America, in forests east of the Mississippi River – and it is raised with no or very few chemicals and little tilling. Markets in Asia have been slow to acknowledge this as a separate category; simulated-wild roots are easily mistaken for wild roots and command a higher price than cultivated ones. (Source: *Ginseng, the divine root. The curious history of the plant that captivated the world*, by David A. Taylor.)

(Please see page 77 for more information on this book.)

## MEDICINAL PLANTS AND HERBS

### Medicinal and aromatic plants: the way out of poverty?

About 20 000 tonnes of medicinal and aromatic plants (MAPs) worth US\$18–20 million are traded every year in Nepal alone, and about 90 percent are harvested in an uncontrolled fashion by landless, resource-poor mountain farmers for whom the harvest and trade in medicinal plants constitute their only form of cash income. The situation is similar in Bangladesh, Bhutan, India and other countries of South Asia, and 90 percent of the plants from Nepal are exported to India in raw form.

The greater Himalayan region, in fact, has the comparative advantage of being home to many MAPs found only there. The region also has various well-developed practices in traditional medicines

(Ayurveda, Unani, Siddha) based on indigenous knowledge of these plants' medicinal and healing properties. Considering the global trade in MAPs – now a US\$60 billion industry and still growing, especially with the increasing demand worldwide for herbal medicines – the potential of MAPs to provide relief from poverty in South Asia, where 40 percent of the world's poor reside, is tremendous, if it can be tapped.

However, issues of sustainable harvesting – the need to balance the push-and-pull factors of commercial demand on the one hand and conservation of these valuable plants and their contribution to biodiversity on the other; the need for greater value addition at the community level and for stronger farmer-industry collaboration to realize this; the need for commercial cultivation of important species, as well as for more research about the plants and more information including market information and strategies together with a more supportive policy in the region must be addressed.

Given the increasing value of MAPs, both in terms of primary health care and as a critical source of livelihoods and income for the rural poor in the region, the International Centre for Integrated Mountain Development (ICIMOD) with support from the Common Fund for Commodities (CFC), the Netherlands, is implementing a four-year, US\$1.68 million project "Medicinal Plants and Herbs: Developing Sustainable Supply Chain and Enhancing Rural Livelihoods in the Eastern Himalayas" in three countries, Nepal, Bangladesh and Bhutan, with India providing technical expertise. ICIMOD's Medicinal and Aromatic Plants Programme in Asia (MAPPA) is the project's implementing agency, with FAO's Intergovernmental Subgroup on Tropical Fruits providing a supervisory role.

The project's overall objective is to conserve natural resources, reduce poverty and improve livelihoods for mountain communities of the Himalayan region through the sustainable development and utilization of high-value, low-volume MAPs.

A three-day inception workshop in April launched the project. Participants included representatives from nodal agencies (focal point organizations for the project in each country), research and academic institutes, non-governmental organizations (NGOs) and the private sector. During the

workshop, ICIMOD and experts from India shared the latest trends and organic practices in MAP cultivation and processing as well as emerging value supply chain practices.

Partners in each country are implementing the project. In *Bangladesh* the nodal agency is the Ministry of Commerce, with the Bangladesh Neem Foundation and the Development of Biotechnology and Environmental Conservation Centre as implementing partners. In *Bhutan* the project will be implemented by the Ministry of Agriculture, while the Ministry of Forests and Soil Conservation is the nodal agency in *Nepal*, with the Herbs and Non-Timber Forest Products Coordination Committee, Nepal working with partners to implement the project in western Nepal.

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**MOUNTAIN MEDICINAL PLANTS**

Medicinal plants are one of the most valuable resources at high altitudes. For example, 1 748 species from the Indian Himalayas are used for local medicinal treatment or for trade, involving the pharmaceutical industry. Roughly a third grow in the subalpine or alpine zone. Cultivation of medicinal plants instead of harvesting wild plants, which often causes local extinction of highly priced medicinal species, and local processing instead of exporting raw material, are two strategies that can ensure the sustainable use of medicinal plants and increase the incomes of mountain dwellers. (Source: Flyer, International Mountain Day 2006, FAO.)



**Artemisia annua: WHO publishes guidelines on cultivating an essential plant used in antimalaria medicines**  
 The World Health Organization (WHO) today publishes guidelines for the cultivation and collection of *Artemisia annua* L., a Chinese traditional medicinal plant which is the source of artemisinin, used to produce the most effective medicines for malaria. The guidelines will contribute to improving the quality of *Artemisia annua* L. to develop artemisinin-based medicines further, and help ensure a sustainable supply to meet market demand.

*Artemisia annua* L., used in Chinese traditional medicine for centuries, is today considered part of the solution where malaria has become resistant to other medicines. Artemisinin-based combination therapies (ACTs) have been recommended by WHO since 2001 in all countries where falciparum malaria – the most resistant form of the disease – is endemic. Since then, the world market for products containing artemisinin derivatives has grown rapidly. However, not all artemisinin meets the required standards to produce quality medicines, making it all the more urgent to promote best practices in the cultivation and collection of the raw material used to make the combination therapy.

About 40 percent of the world's population is at risk of contracting malaria which is resistant to other medicines. Of the 76 countries needing artemisinin-based treatment today, 69 have adopted the WHO recommendation to use this therapy.

The availability of these treatments still falls short of what is needed. Of an estimated 600 million people needing ACTs worldwide, only about 82 million are receiving the treatment through public sector distribution systems (which constitute 90 percent of antimalarial distribution in developing countries).

The WHO monograph on good agricultural and collection practices for *Artemisia annua* L. provides a detailed description of the cultivation and collection techniques and measures required for a harvest to meet quality requirements. The information is based on research data and the practical experience of several countries where successful cultivation practices have led to a high yield of good quality *Artemisia annua* L.

The authors of the guidelines caution governments on two fronts. First, they must ensure that farmers work with

manufacturers to determine the actual market demand for the plant. Recent experience in some countries has shown that overproduction not only wastes money and time, but it can also have a negative effect on the plant's future yield. Second, they must ensure the availability of the technical skills and expertise needed to extract artemisinin from dried leaves.

The WHO monograph also aims to provide a model for countries and researchers to develop further monographs on good agricultural and collection practices for other medicinal plants, and promote the sustainable use of the plant as part of the larger aim of protecting the wild resources of medicinal plants. (Source: World Health Organization, 12 March 2007.)

**Global standard set for wild medicinal plant harvesting**

A new standard to promote sustainable management and trade of wild medicinal and aromatic plants was launched on Friday in Nuremberg at Biofach, the World Organic Trade Fair. The standard is needed to ensure plants used in medicine and cosmetics are not overexploited.

About 15 000 species or 21 percent of all medicinal and aromatic plant species are at risk, according to the report by the Medicinal Plant Specialist Group of the World Conservation Union's (IUCN) Species Survival Commission that sets forth the new standard.

More than 400 000 tonnes of medicinal and aromatic plants are traded every year, and about 80 percent of these species are harvested from the wild.

Almost 70 000 species are involved, many of them in danger of overexploitation or extinction through overharvesting and habitat loss. In India, for instance, 319 medicinal plants are listed as threatened by IUCN.

In Ecuador, one of the best known medical herbs in the world, cascarilla *Cinchona pubescens* – the original source of the antimalarial drug quinine – may be threatened as a result of overexploitation, according to the World Wide Fund for Nature (WWF). Today the herb is used to treat a variety of ailments, from upset stomachs to immune system problems.

In Eastern Europe, unsustainable collection of the wild herb pheasant's eye, *Adonis vernalis*, used to treat cardiac ailments, has led to declines throughout the plant's range, says WWF, and today the

species is protected from collection in many countries.

In the United States of America, large quantities of American ginseng, *Panax quinquefolius* and goldenseal, *Hydrastis canadensis*, are collected in the wild. Although much of the ginseng exported from the United States is now cultivated, enough collection of the wild plant occurs that trade in the species is now regulated. Both ginseng and goldenseal are listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Flora and Fauna, which allows trade in these plants only through a permitting system.

About 90 percent of the ginseng exported from the United States each year goes to countries in East Asia. The United States imports hundreds of thousands of tonnes of many different herbs each year to support its US\$3 billion market.

Following extensive consultation with plant experts and the herbal products industry, the International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants, ISSC-MAP, was drawn up by the Medicinal Plant Specialist Group. The German Federal Agency for Nature Conservation was involved in the consultation together with WWF-Germany, and the wildlife trade monitoring network TRAFFIC, plus industry associations, companies, certifiers and community-based NGOs.

The standard is based on six principles – maintaining medicinal and aromatic plant resources in the wild, preventing negative environmental impacts, legal compliance, respecting customary rights, applying responsible management practices and applying responsible business practices.

Traditional Medicinals, a Californian herbal medicine company, is testing the application of the new standard to the collection of bearberry, a shrub whose leaves are used to treat the kidney, bladder and urinary tract.

To view the Medicinal Plant Specialist Group paper that sets forth the complete standard, please visit: [www.floraweb.de/proxy/floraweb/MAP-pro/Standard\\_Version1\\_0.pdf](http://www.floraweb.de/proxy/floraweb/MAP-pro/Standard_Version1_0.pdf) [Source: Environment News Service [United States of America], 20 February 2007.]

#### **Assessment of success and failures in cultivation, processing and marketing of medicinal plants in the Malwa region, Central India**

During the last decade India, particularly Madhya Pradesh state, has observed a

major boon in cultivating medicinal and aromatic plants (MAPs), which are on high demand in the international as well as the national market. The Government, semi-government, NGOs, private industries and even individuals were largely attracted because of the high cost of raw materials of species such as safed musli (*Chlorophytum borivillianum*), sarpgandha (*Rauvolfia serpentina*), lemon grass (*Cymbopogon martinii*), stevia (*Stevia rebaudiana*) and coleus (*Coleus forskohlii*).

The state and central government launched a massive campaign to promote large-scale cultivation of some 20 to 30 species by giving subsidies and loans to farmers. The basic aim of the campaign is to conserve medicinal plants from the forest, increase rural employment and income and also increase exports. Because of the decreasing availability of raw material from the forest and the *Coleus forskohlii* high costs of planting material and raw products, several companies and progressive farmers have started large-scale cultivation of highlighted species. As a result there is a scarcity of planting material, crop suitability, market and proper management.

Therefore, in the last decade or so the area under medicinal crop cultivation has greatly increased because of the attractive and remunerative market prices in both the international and national markets. However, more recently, through lack of market demand, low prices, high planting material and production costs, increasing labour costs, less local and industrial consumption, and more production, the market for these commercially cultivated medicinal plants has crashed. As a result, small-scale farmers failed to sell their produce (wet) in the local market: the cost of the raw or wet product dropped considerably and there were no buyers. Hence, some farmers left the cultivation or sold their produce at bargain prices in the local market.

A recent report examines the various causes of success and failures in the cultivation of ashwagandha, safed musli, asaria, coleus and stevia plants in the Malwa region of Madhya Pradesh state. For several reasons, the market for the much sought after wonder crop safed musli has drastically crashed in the last one to two years. It has been flooded by the cultivated medicinal crop and there were no buyers for the raw material produced particularly by small-scale farmers of the region.

The study reveals that because of market saturation (overproduction) of

commercial crops (such as safed musli and ashwagandha), increase in labour costs, little enthusiasm for processing and value addition techniques and other marketing problems, farmers are rapidly decreasing the area under MAP cultivation. The cases of failures in cultivation and marketing of selected species are more than successful cases in the study area. This situation needs special attention from government, traders and the industry.

The survey of the study area clearly indicates that the cultivation of selected species is not remunerative for small landholding farmers. Overall, the false hopes given by planting material suppliers, consultants and the industry, along with farmers' own mistakes in cultivation and processing, have led the small farmers of the Malwa region to start reducing the cultivation area even further. [Source: extracted from the executive summary of a project report submitted to the Indian Institute of Forest Management (IIFM), Bhopal, Madhya Pradesh, India in October 2006 by Dr Manish Mishra and Dr P C Kotwal.]

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*Rauvolfia serpentina*



#### **Masses of moss**

Moss has been harvested in Scotland, the United Kingdom, for thousands of years and still is, although until recently very little was known about it outside harvesting circles. A recent four-month study investigated moss harvesting in the country, involving contact with 308 harvesters, traders, landowners, bryologists (moss experts) and informants on the illegal trade. The study comes at a



time of increasing interest in NTFPs from the Forestry Commission Scotland, private landowners, community woodland groups and conservation bodies alike.

Today moss is harvested for use in the floristry and horticultural trades and represents a worldwide commodity [see article on moss harvesting in the Pacific Northwest, *Non-Wood News* 13]. In Scotland, 70 percent of florists and 60 percent of garden centres trade in moss, although the majority of these import their supplies from wholesalers in England or the Netherlands, who in turn source most of their moss from across the European Union (EU). Given its wet climate, Scotland is home

to a wealth of mosses however and those growing in non-native conifer plantations offer opportunities for harvesters, either for personal use or commercial sale.

The study found that moss harvesting does occur throughout Scotland and on a variety of scales; from large-scale commercial harvesting enterprises to individual florists and garden centres supplying their own needs, to individuals harvesting for personal or charitable purposes. As much illegal harvesting, i.e. without landowner permission, is thought to occur as legal harvesting. Estimations put the total value of the harvest and trade of Scottish-grown moss at UK£0.5 million

annually and 125 jobs. Landowners charging permit fees make on average very little money from moss harvesting but welcome the diversification of land activities.

One-third of all landowners contacted had experience of moss harvesting in their forests, although large-scale harvesting is concentrated in the expansive forests in the south of the country. Cases of illegal moss harvesting from peat bogs do occur and these cause concern over the sustainability and legality of the practice, thus damaging the industries' reputation. However, most harvesting concentrates on just four genera, *Pleurozium*, *Polytrichum*, *Pseudoscleropodium* and *Sphagnum*, the

**MOSS GATHERING IN THE UNITED STATES OF AMERICA**

*The following e-mail exchange of March 2007 presents interesting points of view on moss harvesting guidelines.*

**Proposal from JeriLynn E. Peck**

A number of us have been asked to pull together some draft guidelines for the commercial harvest of mosses for discussion and distribution among the members of the International Association of Bryologists (IAB) at the annual meeting this summer, with the ultimate intent of providing IAB-approved general harvest guidelines. We are just starting to think about this, so I wanted to throw out to anyone who might wish to provide some input the opportunity to provide some guidance on developing the guidelines!

Specifically, any advice/documents/ Web links referring to existing guidelines for moss or similar NTFPs or to the process of developing workable guidelines would help ensure that we think about everything that we should. (JeriLynn E. Peck, Research Fellow, 207 Forest Resources Building, Penn State, University Park, PA 16802, United States of America; <http://silv.cas.psu.edu/jp.htm>; [www.strengthinperspective.com/JPMoss](http://www.strengthinperspective.com/JPMoss))

**Response/proposal from Eric Jones**

I suppose the creation of harvesting guidelines could be a positive step towards moss conservation, but so often these sorts of efforts seem to do more to disrupt harvesting patterns, such as the way in which local knowledge about stewarding

the resource is formed. If the end goal is moss conservation, maybe efforts should first target the widespread destruction of moss habitat that occurs from clearcut logging, mountain top removal for coal, freeway construction, housing developments, etc. I suspect the impact from harvesting is nothing compared with these other activities.

Harvesters have no power and so an attack on their livelihoods by science will only push them more underground. How do we as scientists and managers protect the good harvesters that are trying to make some money while also trying to understand and safeguard their moss patches?

What would be great is to figure out a way for a much greater number of harvesters to be brought into the knowledge-sharing fold. I have yet to see a single scientific study that has interviewed and documented the techniques and tools of harvesters and then tested them. Instead, what so often seems to happen is a harvester gets busted "poaching" moss and the pictures end up in the newspaper. Fear then spreads to all of us, scientists and managers included, that harvesting equals resource destruction.

My friend Kurt is just one of many good people out there harvesting who could be a great resource, but there is no way he or other harvesters are going to participate in the process the way things are now. He doesn't speak science, doesn't have extra time or money and he resents management for making him jump

through hoops, but never lifting a finger to help him the way they do other stakeholders. However, he might be persuaded to collect some data if he were offered money and training to do so. That would be the sort of positive step that could bring people like Kurt into discussions like these. It would send a message to him that he is not viewed negatively by management and science, but actually is seen as someone with important skills and knowledge to contribute.

I mean no disrespect to the research you have done, every little bit helps. However, in reality we have so little information on moss it seems premature and presumptuous to create guidelines for how to harvest moss before we really investigate what harvesters are doing.

What if we tabled that idea and instead worked to do the following three things.

- Submitted grants for serious in-depth ethnobotanical research on moss harvesting culture, knowledge and technology/techniques.
- Developed a strategy for educating land managers about conservation (e.g. less damage to moss from logging).
- Worked to promote opportunities for harvester involvement in knowledge generation, such as data collection.

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*(Minor edits have been made for clarification purposes only.)*

harvested species of which are all considered common and widespread. The knowledge and practice of sustainable harvesting techniques among large-scale harvesters were also found to be high. Although conifer plantations are subject to cyclical disturbances during felling operations and, as such, moss harvesting pales into ecological insignificance, bryologists recommend that places such as streams, springs and rock outcrops where rare mosses may be found should be avoided during harvesting.

To conclude, market opportunities exist for Scottish-grown moss to replace current imports from elsewhere in the EU. Despite the ecological sensitivity demonstrated by many harvesters, concerns over the sustainability of harvesting must be addressed in order to build confidence in the industry. A code of conduct for moss harvesting in Scotland is currently being developed and is hugely welcomed as a way to promote this NTFP-based industry, for which Scotland has great potential. *For a copy of the full report on which this article is based and for more information on the code of conduct, please visit: [www.forestharvest.org.uk](http://www.forestharvest.org.uk) (Contributed by: Sam Staddon, Institute of Geography, University of Edinburgh, Edinburgh EH8 9QP, United Kingdom. E-mail: [s.c.staddon@sms.ed.ac.uk](mailto:s.c.staddon@sms.ed.ac.uk)*



*Sphagnum sp.*

### **Sphagnum moss (*Sphagnum sp.*)**

Sphagnum moss has long been used for its medicinal properties. The entire plant is antiseptic and a tar extracted from the decaying moss is particularly valuable as an external treatment for a variety of skin diseases, including eczema and psoriasis. Yet it is the plant's incredible absorptive properties that have made their mark on modern field medicine. When thoroughly dried, sphagnum is able to absorb 16 times its weight of water, making it an excellent

wound dressing that is said to have saved thousands of lives during the First World War. It is also used as a potting material and soil conditioner.

However, sphagnum's potential as a NTFP should be limited to small-scale development, as extensive harvesting is leading to the destruction of many natural bogs, a delicate ecosystem that takes centuries to develop. [Source: *Our Life, Medicine Path: Non-Timber Forest Products of the Boreal*. Taiga Rescue Network fact sheet.]

### **PAPER MULBERRY** (*BROUSSONETIA PAPHYRIFERA*)

Paper mulberry (*Broussonetia papyrifera*) is native to Japan and Taiwan Province of China and is an ancient introduction across the Pacific as far east as Hawai'i. Although the tree is fertile in its native range, the plants carried into the Pacific were all male clones, transported and planted as rootstock or stems. Thus, the female plants with flowers and fruit are absent.

The tree reaches a height of 12 m or more if allowed to grow, but in practice it is usually harvested at a much shorter height when the stems are about 2.5 cm in diameter and 3–4 m tall. The tree was very important in traditional Polynesian culture, as its bark supplied one of the most important materials in ancient Polynesia, tapa cloth.

Today, the tree has disappeared from most of its traditional range and is cultivated to any extent only in Tonga, Fiji and Samoa. It is important in these places because it is a major source of handicraft income in the form of finished tapa cloth. Although it is no longer used in Polynesia for clothing, in Tonga and Samoa tapa cloth is still worn during ceremonial occasions such as festivals or dances. It does not last very long when worn as everyday clothing.

The tree is grown in plantations and home gardens on islands where tapa cloth is still made. It can tolerate a wide range of environmental extremes and even does well in temperate climates (its native habitat). Since only the male clones are present in Polynesia, the tree has no potential for becoming invasive.

### **Uses and products**

The most significant part of the paper mulberry is its strong, fibrous bark used in

making the native bark cloth known as tapa. The plant also has other less important uses. *Fruit.* The sweetish fruits are edible, although where only male clones are present, such as in the Pacific Basin, no fruit is formed.

*Leaf vegetable.* In Indonesia, the steamed young leaves are eaten.

*Medicinal.* In Hawai'i, the slimy sap was used as a laxative and the ash of burnt tapa was used for treating thrush. In Samoa, an infusion of the crushed leaves is sometimes taken as a potion for treating stomach pains and ill-defined abdominal pains. The leaf, bark and fruit are used medicinally in Viet Nam, the Lao People's Democratic Republic and Cambodia.

*Animal fodder.* The leaves are fed to pigs in Viet Nam, the Lao People's Democratic Republic and Cambodia and to silkworms in China.

*Fuelwood.* After removing the bark for tapa, the stems can be used for kindling.

*Fibre/clothing.* The inner bark has been used for centuries in Southeast Asia for paper and textiles. The bark is traditionally used in Polynesia to make tapa.

The finest and most delicate tapa in Polynesia was made in Hawai'i. Nowadays, however, tapa making in the Pacific is limited to Tonga and Fiji and, to a lesser

### **THE MAKING OF TAPA CLOTH**

The bark is stripped from the cut stems by making a lengthwise incision across the stem and pulling it off intact to obtain a single long strip. The inner bark, or bast, is then separated from the outer bark, and any green matter remaining on the bast is removed using scrapers; the bast is then washed to remove the slimy sap. The strips are pounded on a wooden anvil using a square beater made of a hard wood. Two or three of the strips are then felted together by the pounding, helped by the stickiness of the bark. Several of the resulting sheets are often pounded together in layers to increase the thickness or to cover over thin spots or holes in the individual sheets. A bit of paste in the sprinkling water is usually used at this point. These white tapas are then painted or, as in Hawai'i, printed with decorative designs.

extent, Samoa, and the tree and the art are nearly forgotten everywhere else.

**Tannin/dye.** Charcoal from the wood makes one of the best permanent black inks for tapa designs.

**Rope/cordage/string.** The bark fibre can be used to make rough cordage, as can the roots.

**Ceremonial/religious importance.** The bark cloth is used ceremonially in Tonga, Fiji and Samoa. In Hawai'i, tapa was important in burial wrapping and other funerary customs.

[Source: extracted from *Traditional Trees of Pacific Islands*, ed. Craig R. Elevitch. 2006. Full text available for downloading from: <http://www.traditionaltree.org>]

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*Broussonetia papyrifera*

"Riches of the forest: food, spices, crafts and resins of Asia"

**PINE PRODUCTS**

**Pine resin: turpentine, paints and varnish from Cuban trees**

Turpentine is one of the products manufactured from the thick, translucent pine resin extracted from tall coniferous pine trees. Different *Pinus* species can be found growing naturally in various parts of the world, including Europe and Asia.

Species such as *Pinus radiata* are also grown within plantations in many countries, given the well-developed market for pine products and the versatility of the timber.

In Cuba, *Pinus caribaea* (known as "male pine") is used for both its timber and resin. The processed pine wood is used for a wide variety of construction purposes (doors,

windows, boats and furniture). Farmers also use the unprocessed round wooden poles for building houses. The resin is used as an industrial component to make products such as colophony (processed resin) and turpentine, which are in high demand for the production of paints, varnishes, adhesives and disinfectants. Most of Cuba's pine resin is exported to several countries including Mexico, India and Spain. One tonne of crude resin has a market value of around US\$350, tripling in value once it is distilled.

Pine trees in Cuba have a long history of use, stretching from precolonial times up to the present day. *Pinus caribaea* is part of the natural vegetation of Cuba and is distributed mainly across Pinar del Río. This province is home to approximately 100 000 ha of pine trees, 70 percent of which are plantation based. Here, nearly 200 families are actively involved in the collection of pine resin. At present, the average Cuban monthly wage is 250 pesos, but resin extractors can earn almost three times this amount. One tonne of resin fetches around 663 pesos and, on average, an extractor can produce 1.5 to 2 tonnes per month.

In Cuba, industrial resin processing began in the mid-1980s. In the 17 years between 1985 and 2002, a total of 12 500 tonnes was produced – 80 percent of which were exported. In the first year of production the output was around 70 tonnes, increasing to almost 1 200 in 1989. However, following the country's economic crisis in 1990, the annual output plummeted to less than 200 tonnes.

In recent years research efforts have focused on the processing of resin products for export, using nationally developed technologies. As a result, production levels have rapidly risen. In Pinar del Río, approximately 1 200 tonnes of resin have been produced per year since 2000 and the forecast is for production to increase to around 5 000 tonnes per year. The establishment of several factories has helped to boost the volume being processed.

The fluctuations of resin production and the development of new processing technology are part of Cuba's recent economic and political history. Through the efforts of its citizens, and through government support and research, Cuba has managed to make its intensive agricultural and industrial activities more sustainable both socially and environmentally. The pine resin industry is one such example.

**Compatible extraction: wood and resin**

Pine trees are ready for resin extraction around the same time they reach a sufficient diameter for timber logging – upwards of 20 cm. However, the felling of trees generally takes place two to four years after the resin is tapped, to ensure a good harvest of both products: resin and pine logs.

Resin tapping involves producing a central wound in the trunk, at a height of around 1.6 m above the ground, along with additional, small wounds called picas, which point downwards in a V-shape. To prepare the tree for tapping, a section of trunk, at a width of around 65 cm, is debarked. This is the surface area that resin will be extracted from over the next 40 to 44 weeks, using a technique that allows the tree to continue living and growing until its timber is harvested.

To stimulate the flow of resin a central wound is cut, below which a metallic funnel is hung, leading to a collection pot. Connected to the central wound, several picas are then made, each about 5 mm in depth and 10 mm in length. An additional incision is made each week to maintain the resin flow. Once the resin channels are accessed, the thick, sticky resin slowly exudes from the trunk for up to 25 hours. This is collected and deposited into 200 kg tanks or cans, which are transported to plant processors or export companies. A single *Pinus caribaea* tree can yield about 4 kg of resin per year, which is equivalent to around 2 tonnes of resin per ha. Each extractor is responsible for a production area of 6 to 10 ha (containing 2 000 to 5 000 pine trees) – from which they collect between 15 and 30 tonnes of resin annually.

All resin extractors are linked with the State Forestry Company, which establishes the payment system, and the Cuban Forest Commission keeps them informed about raw material prices, trade conditions and product commercialization. The present management of pine trees and resin extraction includes the application of appropriate technologies and a focus on the conservation of pines – guaranteeing ongoing wood and resin production. The extractors benefit through stable employment and the use of techniques that ensure a high quality resin. If such conditions are maintained, this all bodes well for a sustainable future for the industry. [Source: case study on pine resin, by Ynocente Betancourt Figueras and Maria Josefa Villalba Fonte [in *Riches of the forest: fruits, remedies and handicrafts in Latin America*, eds C. López, P. Shanley and A.C. Fantini].]



## PINE RESIN PRODUCTION

The following is a reply from FAO's NWFP Programme to a reader in Fiji regarding an inquiry on pine resin production. Regarding general information about pine resin (tapping techniques, markets, etc.), I am pleased to invite you to browse our online publication on pine tapping (*Gum naval stores: turpentine and rosin from pine resin*, [www.fao.org/docrep/v6460e/v6460e00.htm](http://www.fao.org/docrep/v6460e/v6460e00.htm)). The techniques described are still valid, although the market information is a bit outdated. Since its publication, China has reinforced its dominant place in the global rosin market.

Here is the reply to your two specific questions

### 1. To collect and export raw pine resin ... which are the best markets for export?

First, raw pine resin is not a commodity for international trade. It needs to be refined locally, from which rosin is an exportable raw material. Investment costs for setting up a resin refinery are relatively low (see estimate in the above publication).

Please check also the species of pines available for tapping, as not all pine species are fully suitable to yield marketable resins (rosin from some pine species commands much higher prices). In addition, please be aware that tapping pines is damaging to their stems and that the wood from tapped pines sells at lower prices (so there will be an economic trade-off to be calculated between extra income from tapping pines versus selling the wood at a lower price).

The best markets to look for from Fiji for the rosin would be China (that cannot get enough of it for its fast-growing chemical industries), but also Japan, the Republic of Korea or nearby New Zealand and Australia. The rosin market is very competitive, so production "costs" would have to be very low in order to be able to sell at a profit.

### 2. To manufacture resin-based products ... what are the best products, which fetch high returns?

Raw pine resin can be refined into (solid) rosin (which is the most common resin-based product and maybe the best suitable product in your case). It is exported in barrels. Eventually the capture of the volatile substances during the refinery process can also be envisaged, but this requires substantial higher investment. Rosin is a raw material for the chemical industries (e.g. paint, varnishes, prints, flavours and fragrances).

For Fiji, my suggestion would be to go into the "tourist-curious" type of products and produce from the rosin an oil-based "aromatherapy type of fragrance substance" sold in small glass flasks to tourists at a high prices.

*(Please contact us at the address on the first page for a hard copy of the publication mentioned.)*

especialmente a nivel local que participan en la validación del marco jurídico forestal y del PRONAFOR (Programa Nacional forestal), llevando a cabo procesos locales de carácter piloto de los cuales surjan propuestas para su mejoramiento y dinámicas participativas para su implementación. El FNPP, Apoyo a la Operacionalización del Marco Jurídico Forestal y del Programa Nacional Forestal trabaja en Honduras desde enero de 2005 en tres áreas pilotos: Villa San Antonio, MAMUCA y Gualaco.

En la comunidad de Protección, Villa de San Antonio, a unos 50 km al oeste de la capital, Tegucigalpa, un grupo de mujeres fueron capacitadas para elaborar artesanías con acículas de pino a través del Proyecto FNPP. La Villa de San Antonio, es una comunidad forestal, enclavada en un bosque de pino y tiene organizada una cooperativa que se dedica al aprovechamiento de la madera, a la extracción de resina de pino y además poseen un pequeño aserradero y una carpintería, estas labores son realizadas por los hombres.

Alrededor de 20 mujeres de la comunidad se capacitaron en noviembre pasado para elaborar artesanías utilizando las hojas de pino, las cuales son «cosechadas» después que los árboles son derribados para aprovechar la madera; la capacitación duró un par de semanas, al final de las cuales el ingenio humano y la imaginación se ponen a prueba, porque las personas comenzaron a elaborar diferentes objetos, para adorno o para uso práctico de los hogares. Ésta es una actividad innovadora en la zona y en las áreas que trabaja el FNPP, utilizando productos forestales no madereros, por ejemplo las acículas, que durante años se quemaban en la época de incendios forestales. Esta actividad es realizada por mujeres de todas las edades que han estado siempre al margen de las actividades productivas que genera el bosque. Esta actividad significa ingresos para los hogares. Además, la capacitación para su aprendizaje fue realizada por mujeres de otra comunidad, las cuales no formaban parte del proyecto, lo cual evidencia la solidaridad entre grupos de mujeres.

Además de los beneficios indirectos que aportan para la protección del bosque, el beneficio directo es que los ingresos monetarios aumentaron sustancialmente en las familias que se dedican a esta labor, ya que una pieza la pueden vender en alrededor de \$15, producto de dos días de trabajo. Ésta es una actividad temporal puesto que el

## Pine bark extract shows promise for slowing sugar uptake

Extracts from French maritime pine bark may inhibit an enzyme linked to glucose absorption 190 times more than a synthetic medication, says new research from Germany that could offer significant benefits for diabetics if the results can be translated from the laboratory to humans.

The results of the new study, published online in the Elsevier journal *Diabetes Research and Clinical Practice* ("Oligomeric procyanidins of French maritime pine bark extract [Pycnogenol] effectively inhibit alpha-glucosidase", by A. Schafer and P. Hogger), add to a growing

body of research reporting the antidiabetic effects of the pine bark extract, Pycnogenol.

The product is extracted from the bark of the maritime pine that grows on the southern coast of France and is currently used in over 400 dietary supplements, multivitamins and health products.

*(Source: NutraIngredients-usa.com [France], 9 February 2007.)*

## Mujeres elaboran artesanías con acículas de pino en Honduras

El Programa de Cooperación entre la FAO y los Países Bajos (FNPP, siglas en inglés), brinda una oportunidad a diversos actores,

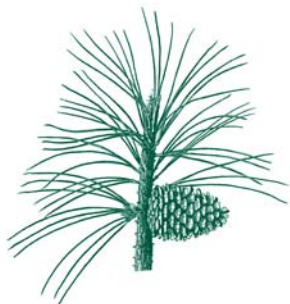
grupo necesita apoyo en el proceso de mercadeo.

A pesar de que Honduras tiene más de dos millones de ha de bosques de pino, son muy pocas las comunidades que poseen esta experiencia de aprovechamiento de las acículas del pino.

Aportado por Renán Mairena, FNPP Honduras, rmairena@yahoo.com

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**Pine nut harvesting in Mexico**

Every seven years, hundreds of tonnes of piñon nuts are wild harvested in the Sierra. These pink nuts bring the highest value on the global market – 800 pesos per kg in Mexico.

The problem is that thousands of harvesters from all over Chihuahua descend on the ejidos (communal land) on the eastern foothills of the Sierra, most notably Balleza, to harvest this natural production. The local people also harvest, but receive nothing from outside harvesters. The Tarahumara and mestizos (people of mixed blood) in the region want to control production and develop value-added enterprises such as shelling, packaging, and the production of chocolates, sweets and other products with pine nuts.

Piñon pines produce large quantities of nuts every seven years. In their shells, the nuts store for years, so a community can store the harvest and have products on a sustainable level for five or six years. Smaller intermittent harvests could also sustain production during off years.

With support from Sierra Madre Alliance, agronomist Nora Jacques has helped a group in Ejido Baquiriachi to organize, evaluate the feasibility of the project and develop proposals to purchase 10 tonnes of nuts from harvesters and to

develop a processing plant. This project will probably be funded in 2007. [Source: Sierra Madre Alliance [SMA] Update, March 2007.]

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**www.sierramadrealliance.org/index.shtml**

**Pine nut production in the Kozac region of Turkey**

Some 27 percent of stone pine (*Pinus pinea*) forests in Turkey are located in the 16 villages of the Kozac region. They produce about 1 000 of the 1 300 tonnes of the country's annual yield of pine nuts, 80 percent of which are exported. Of the 18 600 ha of stone pines in the area, 16 500 ha are on private land, 1 400 ha belong to villages and 700 ha are private plantations in state forests.

Rising revenues from pine nuts have encouraged people to convert vineyards, fruit gardens and degraded coppice lands into stone pine stands. Higher incomes have allowed them to invest in agriculture, horticulture and animal husbandry, thereby diversifying their economic base as well as that of the region. Because stone pine forests make good grazing lands, integrated land use became more common. Manure fertilizes the soil and the trees' large canopy protects grass from the sun so that it stays green longer and develops better. The areas are opened to animals only when trees reach a certain age so that no damage occurs.

Because selling pine nuts has increased incomes and employment levels, the Kozac region has experienced significant changes in socio-economic conditions: health services and infrastructure have improved, education has increased, etc. These benefits have created a unity not seen in other parts of the country and fostered the development of business cooperatives that not only have increased bargaining power but also created jobs. [Source: extracted from *Better forestry, less poverty: a practitioner's guide*. FAO Forestry Paper 149. 2006. Rome. ISBN 92-5-105550-5; www.fao.org/docrep/009/a0645e/a0645e00.HTM]

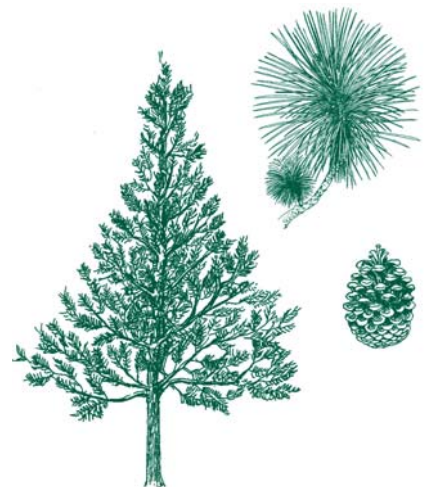
**Pine products from boreal forests**

A large number of pine species are found throughout the boreal forest and many of these species make a significant contribution to the local economy, beyond the obvious harvesting of timber.

For example, turpentine can be obtained from the oleoresins of all pine species, although trees from warmer areas generally give higher yields, making the process more economically viable. The pitch that can also be extracted from these resins can be used for waterproofing and as a wood preservative.

Certain species are also edible and can be used for medicinal purposes. For example, in the northeastern Russian Federation *Pinus pumilla* (dwarf Siberian pine) produces edible pine nuts and the inner bark of *Pinus sylvestris* (Scots pine), which ranges across northern Europe and well into the Russian boreal, has been ground up and used to make bread in times of famine.

In terms of medicinal uses, *Pinus sylvestris* is also valued for its antiseptic properties and its positive effects on the respiratory system; its essential oil is often used in aromatherapy. [Source: *Our Life, Medicine Path: Non-Timber Forest Products of the Boreal*. Taiga Rescue Network fact sheet.]



"Riches of the forest: fruits, remedies and handicrafts in Latin America"

 **RATTAN**

**Halting the rapid disappearance of the world's rattan resources**

Unlike bamboo, which is quite widely cultivated because of its versatility and importance in trade, most of the rattan people use is collected from the wild. But, apart from timber, rattan is now one of the most economically important products from the moist tropical forests of Asia and West Africa. Overharvesting is becoming a serious threat – both to the survival of rattan populations and the livelihoods of the people who depend on them.

However, despite their economic and social significance, there are hardly any reliable data on rattan resources. Rattan is part of the forest undergrowth so it is not picked up by the remote sensing techniques used in routine forest inventories. It is, therefore, hard to evaluate the true state of the world's rattan

## RATTAN

Rattans are spiny, climbing palms. Some 600 species grow in the tropical forests of Asia and Africa, with around 50 traded commercially. Unlike bamboo, rattan does not regrow rapidly and is seldom sustainably managed. Overexploitation and loss of habitat have led to a dramatic reduction in the resource over the last 50 years.

Rattan is used locally for bridges, netting and baskets. Most is gathered by villagers and forest dwellers and in some places communities have developed advanced management systems, such as the rattan gardens in Kalimantan, Indonesia.

Commercially, rattan is mainly used to make furniture and craft goods for export. Rattan collection is often separated from manufacture so the poorest people do not benefit from the value of the finished product. But products can be made by small craft industries to increase local incomes significantly. For example, collectors in Ghana who send rattan poles to commercial factories earn about US\$45 per month, while furniture makers can earn up to US\$250 per month simply from producing items for local sale.

Product quality and design are two of the most important factors influencing marketability. Export of rattan products can make important contributions to national incomes. China, Indonesia, Malaysia and the Philippines exported an estimated US\$1.68 billion worth of rattan and rattan products in 2004. Some countries, such as Indonesia, have introduced export controls on rattan poles and semi-processed rattan with the aim of protecting resources and boosting local manufacturing, but the effects on local and global trade appear to be mixed.

resources. What we do know is that rattan's forest habitats are shrinking while demand and extraction rates are increasing.

The International Network for Bamboo and Rattan (INBAR) aims to increase awareness of the threats to rattan resources as a first step in promoting their sustainable management and use. At the same time methods of gathering basic information should be developed as to how much rattan remains and where it is, and to encourage organizations to go out and collect such information. Sustainable management and harvesting methods must also be developed and show how they can be applied in natural rain and monsoon forests and assist in developing and demonstrating ways of growing rattan in plantations. [Source: *In partnership for a better world – strategy to the year 2015*. 2006. INBAR, Beijing, China.]



"Riches of the forest: for health, life and spirit in Africa"

### Rattan: from harvest to market

Rattan is a valuable palm family NTFP providing income for villagers who harvest it for sale and use it in handicrafts.

From harvest to market, the rattan business is laborious. Villagers harvest on foot. Using simple hand tools, they scale huge trees and cut the vines. Skill is required to make accurate cuts while keeping watch for ants and wasps nesting in the spiky protection of the vine's outer covering.

Processing soon follows harvest. Methods vary between regions, but one goal is shared: producing smooth, even-coloured, blemish-free, pliable cane.

Oil curing or deglazing consists of placing the canes in boiling diesel oil solutions. Curing removes moisture, reduces fungal attacks, improves colour and increases pliability.

In some regions workers place canes in mud solutions and heat them over a fire before rubbing the surface clean. This method is seen in Indonesia, while in Papua New Guinea water washing is followed by a fine steel and kerosene scrubbing.

Drying and sometimes sulphur fumigation follow oil curing. Drying is determined complete by weight, colour and the pitch of the sound made when a cane is rapped on the ground. Drying is crucial to quality. Sulphur fumigation kills insect larvae and enhances colour.

Bringing rattan to market is not thought to create significant environmental damage or danger to workers. Undesirable canes can cause litter and monetary waste. Care must be taken in using hand tools and personal protective equipment is a wise choice to protect the respiratory system.

Rattan resources can be renewable. Research is critical to the ecosystem and the people who work in the industry. Cultivation efforts have seen small successes but deforestation threatens rattan's natural habitats. Rattan's value protects trees from cutting as it supports families. [Contributed by: Rebecca Arrington, Side Porch Ind., LLC, 2705 W. Buno Rd, Milford, MI 48380, United States of America; e-mail: RUWeavin@aol.com] (Please see page 52 for information on participatory rattan management in Nepal.)



People obtain more than 20 percent of their protein from wild meat and fish in 62 developing countries. People in the Congo Basin alone consume more than 1 million tonnes of wild meat yearly (equivalent to 4 million cattle), while people in the Amazon Basin consume 67 000 to 164 000 tonnes per year. Wild forest-dwelling animals represent a mixed blessing, however, with raids on crops counterbalancing ease of hunting. (Source: *Unasylva*, 57(224): 5-6.)

### How wildlife can better contribute to livelihoods and poverty reduction

Wild animals historically have been a major source of food, clothing, weapons, medicine and rituals, although intensive use is declining because wildlife populations are decreasing. As an important component of forests, the sustainable management of wildlife requires a range of integrated approaches if lasting solutions to the supply crisis in many poor rural areas are to be found (see Box).

**CREATING INCENTIVES FOR CONSERVATION**

The World Wide Fund for Nature (WWF) is working with a village on the edge of the rain forest in southeast Cameroon to regulate the commercial hunting of bushmeat. With new roads opened for logging, local hunters and outside poachers were selling their catch to passing truck drivers for more money than they could earn from other activities. Collaborative efforts with the Ministry of Environment and Forests to stop such trading failed because it was impossible to patrol the large number of trucks travelling on the numerous roads.

Given the incentive to keep wildlife abundant for foreign hunters who pay large sums of money for trophies, the villagers and WWF worked out a scheme by which residents hunted only for their own needs in return for the community receiving a portion of the licence fees that foreigners were charged. These revenues paid for improvements such as equipment for schools. The logging concessionaire also agreed to improve operations, provide jobs for local people and allow them to access forest products for their own consumption. To help restrict hunting, company trucks bring frozen meat back from the cities to feed workers.

Although gaps in information make it difficult to determine the extent to which bushmeat can alleviate poverty and improve livelihoods, evidence shows that poor people obtain a significant portion of their protein from this source, particularly in lean seasons. They also earn income from the sale of any surplus catch. While hunting wild animals is unlikely to be a major route out of poverty, if regulated and sustainable it can diversify livelihood options and provide a stepping stone for landless people to start a small business or have money to invest elsewhere.

*Open access.* Despite the value of bushmeat as a source of high-quality protein and income, access is not tightly controlled in most cases. Individuals or entities generally do not own the resource *per se* so that local use or management rights are not well defined, especially over large areas that

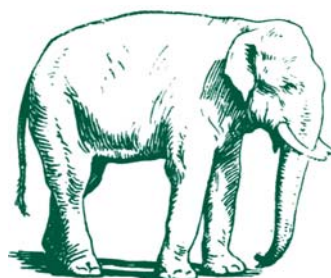
encompass several villages. As a result, hunters generally do not feel a sense of stewardship, preferring instead to capture as many animals as possible before others deplete the stocks. In addition, the equipment is simple (bows and arrows, guns and traps), hunting fits in well with the farming cycle in terms of labour needs and dried meat is easy to transport to market because it is light.

*Illegal harvest and trade.* Bushmeat is often harvested for meat, as well as for trophies, by using explosives, wire traps and other unlawful methods. Drivers of logging trucks then illicitly move the carcasses to urban markets. These activities involve thousands of people and are spread over immense areas, many of which are remote and inaccessible. Efforts to regulate hunting and trade with the intention of benefiting poor people can have quite the opposite effect.

Given clear indications that current levels of wildlife harvesting are unsustainable in many places, finding solutions requires building national and local capacity, clarifying rights, adopting participatory approaches to decision-making, using local knowledge and skills, and integrating bushmeat issues into broader strategies to improve livelihoods.

Field practitioners can address issues related to the sustainable use of wildlife by first learning about the local hunters, the trade in bushmeat and the links to livelihoods. On the basis of this information, they can then suggest to village leaders and other authorities ways to maintain sustainable hunting levels. [Source: extracted from *Better forestry, less poverty: a practitioner's guide*. FAO Forestry Paper 149. 2006. Rome. ISBN 92-5-105550-5; [www.fao.org/docrep/009/a0645e/a0645e00.HTM](http://www.fao.org/docrep/009/a0645e/a0645e00.HTM)]

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**Rhinos and elephants targeted by poachers in southern Africa**

Rhinos and elephants are being increasingly targeted by poachers for the rhino horn and ivory trades, while smaller mammals such as antelope are being tracked for bushmeat, according to Animal Rights Africa (ARA). In its *Consuming wild life: the illegal exploitation of wild animals in South Africa, Zimbabwe and Zambia* report, the group notes that the illegal killing of wild animals, using guns, snares, poison or hunting dogs, falls into three categories: *traffickers*, often operating as part of international criminal networks, trade meat, ivory and rhino horn on local and international markets; *poor people* kill game for food and to sell parts as souvenirs or to traditional healers; and, finally, *wealthy individuals* hunt animals in protected areas for their trophy value.

While data on the subject are fragmented, figures obtained by ARA show significant amounts of poaching, often targeting reserves. At least 70 rhinos have been killed in South Africa's famous Kruger National Park in the past six years. In Zimbabwe, the rhino population in three parks has dropped sharply, ARA said, quoting figures from the Zimbabwe Conservation Task Force. The group also cited media reports of 28 elephants killed in two national parks in Zimbabwe since October 2006.

In Zambia, the trade in illegal bushmeat was seen to be brisk with 12 tonnes of meat seized in the country in 2006.

Several countries, including Zimbabwe, have complained that the ban on elephant products proposed by Kenya and Mali will seriously affect hunting. The proposal is to be discussed at a conference of the Convention on International Trade and Endangered Species of Wild Fauna and Flora (CITES) in the Netherlands in June. [Source: *Monsters and Critics* [United Kingdom], 2 April 2007.]

**Nature & Faune**

Nature & Faune is an international bilingual (English and French) publication of the FAO Regional Office for Africa. Its aim is to disseminate information (scientific and technical knowledge) and promote the exchange of experiences on wildlife, protected area management and the sustainable use and conservation of natural resources in Africa.

The current issue deals with the theme of human/wildlife conflicts.

Subscription is free; just send an e-mail to [nature-faune@fao.org](mailto:nature-faune@fao.org). Alternatively, the

magazine can be downloaded from the Nature & Faune Web site at the address below.

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#### FUNDING FOR WILDLIFE PROJECTS

SITA Trust's Enriching Nature Programme is providing funds for wildlife projects. Funding is available to support species and habitats that have been identified as a priority by the Biodiversity Action Planning process.

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#### Illegal bushmeat trade growing in the United States of America

The illegal import of African bushmeat is a growing trade. Federal agents are confiscating thousands of animals including African rats, bats and great ape parts smuggled into the country. Tourists bringing in bushmeat in suitcases are being caught at airports at least once a week. Boxloads of illegal cargoes of bushmeat have been discovered. There is a thriving black market and the authorities say that it is a dangerous one. Bushmeat is a cultural food preference for African expatriates in the United States. But government scientists say bushmeat carries potentially deadly diseases that have already spread from animals to humans.

University of California, Berkeley Wildlife Ecology Professor Justin Brashares says health is not the only issue. He is worried that whole species are now in danger of extinction. "I don't condone it at all," he said, "but many people who are selling it, and eating it, would like to see some legalized trade. A United States

Department of Agriculture-approved trade." Brashares said his team of volunteers have seen markets openly selling the banned meat. The black market is especially lucrative in the Bay Area, including San Francisco and San José.

Brashares says anyone who wants it can find bushmeat. (Source: CBS 5 [San Francisco, United States of America], 21 March 2007.)



#### The Neotropical bushmeat crisis

The devastating effects of the bushmeat trade on wild primates in Central and West Africa are well recognized. In contrast, the largely uncontrolled hunting of primates in Central and South America has received little attention. As in Africa, the convergence of large-scale deforestation, increasing commercial hunting and the capture of live animals have had devastating effects on Neotropical primates and many species may be pushed to the brink of extinction.

Drawing on almost 200 primarily scientific publications, *Going to pot. The Neotropical bushmeat crisis and its impact on primate populations* comprehensively reviews the scale of primate use across 22 Central and South American countries. In doing so, the authors demonstrate that current levels of offtake are unsustainable across most Neotropical primates' range and that effective conservation measures are urgently required. In at least 16 of the 22 Neotropical nations examined, hunting for bushmeat poses a critical threat to primate populations. There is a paucity of data for the remaining five countries (Argentina, Belize, El Salvador, Nicaragua and Uruguay). However, this does of course not imply a paucity of problems. One country, Chile, does not have any primates at all.

Approximately eight million people in South America regularly consume

bushmeat as a source of protein. A significant portion of bushmeat from tropical forests consists of primates. While local farmers and subsistence hunters are consumers and increasingly traders, wealthier households also consume considerable amounts of bushmeat.

Rural populations in the Brazilian Amazon alone are estimated to consume between 2.2 and 5.4 million primates per year. Because of their slow reproductive rate and low population densities many primate species cannot sustain this immense offtake. Hunting of large and medium-sized Neotropical primates occurs at a rate that poses an extreme threat to their long-term survival. Although current hunting levels are lower in some areas, this does not necessarily indicate a decreased threat. Instead, these numbers may reflect overexploitation in the past that has led to generally low population numbers. The increasing commercialization of bushmeat hunting, modern hunting techniques and equipment, expanding infrastructure and growing human populations, combined with serious habitat degradation and fragmentation, further exacerbate the situation.

Whereas the extent of habitat destruction in the Neotropics is widely acknowledged, the serious impact of hunting is often ignored. However, the hunting of primates for food, rather than habitat loss is predicted to pose the most serious threat to the survival of large primates in Central and South America within the next two decades. As in Africa, habitat fragmentation and hunting are synergistic, causing newly accessed forest regions to become available to hunters.

Data from hunted areas in many different Amazonian sites show that large primate biomass has dropped by up to 93.5 percent, in comparison with areas where hunting is absent. The impact of this reduction goes beyond the effects on primate species. There is a domino effect on the forest ecosystem as a whole. Primates are important seed dispersers. Highly mobile woolly and spider monkeys feed on fruits, and woolly monkeys in particular consume the fruit of over 200 different woody plants. The removal of these species therefore significantly affects the ability of plants to disperse their seeds and changes the dominance relationship between tree species. In the medium term this leads to changes in forest composition, structure and biodiversity.



The hunting of Neotropical primates outlined in this report illustrates how a traditional way of life has become biologically devastating. There are no easy answers to this dilemma, and any resolution of this continent-wide conservation crisis depends on genuine commitment from all stakeholders. Preventing the disappearance of many primate species in the Neotropics requires urgent national and international action. To protect national biodiversity and the integrity of their forests, range states are therefore encouraged to prohibit primate hunting and strengthen the implementation and enforcement of binding protection measures. [Source: extracted from the Executive Summary, *Going to pot. The Neotropical bushmeat crisis and its impact on primate populations*. 2007. Care for the Wild International, Kingsfold, United Kingdom and Pro Wildlife, Munich, Germany. Download from: [www.careforthewild.com/files/Bushmeatreport1206\\_singlepages.pdf](http://www.careforthewild.com/files/Bushmeatreport1206_singlepages.pdf) (Please see page 56 for information on the bushmeat trade in Sierra Leone.)

**Wildlife management**

Among the multiple threats to wildlife, two of the most immediate and direct are unsustainable hunting and trading in wildlife and wildlife products, and human/wildlife conflict.

In many parts of Africa, commercial trade in bushmeat for consumption is probably the single most important cause of the decline of wildlife populations, ranging from insects, birds and turtles to primates, antelopes, elephants and hippopotamuses. It was estimated that in the Congo Basin alone, the annual offtake of bushmeat is about 5 million tonnes, but a recent, detailed study of bushmeat offtake in the moist forests of Cameroon and Nigeria, which documented an average offtake of 346 kg per km<sup>2</sup>, suggests a much lower offtake of up to 1 million tonnes for the Congo Basin. However, this lower estimate gives little cause for comfort, because it is still far in excess of a sustainable level, given the inherently low production of animal biomass in tropical forests.

Meat from wild animals is not only an African issue (see Table). The meat from freshwater turtles is consumed in huge volumes in East Asia, despite the fact that 75 percent of the 90 species found in Asia are considered threatened, and 18 of these are critically endangered.

**Decline in selected animal populations**

Species	Initial population	Year	Current population	Decline (%)
Bonobo (pygmy chimpanzee)	100 000	1984	5 000	95.0
Asian elephant	200 000	1900	40 000	80.0
African elephant	10 000 000	1900	500 000	95.0
Tibetan antelope	1 000 000	1900	75 000	92.5

There are success stories of the revival of overexploited wild animal populations. In 1969, all 23 species of crocodilians were threatened or had declining populations. Today, one-third of crocodilians can sustain a regulated commercial harvest, and only four species are critically endangered. In many cases, well-managed, CITES-approved ranching programmes produce sustainably harvested hides for the international market, garnering the support of industry and governments, while helping supplant illicit trade. Similar programmes in regulating the trade in wool products from South America’s vicuña have resulted in similar successes. By the 1960s, vicuña populations had been reduced to 5 000 animals, less than 1 percent of historical populations, but conservation and management have restored their numbers to 160 000. Today, the illegal global trade in wildlife is second only to narcotics and is valued at almost US\$5 billion.

Because of human population growth, the accompanying growth of human settlements and the consequent reduction of wildlife habitat, conflicts between humans and wildlife are occurring more and more frequently around the world. In Africa, where many people depend directly on natural resources for their livelihoods, wildlife species such as crocodiles, elephants, hippopotamuses and lions raid crops, injure or kill livestock, invade human settlements and cause damage to personal belongings, and can even injure and kill people. As a result, local people are increasingly hostile to wildlife and local communities do not cooperate with conservation authorities. The result is increased instances of poaching and other illegal activities.

The causes of human/wildlife conflict will not be eliminated in the near future and it can be expected that conflict will only increase in frequency and intensity. There is, therefore, an urgent need to find ways to manage this conflict. A range of approaches are being tried, including natural and artificial barriers, such as

suspending chilli pepper-impregnated cloths on ropes surrounding agricultural fields, a technique used successfully in an FAO project in Ghana to deter elephants from raiding crops. At present, the most reasonable approach to managing the conflict is to implement short-term mitigation strategies jointly with long-term preventive measures.

A challenge for policy-makers is to balance conservation of wildlife resources with the livelihood requirements of local populations in all regions. [Source: *State of the World’s Forests* [SOF0] 2007, FAO.]



**The impact of acorn crops on deer hunting in the United States of America**

Deer hunters around Pocahontas say that many of the trees are withering and their vegetation is dead. Thanks to a cold snap that hit Northeast Arkansas last week much of spring’s green has now turned to brown. Avid hunters know the threat this could have on wildlife: not having an acorn crop will make it hard for deer and turkeys to make it through the winter.

Acorns produced by many of these withering trees provide vital nutrients for animals such as deer. “Acorns are the staple for wildlife. They count on the nut crop every year. You have lean years, but I don’t think there’s ever been a year where you have zero,” said one hunter. He says the true effects of this cold snap on plant vegetation probably will not be seen until later in the year, when the deer hunting season begins. “In order for the does to produce good fawns for the spring, they are going to need some fat preserves. That’s what the acorns do for the deer.”

The problems with vegetation will not affect the current turkey season, but hunters will see the effects on the deer hunting season which begins in October. [Source: KAIT [Arkansas, United States of America], 14 April 2007.]



*Smilax sonchifolius*



YACÓN

### El Yacón (*Smilax sonchifolius*) en Perú

El Yacón (*Smilax sonchifolius*) es una especie conocida principalmente en el Perú y en los últimos años ha tomado importancia económica. Fue domesticada y cultivada utilizando su raíz tuberosa como alimento fresco, de sabor dulce, refrescante y con propiedades antidiabéticas. Esto se confirma a través de los restos arqueológicos (cerámica, textiles y restos de raíces) de las culturas Nazca (500 aC.-700 dC), Paracas (1500-500 aC y Mochica (500 aC-700 dC), de la costa peruana, así como la cultura Candelaria del noroeste argentino, entre otras.

Del vocablo quechua llaqón (su agua), también conocida en Aimara como aricama o jicama, es originaria de la vertiente oriental de los Andes y valles interandinos, principalmente en Perú. Es común encontrarla en los huertos familiares y alrededor de los campos o en asociación con otras especies tales como maíz (*Zea mays*) y frijol (*Phaseolus vulgaris*); sin embargo posee un amplio rango de distribución, desde Venezuela hasta Argentina, extendiéndose su cultivo a zonas agroecológicas tropicales altas. Su hábitat natural varía entre los 1000-2500 m de altitud. Requiere humedad en las primeras etapas de crecimiento, pero después puede soportar períodos de

sequía así como temperaturas altas y mínimas de 4-5 °C. Para producir raíces comestibles necesita suelos profundos, ricos y bien drenados. En el Perú se cultiva actualmente desde el norte hasta el sur del país.

Pertenece a la Familia Asteraceae (Compositae), es una planta perenne que puede medir hasta 2,5 m de altura, con hojas laminares simples palmatinervias de color verde con abundante pubescencia en el haz y en el envés, tallo exhuberante cilíndrico, piloso y hueco, de color verde. Flores visibles a partir de los 4-5 meses después de la plantación, de color amarillo o anaranjado, inflorescencia racimosa de tipo cabezuela en capítulo con un promedio de 10 flores por planta, con 5 sépalos por flor. Posee dos tipos de raíces: fibrosas y de reserva, raíz tuberosa. Las raíces fibrosas son muy delgadas y su función principal es la fijación de la planta al suelo y la absorción de agua y nutrientes. Las raíces de reserva son engrosadas, fusiformes, ovadas, existen diferentes formas hortícolas, tales como la blanca, anaranjada y morada. Entre las labores más importantes para su cultivo está la propagación exclusivamente asexual, encontrándose seis formas: 1) por porciones de cepa; 2) por brotes enraizados en la cepa; 3) por estacas; 4) por nudos individuales; 5) por tallos enteros y 6) in vitro, siendo las más usadas las dos primeras.

El período vegetativo varía entre 8 y 9 meses dependiendo del ecotipo y lugar de siembra, se puede cultivar todo el año, pero se restringe básicamente a la época de lluvias (octubre a diciembre). La pubescencia de las hojas evita que los insectos se alimenten y transmitan plagas y enfermedades importantes.

El rendimiento de raíces varía entre 20 y 50 tm/ha y es considerado un producto perecedero después de cosechado. El precio en campo es de 0,13 euros/kg (S/ 0,50 nuevos soles), pudiendo llegar a los mercados de Lima a 0,38 euros/kg (S/1,50 nuevos soles). Las hojas también son comercializadas, principalmente para forraje y para la elaboración de tisanas.

El Yacón se cultiva también en Nueva Zelandia, Japón, República Checa, China, Corea, Estados Unidos, Brasil, Paraguay y Taiwán. Es en el Japón donde radica su mayor estudio y comercio.

Como elaboración de productos derivados de esta especie podemos mencionar refrescos, miel y tisanas (de

hojas), teniendo otras alternativas de industrialización tales como: hojuelas, jarabe y pasas. Numerosos estudios demuestran la presencia de altas concentraciones de oligofruktanos en las raíces, fundamento importante para considerar a esta especie como fuente de azúcar natural para el control de la diabetes.

Aportado por el Ing. M. Abozaglo, Madrid, España

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"Riches of the forest: fruits, remedies and handicrafts in Latin America"

## ANGOLA

### German NGO for dissemination of natural medicine

At a recent seminar on natural medicine, the NGO German Agrarian Action has suggested the practice and dissemination of natural medicine in Angola with a view to facilitating people's access to primary medical assistance. According to the NGO's representative in the country, natural medicine is a good alternative for countries such as Angola, mainly in the rural areas, where many people have no access to primary health care, nor access to drugs that are often costly and unattainable by many. He said the natural medicine is advantageous, because it can be manufactured in all communities, is cheaper and everyone can produce a garden for medicinal plants.

An Angolan physician, João Baptista Nsende, explained that the African Union has an interministerial commission that addresses the continent's pharmacopy and Angola, as a member country, must adopt a position on the matter and regulate the use of medicinal plants. He explained that in Angola there are about 30 000 medicinal plants with which a large variety of diseases can be treated, mainly those most frequent such as malaria, diarrhoea and respiratory infections.

The seminar participants analysed about 60 medicinal plants from the tropics, their therapeutic effects and dosage and learned how to prepare some medicines and ointments from plants. [Source: AngolaPress [Angola], 26 February 2007.]

## ARMENIA

### The forest is receding

Precious plants are nearing extinction in the forest area surrounding Vanadzor. Agricultural scientist Lilia Bayramyan has identified such medicinal herbs and wild plants as nettle, thyme, mint, cat thyme, motherwort, Solomon's seal and St John's wort. Her observations in and around Vanadzor's central bazaar last spring revealed that about 4 tonnes of herbs and wild plants were collected and sold each day during that period. "If this trend continues, the reserves of precious plants will be exhausted in two years," Lilia Bayramyan concludes.

In addition to this ruthless collection of herbs, her studies also suggest that the plants are endangered above all by logging

in the area. "Since logging began, the temperature has risen and these precious plants began withering in the sunlight. Now they can only grow in the upper or transalpine layer of the forest. And people, in their turn, keep picking them."

The result of all this is that in the formerly forested areas of Vanadzor, precious plants are being replaced by herbaceous plants, which are gradually turning the forest areas into a transalpine zone in which the temperature is continuously rising. Favourable conditions for grass have been created and wild horseradish, trefoil and coltsfoot have overtaken the former forests and, growing rapidly, prevent any other tree or plant seeds that end up here from taking root. [Source: Hetq Online [Yerevan, Armenia], 8 January 2007.]

### Two organizations sign memorandum of cooperation for biodiversity protection

The World Wide Fund for Nature (WWF) Armenia and Armenian Public Relations Association (APRA) signed a memorandum of cooperation on 10 April 2007.

The office public relations department says the memorandum attaches importance to the protection of Armenian biodiversity and the sustainable use of natural resources. The cooperation aims to react quickly and provide accurate information for decision-makers and the public. WWF Director Karen Manvelyan raised the hope that "cooperation with APRA will step up public education in environmental protection as well as attract public attention to biodiversity risks". [Source: Panorama.am, 11 April 2007 via CENN Weekly Digest, 13 April 2007.]

## BELIZE

### IACHR Commission says the Government of Belize must protect the indigenous people of Toledo

By permitting oil exploration on indigenous lands in the Sarstoon/Temash National Park in the Toledo district, the Government of Belize is violating treaty obligations and a 2004 ruling by the Inter-American Commission on Human Rights (IACHR). This is the official view of the environmental group Global Response.

The Sarstoon/Temash National Park is Belize's second largest national park, encompassing an area of 41 000 acres (approximately 16 592 ha) of pristine forest and coastline along the southern border

with Guatemala. The park includes 16 miles (approximately 25.7 km) of Caribbean coastline and contains 14 ecosystem types including undisturbed mangrove, the only comfre palm forest (comfre palm is a rough, hairy perennial herb, not a tree; its roots contain tannin and are used widely in herbal medicine and treatments in Belize) and the only known lowland sphagnum moss bog, also known as bog moss and found in wet boggy soil, growing in clumps. The moss is permeated with capillary cells that retain water and is used in potted plants and, in some countries, also as a dressing for wounds in Central America. The park is home to 226 species of birds, 24 species of mammals, 22 species of reptiles and 46 species of butterflies.

In 2003 the Government of Belize signed an agreement with the Sarstoon/Temash Institute for Indigenous Management (SATIIM) giving it authority to manage the park and for the last four years SATIIM has been taking care of the park and making sure environmental laws are obeyed. SATIIM represents five Ketchi Maya and Garifuna indigenous communities in the area and is internationally recognized as an organization with legal powers to enforce the law. [Source: The Reporter [Belize], 5 January 2007.]

(Please see page 34 for more information on sphagnum moss.)



*Hoodia gordonii*

## BOTSWANA

### *Hoodia gordonii* – a rare medicinal hope

Tshabong. Some Bokspits residents call this plant *seboka* while others know it as *tlhokabotshwaro*. Outsiders have named it bushman's hat and Queen of the Namib, among others. Scientifically, however, the wild plant is known as *Hoodia gordonii* and is reputed to have medicinal properties.

Found in the Bokspits region, the plant is now being grown commercially to benefit the communities of southern Kgalagadi where it grows wild. Local Khoisan communities, however, have long known about the special medicinal value of the plant and have chewed its succulent stems to suppress hunger.

Duncan Basima of the Department of Forestry and Range Resources said the plant was in high demand internationally and that they have decided to cultivate it domestically to benefit communities where it grows wild. The plant species they have cultivated contains the active ingredient P.57 which suppresses hunger.

He said his department started a communal cultivation project in Bokspits to generate income for residents and create national capacity in *Hoodia* cultivation. Four communities in the Bokspits area have been mobilized and trained to cultivate the plant. The project, funded by the African Development Fund for two years in cooperation with Veld Products Research & Development, will help reduce poverty in the arid Bokspits area and communities will be able to earn a living from the plants. However, Bokspits residents will have to wait until 2009 to harvest their first crop of medicinal plants as they only started the project in October last year.

The General Manager of Veld Products Research and Development said multinational pharmaceutical companies were interested in the plant, which grows wild in Namibia, South Africa and Botswana. He said the *Hoodia gordonii* project was still in the cultivation stage and that his organization was trying to train communities on how to conserve and harvest the plant for commercial use. He said that he was trying to encourage people to plant *Hoodia gordonii* in their own plots since there is not much in the bush that could be used for commercial purposes. It takes three to four years for the plant to be ready for harvest.

South African scientists have been testing *Hoodia gordonii* and they discovered that the plant contained a previously unknown molecule that replicates the effect glucose has on nerve cells in the brain, fooling the body into thinking it is full. The appetite suppressant properties of *Hoodia gordonii* have now been developed and *Hoodia* products are marketed in many Western countries where obesity is a problem. (Source: Botswana, 27 March 2007.)



## BRUNEI DARUSSALAM

### Firms and groups invited to propose projects to tap nation's forests

Private companies and groups are welcome to propose projects to the Ministry of Industry and Primary Resources and its Forestry Department to develop pharmaceutical and even cosmetic products derived from the country's rich rain forest resources.

"Tropical rain forests in Brunei Darussalam are very rich. We want to explore ways to make use of the richness of our resources, not only for timber but also for non-timber resources," Mahmud Yussof, Acting Deputy-Director of the department said in an interview, noting that 78 percent of the country is covered in thick rain forest teeming with valuable plants that can be used for medicine. "Brunei Darussalam definitely has the potential to create a market in this area. We have very rich forests here where there are local medicinal and herbal plants. One such type of tree is called *gaharu*, a local species that can produce fragrance. Thailand and the Middle East have already ventured into this."

Conservation of the rain forest to develop these types of economic activities is apparent through Brunei Darussalam's involvement in the Heart of Borneo project during the signing of the Heart of Borneo Declaration earlier this week. (Source: BruDirect.com [Brunei Darussalam], 15 February 2007.)

(Please see page 62 for more information on the Heart of Borneo project.)



## BULGARIA

### Parliament approves Biodiversity Bill on first reading

The Bulgarian Parliament approved its Biodiversity Bill on first reading. The bill stipulates that the Ecological Assessment and Environmental Impact Assessment are to be enforced when investment proposals

for protected areas are filed. The amendments are a result of Bulgaria's commitments to the European Commission, thus meeting the requirements of ecological network, Natura 2000. (Source: FOCUS News [Sofia, Bulgaria], 15 March 2007.)

### Bulgaria produces 8 000 tonnes of honey, half of which is exported

More than half the honey produced in Bulgaria is exported to other countries, mainly in the European Union, the chairman of Sofia's Bulgarian Apiarist Union announced at an apiculture seminar. Bulgaria produces an average of 6 000–8 000 tonnes of honey, 4,000–5 000 tonnes of which are exported. Bulgarian honey consumption is very low: 150–200 g/person/year.

Bulgarian apiarists have some clashes with legislation amendments, which imposed tax levying on their production. (Source: FOCUS News [Sofia, Bulgaria], 5 April 2007.)



## CAMEROON

### From a taboo to a delicacy: the evolution of eating snail meat in the Bakossi landscape area

Within the last two decades, the eating of snail meat has not only moved from being a sociocultural taboo among the people who inhabit the Bakossi landscape area in Cameroon, but has evolved to represent an important protein food and one of the key income sources for many households. Many snail species are eaten in the area, but the most popular is *Achatina achatina*, mostly found in the forest zones of Cameroon.

Situated in the southwest and littoral provinces of Cameroon, the Bakossi landscape area harbours three key montane forest sites: Kupe, Bakossi and Muanenguba, renowned for their significant biodiversity and sociocultural values. These forests cover an area of about 900 km<sup>2</sup> featuring among Cameroon's most important montane forests with an exceptional level of endemism and biological diversity. Richer in plant species diversity than the adjacent Mount Cameroon, with 2 435 species, it is the richest rain forest site in Central and West Africa, and home to many primates. The local population of over 150 000 people continues to depend on the resources of

these forests for their livelihoods and income (via hunting, farming, tourism and drinking-water). The forests are also the icon of the cultural and spiritual heritage of the Bakossi (the dominant tribe of the area). This unique biodiversity and sociocultural values, however, are threatened by overhunting, agricultural encroachment and illegal logging.

As recently as 20 years ago, people in the Bakossi landscape area still perceived snails in general as inedible. This stigmatization went on in the area for another decade until the Bakossi verified that other Cameroonians in bigger towns such as Kumba and Mamfe actually loved eating snails. Then in the mid-1970s traders came from Kumba to buy snails. The snails actually brought in income even for non-snail eating Bakossi households, significantly subsidizing livelihoods. The snails were more valuable than many thought. Then medical advice started pointing at snails as an important and cheap source of protein and consequently some Bakossi slowly began to develop relatively sociable attitudes towards them. At this point, hunting to raise income was more popular than hunting to eat.

As snail hunting and sales gained ground owing to the increasing market, there was a glaring upshot on their availability. Snails that were once easily seen near people's homes started becoming rare. Snail hunting was commonly done at night (in low temperatures) especially by children, who carried with them flashlights and lamps.

It was still uncommon, however, to find Bakossi people who consumed snails publicly. Slowly and steadily, however, the taboos associated with snail eating started fading away and some Bakossi started finding it normal to eat snails in public. Consequently, the market for snails in the area further expanded and the hunting rate increased.

As people in the area became increasingly familiar with snail hunting, more and more lessons were learned and basic scientific discoveries made and developed. After returning from snail hunting, some hunters either ate all their catch or ate and reserved some for sale, while others sold them all. It was through this process that a certain Enuge Augustine, today President of the local snail farming NGO Progressive All Purpose Common Initiative Group (PAPCIG) realized that the snails his children had reserved

(covered with a bucket) for sale, laid eggs, which eventually hatched to produce juvenile snails. From this experience, he built a box, in which he transferred the eggs and the hatched snails. An American Peace corps volunteer who was working in the area advised him to contact WWF Cameroon on his findings.

Support given to him by WWF not only helped him to realize the status of PAPCIG, but enabled PAPCIG to benefit from some material, technical and financial support that helped erect a 10 000 capacity contemporary snail farm in Tombel, which has not only served as an income-generating farm for the group and the employment of some unemployed youth, but has also been of significant assistance to research.



Having embedded itself as meat by virtue of its taste, cooked snails are today sold in different parts of the Bakossi land, on streets and in hotels, etc. The meat, especially when spiced with pepper and other spices from the forest, serves as a real appetizer for beer consumers and also as an important alternative for commonly consumed meat (cattle, goats, chickens, etc.), bushmeat and fish.

Having recognized poverty as one of the key causes of forest and species reduction in the area, WWF Coastal Forests Program (WWF-CFP), embarked on lending its support to PAPCIG, as one of the approaches for increasing snail availability in the local market, and managing the pressure (mostly from snail hunters) on snails in the wild. Over 15 community-based organizations (CBOs) exist today in the area benefiting from WWF-CFP's organizational, human (capacity development), financial and physical (material) support.

The CBOs are not only supplying live snails but some have evolved to transformation levels. Like beekeeping in the area, a transformation and sales unit (where the quality of snails is controlled, they are packaged in sachets and preserved in deep freezers for sale) was set up by Community Action for Development (CADEV) in 2006, hence adding value to their

products. A full sachet of 250 g is sold at 500 CFA francs (about US\$1). Up to March 2007, CADEV made an average profit of 35 000 CFA francs (US\$63) from processed snail sales monthly, excluding the sale of other related snail components such as empty snail shells used for calcium production. It is worth noting that most of the snail farming CBOs in the area sell their live snails to the CADEV transformation unit, where they receive the full cost of their live snails on the spot and are given bonuses at the end of each quarter.

Like the locally produced natural honey that is known to generate an annual income of 4 400 000 CFA francs (US\$8.000) for one of the beekeeping CBOs in the area, snail sales are gradually also becoming a real income provider although it is hard to find anyone depending exclusively on snail farming and sales for survival. The activity is most often secondary, given that farming forms the mainstay of the people in the area. But its contribution to the socio-economic development of households in the Bakossi landscape area cannot be underestimated.

The direct implication of snail farming as an income provider to many Bakossi households and its indirect impact on biodiversity conservation, by virtue of its alternative force for bushmeat, makes it lucid for WWF-CFP to support the activity.

Today, snail consumption has not only evolved to gain the status of a delicacy in the Bakossi culture, but serves as a satisfactory alternative source of meat among a significant part of the population. There is also a considerable drop in the hunting of snails in the wild, in favour of farming them.

However, snail farmers are concerned about both the incessant attacks by predators (black flies, reptiles, rats, ants, etc.) on the snail farms and other important constraining factors including saturation of the local snail market. More support is critical to help in predator management and the marketing of snails. International market networks that can boost snail farmers' economic power are unknown. A positive start would be to carry out studies on the snail international market network and demand. The National Association of Snail Farmers in Cameroon (NASFARM), founded in 2006, is poised to do this, but given its infancy, certainly needs help for this to be realized. (Contributed by: Ngwene Theophilus Nseme, WWF-Coastal Forests Program, PO Box 1169, Bota-Limbe, Cameroon. E-mail: nngwene@yahoo.com)



### Adaptación de especies de bambú de clima templado en Chile

El Instituto Forestal, INFOR, realizó el 25 de abril en la ciudad de Valdivia un Seminario de lanzamiento del proyecto «Adaptación de especies de bambú de clima templado en Chile», seleccionado en el XIII Concurso Nacional del Fondo de Fomento al Desarrollo Científico y Tecnológico FONDEF del Conicyt.

El proyecto tiene como objetivo general adaptar especies exóticas de bambú de clima templado para uso industrial, desde la Región Metropolitana hasta la undécima región, incluyendo la Isla de Pascua. Esta especie es considerada como una de las que experimenta mayor tasa de crecimiento dentro de los vegetales, y sirve como forraje, alimento, producción de pasta y papel, protección de riberas y ríos, artesanías, muebles, construcción y textiles, entre otros.

La adaptación y plantación industrial de estas especies en Chile será una nueva fuente de ingresos para los pequeños y medianos agricultores, debido a la entrega de materias primas industriales y su utilización directa, ya sea en construcción, tutores, cercos, fabricación de muebles, alimento, entre otros. Además, uno de los beneficios de esta especie, es que puede ser cosechada anualmente, a diferencia de las rotaciones forestales tradicionales. *Fuente:* Informativo Forestal Diario de INFOR, miércoles 11 de abril de 2007.

### Orquídeas silvestres ancestrales

El bosque chileno y su campiña, aunque contienen menos especies en total que los bosques tropicales, constituyen una reserva mundial de biodiversidad, dado el alto grado de endemismos locales. Entre los descendientes de estos antiguos linajes únicos en el planeta, se cuentan las orquídeas terrestres chilenas.

En los escasos fragmentos de bosque nativo que aún subsisten en Chile, hay algunas áreas donde surgen las orquídeas silvestres, que aún conservan una condición prístina. Por ello, conocer y conservar estas plantas endémicas amenazadas no es sólo una carrera contra el tiempo, sino un objetivo importante en la protección de nuestra flora herbácea. Esta riqueza florística, con altos niveles de exclusividad, ha sido reconocida por la comunidad científica internacional como un hotspot de biodiversidad.



Las orquídeas son fuentes de bienes y servicios que van desde valores estéticos expresados a nivel del paisaje, hasta valores económicos asociados a determinados productos exportables, tanto como flor cortada, como en maceta. En este marco, la Fundación para la Innovación Agraria (FIA) ha apoyado de manera permanente el desarrollo de la biotecnología agropecuaria al prestar ayuda, tanto financiera como técnica, en dos Proyectos de Domesticación y Mejoramiento Genético de Orquídeas Silvestres del Género *Chloraea*.

Con esos dos proyectos de investigación se persigue, además de poner fin a su disminución acelerada, obtener un producto original, renovado y atractivo, con alto valor agregado, que compita ventajosamente en el mercado internacional.

Has sido un trabajo multifacético, pionero, exigente, prologado y apasionante, lo que permitirá, gracias al esfuerzo y perseverancia de un puñado de investigadores y al apoyo constante del Gobierno de Chile, a través de un organismo del Ministerio de Agricultura, junto al resguardo de estas especies únicas, diversificar la opción como país emergente en la producción de flores bulbosas.

Para posicionarlas, tanto en nuestro medio como en el extranjero, es importante que a las orquídeas terrestres, ahora cultivadas, se les reconozca la identidad de su prolongado endemismo, como un valor histórico-cultural, designándolas flores emblemáticas de la celebración del Bicentenario de la República, que está próximo a cumplirse.

*Fuente:* Extraído de un artículo de Enrique Matthei Jensen, Ejecutor Proyectos FIA in Revista Chile Forestal, Año 2006, N° 321.



### Chinese company doubles stevia production capacity

Qufo, China. Sunwin International Neutraceuticals, Inc. (SUWN), a leader in

the production and distribution of Chinese herbs, veterinary medicines and one of the world's leading producers of all natural, zero-calorie stevia in China, announced today that it has completed construction of its new stevia manufacturing facilities. These new facilities are capable of producing an additional 300 tonnes of premium stevia per year, increasing annual bulk production by approximately US\$15 million.

The new facilities will use proprietary technology developed by SUWN to process the seeds of the *Stevia rebaudiana* plant, enabling the company to produce the highest-grade stevia in the industry. The company anticipates that this additional production will be marketed to the pharmaceutical industry in China, Japan and the Republic of Korea as well as to other countries such as Singapore, Malaysia, Thailand and India. *[Source:* NPIcenter [press release], 9 January 2007.]



### Quality honey produced in Sancti Spiritus

Honey is once more ratified as one of the main exports in the Cuban central province of Sancti Spiritus, where over 500 tonnes of the product have been sold to date, especially to European countries. The processing plant in this territory, which receives the honey from Pinar del Rio up to Camaguey province, was able to increase production above scheduled plans. *[Source:* Escambray [Cuba], 28 March 2007.]

### Camagüey boosts bamboo plantations

The reforestation plan in the eastern province of Camagüey is devoting special attention to boosting bamboo plantations since bamboo has disappeared from more than 600 ha over the last five years; 70 ha have been planted, approximately half of that planned last year. In 2007, the sowing programme includes 40 ha.

The Forest State Service branch office in Camagüey said that the bamboo reforestation has tackled certain problems. Most of the plantations are located near livestock water sources and the plant's leaves are used as food for the cattle. It is also a raw material widely used in the construction of furniture and fences and in the pharmaceutical and paper industry. *[Source:* Radio Cadena Agramonet [Cuba], 19 March 2007.]

## DEMOCRATIC REPUBLIC OF THE CONGO

### Greenpeace spotlights rain forest damage

The environmental group Greenpeace called for urgent action on Wednesday to prevent illegal logging in the rain forests of the Democratic Republic of the Congo, accusing international companies there of "causing social chaos and wreaking environmental havoc".

In a report that accused the World Bank of failing to stem the problem of illegal logging, Greenpeace said over 15 million ha (37 million acres) of rain forest had been granted to the logging industry since a moratorium was agreed by the Government in May 2002. The group's report, "Carving up the Congo", also accused international logging companies of deception and intimidation to obtain timber.

Of the 60 million people in the country about 40 million depend upon the rain forests to provide essential food, medicine and other NTFPs along with energy and building materials. And the forests are critical for the survival of wildlife, including gorillas, chimpanzees and bonobos, the report said.

Meanwhile, the World Bank has acknowledged that over the last three years no money whatsoever has been paid in taxes by logging companies to local communities to provide essential services such as schools and hospitals.

"This leaves these people not only without the forest that provided their food, shelter and medicine, but without the benefits they had been promised," Greenpeace said.

The Democratic Republic of the Congo has the second-largest primal tropical forest in the world with 86 million ha (212 million acres) of which 60 million ha (148 million acres) are potentially exploitable for logging. [Source: Sapa-AFP in *Citizen* [South Africa], 12 April 2007.]

## ETHIOPIA

### Tapping into bamboo

A training class held by Chinese experts changed the life of one impoverished farmer in a bamboo-growing village 300 km from Addis Ababa. In 2005, Solomon Gessesse participated in a bamboo-processing class in Addis Ababa and later established a bamboo factory there, hiring 13 workers. His monthly income now exceeds 12 000 birr. In contrast, another bamboo-processing facility nearby with five employees, whose owner did not

participate in such training, earns only 1 000 birr/month.

Ethiopia processes abundant bamboo resources, covering 1 million ha and accounting for 67 percent of the total bamboo groves in Africa. However, for a long time bamboo production was very low with bamboo processing remaining at the primary stage with low added value. China has a developed bamboo industry with much experience in bamboo growing and processing. As a member of the International Network for Bamboo and Rattan (INBAR), China actively participates in and promotes South-South cooperation. While developing its own bamboo industry, it also renders financial and technological support to other developing countries, helping them utilize their bamboo resources and train their own experts.

In 2005–2006, the Chinese Government cooperated with INBAR to hold two training courses for bamboo industry development in Ethiopia, training 97 bamboo growing and processing technicians. In 2006, a total of 23 Ethiopians attended the bamboo processing course. Chinese experts started their courses from scratch – from selecting the bamboo, making bamboo strips, bamboo dyes and creating moulds to weave new types of small bamboo baskets, bags, lampshades and curtains. They also introduced the Ethiopians to a new method of cutting several bamboo pieces into strips of the same width at one time.

In addition, Chinese experts have helped hold two workshops in Ethiopia on bamboo development with more than 160 participants. The Beijing Summit of the Forum on China-Africa Cooperation (FOCAC) also provided a new opportunity for China to cooperate with Ethiopia in bamboo development. In December 2006, a Chinese economic and trade delegation, tasked with following up on FOCAC, went to Ethiopia and

attended the workshop on promoting the sustainable development of the bamboo industry in the country.

Some large enterprises in Ethiopia have also begun to invest in the bamboo industry, including an Ethiopia-United States joint venture that has invested in bamboo groves covering 400 000 ha. It has signed agreements with three large Indian paper mills to supply bamboo pulp, worth US\$130 million within three years. Meanwhile, a Chinese mining enterprise plans to invest in making paper from bamboo. [Source: *Chinafrica*, February 2007, Vol. 2, No. 2; [www.chinafrica.cn](http://www.chinafrica.cn)]

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### Ethiopian Biodiversity Conservation Institute striving to utilize and conserve medicinal plants

The Ethiopian Biodiversity Conservation Institute announced that it has been undertaking, through its Medicinal Herbs Care and Sustainable Conservation project, various activities to enable the community to utilize medicinal plants that could be cultivated in backyards and conserve those found in the field with over 16.2 million birr.

Ethiopia produces 56 000 tonnes of medicinal herbs annually, 87 percent of which grow in the forest while people cultivate the remaining 13 percent in their backyards, said project coordinator Dr Fasil Kibebew. The medicinal herbs will bring in revenue that covers 8 percent of the annual budget and will also cover 42 percent of the Government's expenditure for the procurement of medicines. Currently, medicinal herbs have a US\$62 billion transaction in the international market, he said, further stating that efforts are under way to enable the country to obtain a share of the market.

As part of efforts to utilize the herbs by processing them in factories, Addis Ababa University has succeeded in preparing an anti-tapeworm for animals with a 93 percent reliability.

Field gene banks have been established in Wondo-Genet and Goba to preserve the plants and 300 medicinal plants in Wondo-Genet and 247 medicinal plants in Goba are under protection. These plants that should



"Riches of the forest: for health, life and spirit in Africa"

be preserved in their origins are under protection and care in Bale National Park, Adele, Workiti and Goba forests, Dr Fasil said, adding that the institute is supporting the local community to utilize the plants.

The project has distributed improved stoves among the community to deter them from using the plants for firewood. It has also multiplied over 1.3 million seedlings and distributed them to the community to be planted in their backyards. [Source: *The Ethiopian Herald*, 4 March 2007.]

## GUATEMALA

### Ornamental greens from the Maya Biosphere Reserve: the Rainforest Alliance's Certified Xate Initiative

Villagers in the Guatemalan community of Uaxactún subsist primarily on income earned from the collection of NTFPs, such as fruits, gum, resin and xate, an ornamental palm leaf. Their forest home, once a major Mayan city, lies within the confines of the Maya Biosphere Reserve, the largest protected area in Mesoamerica. In addition to hundreds of Mayan ruins, the 5.2 million acre (2.1 million ha) reserve boasts an astounding diversity of plant and animal life.

In recent years, land clearing and forest fires have been destroying the forest expanse at an accelerating pace. Which is why the Rainforest Alliance, an international conservation organization, has been working with Uaxactún villagers and others to create an incentive for the protection of their forest home. In addition to certifying Uaxactún for sustainable timber harvesting, the Rainforest Alliance, in collaboration with the community, has established guidelines for the sustainable harvest of the xate palm, also known as chico (*Chamaedorea* spp.). Thirty million xate fronds are delivered each year to the United States of America and Canada for Palm Sunday services. Xate exports contribute over 1 million dollars annually to the Guatemalan economy and in the Selva Maya, where nearly 50 percent of the population has no formal education, wild xate harvesting generates about 10 000 jobs, especially for women.

When only a few leaves are removed from the plant at a time, the fronds are allowed to regenerate. However, the increased demand for xate combined with an absence of standards and management practices, have resulted in serious

challenges to the sustainability of the plant. Not only have the palms become threatened by overharvesting, but the workers who collect them have been venturing further into the forest, often collecting other threatened plants and seeds as they go. Since the establishment of the standards in July 2005, the community of Uaxactún together with nearby Carmelita have sent one shipment of sustainably harvested xate per week to Continental Floral Greens of San Antonio, Texas, United States of America. These shipments represent an income of more than US\$100 000 per year for the impoverished communities, more than half of which goes directly to the xate collectors.

The Rainforest Alliance explains that before linking up with Continental Floral Greens, harvesters sold their xate to intermediaries for a much lower price. Most of the leaves had defects, so they ended up in exporters' dumps. The Rainforest Alliance has encouraged xate collectors to cut only quality leaves and leave more fronds on the palm, which permits faster regeneration. They now sell their leaves for twice as much as they did previously.

In addition, according to the Management and Conservation Organization (OMYC), which manages the community's forest concession in the Maya Biosphere Reserve, women who until recently had no cash income now earn between US\$6 and \$7 per day harvesting, selecting and packaging xate for export.

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*Chamaedorea* spp.

## GUYANA

### Guyana: United Kingdom High Commission donates money to GMTCS

The British High Commission recently made monetary donations to a social welfare and sustainable development society. According to a press release, the British High Commissioner presented cheques to the Help and Shelter and the Guyana Marine Turtle Conservation Society (GMTCS).

The money donated to GMTCS is the third part in a project aimed at building capacity for the indigenous people of northwest Guyana to assist them to manage their natural resources effectively and to undertake a preliminary assessment of certification for local organic NTFPs. According to the press release, the project started last July and has resulted in NTFPs from the area being sold in the local markets. Additionally, six persons were trained as tour guides and a map of the area's natural resources has been drawn. [Source: *Stabroek News* [Guyana], 3 April 2007.]

## INDIA

### Jharkhand to upgrade sericulture production

To upgrade silk production in Jharkhand, the Central Silk Board (CSB) and state industry department has initiated a joint venture project of a perspective plan for sericulture development with an investment of Rs151 crore. Jharkhand at present produces 100 tonnes of raw silk and targets to reach 350 tonnes within the next six years. The state produces tasar, mulberry and eri silk, with the regions of West Singhbhum, Seraikele-Kharsawan and Santhal Pargana serving as breeding grounds for cocoon cultivators.

In this venture, the Government plans to undertake infrastructure development, plantation activities, training and value addition of raw silk projects in the current fiscal year. The Ranchi-based Central Tasar Research and Training Institute would help in the project by providing services of training, research and development and technology transfer to farmers.

At the moment sericulture is being carried out on plant species such as arjuna, saal, asan and the mulberry tree but the Government's focus would be on non-mulberry production. [Source: *Fibre2fashion.com* [India], 5 April 2007.]



## Trade figures on gums and resins

Gums and resins	2002–2003 (tonnes)		2003–2004 (tonnes)		2004–2005 (tonnes)		2005–2006 (tonnes)	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
Gum arabic ( <i>Acacia nilotica</i> )	86.31	7 341.24	101.85	8 172.15	168.78	12 730.93	1.39	14 825.84
Asian gum	285.33	75.01	359.84	49.89	66.4	7	–	–
African gum ( <i>Acacia senegal</i> )	129.31	22	13.21	–	6.51	–	1.44	–
Assafoetida ( <i>Ferula asafoetida</i> )	473.91	514.23	744.21	902.12	731.63	985.1	1 269.42	528.52
Benjamin ras	1.2	118.5	0.38	26.47	–	34.6	–	60.09
Benjamin cowrie	1.84	–	–	–	–	–	–	40
Karaya gum (Indian tragacanth) ( <i>Sterculia urens</i> )	1 119.83	–	429.69	3	773.1	1	0.65	10.82
Acacia gum	–	–	–	–	–	–	–	–
Mastic gum ( <i>Pistacia lentiscus</i> )	0.64	4.72	1.24	1.86	0.45	5.01	–	–
Other natural gum	645.53	777.73	761.17	453.36	459.44	195.75	206.51	48.68
Other gum resin	968.7	148.67	582.48	121.22	139.29	176.37	29.37	–
Guar gum refined split ( <i>Cyamopsis tetragonoloba</i> )	41 337.02	–	38 072.3	473	48 738.47	0.33	14 951.54	16.22
Guar gum treated and pulverized	69 513.86	–	77 797.59	0.25	76 298.65	0.3	134 190.53	69.55
Guar meal	1 097.46	6.37	4 691.36	–	4 611.34	4.6	3 146.54	–
Copal ( <i>Agathis</i> spp.)	49.66	1 593.93	0.65	1 188.52	–	1 540.77	–	–
Dammar Batu	0.22	4 206.35	14.13	5 221.77	2	9 477.63	–	–
Other resins	69.52	147.04	8 611.44	470.46	2 832.82	1 507.29	–	–
Myrrh ( <i>Commiphora</i> spp.)	–	12.2	11.86	23.45	11.7	13.82	0.08	12.82
Olibanum or frankincense ( <i>Boswellia serrata</i> )	6.5	16.25	7.98	1	12.08	7	–	4.22
Natural resin enamels	–	0.715	–	–	–	–	–	–
Balsam of Tolu ( <i>Myroxylon balsamum</i> )	0.01	68.56	–	–	–	–	–	–
Pepper oleoresins	1 043.8	0.5	–	–	–	–	–	–
Turmeric oleoresins	235.9	1.42	–	–	–	–	–	–
Cardamom oleoresins	2.45	–	–	–	–	–	–	–
Celery seed oleoresins ( <i>Apium graveolens</i> )	324.77	–	–	–	–	–	–	–
Nutmeg oleoresins	178.38	0.01	–	–	–	–	–	–
Oleoresins of spices, nes	77.32	–	–	–	–	–	–	0.25
Other balsams/oleoresins	349.08	133.69	770.51	10 497.04	877.77	5 822.78	549.8	3 809.6
Agar agar w/w modified	15.48	30.83	24.93	43.44	20.01	67.46	3 146.54	–
Other mucilage thickeners w/n modified, derived from locust beans or locust bean seeds	242.16	2.7	420.42	33.39	1 224.68	43.12	–	3.6
<b>Total gums and resins</b>	<b>118 256.192</b>	<b>15 222.665</b>	<b>133 417.24</b>	<b>27 682.39</b>	<b>136 975.12</b>	<b>32 620.86</b>	<b>157 493.81</b>	<b>19 430.21</b>

Source: Monthly Statistics of Foreign Trade of India, Vols I and II, Export and Import, 2007. Directorate-General of Commercial Intelligence and Statistics, Government of India, Kolkata.

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#### Determination of sustainable harvesting limits of commercially important NTFPs in natural tropical forests of Madhya Pradesh

The conservation of commercially important forest resources in state-owned

natural tropical forests is a challenging task because these forests constitute a common property resource and local people have the right of free access to collect NTFPs. Owing to increased commercial utilization of forest resources, local user communities are encouraged to overexploit forest products, ignoring the traditional practices of sustainable harvesting of utilizable resources from natural forests. In the prevailing forest management system, extraction of NTFPs is not at all sustainable, either in ecological or in socio-economic terms. A participatory

approach involving local forest-dependent user communities seems to be an inevitable tool for sustainable management and *in situ* conservation of valuable indigenous forest resources.

Keeping this as the main objective, the Madhya Pradesh State Forest Research Institute, Jabalpur, India has taken the lead to determine the sustainable harvesting limits of overexploited NTFPs in natural forests, employing an integrated participatory approach in the tribal-dominated tropical forests of Madhya Pradesh under a research project

sponsored by the Council of Scientific and Industrial Research, New Delhi, Government of India.

In this project, eight site-specific commercially important NTFP species, *Chlorophytum tuberosum*, *Curculigo orchioides*, *Dioscorea daemona*, *Curcuma angustifolia*, *Bauhinia vahlii*, *Plumbago zeylanica*, *Asparagus racemosus* and *Embelia robusta* were selected to determine sustainable harvesting limits in natural forest ecosystems. An innovative experiment was designed with various treatments based on different harvesting intensities, i.e. control (no harvesting), T<sub>1</sub> (20 percent), T<sub>2</sub> (40 percent), T<sub>3</sub> (60 percent) and T<sub>4</sub> (80 percent), where underground plant parts (roots/ rhizomes/ tubers) are harvested. In the case of *Bauhinia vahlii*, however, the leaves of which are harvested, an additional treatment, i.e. T (100 percent extraction) was undertaken. All the treatments were done in five replications. Regeneration capacity of the species was estimated for all the treatments with five replications by using a regeneration index method.

The results of the experiment were quite alarming, particularly for *Chlorophytum tuberosum*, *Dioscorea daemona* and *Asparagus racemosus*, which allowed harvesting of only 18, 38 and 32 percent of plants respectively to maintain sustainability in natural forest conditions. However, other species, i.e. *Curculigo orchioides* (75 percent), *Curcuma angustifolia* (60 percent), *Plumbago zeylanica* (60 percent) and *Embelia robusta* (80 percent) showed comparatively higher sustainable harvesting limits. *Bauhinia vahlii*, which contributes substantially (Rs5 000–7 000/family) to the annual income of forest-dependent communities, was found to be in a very precarious condition because of repeated overexploitation of its leaves. Almost all the plants were found to have lost their flowering, fruiting and leaf growth vigour. Leaves of this species are in high demand for making plates and cups and are harvested twice in a year in summer as well as in winter. The bark of the stem of this species is also used for making rope. Findings of the experiment have suggested that 70 and 80 percent of harvesting in summer and winter can be permissible to maintain leaf-sprouting vigour of the plant in natural forest ecosystems, both in qualitative and quantitative terms.

It has been established from the study that the development of skills and

capabilities of local user communities (as key stakeholders) at the grassroots level for the sustainable use of forest resources is the only viable tool for the conservation and sustainable management of forest resources in natural forest ecosystems of the country.

The present study is a part of the project "Determination of sustainable harvesting limits of utilizable forest resources in tribal-dominated natural tropical forests of Madhya Pradesh". (Contributed by: Dr R.K. Pandey (Senior Scientist and Head) and Dr (Mrs) Satvant Kaur Saini (Research Associate), Ecology and Environment Division, State Forest Research Institute, Jabalpur, pin: 482008, Madhya Pradesh, India. E-mail: pandeyrk1@yahoo.com or satvant@rediffmail.com)



*Curcuma tumeric*

### Jaipur's lac industry is booming

The lac industry began in the eighteenth century in the narrow lanes of Jaipur's old city. Today, it is a booming business with its products finding their way to places as far away as Europe.

In recent years, the industry has successfully broken away from its traditional image of making bangles to produce exquisite jewellery and gift items. Today, over 5 000 families in Jaipur are involved in the industry. Jaipur alone accounts for annual exports worth Rs700–800 million.

Several local artisans have even been awarded for their contribution and creative innovations. Yet these artisans have to toil hard and long in difficult conditions to give shape to their designs. "We have to work on hot furnaces where lac is melted. Working conditions are very harsh, especially during summer," said one manufacturer of lac items.

But the artisans seem to forget about their hardships when they proudly begin to

talk about taking the cottage industry to global levels. (Source: *Hindustan Times* [India], 11 April 2007.)

### Boost to bamboo cultivation

The Department of Agriculture and Cooperation has launched a programme on a National Bamboo Mission in India from 2006 to 2007 to enhance the production and productivity of bamboo. The mission aims at i) promoting the growth of the bamboo sector through an area-based regionally differentiated strategy; ii) increasing the coverage of the area under bamboo in potential areas, with improved varieties to enhance yields; iii) promoting marketing of bamboo and bamboo-based handicrafts; iv) establishing convergence and synergy among stakeholders for the development of bamboo; v) promoting, developing and disseminating technologies through a seamless blend of traditional wisdom and modern scientific knowledge; and vi) generating employment opportunities for skilled and unskilled persons, especially youth.

The proposed bamboo plantation activities under the mission would generate about 50.4 million workdays. In the nursery sector, total estimated employment to be generated every year will be around 9.7 lakh workdays. Besides this, there will be employment generation in both skilled and unskilled segments in the handicraft sector.

The proposed scheme is environment friendly and economically viable in nature. The project proposals submitted by the state governments for financial assistance under the mission during 2006 to 2007 are under consideration by the Department of Agriculture and Cooperation.

At present, bamboo is being cultivated in 89 575 km in the country. (Source: Press Information Bureau (press release) [New Delhi, India], 12 March 2007.)



"Riches of the forest: food, spices, crafts and resins of Asia"

## INDONESIA

### Indonesia's paradise lost – and regained

The United Kingdom's Royal Society for the Protection of Birds (RSPB) is enlarging its vision and is moving into tropical bird conservation in a serious way as part of a partnership that is seeking to save one of the world's greatest wildlife hotspots. With its sister organization in Indonesia and BirdLife International, the RSPB has secured a long-lasting management concession on a stretch of lowland rain forest in Sumatra which has more breeding bird species than the whole of the United Kingdom.

The Harapan rain forest hosts at least 267 types of birds and may hold more than 300. It is also home to a striking range of animal species, as well as the world's richest and most diverse flora. Yet for all its natural treasures, the forest has been placed under dire threat by the pressures of illegal logging and conversion to timber and palm oil plantations, which have reduced the Sumatran rain forest to a fraction – less than 5 percent – of its former 16 million ha.

Up to now, sites earmarked for timber production or plantation crops in Indonesia could be used for nothing else. But the ecosystem restoration decree, which was introduced by the Indonesian Ministry of Forestry, permits the management of forests to obtain benefits labelled "ecosystem services". These include storing carbon, controls on pollution and protection for wildlife, all of which, says the partnership, will help nearby human communities.

Directly benefiting will be the 150-strong Batin Sembilan tribe, a nomadic people that will continue to harvest rubber, honey, fruits and rattan for its own use. "With intact forest remaining, they will have the choice of maintaining their traditional lifestyles," said Sukianto Lusli, executive-director of Burung Indonesia. "They will also have the option of becoming wildlife monitors or forest wardens, as will other people in the local area." There will be other jobs for the Harapan community as forest guides, in nursery management and the preparation of land. Field staff are being recruited now and the site will eventually be managed by a team of about 80 people. The development of a research station and ecotourism are long-term possibilities.

Harapan is the Indonesian word for hope. The forest stretches 35 km east to

west and 40 km north to south, and represents about 6 percent of remaining lowland rain forest in Sumatra. It is two degrees south of the equator and conservationists hope that its humid conditions will hasten regeneration. Furthermore, the ecosystem restoration decree means other private management bodies can also apply to restore forests in Indonesia.

The RSPB is about to launch a United Kingdom fundraising campaign for Harapan with a target of UKE2 million over the next 12 months. Similar campaigns are beginning in other European countries and Japan. The initiative has already received significant financial support from the European Commission and Conservation International's Global Conservation Fund.

In the long term, the RSPB, Burung Indonesia and BirdLife International plan to establish a trust fund of UKE9 million. Annual interest payments from the fund will cover the forest's management costs. (Source: *The Independent* [United Kingdom], 3 April 2007.)



## ISLAMIC REPUBLIC OF IRAN

### The Republic is to improve medicinal herb cultivation in 2007

The Islamic Republic of Iran's Agriculture Jihad Ministry will put the medicinal herbs comprehensive plan into practice for the next five years to develop the output, said the Ministry's Ornamental Plants and Medicinal Herbs Office.

One of the plan's goals is to export medicinal herbs. To this end, almost 58–60 000 ha are under cultivation, with an

expected yield of 73 000 tonnes of medicinal herbs. The Ministry plans to find the proper farm lands for herbs, train its experts and producers, and cooperate with standards institutes to produce quality medicinal herbs. (Source: *MehrNews.com* [Iran], 13 April 2007.)

## JAMAICA

### Allspice: high demand for pimento

Pimento, or allspice as it is known internationally, is currently impacting the culinary world. It is one of the main ingredients in jerk seasonings and mixed spices.

The growing demand for the product, not only for local consumption, but for use overseas and in the hospitality industry, has opened up a niche market that is expected to be very profitable for local farmers.

The Ministry of Agriculture and Lands is reporting that the pimento industry is earning an estimated US\$5 million annually from exports of whole berries, leaf, berry oils, liqueurs and other value-added products. There is also an increasing demand for pimento berries to satisfy the expansion of the jerk market.

With the sudden interest in the product, there are certain guidelines and procedures that must be followed to get the product from its natural state to acceptable standards for export. (Source: *Jamaica Gleaner* [Jamaica], 15 February 2007.)

## KENYA

### Kenyan President prohibits trade in sandalwood

Kenyan President Kibaki has made the highly priced sandalwood tree a protected species for a period of five years, representing a ban on trade. According to the announcement, the ban on the sandalwood tree's exploitation and trade is effective from 14 February this year, meaning that there will be no cutting or trading of the species and those caught trading in the products will be prosecuted.

The species, also known as *Osyris lanceolata*, is threatened with extinction because of indiscriminate exploitation and illegal trade.

The species can fetch between Sh1 million and Sh3 million depending on its age. (Source: *SomaliNet* [United States of America], 6 April 2007.)



### Ecotourism in the Lembus forest

What started as a community concept on ecotourism is now a regional story on good community conservation practice. When the people of Koibatek approached VolunteerforAfrica (VFA) to help them come up with a management concept for the Lembus forest, little did they know that this would hatch into a project that would change their lives, at least in so far as forest management and culture exposure are concerned.

With funding from the Netherlands Committee for the World Conservation Union (IUCN), the community, through technical advice from VFA's Sustainable Natural Resources Management Programme, have established an Ecotourism and Cultural Centre, which has the following advantages.

**Income.** The Ecotourism site is providing an income to community members, which include a youth group and a women's group, operating the site. Membership comes from people living around the forest and income derived means that the people are able to benefit directly from the forest by improving their living standards. It also makes them believe in the conservation of the forest.

**Forest conservation and/or sustainable use.** With ecotourism, the people now have some knowledge on the importance of forest and wetland conservation.

**Education and information.** The Ecotourism site is serving as an education point for the community on the virtues of the environment and shows them why they really need to protect the Lembus forest, now and for the future.

**Culture.** The Ecotourism site is designed in a traditional way, using traditional materials. This is enhancing a local understanding and preservation of Tugen cultural values. (Source: Web site of VolunteerforAfrica, [www.volunteerforafrica.org/](http://www.volunteerforafrica.org/))



### Une expérience de promotion de PFNL à Tominian

L'ONG nationale Sahel Eco a bénéficié d'un financement de la FAO à travers le mécanisme d'appui à la foresterie du Mali et TREE AID, une ONG britannique pour la mise en œuvre d'un projet dénommé Projet de promotion des entreprises forestières villageoises (EFV). D'une durée initiale de trois ans (septembre 2005-septembre 2007), le projet a accompagné 160 exploitants forestiers, essentiellement des femmes, à la création de 14 entreprises autour de trois produits à savoir le miel, le fruit de tamarinier et les amandes de karité. Ce projet s'appuie sur une approche particulière appelée ADM (Analyse et développement de marché).

Avec un chiffre d'affaires de plusieurs millions par entreprise, les bénéficiaires ont pris des mesures pour la bonne gestion des ressources dans la forêt appelée DUWA dont leur vie dépend. Parmi ces mesures on peut citer, la redynamisation des comités de surveillance de la forêt chargés de veiller sur le respect des règles consensuelles de gestion. Les entrepreneurs ont tissé des alliances stratégiques avec les caisses d'épargne sur place pour faciliter l'accès au crédit et avec des partenaires commerciaux comme l'ULPK (Union locale des productrices de karité) de Diôla pour faciliter l'écoulement de leur produit. Ils produisent et commercialisent les amandes, le beurre, le fruit de tamarinier et le miel.

Tous ces groupes évoluent au sein d'une association coopérative appelée Farakunna, composée de 22 villages, qui tire l'essentiel de leur revenu de la forêt. (Contribution de: Bakary Diarma, Coordonnateur du projet EFV/Sahel Eco, BP 04 Tominian; courriel: [djerma2002@yahoo.fr](mailto:djerma2002@yahoo.fr))



### Improving village life in Nepal

Every year in Nepal's Himalaya highlands, villagers gather thousands of tonnes of medicinal plants from the wild, and pack and dry them to sell to traders for export. The sale of these plants, oils and resins, or non-timber forest products (NTFPs), provides much-needed income to local communities in Nepal, who also rely on the plants for food, medicines and fuel.

The sale of these NTFPs represents a potential long-term source of income for

local villagers and a powerful incentive for them to conserve their forests. However, the villagers typically sell their goods to exploitive medicinal herb traders, who encourage them to harvest as much as they can, while paying them poorly for their products. Once a plant supply runs out, the traders move on, leaving the villagers who have depleted their only source of livelihood without much recourse.

In January 2005, the Rainforest Alliance awarded Forest Stewardship Council (FSC) certification to the Federation of Community Forest Users, Nepal (FECOFUN), whose members harvest their forest botanicals in a responsible way, ensuring the long-term availability of their natural resources and maintaining the health of the forests. They then sell their wild-crafted ingredients to the international natural products industry. The villagers' certified essential oils and handmade papers are now available in the United States of America and the United Kingdom.

Walter Smith, lead auditor and senior technical specialist for the Rainforest Alliance forestry programme, conducted the annual Forest Stewardship Council (FSC) audit of FECOFUN, the group certificate holder for the community forest user groups. This involved the need to revisit the forests to make sure that they are still being harvested and managed in compliance with FSC standards. This audit is particularly difficult because there are no roads leading directly to each certified forest.

The head of one community group visited was an indigenous Thami man who took the audit group to the Rainforest Alliance certified handmade paper factory. It is not a factory in the usual sense. Several men and women (mostly women) are boiling plant cuttings and scraping bark for making paper. The bark is going to a Japanese/Nepali company that sells it to Japan for use in manufacturing Japanese currency. This community group (like others in the certified pool) gives first priority for jobs to the poorest community members. (Source: *Rainforest Matters*, Rainforest Alliance, March 2007.)

### Community development from participatory rattan management

Nine species of two genera of rattan are recorded in Nepal. Among them, *Calamus tenuis*, *Calamus acanthospathus* and *Calamus inermis* are protected, mostly in the Community Forest of Nepal. *Calamus tenuis* is a small rattan, which is native to

the Terai region of Nepal. Some of the species of rattan, however, are indigenous to Nepal. Because of an indifferent approach by foresters, their management has been neglected in both the natural forests and sacred groves. The need to manage rattan in the natural forests has been recognized since 1994, when research work on rattan was pioneered. *Calamus tenuis* is the most distributed in natural forests, community forests and some private lands.

The concept of community forestry evolved in the 1990s in Nepal. The 1993 Forest Act and the 1995 Forest Regulation, which aimed to empower the community forest user groups, are the main legal instruments that govern the functioning of community forest in Nepal. According to forest policy, any part of the state forest can be handed over to the local communities who have access to and have been using the patch of the forest over a long period of time. The community has full authority to make decisions on the issues of forest management and utilization, as well as fund management. It gets all revenues from the forest and is supposed to spend the income on forestry and local development activities. The community participatory forestry approach has been successful in managing forests, including biodiversity.

Rattan is an important NTFP in Nepal. *Calamus tenuis* is an endemic and widely distributed species throughout the lowland areas of the country. Rattan has been locally used for various domestic purposes but largely as basketry and furniture. In the past, rattan was seriously degraded as a result of lack of conservation initiatives, improper management and unscientific non-sustainable harvesting, immature collection and overexploitation by the farmers and habitat destruction in most part of the country. It is estimated that more than 60 percent (roughly 10 000 ha) of natural rattan forests have vanished forever. Despite these negative figures, the recent community forestry programmes have brought a positive change in the conservation and management of forest resources, including the management of NTFPs such as rattan. Currently, six Community Forest User Groups (CFUGs), three protected areas (national parks and wildlife reserves), three religious groups, three institutions (schools and herbal farms) and some private farmers are contributing to conserving rattan in Nepal.

The Sati Karnali community forest is located in the far western Terai of Nepal.

The total area of this community forest is 298.5 ha, including 170 ha of *Calamus tenuis* and benefits 5 352 inhabitants (892 households). The food supply situation shows that 16 percent of households' production can support only three months, 6 percent for three to six months, 20 percent for six to nine months, 10 percent for nine to 12 months and 48 percent for more than a year.

A recent case study focused on the Sati Karnali Community Forest User Group (SKCFUG). It was handed over to communities in 1994 and in 1996 the Rattan Management Plan (RMP) was prepared. After implementing the RMP, production of rattan has increased by 15 percent, where income earning was 25 percent in each subsequent year, and the rattan forest has fully revived. The present average growing stock of cane is 19 840 stems per ha with annual production of 6 to 8 tonnes of cane (dry weight) per ha. CFUG auctions rattan on a weight basis at a minimum rate of Rs30 (US\$0.40) per kg. They make about Nrs210 000 (US\$3 000) per ha annually, which gives about 3.5 million rupees (about US\$45,000) per year. For example, in 2002, SKCFUG earned a total of Nrs4 657 970, out of which Nrs3 871 402 (83.1 percent) were from rattan alone.

Rattan is managed utilizing indigenous knowledge for regulating access, utilization and distribution of benefits in the community.

The case study concluded the following.

- Community forestry in Nepal has boosted NTFPs (such as rattan) as a major income-generating source and participatory management practice is one of the successful methods to manage rattan and other forest products in Nepal.
- SKCFUG has contributed significantly to social development, such as health, education, agriculture, rural finance and capacity building.
- The diversification of rattan species to develop enterprises and value addition works are challenges ahead of SKCFUG.
- Degraded rattan forest can be restored through participatory management and use of community funds for forest and social development work.

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"Riches of the forest: for health, life and spirit in Africa"



## NIGERIA

### Raffia and barkcloth weaving and palm wine

The weaving of raffia in Akwa Ibom is a small-scale industry that has adapted well to modern demands. In a village in Abak, the weaving was and is still a craft conducted by boys to produce money for clothing, education and so on.

Raffia threads, *ndam*, consist of the outer skin peeled from fronds of the raffia palm, knotted together in a continuous length. At first, the threads are green in colour, but they dry to a light brown. Formerly, vegetable dyes were used, but now modern dyes are employed to make coloured threads for weaving. The weaving technology is extremely simple. A slanting loom, *akpara ekpat*, made of lengths of palm midrib is used, alongside other weaving tools such as a hardwood beater or sword, *awat ekpat*; a shuttle, *okop ekpat*; a heddle, *nisong ekpat*, made from two lengths of palm midrib bark and raffia threads.

Products of raffia weaving include lengths of cloth used for wrapping headloads, making garri sacks, covering mattresses and seats of the deckchair type. The major product is the raffia bag used by hunters and farmers for game and farm produce. In the past, raffia cloth was used as clothing and, to this day, special wrappers with striped patterns are worn on ceremonial occasions by chiefs and dancers.

Barkcloth is a non-textile fabric made from the bark of a tree. In the forest region of southeastern Nigeria, barkcloth was the normal apparel used for wrapping precious

objects, such as skin-covered masks and for storage. The use of barkcloth declined drastically as soon as imported cotton became available. Today, it only survives in a few ceremonial contexts.

One of the central features of traditional and ceremonial life in the southeastern part of Nigeria is the drinking of palm wine; in fact, no social event of any importance is truly complete without it. The communal drinking of palm wine is an overt act of fellowship and expresses a stranger's good intent.

The Ibibio tap their wine from the raffia palm (*Raphia* spp.) while elsewhere the oil palm (*Elaeis guineensis*) is exploited. A bamboo ladder is used to climb the tree and a flat-ended chisel-like knife, *enuon*, is employed to cut the male inflorescence stalk. The wine is collected in a special tapping pot but in the case of the oil palm, "up wine" is obtained by using a climbing rope to climb the tree, and the incision is made in the inflorescence with a curved knife. "Down wine" is obtained by felling the tree and tying a container to the top end after all the leaves have been removed.

Everywhere, wine is collected twice daily, in the morning and in the evening. The wine may be consumed fresh from the tree, or on the first, second or third day after tapping. The rate of fermentation is so rapid that by the second day, the drink is fairly intoxicating and by the third day it is sour and of considerable potency. The people of Obudu in the Cross River state developed techniques of storing and increasing the alcoholic content of palm wine, but elsewhere, wine older than three days is distilled into spirits – *ufofop* or *kaikai*, which are also commonly used in traditional ceremonies.

Biologists and nutritionists also talk of the nutritional value of palm wine. The natural drink, they say, contains a lot of yeast and minerals rich in vitamins that nourish the body and helps it to relax. (Source: Akwa Ibom state [Nigeria], 6 February 2007.)



## PARAGUAY

### Ecoturismo en el Parque Nacional Ybycuí

El Parque Nacional Ybycuí posee una rica calidad paisajística, con exuberantes arroyos y saltos que le proporcionan una cualidad ambiental única, para uso turístico. Fue designado como Parque Nacional en el año 1973 y cuenta con una extensión de 5000 hectáreas. Se encuentra ubicado a 150 km de Asunción, en el Departamento de Paraguari.

El Plan de Ecoturismo del Parque ofrece al visitante varias opciones para disfrutar de su estadía, ya que existe una superficie boscosa que protege la rica fuente de agua dulce.

El parque se subdivide en zonas de manejo: de uso extensivo, histórica, de uso especial, de recuperación, primitiva y primitiva intangible, se puede encontrar una descripción de los posibles usos de cada zona en el centro de visitantes que se halla ubicado en la zona de uso intensivo (área recreativa).

La vegetación boscosa y los cerros ofrecen un paisaje variado. Los senderos existentes dentro del bosque permiten apreciar la vida silvestre del lugar y conocer a las especies de animales y plantas características de la región. El visitante encuentra aquí espacios para el descanso, deportes al aire libre y la posibilidad de disfrutar de la belleza de sus arroyos y cascadas.

Conserva gran parte de la flora de la Ecorregión Selva Central, presentando ejemplares representativos en vías de extinción. Entre las especies vegetales se encuentran helechos gigantes, palmeras, cactus, tunas, bromelias, cañas, orquídeas, camalotes, entre otros.

Se presentan algunos afloramientos de rocas correspondientes al grupo de la cordillera de Caacupé, formaciones Paraguari, Cerro Hú y Tobatí, constituidas por areniscas sedimentarias formadas en el silúrico, hace aproximadamente 400 millones de años.

A la entrada del parque se encuentra la primera fundición de hierro del Paraguay y de Sudamérica, conocida con el nombre de «La Rosada», construida entre los años 1850 y 1854 bajo el gobierno de Don Carlos Antonio López. Sus hornos proveían la materia prima para la construcción de embarcaciones y maquinarias. La Rosada funcionó hasta 1868, año en que fue destruida por las tropas uruguayas y brasileñas durante la Guerra de la Triple Alianza.

La zona histórica fue reconstruida en 1973 y restaurada en el año 1998, consta de un museo histórico y cultural que permite interpretar a través de las piezas conservadas la tecnología de la época y el ingenio humano desarrollado para la elaboración de los primeros elementos metálicos en el Paraguay.

A dos kilómetros de la entrada, por camino de tierra, se llega hasta el área recreativa del parque, donde se puede realizar senderismo, recorriendo los cuatro senderos y los saltos de agua, como el Mbocaruzú, Yryvucuá y Karaimi o travesía por agua en el Arroyo Corrientes.

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## THE PHILIPPINES

### Upland dwellers tapped to manage forest resources

The country's forests are home to 22 million Filipinos. Among the Philippines' poorest, these upland dwellers have been partly blamed for the depletion of the forest resources. Lately, however, several government and non-government groups, including the Department of Science and Technology's Forest Products Research and Development Institute (DOST-FPRDI), have begun to look at these communities, no longer as an ecological nuisance but as a potent force in forest rehabilitation and protection.

A step towards this direction was the project funded by the Japan-based International Tropical Timber Organization (ITTO) where FPRDI researchers surveyed and trained forest dwellers in the provinces of Aurora, Western Samar, Surigao del Sur and Palawan.

They documented the communities' economic activities, especially how they collect, process and market NWFPs such as rattan, vines, bamboo, erect palms, honey and almaciga resin. "After surveying ten settlements in these provinces, we found that forest communities, many of which consist of indigenous people, depended on forest products as a major source of income," says project leader Arnaldo Mosteiro. "They were diligent and creative, producing all sorts of handicrafts

– mats, hats, fans, bags, brooms, house decors – from every available raw material. Ignorance, however, stifles their productivity and jeopardizes their raw material base. For instance, farmers used very crude methods to tap resin from almaciga trees. In the process, the trees are maimed and ultimately killed.”

“Over the years, FPRDI has trained upland dwellers on the wise use of non-wood forest resources. We have shared technologies that would improve their product quality and productivity, as well as livelihood skills that would lessen their dependence on the forest,” said FPRDI Director Florence P. Soriano. “Last year, for instance, DOST conducted a project that taught B’laan tribal women in South Cotabato and NPA rebel returnees in Samar to make handmade paper and handmade paper novelty items.”

“The FPRDI-ITTO survey alerts us that we need to link up with all concerned groups so that we can give these communities the best business support and environmental education that we can. We have no other choice. If we are serious in saving our forests, we have to be serious in empowering the people who live in them,” Soriano concluded. [Source: *Sun Star* [The Philippines], 15 February 2007.]

## ROMANIA

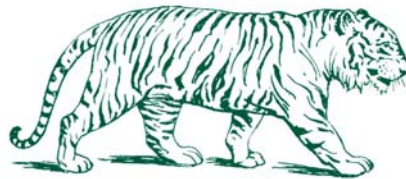
### Romanian forestry sector to receive funds of over one billion euros

The Romanian forestry sector will receive over one billion euros (about US\$1.30 billion) of European funds from 2007 to 2013, the Ministry of Agriculture said on Tuesday. Once the 2007–2013 National Rural Development Plan is approved by the European Commission, Romania will receive rural development funds worth 8.022 billion euros (about US\$10.43 billion), with about one billion euros of this to be earmarked for the forestry sector.

The money will be used by Romania for staff training, the improvement of the forest’s economic value, the increase of the forestry products’ added value, infrastructure, and planting forests on farm and non-farm land.

Starting in 1956, Romania was the only country in the world whose forests had ten-year management programmes and they were entirely planned according to a unitary design; the Romanian school of forest planning was internationally recognized.

In the European context, Romania stands out because of the high biodiversity of its forestry ecosystem, especially riverside coppices, plain and hill mixed foliage forests, beech and resinous mixed forests, natural spruce fir forests under the aspect of genetic diversity, placing Romania in the top echelon of European countries. [Source: People’s Daily Online [Beijing, China], 10 January 2007.]



## RUSSIAN FEDERATION

### Ecotourism in the Russian Far East

The 1990s brought an increase in ecotourism activities in the Russian Far East (RFE) after growing interest in the region from the global environmental movement and greater international demand for adventure tourism. Ecotourists were attracted to the RFE by the Siberian tiger, rare plants, wild salmon rivers, vast intact forests and a unique marine environment.

Ecotourism brought a means of conservation and subsistence to a region that was heavily dependent on resource extraction. Local communities and indigenous groups also benefited from the increase in tourism by building accommodation and developing their own ecotourism activities. For the indigenous people of Udege, living in the forests by the Bikin and Samarga rivers, revenue from Japanese ecotourists provided essential financial support for a period when they were dependent on hunting and fishing.

But ecotourism is not synonymous with conservation. Some Zapovednik (Russian state nature reserve) managers have been compelled by the Government to set up unsustainable ecotourism activities in restricted zones, jeopardizing some of the Russian Federation’s most valuable natural areas such as the Geizer’s Valley in Kamchatka and the Marine Preserve in Primorye. Tourist pressure and industrial interests in these regions have led to a series of lengthy court cases, public discussions and environmental protests from Lake Baikal to the Kamchatka peninsula. Even the conservation status of a

United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site, awarded to the Baikal watershed, Bystrinsky Park and Central Sikhote Alin, may not guarantee their future conservation.

The positive and negative effects of tourism are a controversial issue. One group that seems to be benefiting from it is the Eveny people, an indigenous community in the Bystrinsky natural park of Kamchatka, a veritable ecotourist’s paradise that is now gaining popularity as a destination for cultural tourism.

Originally reindeer herders and people who reverse the larch tree, the Eveny people have always had an intimate connection with the taiga and tundra. For the last three years they have been organizing ethnocultural tourism in their community. Ecotourists live in the traditional way of the Eveny people and are taught handicrafts such as birch bark carving and skin tanning. [Source: extracted from an article by Stephan Nielsen and Anatoly Lebedev in *Taiganews*, 57, Winter 2006.]

[Please also see page 62 of *Non-Wood News* 13.]

### Growing market for wild fungi and berries

Russian companies actively develop harvesting and processing of wild fungi (chanterelles, boletus), berries (cranberries, lingonberries, bilberries) and nuts (cedar nuts). The profitability of this business in the Russian Federation exceeds 15 percent, and in the case of export to the EU countries, 100 percent. In contrast to cultivated fungi and berries, wild ones do not require expenditures for cultivation, they enjoy high demand in the West, and do not need large initial investments. Since there are no official statistical data on the volume of the market for wild fungi, berries and nuts in the country, it can only be estimated at a hundred million dollars.

According to data provided by the agency of Tomsk province development (ARTOT), market capacity in this region only accounts for 138 000 tonnes per year (US\$370 million in 2005). Besides the Tomsk province, production and processing of wild fruits, fungi and nuts are significant in other Siberian territories and northern regions of the country. The harvesting season lasts usually from June through October. During the season more than 30 intermediaries are involved in buying wild products from pickers and the Tomsk food company AMK, which controls more than 50 percent of the



local markets and even has its own forest land specially for harvesting fungi, berries and nuts.

The company exports several thousand tonnes of edible boletus, chanterelles and cranberries per year to Italy and Sweden. Some companies export raw products and salted or boiled chanterelles, but also more advanced quick-frozen products. According to the President of the Ledovo Group, cultivated and wild fungi sectors are not competitors. One of the major issues in the wild fungi sector is the instability of supply which strongly depends on climatic conditions and the ecological situation.

Consumption of fungi in the Russian Federation is a national tradition and therefore this market has prospects for considerable increase, but only if commercial cultivation on the industrial scale develops. Then, possibly, the cultivated analogues of wild fungi could extrude those growing wild. In the majority of European countries, the United States of America, Australia, Japan and China such fungi are no longer collected and buyers do not see a large difference between wild and cultivated products. The same has already occurred with blueberries, which are cultivated on a large scale in Europe, North and South America and Australia, or cranberries, commercially grown in the United States of America, whereas most cranberries used for processing in Europe come from Russian forests. [Source: FreshPlaza [the Netherlands], 29 January 2007.]



**The latanyé project: development of the latanyé broom industry in Saint Lucia**  
Latanyé (*Coccothrinax barbadensis*) is a

palm native to Saint Lucia and its leaves are used to make crafts and brooms.

Success in latanyé development was achieved by:

- latanyé being identified as both ecologically vulnerable and as a plant used to maintain the livelihoods of rural communities;
- carrying out research and documentation of the appropriate and successful methods to: propagate the species, establish cultivated plantations and sustainably harvest latanyé leaves; and
- collaboration among agencies that impact on the latanyé plant and broom production.

A socio-economic study by Lyndon John in 2001 detailed the vulnerable nature of the latanyé broom industry in which there was a high demand for latanyé brooms, an overharvesting of latanyé leaves and a consequent scarcity or unavailability of leaves. Latanyé brooms are bought locally and are also sold elsewhere, including in Barbados, Saint Vincent and the Grenadines, the Bolivarian Republic of Venezuela, United States Virgin Islands and Saint Martin. However, the scarcity of leaves resulted in the reduction of the quantity and the quality of brooms produced.

To ensure conservation of the latanyé plant, the Forestry Department and latanyé farmers used wildlings to establish plots on government and private holdings. There were also experimental trials to germinate the latanyé seeds. But these two strategies were costly. Research at the Forestry Department in 2002 determined a pregerminative method that gave 90 to 100 percent germination. This method also reduced the time for germination of seeds and resulted in the production of a greater number of plants with uniform age and less mortality.

Another experiment was carried out (from September 2004 to September 2005) to determine the optimum harvesting regime of latanyé leaves in a plantation. Every four months, four treatments of 30, 40, 50 and 60 percent removal of leaves were undertaken in three blocks using the experimental design of randomized complete blocks. The results indicated that:

- there was a clear trend with higher removal of leaves leading to fewer leaves remaining;
- greater productivity of leaves in the rainy season in blocks where there was greater exposure to light; and

- greater productivity of leaves in the dry season in blocks where there was less exposure to light.

The results suggest that using a harvesting intensity of 40 percent of leaves per plant present in the dry season and 50 percent in the wet season, would result in the optimum and sustainable production of latanyé leaves.

Apart from research on the appropriate silvicultural and agronomic practices, the latanyé project also examined the economic aspects of production. The Forestry Department determined the cost of production to establish one acre (approximately 0.4 ha) of a latanyé plantation and, in collaboration with the Corporate Planning Unit of the Ministry of Agriculture, determined that the production of latanyé leaves and sale of latanyé brooms was economically feasible. There was also collaboration with other government services such as the Extension Service, Ministry of Commerce, Ministry of Planning, Saint Lucia Bureau of Standards, latanyé plant and broom producers and exporters, and NGOs for product development and exploration of markets for the sale of latanyé brooms. The Forestry Department and the Extension Service provided potted latanyé plants and technical assistance to latanyé farmers that resulted in the successful establishment of 34 plantations of pure and mixed plots of latanyé on farmers' holdings. The average size of a plantation was 1 acre (0.4 ha).

All of the above-mentioned organizations are part of the Latanyé Task Force. The plan of work related to latanyé broom production is guided by the mandate of this task force.

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(The project report is available from FAO's NWFP home page under "Readers' Research".)



#### **Tiwai Island and the threat of the bushmeat trade**

The humanitarian dilemma created in Sierra Leone and Liberia over the last 15 years has resulted in refugees and forced migrations. The subsequent crippling of domestic agricultural supplies and the limited access to food provided by aid organizations have meant that refugees



and internally displaced persons have had to rely on wildlife as an alternative and supplementary food source. Protected areas tend to be the most heavily affected, because animals there become easy targets for poachers, and park guards are either victimized or forced to flee for their own lives.

Tiwai Island Wildlife Sanctuary, a community-based ecotourism project in the south of Sierra Leone has certainly felt this pinch. Since research and ecotourism activities began on Tiwai in 1982, until the outbreak of the civil war in 1991, virtually no hunting of any kind occurred and in January 1987 the island became a legal game sanctuary in which all hunting was prohibited. During the war, financial support to Tiwai was terminated and the island was inaccessible to researchers. Local staff and village communities suffered tremendously and several people lost their lives. At the end of the war, the potential for increased threats to biodiversity nationwide was greater than ever, especially for areas like Tiwai.

The manifestation of peace in Sierra Leone could, eventually, lead to sustainable development or to an intensification of unsustainable resource exploitation, such as bushmeat hunting by large numbers of displaced refugees and host communities who have had their livelihoods undermined. In the immediate wake of the war, Tiwai ultimately became exposed to intensive anthropogenic activities such as trapping and hunting for bushmeat and habitat destruction for agricultural services. In addition, intensive poaching was carried out on the island during the civil conflict.

The Environmental Foundation for Africa (EFA) first became aware of poaching problems on the island during field visits in 2000. Since then, EFA staff members have worked with the two chiefdoms bordering the island to revive hopes for restoration of the wildlife sanctuary. Following community meetings, the chiefs of both chiefdoms imposed a ban on all hunting activities on the island and formed an interim project committee to mobilize restoration efforts. The rapid resumption of ecotourism and of wildlife and ecological studies, prompted by EFA, has helped to discourage unsustainable activities and has started to generate a much needed cash flow to benefit local people. However, even as community support grows for the project, day-to-day needs and expectations

about the project's benefits pose serious challenges.

Poaching is still prevalent on the island and its eradication is one of the greatest challenges facing Tiwai. The community recognizes this as a problem with relevant community meetings identifying the predicament of bushmeat hunting on Tiwai, but the way forward is unclear. Poaching ultimately presents a serious threat to the island's future as a sanctuary. It is endangered as an ecotourist destination, as visitors hearing gunshots often report negative experiences, which can lead to bad press and ultimately ruin Tiwai's reputation as an idyllic retreat for future tourists. International research on the island, which was recently restarted in January 2007, is also easily undermined by the prevalence of hunting. Ultimately, primates need to be alive and unafraid of humans, to be considered useful research subjects.

International researchers have been recognized as the most financially profitable visitors to Tiwai and without their presence the project will struggle to survive in future. Tiwai, through tourism and research, has the potential to raise great revenue for its surrounding communities, but hunting on the island could well undermine this. Thus, the few who are currently poaching on Tiwai are doing so at the expense of the greater community. If the issue of poaching is not addressed properly, it may undermine the whole project. A one-of-a-kind ecosystem could be lost and the communities that surround Tiwai could ultimately lose a unique livelihood opportunity. [Source: extracted from an article by Paul Munro, Environmental Foundation for Africa [in *Africa News*], 27 February 2007.]

## THE SUDAN

### Road to prosperity is paved with gum

Throughout its history, the Sudan has been racked by fighting and instability, largely because of ethnic divides between its Arabic north and African south. A successful Canadian land developer, David Tennant, first travelled to the region in January 2005, just after the south signed the Comprehensive Peace Agreement with the northern government of Khartoum. He was looking for a way to create economic activity, train people and invest profits back into the community.



Gum arabic

Two years later, what began as a small humanitarian project is giving birth to an industry. "I almost accidentally fell into a product called gum arabic," says Tennant. "We exported it through the south of the Sudan and we were the first people to do so."

Gum arabic is the hardened tree sap that bleeds out of acacia trees. It is in countless ordinary products – sweetening candies, coating aspirins and prolonging the fizz in soft drinks. It is so prized that the United States of America still imports gum, despite economic sanctions against the Sudan since 1997. For thousands of years, Arab traders from the more developed north have taken the product to the world market, hence the name gum arabic. The northern Sudan exports 70 to 90 percent of the world's supply through the partly state-owned Gum Arabic Company.

But according to the Ministry of Export and Trade in the south, 80 percent of that dried resin actually comes from the south where the trees are abundant even though the southern Sudanese have seen little benefit.

Consequently, Tennant began touring the parched countryside, meeting with business people, politicians, traders and farmers. His idea caught on – that shipping gum out of the south to improve the life of the southern Sudanese could be more than just a dream.

Tennant raised money in Canada, invested a lot of his own and set up the first gum company in the southern Sudan, stipulating that future profits would fund humanitarian projects. A year and a half later, the gum company delivered its first shipment – 37 tonnes of certified gum – to buyers in Dubai. Tennant calls the achievement a miracle. "Before the peace agreement, the issue of gum was something that was a dream," says Moses Kuch, Deputy Director for External Trade,

Supply and Commerce. "We never realized that we could develop it and own it."

This month, on his third trip to Juba, Tennant returned as a special adviser to the Ministry of Trade. Talk has turned to border restrictions, certification, quality control, farming cooperatives and nurseries, as well as training, education and conservation at the local level. Millions of dollars have started flowing from the Government and national bank to open up other gum-rich areas.

Another priority is setting the record straight on where so much of the best gum in the world actually comes from. There is even a new name. The Government now calls it gum Africa. But in a country where disputes over resources spark bloody conflict, it is a regional initiative that might not go over so well in the north. The southern Sudanese officials say that is not stopping them. "Indeed it will be an economic blow to the people of the north but it's our right. The gum is being produced in our territory and we need to think of how we can best manage our resources."

But how to convince major buyers such as Coca-Cola to switch suppliers? A chemical engineer, who accompanied Tennant to the southern Sudan, says it comes down to quality. "The gum that's coming out of the southern Sudan has a reputation of low quality because it has never been regulated, there's no grading system, and most of it is smuggled out through neighbouring countries," says the University of Western Ontario's Mohammed Rahbari. "I think we should be able to put together quality control systems and educate the farmers and buyers at the local markets of what exactly we need to ensure we don't turn buyers away from this gum."

Last month, Tennant sent Rahbari and a team from the gum company into the rural southern Sudan to show harvesters exactly what they are looking for – larger chunks, free from tree bark and other resin.

The establishment of a gum industry in the south is already improving working conditions and is a far cry from the past.

Dealing with the gum company guarantees better prices. It also gives harvesters a sense of ownership and freedom. Aside from Tennant and Rahbari, all the company's top employees are young southern Sudanese, including one Sudanese-Canadian. (Source: extracted from an article by Andrea Huncar, *The Hamilton Spectator* [Canada], 10 March 2007.)

## UGANDA

### Uganda honey gets EU nod

Uganda's honey has been selected to be the African flag carrier to the European Union (EU) market, the Uganda Export Promotions Board's executive director, Florence Kata, has said. "Uganda is required to supply 60 tonnes of Ambar (Gold) honey. The consignment is to be launched in London in May," Kata said. She added that the honey would get to supermarkets through a network of buyers across Europe.

"However, after the launch, we want the buyers to be assured of constant supply for the next three years, during which we should be able to gain experience and intellectual ability of supplying to larger markets," she said.

"The international price for honey is U sh1 600. The firm proposed to offer U sh1 800 at the farmgate level and will only collect honey that is more than 500 kg. However, the prices are all still being negotiated," Kata said. (Source: *New Vision* [Kampala], 15 March 2007.)

### Aloe vera farmers to get Ush1 billion plant

The Uganda Commercial Aloe Vera Farmers Association and a United States firm have raised US\$600 000 (about Ush1 billion) to put up a processing plant. The plant will process the multimedicinal plant into various health products – cosmetics, toothpaste, health drinks – and the residues will be turned into animal feeds.

Ali Sessanga, the project director, explained that the plant would help farmers sustain the export market, adding that the machinery was acquired through a long-term loan. Aloe vera has not been processed in Uganda before. Sessanga said the machine has the capacity to crush 60 144 acres (approximately 24 339 ha) of aloe vera per month. Uganda's aloe vera area is 912 acres (approximately 369.07 ha), which means that farmers should produce more of the crop. (Source: *New Vision* [Kampala], 14 February 2007.)

## UNITED ARAB EMIRATES

### New postage stamps on biodiversity in the United Arab Emirates issued

Emirates Post, in association with Environment Agency – Abu Dhabi (EAD), has issued three sets of postage stamps, illustrating the flora and fauna of the

United Arab Emirates, some of which are endangered species.

The commemorative stamps are meant to highlight the biodiversity of the Emirates and raise awareness among the public on the need to preserve flora and fauna endangered by the degradation of their habitats, overgrazing and shrinkage of vegetation.

One set of stamps features most widespread wild plants, while other two sets portray desert reptiles and gazelles, respectively. (Source: *Dubai City Guide* [United Arab Emirates], February 2007.)



*Myrica gale*

## UNITED KINGDOM

### Myrica gale makes a comeback

The Vikings used it as a stimulant before going into battle, the Celts used it to flavour their beer and Scottish Highland housewives used it as an insect repellent. Now bog myrtle (*Myrica gale*), or sweet gale as it is also known, is experiencing a new lease of life in a range of natural products.

The pharmaceutical giant Boots has spent UK£700 000 researching the use of bog myrtle, which could have an important role in the Scottish Highland economy. So far, the essential oil of sweet gale in the firm's new sensitive skincare products has all been harvested from wild outcrops of Scottish bog myrtle. Highland Natural Products, Boots' research partner in the project, has started work on developing cultivated areas of bog myrtle. The plant occurs naturally in the Highlands but it may be possible to establish plantations in the Highlands, Aberdeenshire and the Borders.

The potential demand for sweet gale oil could result in 500 new jobs and be worth UK£2 million a year to the rural economy by 2016.

However, the people behind the research into the uses of bog myrtle believe the Scottish Executive should be doing more to support research into commercial cultivation

of the plant. Unless more is done, they warn, the chance for a new Highland boom could be squandered, with companies looking to countries such as Poland to develop cultivation of the crop. The research director of Highland Natural Products said: "The main problem in Scotland is there is no policy for developing non-food crops, whereas there is a policy in England and Wales. There does not seem to be much idea of how important these things can be to the rural economy." Both Boots and Highland Natural Products have spent thousands of pounds testing the antibacterial qualities of bog myrtle oil and making sure it is suitable for use on sensitive skins. They say there is a need for government support if the crop is to be cultivated with commercial success.

By 2016 Boots expects to need 10 tonnes of bog myrtle oil a year. The harvested area covers 50 ha, but this will need to rise to 2 900 ha by 2016.

The shrub, which grows on rocky, boggy ground, can be grown on land which is also used for woodland and grazing. One hectare of ground can yield 1 kg of oil. Funding for growers in the initial stages of cultivation is also important and would ensure that the plant could go commercial in years rather than decades.

According to a research associate at the Royal Botanic Garden, Edinburgh, bog myrtle is a wonder herb that is firmly planted in Scotland's history of medicinal plant use. People have used it to treat ulcers, intestinal worms and aching muscles. It is even used as an alternative to hops in beer. "This project is a wonderful renaissance for bog myrtle, which I'm sure will be welcomed by Scotland's hill farmers."

An interim report, commissioned by the Scottish Executive last year to study the benefits of sweet gale cultivation, found that it could generate investment of UKE4.8 million at the farm level and create up to 460 jobs. The Scottish Executive said that farmers who applied for funding with a satisfactory business plan would stand a good chance of receiving support. [Source: *The Scotsman*, 5 February 2007.]



THE UNITED REPUBLIC  
OF TANZANIA

### Bamboo a potential saviour of poor children

The Dar-es-Salaam-based Bamboo Training School has embarked on an operation to train street kids and disadvantaged children from the city and upcountry on how to knit

bamboo and manufacture various products for sale so as to support themselves financially. Mkumba George, a teacher at the school, said that currently more than 60 young people have been trained, 40 of whom are female. Ten of these have formed a working group which operates in locations at Kimara, Mwenge and Ubungu, on the outskirts of the city.

George explained that they are promoting the theme that bamboos constitute money that grows, which they are using to coopt youth into the project. He said that they get raw materials mainly from Kigoma and Mbeya. He pointed out that given the stiff competition in the current business environment, youth can cope successfully only if they are well organized economically and make high-quality, appealing products for sale on the domestic and overseas markets.

The project would also reduce deforestation in the country, since people would use bamboo instead of cutting down trees wantonly for making furniture, and other activities.

George said appreciable success had been recorded in marketing their products locally, but they were unable to meet external demand because of lack of sufficient capital. He said one of the surest ways out of the problem was securing loans, to place them on a sound financial footing. [Source: Sunday Observer, 11 March 2007 [in IPP Media, United Republic of Tanzania].]

### Insect-based industries

While the value of considering insects as "mini-game" or "mini-livestock" may not be immediately obvious, the analogy is compelling. As a forest-based wildlife resource, certain insects can be managed like other animals and have economic potential at least at the subsistence level, if not at higher commercial scales.

Four insect-based industries are of interest in the United Republic of Tanzania:

- the use of insects for human or animal food (entomophagy)
- beekeeping (apiculture)
- silk production (sericulture); and
- trade in collectible insects.

*Entomophagy and apiculture* were of great traditional importance to certain Tanzanian communities, but cultural alienation from time-honoured rituals and excessive, non-sustainable rates of extraction have led to declining dependence on them over the last century. During the colonial and modern age,

entomophagy developed a negative image in large segments of the general public, although the practice survives in various parts of rural Tanzania. But even in areas where insect feasting is accepted, certain groups of insects appreciated as nutritious and delicious elsewhere in the world may be completely ignored, probably for no better reason than traditional oversight, cultural taboos or readily available protein alternatives. The country could easily revive what may have been Africa's strongest apiculture tradition and a potentially substantial national industry that is at present functioning far below its potential.

Although *sericulture and collectibles* do not have strong traditional roots in the Republic, they are now being promoted as potentially rewarding, small-scale economic ventures. Silk production may be most feasible in conjunction with artisan enterprises or export to West Africa, where traditional demand was strong but local supplies have recently declined through deforestation. Given the country's extraordinary biodiversity and wealth of showy often endemic species of insects, their exploitation as a renewable resource for a growing international market of specimen collectors has barely begun, but must also be regulated to assure sustainability. [Source: Springer/Kluwer Academic Publishers, *Forest Entomology in East Africa: Forest Insects of Tanzania*. 2006. Chapter 9, Forest-based insect industries. H.G. Schabel. (With kind permission of Springer Science and Business Media.).]

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### Maine law defines "pure maple syrup"

As Maine's maple sugar season wound down, Governor John Baldacci signed legislation to clarify the legal definition of "pure maple syrup" to help consumers decide whether they are getting the real thing.

The new law sets standards on how much sugar must be in syrup in order for it to be considered pure. It took effect immediately upon the governor's signature on Monday.

The bill was advanced by the Maine Maple Producers. The Maine Farm Bureau said the

new standard helps to protect Maine's maple syrup industry.

Maple sugar producers say that if there is too much sugar in syrup, it can crystallize shortly after sale. The new law helps to ensure that when someone buys "pure maple syrup", that's what they are getting.

Vermont, the nation's No. 1 maple syrup producer, has rules similar to Maine's new standard. Maine is the nation's second-largest maple syrup producer. [Source: BusinessWeek [United States of America], 4 April 2007.]

### Are ramps under threat?

Demand for ramps from celebrity chefs, avant-garde restaurateurs and avid foodies has some experts worried for the future of the pungent wild leeks grown in the hills of Appalachia.

"[Ramps are] becoming harder to find in many areas because they've become so popular," said Jeanine Davis, an associate professor of horticulture at North Carolina State University. Davis said the increase in popularity over the years means that chic big city eateries and their adventurous chefs are vying for the bulbs but "very few people are producing them commercially".

Ramps look much like a spring onion or a scallion, with flat green leaves protruding from a white onion-like bulb. Their flavour and smell, which is said to linger on the breath and skin for days after being eaten, is powerful and garlic-like.

A group in Chicago recently hosted a US\$65-a-plate ramp dinner, considerably higher than the \$6 to \$10 dinners found in most parts of West Virginia every spring.

The ramp plant takes three years to mature to the stage where it is edible, and two more years before it begins bearing seed for reproduction. Although ramps are harvested in the spring, the plants are not mature enough to produce seeds for replanting until autumn. Many foragers who find ramps growing wild in March or April do not return to sow new seeds in September or October, Davis said.

The owner of one of the few ramp farms in the country, Ramp Farm Specialties in Richwood, says that areas off the main roads are pretty well dug up, but ramps are still abundant in the mountains. Her 50-acre (20.23 ha) farm supplies ramps to individuals and restaurants all across the country. The state Department of Agriculture said that ramps are still abundant in the eastern and northeastern parts of the state. [Source: AP in Community

Forest Resource Center [CFRC] Weekly Summary, 12 April 2007.]

### Medicinal fungi in Alaska

Other than consumption as food, forest fungi are also used medicinally. Medicinal fungi found in Alaska are mostly perennial conks of wood-decay fungi that typically fruit on infected mature trees.

Although published documentation of the consumption of edible fungi by native peoples of the Pacific Northwest remains sparse, some woody conks have reportedly been used for medicinal and spiritual purposes.

Less well documented in Western literature, woody sporocarps of other wood decay fungi might be valued for medicinal or spiritual purposes by Native Americans because such use is common among aboriginal societies throughout the Northern Hemisphere and stretches back in time prior to written history. For instance, a strong tea of the "chew ash fungus" (*Phellinus* [*Fomes*] *igniarius*) was used by the Yupik for constipation and stomach troubles and, although birch fungus (*Phellinus tremulae*) that grows on trembling aspen is not reported to have medicinal value, its ashes are mixed with tobacco or snuff.

It is clear that the original inhabitants of our continent should not be expected to divulge sensitive information regarding the use of native flora and mycota in their spiritual traditions. When evidence exists of

this link, it is incumbent upon government agencies that wish to promote harvesting of these products to consult thoroughly with Native Americans about such plans. At the very least, tribes can define areas that should not be harvested for certain species, and this information should be kept confidential. Another issue that government agencies need to address with regard to using this resource is the likelihood that maintaining endemic populations of these fungi in various places will allow for more genetic diversity required to isolate strains with superior medicinal properties for subsequent propagation. Proper compensation to native peoples for bioprospecting on their traditional lands is a very salient issue, as major pharmaceutical companies may some day wish to produce compounds derived from cultivating these species.

In southeast and south-central Alaska, at least 12 species of wood decay fungi have varied potential for commercial harvesting as medicinal fungi: *Fomes fomentarius*, *Fomitopsis officinalis*, *Ganoderma applanatum*, *G. oregonense*, *G. tsugae*, *Hericium abietis*, *Inonotus obliquus*, *Phellinus igniarius*, *P. tremulae*, *Piptoporus betulinus*, *Pleurotus ostreatus* and *Trametes versicolor*. Another, *Schizophyllum commune* (split gill polypore) is the most common and widely distributed mushroom in the world. It grows on the stems, branches, stumps and logs of hardwood species. It is mentioned

*Fomes fomentarius*. The "tinder conk" has one of the most ancient documented histories of use, both for starting fires and as a valued medicinal. It is one of the fungi found in the pouch of the 5 300-year-old "Ice Man" of the Italian/Swiss Alps. It grows on birch and fir (*Abies* sp.) trees throughout the Northern Hemisphere.

*Hericium abietis*. The "conifer coral fungus" not only has medicinal properties, but is a delicious and safe edible mushroom. It must be collected, handled and preserved like other fleshy mushrooms because it is not a woody conk, although it is often found growing on the boles of snags. It is not common and is difficult to propagate artificially in growth chambers, but it is one of the few edible mushrooms that decay conifers. It therefore has potential in southeast Alaska for inoculating hemlock stands where it would be convenient to collect.

*Pleurotus ostreatus*. The "oyster mushroom," like *Hericium abietis*, is a premier edible mushroom with medicinal properties. It grows on alder, aspen, cottonwood and birch, often fruiting in large flushes for some years after the tree has died. As with *Hericium* and all flesh fungi, it is perishable and must either be sold quickly or preserved soon after harvest (commonly by drying).

*Trametes versicolor*. The "turkey tail" is a common, globally distributed fungus with potent anticancer properties. It grows in dense overlapping clusters on the stems and branches of many hardwood species. Cultivated to extract pharmacologically active compounds, wild strains exhibit aggressive growth in artificial culture, hence the species might be a target for bioprospecting.



here, not because of its potential value as an NTFP, but by way of caution. In their heat-sterilized form they have documented medicinal properties but harvesting and marketing wild material could be hazardous. They have been shown capable of producing lung and brain infections (mycoses) when large concentrations of spores or fragments of the fungus are inhaled.

Most of the fungi occur on one or several specific host tree species. Their collection is therefore limited to areas where these trees grow.

Among these fungi, the woody conks can be harvested at any time of the year because they are slow growing and persist for many years. The edible wood decay fungi with medicinal value (*Hericium* and *Pleurotus*) fruit predominantly during the warmer months of spring and summer. They must not only be harvested in season, but preferably when they are fresh and at their peak of development. Sustainable harvest levels have not been analysed for any of these fungi, but their abundance and resistance to harvest pressures are related to the prevalence of their habitat, namely, the host tree species. [Source: extracted from D.A. Pilz, S.J. Smith, J. Schoreder and J.R. Freed. 2006. *Non-timber forest product opportunities in Alaska*. Gen. Tech. Rep. PNW-GTR-671. Portland, Oregon, United States Department of Agriculture, Forest Service, Pacific Northwest Research Station. 79 pp.]



## VIET NAM

### Medicinal herbs vanish in Son La

Medicinal plants, once prevalent on Hoang Lien Son Mountain in Son La province, are facing extinction because of uncontrolled harvesting by traders, according to experts. Most of the plants are being sold to China, from where about 60 percent of the herbs were originally imported.

The plants are popular because they can be sold for hundreds of thousands of dong. Even a small amount of *Coptis sinensis*, *Panax pseudo ginseng* or Ngu Diep ginseng

will raise between VND200 000 (US\$12) and VND500 000 (US\$30). Around 40 species of medicinal plants have completely vanished and at least ten more are on the verge of extinction. If this trend continues, there will be no more herbs left to sell.

Traders, however, are more concerned about feeding their families than worrying about the future of these herbs. One medicine dealer says his family always goes into the jungle when the plants are ready to be picked. On a good day, his family can earn more than enough money to eat and live comfortably for months.

The director of Hoang Lien Son National Park admits this is a major problem in the area; it is difficult to stop dealers because there are not enough forest officials to police the more than 10 000 households living in or around the park.

Stricter penalties are being requested to curb the uncontrolled trade of these plants to protect them for future generations. [Source: *Viet Nam News* [Viet Nam], 16 April 2007.]



## ZIMBABWE

### Promotion of wild plant foods

The University of Zimbabwe has started a project to promote wild plant foods, which can contribute substantially to household food and livelihood security for communities dotted around the country.

The project, which is being carried out in the Buhera district of the Manicaland province, is coordinated by Dr Maud Muchuweti of the Department of Biochemistry and a team of other experts in the field of food, nutrition and family and biological science. The Kellogg Foundation funded the project through a grant.

"We want to create more awareness about the value of indigenous wild plant foods and promote their effective utilization," Dr Muchuweti said. "Wild plant foods are effective as a survival strategy. We are identifying plant foods that are traditionally used by people in Buhera. We are documenting how the foods are prepared and preserved as well as their nutritional content."

This is a major milestone in the development of cultural information that will provide an authoritative look at many neglected food sources that can contribute to food security, agricultural diversification and income generation. It puts Zimbabwe on a firm footing in line with the Convention on Biological Diversity.

Wild plant foods are still being consumed in Zimbabwe and in most parts of Africa despite the threats of urbanization, environmental degradation, loss of indigenous knowledge regarding their identification, preparation and preservation and other factors.

The university project will involve identifying wild and famine plant foods, their preparation and preservation, nutrient analysis, and cataloguing and documenting other uses of wild plant foods to enhance livelihood security. According to Dr Muchuweti, commercial crops pose a threat of genetic erosion to indigenous food plants. Reduced exploitation of wild and famine plant foods is very unfortunate as some local foods may have better nutritional value than commercial ones. For example, muchakata or muhacha (*Parinari curatellifolia*), a medium to large evergreen tree which produces yellow-brown fruits (*hacha*) from May to November can be used to prepare "Mukandabota", a kind of porridge.

Communities dotted around Zimbabwe are rich in information pertaining to various aspects of how wild plant fruits, vegetables and tubers can be identified, prepared and preserved. Wild fruits and berries found in Zimbabwe include *checheni*, *chechete*, *nhunguru*, *matamba*, *mapfura*, *maroro*, *masau*, *matohwe*, *nhengeni*, *tsambatsi*, *umqokolo* and many others that can, among other things, contribute to the prevention of cardiovascular diseases. Wild vegetables include a variety of okra types – *derere mowa*, *derere hosi*, *derere njeje*, *derere nama* and other vegetables such as *bupwe*, *chipondamasvinya*, *nyevhe* and many others. Tubers include *chinyembanyemba*, *garidye*, *chifumuro*, *madhumbe*, *mufarinya*, *tsenza*, *tsangadzi* and numerous others that have both medicinal and nutritional values.

Such foods form an integral part of the daily diets of many poor rural households. Wild foods are a source of important vitamins, minerals and other nutrients that complement the staple crops eaten by many of the more vulnerable people, including children and the elderly.

The importance of a wide range of wild plant species – including roots and tubers, leafy vegetables and fruits – needs to be documented in a botanical database for future generations.

The university project is also documenting an assortment of wild edible mushrooms, edible grass and seeds from communities in Buhera. [Source: *The Herald* [Harare], 7 February 2007.] ♣



## GLOBAL REPORT CITES PROGRESS IN SLOWING FOREST LOSSES

A number of regions in the world are reversing centuries of deforestation and are now showing an increase in forest area, according to FAO's *State of the World's Forests* report. The report underlines the positive effects of economic prosperity and careful forest management in saving forests, noting that over 100 countries have established national forest programmes.

Global forest cover amounts to just under 4 billion ha, covering about 30 percent of the world's land area. From 1990 to 2005, the world lost 3 percent of its total forest area, an average decrease of some 0.2 percent per year, according to FAO data.

From 2000 to 2005, 57 countries reported an increase in forest area, and 83 reported a decrease. However, the net forest loss remains at 7.3 million ha per year or 20 000 ha per day, equivalent to an area twice the size of Paris.

Ten countries account for 80 percent of the world's primary forests, of which Indonesia, Mexico, Papua New Guinea and Brazil saw the highest losses in primary forest in the five years from 2000 to 2005.

In Asia and the Pacific, net forest area increased in that same period, reversing the downward trend of the preceding decades. The increase was mainly in East Asia, where large investments in forest plantations in China were high enough to offset high rates of deforestation in other areas. The net loss of forest area actually accelerated in Southeast Asia between 2000 and 2005.

Rapid economic growth may help to create the conditions for sustainable forest management, the report said. Forest institutions in the region are getting stronger in a number of countries, and the trend towards more participatory decision-making continues. On the other hand, illegal logging is increasing in some countries. Forest fires may increase in severity if the global climate continues to become warmer.

Forests are obtaining political support and commitment at the highest levels in Africa. Latin American countries have formed networks to fight fires, to increase the effectiveness of protected area management and to improve watershed management. These measures are expected to improve forest management in the two regions.

Africa and Latin America and the Caribbean are currently the two regions with the highest losses. Africa, which

accounts for about 16 percent of the total global forest area, lost over 9 percent of its forests between 1990 and 2005. Latin America and the Caribbean, with over 47 percent of the world's forests saw an increase in the annual net loss between 2000 and 2005, from 0.46 to 0.51 percent.

Europe and North America showed net increases in forest area over the reporting period. [Source: FAO Newsroom, 13 March 2007.]

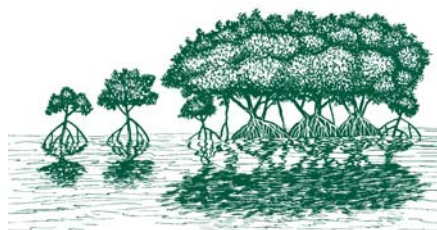


## BORNEO CONSERVATION DEAL SIGNED

A tri-nation deal has been signed to protect 200 000 km<sup>2</sup> of rain forest on the island of Borneo. Malaysia, Indonesia and Brunei Darussalam have pledged to protect the area, known as the "Heart of Borneo".

The area is considered one of the most important sites of biodiversity in the world, home to thousands of species. It is threatened by plantation and logging companies, as well as farmers, and researchers say half of the original forest has already been lost.

The agreement, known as the Heart of Borneo Declaration, aims to put an end to this, and protect an area prized by conservationists. [Source: BBC News, 12 February 2007.]



## COUNTDOWN 2010

Countdown 2010 is a powerful network of active partners working together towards the 2010 biodiversity target. Each partner commits efforts to tackle the causes of biodiversity loss. The Secretariat – hosted by the World Conservation Union (IUCN) – facilitates and encourages action, promotes the importance of the 2010 biodiversity target and assesses progress towards 2010.

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<http://www.countdown2010.net/>**



## RESERVA DE LA BIÓSFERA UNIRÁ PARQUES NACIONALES DE CHILE Y ARGENTINA

La nueva y primera Reserva de la Biósfera Transfronteriza, «Bosques Templados Lluviosos de Los Andes Australes», unirá parques nacionales de Argentina y Chile, con una superficie superior a 4 millones de hectáreas y permitirá conservar y preservar de mejor forma bosques nativos no intervenidos.

Así lo destacó el Ministro de Agricultura, Álvaro Rojas, quien junto al Intendente de la Región de Los Lagos, Jaime Bertín, y la directora ejecutiva de la Corporación Nacional Forestal (Conaf), Catalina Bau, firmarán este documento en que se solicita oficialmente a la Unesco, por parte de Chile, la creación de esta reserva.

Uno de los aspectos más relevantes para Rojas es que organizaciones internacionales como la World Wildlife Fund, The World Bank y The World Resources Institute, han identificado los bosques templados lluviosos de Sudamérica entre las 200 regiones del planeta que deben ser resguardadas por su contribución única a la biodiversidad mundial.

Por su parte, Bau explicó que la biodiversidad inserta en esta nueva reserva de la biósfera, cuenta con familias endémicas de plantas y animales, entre los que se cuentan especialmente las especies arbóreas más longevas del mundo, como el alerce y la araucaria, y entre los animales, como el marsupial más primitivo del planeta, el monito del monte.

Fuente: El Mercurio, 28/3/07 en INFOR, 29 de marzo de 2007.



## ESTABLISHMENT OF A NATIONAL PARK IN FRENCH GUIANA WILL ALSO ENHANCE PROTECTION IN BRAZILIAN AMAZONIA

Fifteen years after the process was begun, on 28 February, a decree established the Amazonian Park of Guiana, in French

Guiana. With almost 2 million ha under full protection and surrounded by a sustainable development zone of nearly 1.3 million ha, the area is the largest French conservation unit and it will become part of the complex formed by the Tumucumaque Mountains National Park in Amapá, and two state-protected areas in Pará, established in November last year: the Maicuru Biological Reserve and the Grão-Pará Ecological Station.

"In all, a little over 11 million ha of contiguous Amazonian lands will be under full protection, becoming the largest contiguous fully protected area of tropical forest on Earth," commemorated the Secretary-General of WWF-Brazil, Denise Hamú.

These three Brazilian full protection conservation units and the recently established national park are also part of an even larger mosaic, formed by 14 other full protection conservation units and 20 sustainable use conservation units, with an additional 15 indigenous lands. This immense contiguous area spans roughly 48.6 million ha, most of it (nearly 45 million ha) in Brazil, plus the part in French Guiana (a little over 3.5 million ha) and in Suriname (almost 100 000 ha). The mosaic extends from Pará to the state of Amazonas and from there to Roraima.

In addition to hindering the advance of illegal gold mining, protecting a large area of forest represents an important contribution in the struggle against deforestation, one of the main activities responsible for global warming. It is also important for the conservation of rare ecosystems, maintenance of ecological equilibrium and the survival of endangered species that require extensive territories. (Source: WWF-Brazil, 28 February 2007.)

The money will form the basis of a new Congo Basin rain forest conservation fund, to be set up under the aegis of the ten African countries surrounding the great wilderness, which at 700 000 square miles (1 812 992 km<sup>2</sup>) in extent is twice the size of France, but is increasingly threatened with development.

The United Kingdom has persuaded Professor Wangari Maathai, the Kenyan environmental campaigner and 2004 Nobel Peace Prize winner, and Canada's former Prime Minister, Paul Martin, a long-standing advocate for debt relief and for African leadership in development, to oversee the fund's establishment and advise on its governance and financial management, ensuring that it has strong African ownership and supports the needs of the Congo Basin countries.

"Fifty million local people rely on the tropical rain forest of the Congo Basin for food, shelter and their livelihoods, while the world relies on it, and other rain forests, as an ecological handbrake on our rapidly changing climate," said the International Development Secretary, Hilary Benn. "But deforestation is a serious problem with nearly 6 000 square miles (15 540 km<sup>2</sup>) being destroyed every year."

The aim is to ensure that local people's livelihoods and rights are protected while helping them to manage the forest better and find livelihoods consistent with forest conservation.

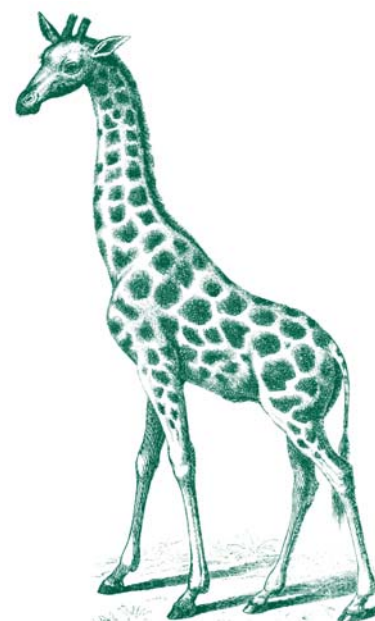
The new fund will strengthen the work of the donors who are already active in the region, including Belgium, Canada, France, Germany and the United States of America, and it will open a channel for new donors to add their support. (Source: *Belfast Telegraph* [United Kingdom], 22 March 2007.)

are equally expected to size up the milestone covered in research on African flora, vegetation of African plant habitats, database of African plants and the evolution of the African Plants Initiative (API) project.

Meeting under the theme: Systematics and Conservation of African Plants, the Yaoundé congress offers yet another opportunity for scientists to exchange views and research on conserving Africa's rich biodiversity which is being seriously threatened by human activities. According to the Minister of Scientific Research and Innovation, Madeleine Tchuinte, human threats to plant existence have increased during the past few years. This, she said, has instilled fear in Africans who one day see their plants disappear. Quite disturbing, moreover, is the fact that the majority of these plants have not been named.

In addition to plants that human beings cultivate for food, millions of plants remain in the wild, which have economic, cultural and medicinal values. "Many remain to be discovered," Mrs Tchuinte said.

The congress is a living example of North-South Cooperation. The AETFAT today counts more than 1 000 members drawn from international institutions, notably national herbariums and specialized research institutions. (Source: *Cameroon Tribune* [Yaoundé], 27 February 2007.) ♣



## NEW FUND TO CONSERVE THE CONGO BASIN

The United Kingdom is to give UK£50 million towards helping to save the second-largest rain forest in the world, the Congo Basin in Central Africa.

In one of the Budget's most eye-catching and unusual items, the Chancellor Gordon Brown announced an £800m Environmental Transformation Fund, to help developing countries cope with environmental changes such as global warming; the Congo forest will be the recipient of the first major grant.

## SCIENTISTS COUNT AFRICA'S ECOLOGICAL RICHES

Scientists from 43 African and European countries began meeting in Yaoundé yesterday at the 18th Congress of the Association for the Taxonomic Study of the Flora of Tropical Africa, better known by its French abbreviation, AETFAT. Among the issues to be handled by participants are those related to the taxonomy of African plants and fungi, the phytogeography of African plants, ethnobotany and the conservation of African plants. Scientists



## FORESTRY DEPARTMENT

### FAO Committee on Forestry

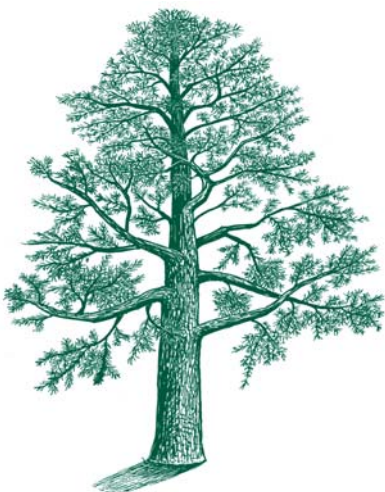
The Committee on Forestry (COFO) is the most important of the FAO Forestry Statutory Bodies. The biennial sessions of COFO (held at FAO headquarters in Rome, Italy) bring together heads of forest services and other senior government officials to identify emerging policy and technical issues, to seek solutions and to advise FAO and others on appropriate action. Other international organizations and, increasingly, non-governmental groups participate in COFO.

The 18<sup>th</sup> session of COFO – with the theme “Weaving knowledge into development” – took place from 13 to 16 March 2007.

### WEAVING KNOWLEDGE INTO DEVELOPMENT

Information – disseminating knowledge  
 Networking – sharing knowledge  
 Fora – exchanging knowledge  
 Analysis – furthering knowledge  
 Capacity building – strengthening knowledge  
 Technical support – transferring knowledge  
 Traditional knowledge – using knowledge

The final report plus all COFO presentations are available from FAO's forestry home page at the following address: [www.fao.org/forestry/site/37836/en](http://www.fao.org/forestry/site/37836/en)



### COFO

The 18<sup>th</sup> session of the FAO Committee on Forestry (COFO18) may be recorded in the annals of history as one of its most successful forest-related meetings. The meeting was superbly organized, disciplined but broadly participatory and accommodating, richly informative and always running on time. Delegates found the massive exchange of information gratifying.

FAO, on the other hand, was pleased to receive considerable concrete guidance from delegations in crafting its future action programme. On the last day, some veteran participants described COFO18 as the most substantive forest policy meeting in years. This analysis will examine the internal dynamics of COFO18 and interpret them against the global context within which the meeting took place. (Source: Earth Negotiations Bulletin, <http://www.iisd.ca/fao/cof18/>)

### FAO IN THE FIELD

#### Development of the NWFP sector in Central Africa

FAO contributes to the development of the NWFP sector in Central Africa through its regional project “Enhancing Food Security through Non-wood Forest Products in Central Africa” [GCP/RAF/398/GER]. In its second year of implementation, the project, which is funded by the German Government, is analysing the legal framework in order to ensure that forestry laws promote the sustainable management and use of NWFPs in Central Africa. The appropriate inclusion of NWFPs in forestry laws is an important precondition to promote sustainable forest management, allowing local populations to enhance their well-being and develop the largely informal but economically important market for NWFPs.

The project, therefore, facilitates the elaboration of a subregional model law promoting the sustainable management of NWFPs. An interdisciplinary working group on this matter has been established, to elaborate a first draft of the law, which will be made available for comments on the project's Web site at [www.fao.org/forestry/](http://www.fao.org/forestry/)

site/6406/en. Before its submission to the Executive Secretariat of the Central Africa Forestry Commission (COMIFAC), the draft will be discussed and validated during a subregional workshop in the second half of 2007.

Furthermore, in collaboration with the World Conservation Union (IUCN) and the respective governments, the project organized national workshops in the Central African Republic, Gabon and the Republic of the Congo in order to identify national priorities to develop the NWFP sector.

Together with the various workshop and meeting reports, recent additions to the project's Web site (all available for downloading) include information notes and reports on various ongoing studies, such as the following.

- Perspectives of certification of NWFPs in Central Africa.
- Sustainable exploitation of non-wood resources.
- Impact of timber harvesting in forest concessions on non-wood resources and its users in the Congo Basin (to be published by FAO as Forest Harvesting Case Study No. 23).

Upcoming Web publications include the following.

- A study on the commercialization of NWFPs in Central Africa.
- An overview of policies relevant to the NWFP sector in Central Africa.
- A study on the consumption of *Irvingia* sp. and *Ricinodendron heudelottii* in Yaoundé and Libreville.
- An overview of the national bibliographies on NWFPs in the six Central African countries covered by the project (Cameroon, Gabon, Equatorial Guinea, Central African Republic, Democratic Republic of the Congo and the Republic of the Congo).

Activities foreseen for the near future include the elaboration of a strategy for the development of the NWFP sector in the Republic of the Congo; the improvement of the system to collect NWFP-related statistics in Cameroon; the creation of a directory of entrepreneurs involved in the trade of NWFPs in the Central African Republic and the Democratic Republic of the Congo; and the analysis of the impact of timber harvesting in forest concessions on non-wood resources and its users in Gabon and Equatorial Guinea.

Building on this ongoing project, FAO's project activities in the Congo Basin have



recently been broadened through the implementation of a new three-year project entitled "Strengthening Capacities of Small and Medium Enterprises in the NWFP sector in Central Africa". The new project aims at developing market chains of NWFPs, some of which are traded in large volumes across borders. The project is funded by the European Commission and has been initiated in close collaboration with the Netherlands Development Organization (SNV), the Center for International Forestry Research (CIFOR) and the World Agroforestry Centre (ICRAF). (Contributed by: Daniel Knoop and Sven Walter, project CP/RAF/398/GER, Cameroon.)

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#### **Killing two birds with one stone: transferring knowledge to fight poverty and land degradation**

With help from FAO, farmers in six sub-Saharan countries have been able to increase their income from the sale of gums and resins and to restore degraded land.

In Burkina Faso, Chad, Kenya, the Niger, Senegal and the Sudan, FAO launched a three-year pilot project in 2003 with financial support from the Italian Government to help local farmers to restore degraded land by planting native acacias that produce gums and resins, which are important products for Sahelian people's livelihoods.

For their adaptation to poor soils and arid and semi-arid climates, *Acacia* sp. are common and important trees in this region, where land degradation is a serious problem. The trees are important fighters against the advancement of deserts, the tree tops intercept wind and rain drops, and the root systems are effective in reducing land erosion. In addition, they restore soil fertility as they fix nitrogen and are an important source of fodder.

At the same time, *Acacia* trees produce gum arabic, which is a valuable natural product for a large range of industries, including the food and pharmaceutical industries. In the food industry, the gum is used to thicken, stabilize and emulsify food and drinks. It is also used in diet products against obesity. The pharmaceutical

industry uses it to bind tablets and as a suspending and emulsifying agent in creams and lotions. This NWFP is an important component of inks used in the press industry. Gums and resins are therefore important sources of revenue for people in this region, who are usually the poorest and most vulnerable to hunger and malnutrition.



*Acacia* flower

Despite the tree's economic and environmental importance, the farmers in the region still use traditional production methods. As a result, they cannot produce gum and resin of a quality high enough to sell on international markets at a desirable price. The production and commerce of the gum and resin had not evolved sufficiently at the local level.

In order to plant more of the species, FAO intervened and first tested new methods of harvesting rainwater in this water-scarce region. It also trained about 56 000 producers of gum arabic and resin on ways to improve their production to meet international market standards. The Organization helped the farmers develop new markets and encouraged producing countries to cooperate and organize themselves, to prevent international buyers from setting the producers in competition against one another and reducing prices. To guarantee a stable supply of the goods, FAO supported the establishment of warehouses to store unsold gums and resins.

As a result, more than 13 000 ha of degraded land have been restored. This has improved animal feeding and reduced conflicts between farmers and shepherds. The mixed cropping of *Acacia* trees with tomatoes, sesame and beans has boosted the growth of them all. The sale of gum and resin overseas has brought in much-needed cash to the region and helped the farmers diversify and increase their sources of income.

"The local response was overwhelming. The people benefiting from the project were both surprised and pleased with what they saw and earned," said Michel Malagnoux, an FAO forest expert responsible for the project.

Based on the success of the pilot project, FAO plans to expand it to other *Acacia*-growing countries. (Source: FAO Newsroom, 5 March 2007.)

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On 20 December 2006, the General Assembly of the United Nations adopted a resolution declaring 2011 as the International Year of Forests. The International Year of Forests will raise awareness that the world's forests are an integral part of global sustainable development, providing crucial economic, sociocultural and environmental benefits. It will promote global action for the sustainable management, conservation and development of all types of forests, including trees outside forests.

To celebrate the year, activities will be organized to foster knowledge exchange on practical strategies to promote sustainable forest management and reverse deforestation and forest degradation. To help facilitate organization of these activities, governments are encouraged to create national committees and designate focal points in their respective countries, joining hands with regional and international organizations and civil society organizations. The United Nations Forum on Forests (UNFF) Secretariat has been tasked as the focal point for the implementation of the International Year of Forests.

This is the second time that forests will have their own "international year". The first was in 1985. (Source: *Unasylva*, 225[57].)

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**FOR MORE INFORMATION, SEE THE WEB SITE**  
**FOR THE INTERNATIONAL YEAR OF FORESTS:**  
**[www.un.org/esa/forests/2011/2011.html](http://www.un.org/esa/forests/2011/2011.html)**



## INTERNATIONAL YEAR OF NATURAL FIBRES

The United Nations General Assembly, on 20 December 2006, declared 2009 the International Year of Natural Fibres. In doing so it invited FAO to facilitate the observance of the year, in collaboration with governments, regional and international organizations, non-governmental organizations, the private sector and relevant organizations of the UN system.

Some progress in making initial preparations had already been made in the lead-up to this declaration, and more has been made in the period since then.

An informal International Steering Committee has met several times. It has formulated objectives for the year, and has overseen the preparation of a communications plan to guide activities through to the end of 2009. Most important, perhaps, it has brought together international representatives of the various

natural fibre industries, among whom there had been no contact prior to the beginning of this process. The success of the International Year of Natural Fibres will depend on a strong international partnership of all the natural fibre industries.

The objectives of the International Year suggested by the steering committee are:

- to raise awareness and stimulate demand for natural fibres;
- to encourage appropriate policy responses from governments to the problems faced by natural fibre industries;
- to foster an effective and enduring international partnership among the various natural fibre industries; and
- to promote the efficiency and sustainability of the natural fibre industries.

### What comes next

For the various natural fibre organizations and groups around the world, it is time to

begin planning activities for 2009. FAO has the role of leading and coordinating but cannot undertake to plan and implement activities on various fibres in individual countries. Where appropriate, you may wish to talk to people in nearby areas, and to people interested in other natural fibres, perhaps to form a local committee in your country or region. Plan for yourselves how you will work to promote natural fibres and to help meet the objectives listed above for the International Year of Natural Fibres.

FAO needs funding for its activities in preparing and disseminating information, preparing global-level activities and coordinating. A budget of around US\$2.5 million has been proposed for the period through to early 2010. This money needs to come from donations from national governments or from industry organizations.

Most urgently, we have an immediate need for a relatively small amount (US\$100 000 to \$200 000) for initial partnership-building and communication activities such as establishing a Web site and preparing a brochure. So far, this money has not been forthcoming; if you are able to help potential donors (government or industry) decide to contribute to the International Year of Natural Fibres you could be making a major contribution to its success. (Source: International Year of Natural Fibres 2009, Newsletter No. 1.)

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www.fao.org/es/esc/en/20953/22215/highlight\_  
108451en.html**

## NATURAL FIBRES

### What are natural fibres?

Natural fibres are produced from animals or plants. Animal fibres are largely those that cover mammals such as sheep, goats and rabbits, but include also the cocoon of the silkworm. Vegetable fibres are derived from the stem, leaf or seed of various plants. Close to 30 million tonnes of natural fibres are produced annually in the world, of which cotton is dominant with 20 million tonnes, and wool and jute each around 2 to 3 million tonnes, followed by a number of others.

### What are natural fibres used for?

Natural fibres form an important component of clothing, upholstery and other textiles for consumers, and many of them also have industrial uses in packaging, papermaking and in composite materials with many uses, including cars.

### Why are natural fibres important?

Apart from their importance to the consumer and in their various industrial uses, natural fibres are an important source of income for the farmers who produce them. In some cases they are produced on large farms in developed countries, but in many developing and least developed countries proceeds from the sale and export of natural fibres contribute significantly to the income and food security of poor farmers and workers in the fibre industries. For some developing countries natural fibres are of major economic importance, for example, cotton in some West African countries, jute in Bangladesh and sisal in the United Republic of Tanzania. In other cases these fibres are of less significance at the national level but are of major local importance, as in the case of jute in West Bengal (India) and sisal in northeast Brazil.

### Why an International Year of Natural Fibres?

Since the 1960s, the use of synthetic fibres has increased, and natural fibres have lost a lot of their market share. The main objective of the International Year of Natural Fibres is to raise the profile of these fibres and to emphasize their value to consumers while helping to sustain the incomes of farmers. Promoting measures to improve the efficiency and sustainability of production is also an important aspect of the year.



## THE UNION FOR ETHICAL BIOTRADE (UEBT)

Natural ingredients businesses receive a BioTrade boost through this Union.

Natural products are becoming big business. High street stores are lined with every imaginable natural cream, lotion or supplement that promise anything from skin rejuvenation to reducing inflammation. The truth is that what is available to the consumer actually represents only a fraction of the plant species that the world's biodiversity has to offer. Even for natural ingredients that have been harvested for centuries, research is still

ongoing to bring them to the market and special attention is being given to ensure product traceability along the supply chain. But the drive behind this niche market is coming from consumers who are looking for fresh, new products, as well as becoming increasingly aware of the impact their choices are having on the environment and the social conditions of those involved in production. These intangible qualities are adding value to biodiversity-based goods and services that show tremendous potential for growth in the future.

Natural ingredients, in fact, provide important inputs to the pharmaceutical, cosmetics and food industries. These industries are always looking out for new and innovative natural ingredients that can be used in their end products. What is important to these industries is that the source is sustainable and, increasingly, that certain ethical practices have been implemented along the value chain. Conventions like the one on Biological Diversity (CBD) have laid down clear objectives for the conservation and sustainable use of biodiversity and the equitable sharing of benefits for those who use this resource. This is where BioTrade has drawn the attention of the market by offering goods and services derived from native biodiversity under the criteria of environmental, social and economic sustainability. Nevertheless, many small BioTrade enterprises from biodiversity-rich (developing) countries have a hard time implementing the rather complicated and costly processes. Many need guidance, business development support and market outreach expertise.

*BioTrade refers to those activities of collection, production, transformation and commercialization of goods and services derived from native biodiversity under the criteria of environmental, social and economic sustainability.*

In response to the private sector call for further guidance on integrating the CBD objectives into their business models, the Union for Ethical BioTrade (UEBT) has been launched. As a private sector-driven initiative, the UEBT is a membership-based association that will bring together

### CASE STUDY: BOROJÓ

Borojó (*Borojoa patinoi* Cuatr.) is a new plant that has become attractive to the natural ingredients industry. Traditionally, the species is part of the staple diet of Afro-Colombian and indigenous communities in the Colombian Pacific rain forests. It is used to make juice, pulp, marmalade, ice cream and jelly. It is also used as a preservative to embalm corpses, and is considered a good healing agent and energizer. Raw plant material from the Borojó fresh fruit's hydrated pulp is used traditionally as a natural ingredient. Because it is rich in essential amino-acids and triterpenes, it has various applications in the cosmetic and nutraceutical industries.

Further research on the fruit reveals that the product could be used as a natural ingredient in the preparation of shampoo, hair conditioners, facial masks, body creams, fragrances and ointments. So, the future looks bright for the plant, but further studies are needed.

Ecoflora Ltda, Phitother, Labfarve and Laboratorios Medick are four companies in Colombia that supply Borojó extracts, having incorporated BioTrade principles and criteria into their business practices – minimum requirements established for BioTrade activities for the conservation and sustainable use of biodiversity and the equitable sharing of benefits derived from the resource.

As requirements of quality standards and traceability become increasingly higher in international markets, companies dealing in natural ingredients are realizing the need for strict production practices in order to guarantee a sustainable supply to secure business deals. Management plans for Borojó, developed at company level, are therefore all-important to the importing companies that want to be able to see clearly that certain practices have been implemented from the beginning of the chain, backing their own claims of sustainable use.

Borojó is a tree species of 3–5m in height, belonging to the Rubiaceae family. Its origin is in tropical America, and it grows mainly in the Colombian Pacific plains – a biodiversity hotspot better known as Chocó.

organizations from different sectors of society around the globe that are working in the field of native biodiversity. The UEBT will offer its members a broad range of services that promote, facilitate and recognize their contributions to biodiversity conservation and sustainable development. Through the UEBT verification framework for natural ingredients, members will also be able to verify their claims that their business practices are in line with BioTrade principles and criteria, which have been developed in the spirit of the CBD.

*The Union for Ethical BioTrade provides the private sector with a robust framework with which to contribute to the objectives of the CBD, back Corporate Social Responsibility claims and receive much needed expertise in international market access and business development.*

The UEBT will be a solution that meets the current needs of the private sector involved in BioTrade activities, and will play an important role in raising the awareness of related issues among the general public.

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## TRADITION TO TECHNOLOGY CONFERENCE

SASKATOON, SASKATCHEWAN,  
CANADA  
10-13 MAY 2007

The Tradition to Technology Conference was a joint effort between the Natural Health Products Research Society of Canada and the Canadian Herb, Spice and Natural Health Products Coalition. The conference also included a significant non-timber forest resources component supported by Royal Roads University.

The focus of the conference was on the tools, techniques and technology that support this industry and its R&D community. A wide range of topics were covered, from the traditional use of medicinal plants and non-timber forest resources to some of the most sophisticated tools and techniques available to advance the science that supports the industry.

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## GLOBAL ECOTOURISM CONFERENCE 2007

OSLO, NORWAY  
14-16 MAY 2007

The International Ecotourism Society (TIES), Ecotourism Norway and the United Nations Environment Programme (UNEP) organized this inaugural Global Ecotourism Conference, which TIES – in partnership with a national or regional ecotourism association – will be organizing every five years.

As the first major global conference on ecotourism since the UN's International Year of Ecotourism in 2002, the Global Ecotourism Conference 2007 reviewed the achievements in the ecotourism field and assessed challenges facing the industry.

The conference brought together national and regional ecotourism associations and networks from around the world, together with other interested organizations and individuals, to discuss common issues and to help strengthen the collective voice of the ecotourism community.

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**www.ecotourismglobalconference.org/**



## SHARING INDIGENOUS WISDOM: AN INTERNATIONAL DIALOGUE ON SUSTAINABLE DEVELOPMENT

GREEN BAY, WI, UNITED STATES  
OF AMERICA  
11-15 JUNE 2007

Indigenous peoples all over the world are steadily confronted with outside pressures of having both their land and cultures assimilated into the dominant cultural context. There is currently an acute need to explore successful models of sustainable development that allow for the preservation of indigenous lands, sovereignty and culture, while also allowing for the integration of economic development, institutional capacity-building and technological advancement.

This conference was designed to bring together scholars and practitioners who are committed to the concepts of sustainable development. This year the conference focused on the natural environment foundational element in the Menominee model of sustainable development.

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## THE ROLE OF NON-TIMBER FOREST PRODUCTS (NTFPs) IN POVERTY ALLEVIATION AND BIODIVERSITY CONSERVATION

HANOI, VIET NAM  
11-15 JUNE 2007

The Viet Nam NTFP Project Phase II, the Ministry of Agriculture and Rural Development (MARD) and the World

Conservation Union (IUCN) hosted this NTFP conference.

NTFPs play an important role in the livelihoods of the rural poor, as a source of food, medicine, construction materials and income. It has been estimated that there are more than 60 million highly forest-dependent people in Latin America, West Africa and Southeast Asia, with an additional 400 to 500 million people directly dependent on these natural products.

Access to forest resources helps rural households diversify their livelihood base and reduce their exposure to risk. Earnings from forest products are often important as a complement to other income. Very large numbers of households generate some of their income from selling forest products, often when farm production is not enough to guarantee self-sufficiency all year round. Income from forest products is often used to purchase seeds, hire labour for cultivation or generate working capital for trading activities. For the poorest households, NTFPs can play a critical role in providing both food and income.

While there is growing appreciation of the importance of NTFPs for rural households, especially of the very poor, there are concerns about the potential impact of NTFP collection on biodiversity.

A number of critical questions were explored during the conference.

- Under what conditions can NTFPs, both plants and animals, be sustainably harvested?
- Can on-farm production of NTFPs result in improved biodiversity conservation?
- Does commercialization of NTFPs result in overharvesting?
- What is needed for markets to be pro-poor?
- Are attempts to develop NTFPs for poverty alleviation really reaching the poorest of the poor?
- To what extent are these attempts impacting biodiversity conservation?

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**INTERNATIONAL RESEARCH CONFERENCE ON BIODIVERSITY AND THE SUSTAINABLE MANAGEMENT OF NATURAL RESOURCES**

**KIGALI, RWANDA  
23-24 JULY 2007**

The Government of Rwanda looks forward to welcoming participants to the first international research conference on biodiversity conservation and sustainable natural resource management in Rwanda. Bringing together both leading national and international conservation and natural resource management professionals, the conference will provide a forum for the exchange of research findings and ideas focusing on the importance of knowledge-based approaches for the long-term conservation of biodiversity.

Rwanda hosts a wealth of biodiversity and natural resources. Many endangered fauna and flora are part of transboundary ecosystems; threatened wetland networks and highland forests are important catchments for the Nile and Congo rivers. This gives a truly international dimension to conservation and natural resource management in the country.

The conference will cover ecosystem health – particularly the correlation between ecosystem, human, domestic animal and wildlife health – as well as economics, tourism, conservation and communities. The conference is being organized under the themes: conservation biology, which will focus on the biology, behaviour and ecological processes of threatened species and their habitats; and sustainable management of natural resources, which will discuss the results of biological, economic and social research in sustainable management of natural resources.

The success of the conference will be a cornerstone in the use of research information to inform and develop sound policies and practices towards biodiversity conservation and natural resource management in Rwanda.

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**THE FIRST REGIONAL SCIENTIFIC CONFERENCE ON TRADITIONAL ARABIC AND ISLAMIC MEDICINE**

**AMMAN, JORDAN  
8-10 AUGUST 2007**

The Traditional Arabic and Islamic Medicine Conference (TAIM) aims to revive the important aspect of our identity and to establish it as a notable area of research on the same level as other practices of traditional medicine.

The conference will include the traditional uses of these herbs, agricultural research, pharmaceutical and biological remedies based on this culture as well as medicinal products and marketing.

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**2007 INTERNATIONAL CONFERENCE ON FOREST AND WOODLAND HISTORY**

**THESSALONIKI, GREECE  
3-7 SEPTEMBER 2007**

This conference is open to all researchers interested in trees, woodlands, forests and their cultural, social and economic values.

**FOR MORE INFORMATION, VISIT THE CONFERENCE WEB SITE:**  
**www.uec.ac.uk/geography/woodlandculturesconference.php or contact: Dr Eirini Saratsi, e-mail: e.saratsi@exeter.ac.uk; Prof. Charles Watkins, e-mail: charles.watkins@nottingham.ac.uk; or Assoc. Prof. Achilles Gerasimidis, e-mail: achger@for.auth.grwww.kent.ac.uk/anthropology/**



**INTERNATIONAL CONFERENCE ON POVERTY REDUCTION AND FORESTS: TENURE, MARKET AND POLICY REFORMS**

**BANGKOK, THAILAND  
3-7 SEPTEMBER, 2007**

This conference is being organized by the Regional Community Forestry Training Center for Asia and the Pacific (RECOFTC), in collaboration with other Rights and Resources Initiative partners, and many other organizations and donors that are concerned about poverty and forest issues.

It is well established that areas with high rates of poverty and forest areas often coincide and there is much interest in exploring ways of using forest resources in ways that benefit the poor, while sustaining the resource base. There is increasing evidence though that the potential of forests to contribute to poverty reduction is only being partially realized. There is also growing recognition that this will continue to be the case unless critical issues are addressed such as the need for greater tenure security, market reform and other supportive changes in policy to improve access to resources and markets by the poor.

This conference aims to support discussion and exchange on the critical factors surrounding forests and poverty and current efforts to reduce poverty through forest management and use. It will strengthen existing, and help build new, strategic networks of key stakeholders to advance tenure, market and policy reforms in support of poverty reduction.

**FOR MORE INFORMATION, PLEASE CONTACT:**  
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*"Riches of the forest: for health, life and spirit in Africa"*



"Riches of the forest: food, spices, crafts and resins of Asia"

**INTERNATIONAL  
CONFERENCE TO  
PROMOTE THE  
DEVELOPMENT OF  
NON-TIMBER FOREST  
PRODUCTS AND SERVICES**

BEIJING, CHINA  
19-21 SEPTEMBER 2007

The conference is being sponsored by the International Tropical Timber Organization (ITTO), with the support of the Ministry of Commerce and the State Forestry Administration of China. It is being organized by ITTO and the Chinese Academy of Forestry in technical collaboration with the International Centre for Bamboo and Rattan (ICBR), the International Network for Bamboo and Rattan (INBAR), FAO and the UN Conference on Trade and Development (UNCTAD).

For decades, NTFPs and services have generated high expectations because of their potential to combine forest management and conservation with income generation. Efforts to increase the role of NTFPs by improving the management, conservation and marketing of NTFPs and forest services are under way in many parts of the world. However, progress has often been less than hoped for and expected.

There is an urgent need to consolidate lessons learned among ITTO members including on how best to encourage more private investment in the sector.

The conference will:

- bring producers, traders and consumers together to share experiences in promoting NTFPs in domestic and international trade;

- study opportunities to promote the development of NTFPs and forest services that can improve the economic attractiveness of maintaining the forest resource base; and
- make recommendations on policy and other measures to promote the sustainable production of NTFPs and the sustainable provision of forest services.

The ITTO conference will address these issues through keynote presentations and panel discussions.

Participants will include decision-makers and experts from governments, companies and cooperatives, industry associations, local communities and international and non-governmental organizations. The conference will be open to all interested participants.

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www.itto.or.jp/live/PageDisplayHandler?id=320  
&pageId=223**



**4TH INTERNATIONAL  
MEDICINAL MUSHROOM  
CONFERENCE**

LJUBLJANA, SLOVENIA  
23-27 SEPTEMBER 2007

The International Medicinal Mushroom Conference (IMMC4) will provide a creative and informative event for mycologists and all those who are interested in studying and discussing the most current research on the biological properties of mushrooms in the following fields.

- Systematics, taxonomy, distribution, ecology and fungal culture collections
- Medicinal value and pharmacology of mushroom active compounds

- Mushroom nutraceuticals
- Fungal physiology, biochemistry and genetics
- Mycotechnology and mushroom cultivation
- Mycoremediation
- Medicinal mushroom species
- Ethnomycology, folk medicine and homeopathy.

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**INTERNATIONAL  
CONGRESS: A GLOBAL  
VISION OF FORESTRY  
IN THE TWENTY-FIRST  
CENTURY**

TORONTO, CANADA  
30 SEPTEMBER – 3 OCTOBER 2007

The congress discussions will be organized under the following three themes: i) Global challenges, responsibilities and leadership in forestry; ii) Frontiers of science and a healthy and diverse forest environment (the forest environment, its diversity and productivity, and scientific challenges, and human health and the forest); and iii) Cultures, markets and sustainable societies.

**FOR MORE INFORMATION, PLEASE CONTACT:**  
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Faculty of Forestry, University of Toronto,  
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/www.forestry.utoronto.ca/centennial/int\_cong  
ress.htm**

**THE FUTURE OF FORESTS  
IN ASIA AND THE PACIFIC:  
OUTLOOK FOR 2020**

CHIANG MAI, THAILAND  
16-18 OCTOBER 2007

Recent and unprecedented economic and social change in the Asia-Pacific region has significantly altered the way forests are regarded and used. It is in acknowledgement of a new kind of society-forest dynamic in the region that the Asia-Pacific Forestry Commission, in partnership with member countries and other international organizations, is

conducting the second Asia-Pacific Forestry Sector Outlook Study (APFSOS II). This major international conference is being organized to strengthen the consultative and capacity-building processes of APFSOS II by bringing together diverse stakeholders and expertise to provide broader perspectives on emerging changes, probable scenarios and their implications for forests and forestry in the region.

The conference will provide opportunities to present selected voluntary papers. The main discussion areas and subjects on which to present voluntary papers will include:

- the current situation of forests and forestry in the Asia-Pacific region;
- societal transition in the region and probable scenarios for forests and forestry;
- impacts of globalization on forests and forestry in the region;
- challenges in balancing environmental, economic and social needs;
- policy, institutional and technological adaptation for the twenty-first century.

**FOR MORE INFORMATION, PLEASE CONTACT:**  
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*(Please see page 61 of Non-Wood News 14 for more information on APFSOS II.)*

 **3RD GLOBAL SUMMIT ON MEDICINAL AND AROMATIC PLANTS**  
 CHIANG MAI, THAILAND  
 21-24 NOVEMBER 2007

Medicinal plants in many forms have been used since ancient times in traditional medicine and for health care. Aromatic plants and their products, particularly essential oils, are also becoming more important. Traditional medicine is, at the present time, accepted as an alternative for or used in conjunction with Western medical practice in many countries.

The theme of the Summit will be "Medicinal and Aromatic Plants in Health Care" with the emphasis on the following subtopics.

- Cultivation and quality standardization
- Sustainable role of medicinal and

- aromatic plants in health care
- Safety and efficacy of phytomedicines and phytocosmetics
- Isolation and characterization of bioactive substances from medicinal and aromatic plants
- Nanotechnology in pharmaceutical, phytocosmetics and natural products

**FOR MORE INFORMATION, PLEASE CONTACT:**  
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 e-mail: [gosmap3@gmail.com](mailto:gosmap3@gmail.com); [www.gosmap3-cmu.co.nr](http://www.gosmap3-cmu.co.nr)



**INTERNATIONAL SYMPOSIUM ON UNDERUTILIZED PLANTS FOR FOOD, NUTRITION, INCOME AND SUSTAINABLE DEVELOPMENT**

ARUSHA, UNITED REPUBLIC OF TANZANIA  
 3-7 MARCH 2008

This five-day Symposium is being organized under the auspices of the International Society for Horticultural Science (ISHS), recognizing the need to provide a global forum for exchange and debate on issues related to the promotion of underutilized plants. The symposium is an activity of the newly formed ISHS working group on underutilized plant genetic resources (PG3) and will be a joint event of the ISHS Commission Plant Genetic Resources and Section Tropical and Subtropical Fruits.

The symposium will be organized around four main areas of importance for underutilized plants: food security, nutrition and health, income generation

and environmental sustainability. Participants will be invited to share and discuss reasons for success and failure of diverse approaches to promote underutilized plants.

The abstract submission deadline is 15 August 2007.

The symposium has been co-convened by the International Centre for Underutilised Crops (ICUC); the Global Facilitation Unit for Underutilized Species (GFU); the World Vegetable Center (AVRDC); the Global Horticulture Initiative (GlobalHort); Bioversity International; Plant Resources of Tropical Africa (PROTA); and the International Society for Horticultural Science (ISHS).

**FOR MORE INFORMATION, PLEASE CONTACT:**  
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[www.icuc-iwmi.org/Symposium2008/](http://www.icuc-iwmi.org/Symposium2008/) ♣



**The creation of a thousand forests is in one acorn.**

*Ralph Waldo Emerson*



- Alamgir, M., Misbahuzzaman, K., Hoque, A.T.M.R & Masum, K.M.** 2006. Role of non-wood forest products based cottage industry in the livelihood of forest encroachers in Bangladesh. *International Journal of Forest Usufructs Management*, 7(1): 59–66.
- Albrecht, M.A. & McCarthy, B.C.** 2006. Comparative analysis of goldenseal (*Hydrastis canadensis* L.) population regrowth following human harvest: implications for conservation. *Am. Midl. Nat.*, 156(2): 229–236.
- Altrichter, M.** 2006. Wildlife in the life of local people of the semi-arid Argentine Chaco. *Biodivers. Conserv.*, 15(8): 2719–2736.
- Andersen, U.S., Córdova, J.P., Sørensen, M. & Kollmann, J.** 2006. Conservation and utilisation of *Abies guatemalensis* Rehder (Pinaceae) – an endangered endemic conifer in Central America. *Biodivers. Conserv.*, 15(10): 3131–3151.
- Apte, T.** 2006. *A simple guide to Intellectual Property Rights, biodiversity and traditional knowledge*. Kalpavriksh, Grain, International Institute for Environment and Development (IIED).
- Arroyo-Rodríguez, V. & Mandujano, S.** 2006. The importance of tropical rain forest fragments to the conservation of plant species diversity in Los Tuxtlas, Mexico. *Biodivers. Conserv.*, 15(13): 4159–4179.
- Baranga, D.** 2007. Observations on resource use in Mabira Forest Reserve, Uganda. *African Journal of Ecology*, 45.
- Benedick, S., Hill, J.K., Mustafa, N., Chey, V.K., Maryati, M., Searle, J.B., Schilthuizen, M. & Hamer, K.C.** 2006. Impacts of rain forest fragmentation on butterflies in northern Borneo: species richness, turnover and the value of small fragments. *J. Appl. Ecol.*, 43(5): 967–977.
- Bhattacharyya, R., Bhattacharyya, S. & Chaudhuri, S.** 2006. Conservation and documentation of the medicinal plant resources of India. *Biodivers. Conserv.*, 15(8): 2705–2717.
- BirdLife International.** 2006. *Livelihoods and the environment at Important Bird Areas: listening to local voices*. Cambridge, United Kingdom. Download from: [www.birdlife.org/news/news/2007/01/listening\\_to\\_local\\_voices\\_IBAs.pdf](http://www.birdlife.org/news/news/2007/01/listening_to_local_voices_IBAs.pdf)
- Bista, S. & Webb, E.L.** 2006. Collection and marketing of non-timber forest products in the far western hills of Nepal. *Environ. Conserv.*, 33(3): 244–255.
- Blundell, A.G. & Mascia, M.B.** 2006. Data on wildlife trade. *Conserv. Biol.*, 20(3): 598–599.
- Bodeker, G. & Burford, G., eds.** 2007. *Traditional, complementary and alternative medicine. Policy and Public Health Perspectives*. Imperial College Press. ISBN 978-1-86094-616-5.
- Cagnolo, L., Cabido, M. & Valladares, G.** 2006. Plant species richness in the Chaco Serrano Woodland from central Argentina: ecological traits and habitat fragmentation effects. *Biol. Conserv.*, 132(4): 510–519.
- Cardillo, M.** 2006. Disappearing forests and biodiversity loss: which areas should we protect? *Int. For. Rev.*, 8(2): 251–255.
- Care for the Wild International/Pro Wildlife.** 2007. *Going to pot. The Neotropical bushmeat crisis and its impact on primate populations*. Kingsfold, United Kingdom, Care for the Wild International and Munich, Germany, Pro Wildlife. Download from: [www.careforthewild.com/files/Bushmeatreport1206\\_singlepages.pdf](http://www.careforthewild.com/files/Bushmeatreport1206_singlepages.pdf) (See page 40 for an extract from this report.)
- Chaubey, O.P., Shukla, P.K. & Jyoti Singh.** 2006. Conservation status of wild medicinal plants in Satpura plateau of Madhya Pradesh. I. *Abrus precatorius* L., *Acacia catechu* (L.f.) Willd, *Acacia concinna* (Willd) DC, *Acanthospermum hispidum* DC and *Achyranthes aspera* L. *Vaniki-Sandesh*, 30(1): 24–27.
- Cocks, M.L.** 2006. Biocultural diversity: Moving beyond the realm of “indigenous” and “local” people. *Human Ecology*, 34(2): 185–200.
- Cocks, M.L., Bangay, L., Wiersum, K.F. & Dold, A.P.** 2006. Seeing the wood for the trees: the role of woody resources for the construction of gender specific household cultural artefacts in non-traditional communities in the Eastern Cape, South Africa. *Environment, Development and Sustainability*, 8: 519–533.
- Cocks, M.L. & Dold, A.P.** 2006. Conservation of biocultural diversity: the role of medicinal plants in Xhosa culture. *Journal of Ethnobiology*, 26(1): 60–80.
- Colchester, M. et al.** 2006. *Justice in the forest: rural livelihoods and forest law enforcement*. Bogor, Indonesia, Center for International Forestry Research (CIFOR). ISBN 979 2446184.
- Croes, B.M., Laurance, W.F., Lahm, S.A. & Buij, R.** 2007. The influence of hunting on antipredator behaviour in Central African monkeys and duikers. *Biotropica*, 39(2): 257–263.
- de Merode, E. & Cowlshaw, G.** 2006. Species protection, the changing informal economy, and the politics of access to the bushmeat trade in the Democratic Republic of the Congo. *Conserv. Biol.*, 20(4): 1262–1271.
- Dorji, L., Webb, E.L. & Shivakoti, G.P.** 2006. Forest property rights under nationalized forest management in Bhutan. *Environ. Conserv.*, 33(2): 141–147.
- Dudley, N. & Stolton, S.** 2006. *Edible Non Timber Forest Products: Harmonising FSC and IFOAM Certification*. Oxford, United Kingdom, International Social and Environmental Accreditation and Labelling (ISEAL).



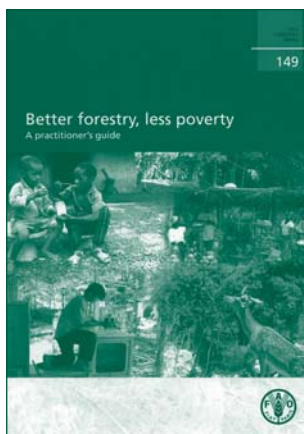
**Egadu, S.P., Mucunguzi, P. & Obua, J.** 2007. Uses of tree species producing gum arabic in Karamoja, Uganda. *African Journal of Ecology*, 45.

**Ehiagbonare, J. E.** 2007. Vegetative propagation on some key malaria medicinal plants in Nigeria. *Scientific Research and Essays*, 2(2): 037–039. February.

**Ejobi, F., Moshia, R.D., Ndege, S. & Kamoga, D.** 2007. Ethno-veterinary medicinal plants of the Lake Victoria basin: a bioprospection. *Journal of Animal and Veterinary Advances*, 6(2): 257–261.

**Evans, K. et al.** 2006. *Field Guide to the Future – Four Ways for Communities to Think Ahead*. CIFOR. 87 pp.

**FAO.** 2006. *Better forestry, less poverty: a practitioner's guide*. FAO Forestry Paper 149. Rome. ISBN 92-5-105550-5.



This guide suggests ways to design and implement forest-based interventions that will have the greatest potential to reduce poverty. The areas for action that it discusses include timber production in both natural and planted forests, NWFPs, woodfuel, bushmeat, agroforestry and payment for environmental services. Download from: [www.fao.org/docrep/009/a0645e/a0645e00.HTM](http://www.fao.org/docrep/009/a0645e/a0645e00.HTM) (Please see pages 37 and 39 for extracts from this guide.)

**Fu, Y.N., Guo, H.J., Chen, A.G. & Cui, J.Y.** 2006. Household differentiation and on-farm conservation of biodiversity by indigenous households in Xishuangbanna, China. *Biodivers. Conserv.*, 15(8): 2687–2703.

**Ghimire, S.K., Mckey, D. & Aumeeruddy-Thomas, Y.** 2006. Himalayan medicinal plant diversity in an ecologically complex high altitude anthropogenic landscape, Dolpo, Nepal. *Environ. Conserv.*, 33(2):128–140.

**Godoy, R., Wilkie, D.S., Reyes-García, V., Leonard, W.R., Huanca, T., McDade, T., Vadez, V. & Tanner, S.** 2006. Human body-mass index (weight in kg/stature in m<sup>2</sup>) as a useful proxy to assess the relation between income and wildlife consumption in poor rural societies. *Biodivers. Conserv.*, 15(14): 4495–4506.

**Gondard, H., Romane, F., Regina, I.S. & Leonardi, S.** 2006. Forest management and plant species diversity in chestnut stands of three Mediterranean areas. *Biodivers. Conserv.*, 15(4):1129–1142.

**Gopal, B. & Chauhan, M.** 2006. Biodiversity and its conservation in the Sundarban Mangrove Ecosystem. *Aquat. Sci.*, 68(3): 338–354.

**Government of Norway.** 2006. *Norwegian Action Plan for Environment in Development Cooperation*. Oslo, Norwegian Ministry of Foreign Affairs. Download from <http://odin.dep.no/ud/english/doc/plans/032201-220054/dok-bn.html>

**Hawksworth, D.L.** 2006. Human exploitation of biodiversity and conservation: a question of balance? Introduction. *Biodivers. Conserv.*, 15(8): 2341–2342.

**Hilgert, N.I. & Gil, G.E.** 2006. Medicinal plants of the Argentine Yungas plants of the Las Yungas biosphere reserve, Northwest of Argentina, used in health care. *Biodivers. Conserv.*, 15(8): 2565–2594.

**IUFRO/Ministerial Conference on the Protection of Forests in Europe.** 2006. *Cultural heritage and sustainable forest management: The role of traditional knowledge. Proceedings of the Conference 8–11 June 2006, Florence, Italy*. Vols 1 and 2. Warsaw, Poland, IUFRO Task Force on Traditional Forest Knowledge, Research Group “Forest and Woodland History”. More than 400 million people who live in or around forests depend on this natural resource as their primary source of

income or subsistence. Of these, more than 60 million are Indigenous Peoples, whose culture, spirituality and identity are intricately intertwined with the land they inhabit. Traditional forest-related knowledge has long been known to have important implications for forest management and conservation of forest biodiversity, as well as identification of valuable genetic resources. As the international community increasingly focuses its attention on achieving the Millennium Development Goals of alleviating poverty and ensuring economic, social and environmental sustainability, the recognition of the importance of traditional knowledge, cultural values, historic perspective and the means necessary for their enhancement will play an increasingly important role in shaping policy as well as forest management practices. The themes discussed during this conference clearly illustrated the scope and complex character of the cultural dimensions of forests.

Download from: [www.mcpe.org/publications/pdf/](http://www.mcpe.org/publications/pdf/)

**Jayaram, K. & Prasad, M.N.V.** 2006. *Drosera indica* L. and *D. burmanii* Vahl., medicinally important insectivorous plants in Andhra Pradesh – regional threats and conservation. *Curr. Sci.*, 91(7): 943–946.

**Jones, M.J. & Orr, B.** 2006. Resin tapping and forest cooperatives in Honduras. *Journal of sustainable forestry*, 22(3–4): 135–169.

**Joshi, P.K., Rawat, G.S., Padilya, H. & Roy, P.S.** 2006. Biodiversity characterization in Nubra Valley, Ladakh with special reference to plant resource conservation and bioprospecting. *Biodivers. Conserv.*, 15(13): 4253–4270.

**Kakudidi, Esezah Kyomugisha.** 2007. A study of plant materials used for house construction around Kibale National Park, western Uganda. *African Journal of Ecology*; 45(s1). March.

**Kaliora, A.C., Stathopoulou, M.G., Triantafillidis, J.K., Dedoussis, G.V.Z. & Andrikopoulos, N.K.** 2007. Chios mastic treatment of patients with active Crohn's disease. *World Journal of Gastroenterology*, 13(5): 748–753.

**Kalu, C. & Rachael, E.** 2006. Women in processing and marketing of non-timber forest products: case study of Benin City, Nigeria. *Journal of Agronomy*; 5(2): 326–331.

**Kathe, W. & Gallia, E.** 2006. International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP). Study on Implementation Strategies and Opportunities for Pilot Implementation. Download from: [www.floraweb.de/map-pro](http://www.floraweb.de/map-pro)

**Keppel, G., Rounds, I.A. & Thomas, N.T.** 2006. The flora, vegetation, and conservation value of mesic forest at Dogotuki, Vanua Levu, Fiji Islands. *New Zeal. J. Bot.*, 44(3): 273–292.

**Khan, A.A., Qureshi, B.U.D. & Awan, M.S.** 2006. Impact of musk trade on the decline in Himalayan musk deer *Moschus chrysogaster* population in Neelum Valley, Pakistan. *Curr. Sci.*, 91(5): 696–699.

**Kolongo, T.S.D., Decocq, G., Yao, C.Y.A., Blom, E.C. & Van Rompaey, R.S.A.R.** 2006. Plant species diversity in the southern part of the Taï National Park (Côte d'Ivoire). *Biodivers. Conserv.*, 15(7): 2123–2142.

**Kursar, T.A., Caballero-George, C.C., Capson, T.L., Cubilla-Rios, L., Gerwick, W.H., Gupta, M.P., Ibañez, A., Linington, R.G., McPhail, K.L., Ortega-Barría, E., Romero, L.I., Solis, P.N. & Coley, P.D.** 2006. Securing economic benefits and promoting conservation through bioprospecting. *BioScience*, 56(12):1005–1012.

**Laurance, W.F., Croes, B.M., Tchignoumba, L., Lahm, S.A., Alonso, A., Lee, M.E., Campbell, P. & Ondzeano, C.** 2006. Impacts of roads and hunting on central African rainforest mammals. *Conserv. Biol.*, 20(4): 1251–1261.

**Leaman, D.J., Schippmann, U., Klingenstein, F., Honnef, S. & Pätzold, B.** 2006. ISSC-MAP: *International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants*. Paper submitted to the 1st IFOAM International Conference on Organic Wild Production. Teslic, Bosnia and Herzegovina. 3–4 May 2006.



**LeBreton, M., Prosser, A.T., Tamoufe, U., Sateren, W., Mpoudi-Ngole, E., Dikko, J.L.D., Burke, D.S. & Wolfe, N.D.** 2006. Patterns of bushmeat hunting and perceptions of disease risk among central African communities. *Anim. Conserv.*, 9(4): 357–363.

**Lindsey, P.A., Alexander, R., Frank, L.G., Mathieson, A. & Romañach, S.S.** 2006. Potential of trophy hunting to create incentives for wildlife conservation in Africa where alternative wildlife-based land uses may not be viable. *Anim. Conserv.*, 9(3): 283–291.

**Ling, S. & Milner-Gulland, E.J.** 2006. Assessment of the sustainability of bushmeat hunting based on dynamic bioeconomic models. *Conserv. Biol.*, 20(4):1294–1299.

**López-Pujol, J., Zhang, F.M. & Ge, S.** 2006. Plant biodiversity in China: richly varied, endangered, and in need of conservation. *Biodivers. Conserv.*, 15(12): 3983–4026.

**Martínez, G.J., Planchuelo, A.M., Fuentes, E. & Ojeda, M.** 2006. A numeric index to establish conservation priorities for medicinal plants in the Paravachasca Valley, Córdoba, Argentina. *Biodivers. Conserv.*, 15(8): 2457–2475.

**McManis, C.**, ed. 2007. *Biodiversity and the Law. Intellectual property, biotechnology & traditional knowledge*. Earthscan. ISBN 1844073491/9781844073498.

**Mead, A. & Ratuva, S.** 2007. *Pacific Genes and Life Patents, Pacific Experiences & Analysis of the Commodification & Ownership of Life*. Call of the Earth Llamado de la Tierra, United Nations University, Institute of Advanced Studies. 273 pp. ISBN 0-473-11237-X.

**Meza, C., Sabogal, C. & de Jong, W.** 2006. Rehabilitación de áreas degradadas en la Amazonia peruana: Revisión de experiencias y lecciones aprendidas. Country case studies on Review of Forest Rehabilitation Initiatives: Lessons from the Past. Bogor, Indonesia, CIFOR. 106 pp.

**Mickels-Kokwe, G.** 2006. *Small-scale woodland-based enterprises with outstanding economic potential – the case of honey in Zambia*. United Kingdom, Bees for Development.

**Monroe, M.C. & Willcox, A.S.** 2006. Could risk of disease change bushmeat-butchering behaviour? *Anim. Conserv.*, 9(4): 368–369.

**Moore, P.D.** 2006. Unkind cuts for incense. *Nature*, 444(7121): 829.

**Morsello, C.** 2006. Company-community non-timber forest product deals in the Brazilian Amazon: A review of opportunities and problems. *Forest policy and economics*. 8(4): 485–494. June.

**Muchugi, A., Lengkeek, A.G., Kadu, C.A.C., Muluvi, G.M., Njagi, E.N.M. & Dawson, I.K.** 2006. Genetic variation in the threatened medicinal tree *Prunus africana* in Cameroon and Kenya: implications for current management and evolutionary history. *S. Afr. J. Bot.*, 72(4): 498–506.

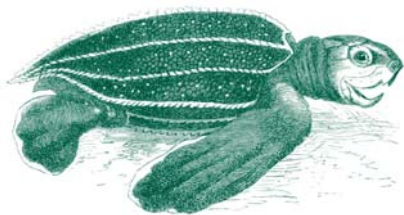


**Muller, D., Epprecht, M. & Sunderlin, W.D.** 2006. *Where are the Poor and Where are the Trees? Targeting of poverty reduction and forest conservation in Vietnam*. CIFOR. Download from [www.cifor.cgiar.org/Publications/Detail?pid=2026](http://www.cifor.cgiar.org/Publications/Detail?pid=2026)

**Narendra, P. & Siddiqui, M.H.** 2006. Conservation of plant diversity of forest for food security of tribal population. *International Journal of Forest Usufructs Management*, 7(1): 6–9.

- Ndangalasi, H.J., Bitariho, R. & Dovie, D.B.K.** 2007. Harvesting of non-timber forest products and implications for conservation in two montane forests of East Africa. *Biological Conservation*, 134(2): 242–250.
- Nelson, S.C. & Elevitch, C.R.** 2006. *Noni: The complete guide for consumers and growers*. Permanent Agriculture Resources. Holualoa, Hawaii.
- Newman, S.M.** 2006. Agronomic and economic aspects of walnut agroforestry in the UK. *Acta Horticulturae*, 705: 65–67.
- Ninan, K.N.** 2006. *The economics of biodiversity conservation. Valuation in Tropical Forest Ecosystems*. Earthscan. ISBN 1844073645.
- Niskanen, A., ed.** 2006. *Issues affecting enterprise development in the forest sector in Europe*. Research Notes 169. University of Joensuu, Faculty of Forestry. 406 pp. ISSN 1235-7421, ISBN 952-458-851-X (printed publication), ISBN 952-458-852-8 (electronic publication).  
Download from:  
[http://joypub.joensuu.fi/publications/other\\_publications/niskanen\\_issues/](http://joypub.joensuu.fi/publications/other_publications/niskanen_issues/)
- Noumi, G.B., Dandjouma, A.K.A., Kapseu, C. & Parmentier, M.** 2006. Le savoir-faire local dans la valorisation alimentaire des fruits du safoutier (*Dacryodes edulis* (G. Don) H.J. Lam) au Cameroun. (*The local know-how in the valorization of (Dacryodes edulis* (G. Don) H.J. Lam) fruits in Cameroon.) *Tropicicultura*, 24(1): 58–62.
- Ocampo Sánchez, Rafael Ángel & Diaz Roja, Roberto.** 2006. *Cultivo, conservación e industrialización del "Hombre Grande"* (Quassia amara). San José, Costa Rica. ISBN 9977-47-356-0.
- Okello, J. & Ssegawa, P.** 2007. Medicinal plants used by communities of Ngai Subcounty, Apac District, northern Uganda. *African Journal of Ecology*; 45(s1), March.
- O'Rourke, E.** 2006. Biodiversity and land use change on the Causse Méjan, France. *Biodivers. Conserv.*, 15(8): 2611–2626.
- Peck, J.E.** 2006. Regrowth of understory epiphytic bryophytes 10 years after simulated commercial moss harvest. *Canadian journal of forest research*. July.
- Peck, J.E. & Christy, J.A.** 2006. Putting the stewardship concept into practice: Commercial moss harvest in Northwestern Oregon, USA. *Forest ecology and management*.
- Peres, C.A. & Nascimento, H.S.** 2006. Impact of game hunting by the Kayapó of southeastern Amazonia: implications for wildlife conservation in tropical forest indigenous reserves. *Biodivers. Conserv.*, 15(8): 2627–2653.
- Pethiya, B.P.** 2006. Options for livelihood enhancement by combining small-scale forest based enterprises with microfinance practices: the Indian experience. Small-scale forestry and rural development: the intersection of ecosystems, economics and society. *Proceedings of IUFRO 308 Conference*, p. 386–397, hosted by Galway Mayo Institute of Technology, Galway, Ireland, 18–23 June 2006.
- Petriccione, M. & Aliotta, G.** 2006. Ethnobotany and allelopathy of the Persian walnut (*Juglans regia* L.). *Acta Horticulturae*, 705: 297–300.
- Phillips, O.L., Rose, S., Mendoza, A.M. & Vargas, P.N.** 2006. Resilience of southwestern Amazon forests to anthropogenic edge effects. *Conserv. Biol.*, 20(6): 1698–1710.
- Pilz, D., Ballard, H.L. & Jones, E.T.** 2006. *Broadening participation in biological monitoring: handbook for scientists and managers*. Gen. Tech. Rep. PNW-GTR-680. Portland, OR, US Department of Agriculture, Forest Service, Pacific Northwest Research Station. 131 pp. Download from:  
[www.fs.fed.us/pnw/pubs/pnw\\_gtr680.pdf](http://www.fs.fed.us/pnw/pubs/pnw_gtr680.pdf)  
Printed colour hardcopies of this publication can be obtained free by contacting the Publications Department, Pacific Northwest Research Station, Portland Habilitation Center, 5312 NE 148th Avenue, Portland, OR 97230, United States of America; e-mail: [pnw\\_pnwpubs@fs.fed.us](mailto:pnw_pnwpubs@fs.fed.us); [www.fs.fed.us/pnw/publications/order.shtml](http://www.fs.fed.us/pnw/publications/order.shtml)
- Pilz, D., McLain, R., Alexander, S., Villarreal-Ruiz, L., Berch, S., Wurtz, T.L., Parks, C.G., McFarlane, E., Baker, B., Molina, R. & Smith, J.E.** 2007. *Ecology and management of morels harvested from the forests of western North America*. Gen. Tech. Rep. PNW-GTR-710. Portland, OR, US Department of Agriculture, Forest Service, Pacific Northwest Research Station. 161 pp. Download a copy in segments from the USFS PNW Research Station Web site at: [www.fs.fed.us/pnw/publications/gtr710/](http://www.fs.fed.us/pnw/publications/gtr710/) or download the entire combined document at: [www.peak.org/~pilzwald/TemporaryDownload/MorelGTR/](http://www.peak.org/~pilzwald/TemporaryDownload/MorelGTR/) or order hardcopies free at: [www.fs.fed.us/pnw/publications/order.shtml](http://www.fs.fed.us/pnw/publications/order.shtml)
- Pulido, M.T. & Caballero, J.** 2006. The impact of shifting agriculture on the availability of non-timber forest products: the example of Sabal yapa in the Maya lowlands of Mexico. *Forest ecology and management*, 222(1–3): 399–409. February.
- Richards, R.T. & Alexander, S.J.** 2006. *A social history of wild huckleberry harvesting in the Pacific Northwest*. Gen. Tech. Rep. PNW-GTR-657. Portland, OR, US Department of Agriculture, Forest Service, Pacific Northwest Research Station. 113 pp.
- Ros-Tonen, M.A.F., van den Hombergh, H. & Zoomers, A.** 2006. *Partnerships in Sustainable Forest Resource Management: Learning from Latin America*. Leiden/Boston, Brill. ISBN 90 04 15339 X/978 9004153 39 4.





**Roychoudhury, N.** 2006. Sericulture in forestry – Vanya Silk. *Vaniki Sandesh*, 30(2): 8–12.  
This paper describes the tropical tasar silkworm as a typical wild silk producer and as a bioresource for forest dwellers. Only three species are commercially exploited for wild silk production (Vanya Silk) in India: *Antheraea mylitta*, *A. proylei* and *A. assama* [*A. assamensis*]. Tasar culture in Madhya Pradesh is emphasized.

**Russell Smith, J., Karunaratne, N.S. & Ranjith-Mahindapala.** 2006. Rapid inventory of wild medicinal plant populations in Sri Lanka. *Biological Conservation*, 132(1): 22–32.

**Samal, P.K. & Dhyani, P.P.** 2006. Gender in the management of indigenous knowledge: reflections from Indian Central Himalaya. *Current Science*, 91(1): 104–108.

**Schabel, H.G.** 2006. *Forest entomology in East Africa: forest insects of Tanzania*. Dordrecht, the Netherlands, Springer/Kluwer Academic Publishers. ISBN-10 1-4020-4654-5.  
(Please see pages 28–29 and 59 for extracts from this book.)

**Schippmann, U., Leaman, D. & Cunningham, A.B.** (in press). A comparison of cultivation and wild collection of medicinal and aromatic plants under sustainability aspects. In R. Bogers, ed. *Proceedings, Frontis Workshop on Medicinal and Aromatic Plants*. Wageningen, the Netherlands, 17–20 April 2005.

**Shanley, P.** 2006. Science for the poor: How one woman challenged researchers, ranchers, and loggers in Amazonia. *Ecology and Society*, 11(2): 28. [online] URL: [www.ecologyandsociety.org/vol11/iss2/art28/](http://www.ecologyandsociety.org/vol11/iss2/art28/)

**Sharma, K.K., Jaiswal, A.K. & Kumar, K.K.** 2006. Role of lac culture in biodiversity conservation: issues at stake and conservation strategy. *Curr. Sci.*, 91(7): 894–898.

**Sodhi, N.S., Brooks, T.M., Koh, L.P., Acciaoli, G., Erb, M., Tan, A.K.J., Curran, L.M., Brosius, P., Lee, T.M., Patlis, J.M., Gumal, M. & Lee, R.J.** 2006. Biodiversity and human livelihood crises in the Malay archipelago. *Conserv. Biol.*, 20(6): 1811–1813.

**Svenning, J.C. & Skov, F.** 2006. Potential impact of climate change on the northern nemoral forest herb flora of Europe. *Biodivers. Conserv.*, 15(10): 3341–3356.

**Taafaki, I.J., Fowler, M.K. & Thaman, R.R.** 2006. *Traditional medicine of the Marshall Islands: the women, the plants, the treatments*. University of the South Pacific, Suva, IPS Publications. 318 pp.

**Tabuti, J.R.S.** 2007. Status of non-cultivated food plants in Bulamogi County, Uganda. *African Journal of Ecology*, 45.

**Tang, Z.Y., Wang, Z.H., Zheng, C.Y. & Fang, J.Y.** 2006. Biodiversity in China's mountains. *Front. Ecol. Environ.*, 4(7): 347–352.

**te Velde, D.W., Rushton, J., Schreckenber, K., Marshall, E., Edouard, F., Newton, A. & Arancibia, E.** 2006. Entrepreneurship in value chains of non-timber forest products. *Forest Policy and Economics*, 8(7).

**Ticktin, T., Whitehead, A.N. & Fraiola, H.** 2006. Traditional gathering of native hula plants in alien-invaded Hawaiian forests: adaptive practices, impacts on alien invasive species and conservation implications. *Environ. Conserv.*, 33(3): 185–194.

**Trauernicht, C., Ticktin, T. & Lopez-Herrera, G.** 2006. Cultivation of non-timber forest products alters understory light availability in a humid tropical forest in Mexico. *Biotropica*, 38(3): 428–436. May.

**Uehara-Prado, M., Brown, K.S. & Freitas, A.V.L.** 2007. Species richness, composition and abundance of fruit-

feeding butterflies in the Brazilian Atlantic Forest: comparison between a fragmented and a continuous landscape. *Global Ecol. Biogeogr.*, 16(1): 43–54.

**Wang ShengYang, Lai WanChi, Chu FangHua, Lin ChienTsong, Shen ShiYen & Chang ShangTzen.** 2006. Essential oil from the leaves of *Cryptomeria japonica* acts as a silverfish (*Lepisma saccharina*) repellent and insecticide. *Journal of Wood Science*, 52(6): 522–526.

**Wenban-Smith, M.** 2006. *Combining organic and FSC certification of non-timber forest products. Reducing costs, increasing options*. United States of America, Dovetail Partners, Inc. Download from: [www.dovetailinc.org/documents/DovetailNTFPCert1006.pdf](http://www.dovetailinc.org/documents/DovetailNTFPCert1006.pdf)

**Wilkie, D.** 2006. Bushmeat: a disease risk worth taking to put food on the table? *Anim. Conserv.*, 9(4): 370–371.

**World Bank.** 2006. *Strengthening Forest Law Enforcement and Governance. Addressing a Systemic Constraint to Sustainable Development*. Report No. 36638-GLB.

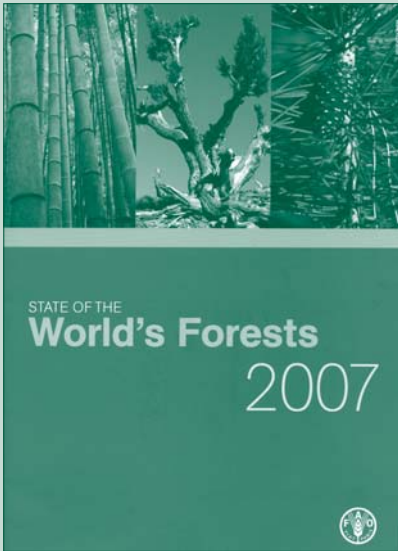
## NEW PUBLICATIONS FROM FAO'S NON-WOOD FOREST PRODUCTS PROGRAMME

The following new working document has been produced by FAO's Non-Wood Forest Products Programme: NWFP Working Document No. 4. *Trade measures – tools to promote the sustainable use of NWFPs? An assessment of trade related instruments influencing the international trade in Non-wood forest products and associated management and livelihood strategies.*

An electronic version is available at the NWFP home page: [www.fao.org/forestry/site/6367/en](http://www.fao.org/forestry/site/6367/en)  
Hard copies of this working document are available free of charge from FAO's NWFP Programme at the address on the first page or by sending an e-mail to: [non-wood-news@fao.org](mailto:non-wood-news@fao.org)

**OTHER RECENT PUBLICATIONS**

**State of the World's Forests 2007**



The seventh edition of the *State of the World's Forests* examines progress towards sustainable forest management. Part I reviews progress region by region. Part II presents selected issues in the forest sector, probing the state of knowledge or recent activities in topics of interest to forestry. Climate change, forest landscape restoration, forest tenure, invasive species, wildlife management and wood energy are just a sampling of the subjects covered.  
[www.fao.org/docrep/009/a0773e/a0773e00.htm](http://www.fao.org/docrep/009/a0773e/a0773e00.htm)

**Forestry grey literature collection**

The Forestry Grey Literature Collection on the Overseas Development Institute's (ODI) Forest Policy and Environment Programme (FPEP) provides a unique record of documents reflecting the origins of people-oriented forestry over the last 25 years. Contributed by members of the Rural Development Forestry Network, the collection includes many project reports and other unpublished materials that shed light on the transition of foresters from being forest guards to acting as facilitators of community-based resource management.

**Ginseng, the divine root**

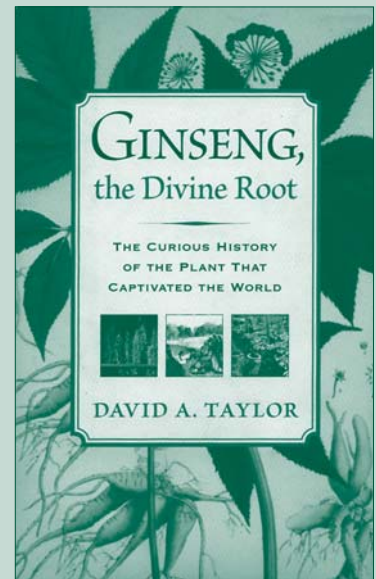
*Ginseng, the divine root*, by D.A. Taylor. 2006. Chapel Hill, North Carolina, United States of America, Algonquin Books. ISBN 1-56512-401-4.

Ginseng is mainly grown around forests in China, the Korea Peninsula and Siberia in the Russian Federation, as well as in the eastern United States of America. Its use goes back 70 million years. Recognized for its medicinal virtues, ginseng has been used as a tonic and as a cure for a vast range of ailments from ancient times to the present. This publication gives a detailed description of its history, highlighting its impact on human cultures. It depicts the illegal trade, the legends and the rise and fall of kingdoms associated with it, as well as the experiences of the explorers, diggers, stealers and traders who sought to make their fortunes from it.

The author in the process uncovers ancient practices and traditions, international crimes and medical lore associated with the "root of life".

While the book will clearly appeal to individuals with a specific interest in non-wood forest products, it offers stimulating reading for all audiences – perhaps especially for those who sample the ginseng-based recipes provided in the appendix.

*(Please see page 30 for an extract from this book.)*



Funded by the Worldwide Environment and Development Affinity Group of the Assets Program of the Ford Foundation, we have converted these documents – previously only available at the ODI library in London and in private collections – into a freely accessible online resource. The documents are organized into several thematic collections: Fuelwood; Social Forestry; Joint Forestry Management; Participatory Forest Management; and Gender and Forestry.

All papers are available to download in Acrobat PDF format, introduced with short summaries in English, Spanish and French from:  
[www.odifpeg.org.uk/publications/greyliterature/index.html](http://www.odifpeg.org.uk/publications/greyliterature/index.html). Overviews introducing each theme are also provided.

The articles in this collection may be of interest to a wide range of people involved in forestry issues or working in the forestry or rural development fields. We would very much appreciate any feedback on this site.  
 .....

**FOR MORE INFORMATION, PLEASE CONTACT:**  
 Cecilia Luttrell, Research Fellow, Forest Policy

**and Environment Programme, Rural Policy and Governance Group, Overseas Development Institute, 111 Westminster Bridge Road, London SE1 7JD, United Kingdom. Fax: +44 (0)207 922 0399; e-mail: [forestry@odi.org.uk](mailto:forestry@odi.org.uk); [www.odifpeg.org.uk](http://www.odifpeg.org.uk) ♣**

**Books are divided into two classes, the books of the hour and the books of all time.**

*John Ruskin*

### Agrobiodiversity Weblog [agro.biodiver.se](http://agro.biodiver.se)

### Bio-Nica

A Web site dedicated to the entomology and biodiversity of Nicaragua.  
[www.bio-nica.info](http://www.bio-nica.info)

### Amazon conservation team [www.amazonteam.org/](http://www.amazonteam.org/)

### Birds of El Jagua, Nicaragua

An e-book on birds of El Jagua cloud forest station in Nicaragua.  
[www.bio-nica.info/Biblioteca/AvesElJaguar.pdf](http://www.bio-nica.info/Biblioteca/AvesElJaguar.pdf)

### Coir Board of India [www.coirindia.org](http://www.coirindia.org)

### Consultorio del Dr. Árbol

Costa Rica ha creado el primer consultorio especializado en la reproducción, cultivo, mantenimiento y aprovechamiento de los árboles, donde se pueden dirigir todas las consultas y dudas, las cuales serán respondidas por profesionales expertos en Ingeniería Forestal y Arboricultura.  
[www.elmundoforestal.com/consultorioforestal/a](http://www.elmundoforestal.com/consultorioforestal/a)

### Finnish forests

[forest.fi](http://forest.fi) is a gateway to Finnish forests and its forest sector and highlights the importance of forests for Finland.  
[www.forest.fi/](http://www.forest.fi/)

### Forests of New Guinea

An interesting flash presentation on the forests of New Guinea is available from the WWF Web site.  
[www.panda.org/about\\_wwf/where\\_we\\_work/asia\\_pacific/our\\_solutions/new\\_guinea\\_forests/index.cfm](http://www.panda.org/about_wwf/where_we_work/asia_pacific/our_solutions/new_guinea_forests/index.cfm)

### Finnish forests

This site is a gateway to Finnish forests and the forest sector and highlights the importance of forests for Finland.  
[www.forest.fi](http://www.forest.fi)

### Frame – Knowledge sharing for the Natural Resources Community

Available in English, French and Spanish.  
[www.frameweb.org/](http://www.frameweb.org/)

### Frame Natural Products audio presentations

New audio presentations featuring comments shared at FRAME's Natural Products International Workshop on rural and conservation benefits from natural products enterprises are now available.

- Johnathan Lash shares a global view of the future of natural resources and their importance in poverty alleviation, "The Wealth of the Poor".
- Abdou Sene presents lessons learned

from the Wula Nafaa project, and specifically the karaya gum market in Senegal, "Gomme Mbepp (karaya gum) in Senegal".

- Catherine Craig gives insight about the opportunities and challenges of planning, harvesting and marketing silk products from areas with high biodiversity in Madagascar, "Wild Silk Production for Conserving Protected Areas in Developing Countries."

Latest additions can be found by clicking on workshop proceedings from the Web site.  
[www.frameweb.org/naturalproducts](http://www.frameweb.org/naturalproducts)

### ITTO: New multilingual Web site

This new Web site provides comprehensive information on ITTO's activities in English, French, Spanish and Japanese.  
[www.itto.or.jp/live/index.jsp](http://www.itto.or.jp/live/index.jsp)

### Khadi and Village Industries Commission of India

[www.kvic.org.in](http://www.kvic.org.in)

### Maple syrup

PennState provides an overview on various aspects of maple sugaring and NWFPs.  
[maplesyrup.cas.psu.edu/maple\\_syrup.html](http://maplesyrup.cas.psu.edu/maple_syrup.html)

### Nature Network

Launched by Nature Publishing Group, Nature Network is a new free online networking Web site for scientists worldwide. Participation is free, requiring little more than registration through the site.  
[www.nature.com](http://www.nature.com)

### OrganicLink

This Web site was launched in January 2007 by the International Trade Center (the UN focal point for technical cooperation in trade promotion) in order to facilitate contact between importers and exporters of organic products globally and provides an unrivalled source of sector information. The site provides a *freely available database of importers and exporters; and a portal for organic sector information.*  
[www.intracen.org/organics](http://www.intracen.org/organics)

### Rambles and ambles

This is Sacred Earth Travel's newsletter covering news, special alerts, destination information and industry news from the sphere of ecotourism.  
[www.sacredearth-travel.com](http://www.sacredearth-travel.com)

### Support fair trade

[www.supportfairtrade.org/](http://www.supportfairtrade.org/)

### The International Ecotourism Society (TIES)

TIES is a global network of industry practitioners, institutions and individuals helping to integrate environmental and socially responsible principles into practice.  
[www.ecotourism.org](http://www.ecotourism.org)

### ONLINE ACCESS TO RESEARCH IN THE ENVIRONMENT (OARE)

OARE, an international public-private consortium coordinated by the United Nations Environment Programme (UNEP), Yale University and leading science and technology publishers, enables developing countries to gain free access to one of the world's largest collections of environmental science literature.

Over 1 000 scientific journal titles owned and published by over 200 prestigious publishing houses, scholarly societies and scientific associations are now available in 70 low-income countries. Another 36 countries will be added by 2008.

Research is provided in a wide range of disciplines, including biotechnology, botany, climate change, ecology, energy, environmental chemistry, environmental economics, environmental engineering and planning, environmental law and policy, environmental toxicology and pollution, geography, geology, hydrology, meteorology, oceanography, urban planning, zoology and many others.  
[www.oaresciences.org/en/](http://www.oaresciences.org/en/)

### The Right to Food

The Right to Food Web site features information on the Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the context of National Food Security.

Through the site, users can increase their awareness of the human right to food, access resources for capacity-building at national and international levels and find guidance, methods and instruments to assist in implementation of the right to food at the country level. Resources include training materials, an e-learning course on the right to food, tools for education and awareness-raising for implementing the right to food and a virtual library containing manuals, technical papers, policy briefs, case studies and publications.  
[www.fao.org/righttofood](http://www.fao.org/righttofood)

### World mapper

Worldmapper is a collection of world maps, where territories are resized on each map according to the subject of interest.  
[www.worldwildlife.org/wildfinder/](http://www.worldwildlife.org/wildfinder/) ♣

**SUBSCRIBING AND CONTRIBUTING TO NON-WOOD NEWS**

Subscription to Non-Wood News is free of charge. Please send an e-mail to [non-wood-news@fao.org](mailto:non-wood-news@fao.org) if you would like to receive a copy and be added to our mailing list.

A strong characteristic of Non-Wood News is that it is open to contributions from readers. Should you have any interesting material on any aspect of NWFPs that could be of benefit to all our readers, please do not hesitate to submit it. Articles are welcomed in English, French and Spanish and should be between 200 and 500 words.

The deadline for contributions for Non-Wood News 16 is 15 October 2007.

For more information, please contact Tina Etherington at the address on the front page or alternatively send an e-mail to: [non-wood-news@fao.org](mailto:non-wood-news@fao.org)

**Request for information: bamboo/bamboo charcoal as renewable energy**

Are there any institutions with an interest in bamboo/bamboo charcoal as renewable energy – especially in Africa, or possible donors for this area?

If you can help, please contact:

Fu Jinhe Ph.D., Senior Program Officer and Coordinator of IUFRO 5.11.05 Bamboo and International Network for Bamboo and Rattan (INBAR), 8 Fu Tong Dong Da Jie, Wang Jing area, Chao Yang district, Beijing 100102, China. Fax: +86-10-6470 2166; e-mail: [jfu@inbar.int](mailto:jfu@inbar.int); <http://www.inbar.int>

**History of NWFP development**

Could you please provide me with information or reference to learn a bit about "The history of development of NWFP as a discipline or subject"? I need this info to prepare a small textbook on NWFPs for our students here. (Reader in Armenia)

*Use of NWFPs is as old as the human race. They provided the earliest food, medicines and shelter. They were the earliest traded goods. When the wild plants were domesticated, thousands of years ago, wild NWFPs became agricultural products. And that led to agricultural revolution – settled and managed use of farm lands.*

*However, when industrial revolution took place (and wage employment and large factories along with infrastructure development and transportation facilities came up), timber became the prime forest product. All others were grouped as Minor Forest Products (MFPs).*

*Thus, by the time the formal and organized educational institutions as sources of knowledge dissemination were established, forest management had narrowed its scope to timber management. Knowledge on NWFPs mostly remained local and traditional.*

*It is only recently that MFPs have re-emerged from obscurity, as NWFPs (shedding their minor status) – prompted by several developments or events such as progressive loss of forest as a timber source, awareness about the need for environmental conservation and non-destructive uses of forests, green consumerism and premium value for organic products, etc. However, progress has been hampered by several hurdles – from lack of policy to lack of necessary skills and research support.*

*This reader can get a lot of information about the history of NWFPs from several Web sites and also from the Report of the International Expert Consultation on NWFPs, No. 3 in FAO's NWFP series. (Reply from Mr C. Chandrasekharan, founder of FAO's NWFP Programme and first editor of Non-Wood News.)*

**Feedback on the last (new look) issue**

- *Non-Wood News* provided me with valuable leads to useful references while I was writing up my doctorate. (Reader in South Africa)
- [Commenting on the new look] It is very near to the colours of Mother Nature. I liked it. (Reader in India)
- Thanks for sending the latest issue of *Non-Wood News*. As usual it's full of interesting notes. (Reader in the United Kingdom)
- I have read the recent *Non-Wood News* (14) with much enjoyment. It has provided me with numerous case study examples for my lectures, not to mention the new information on what is useful elsewhere and could be profitably adopted here in Uganda. I have also benefited by way of the clear articulation of issues and this has improved my communication skills. (Reader in Kampala, Uganda)
- Please continue with the excellent endeavour for we are benefiting from it

tremendously. (Reader in Laguna, the Philippines)

- Let me comment here that you people are doing a great job ... each edition for me is simply un-put-downable ... I read it cover to cover. (Reader in Kogi state, Nigeria)
- *Non-Wood News* is very interesting because we have found some good ideas in it, and look forward to some more good reading. (Reader in Kelmscott, Australia)
- Congratulations! The new NWN looks great! Loads of interesting things to read too. (Reader in Italy)
- I appreciate too much this magazine because I am informed of the news in the world. Where I work we have almost no contribution from the authorities. This kind of publication gives interesting information to people who want to improve the environment. (Reader in La Plata, Argentina)
- FAO's NWFP information is useful for teaching students and guiding them for research. (Reader in New Delhi, India)
- I always wish for and am happy to get the hard copy format as I have very limited access facilities as well as slow download speed. (Reader in Chittagong, Bangladesh)
- We greatly appreciate receiving and reading *Non-Wood News*. (Reader in Surrey, United Kingdom)
- The current issue of *Non-Wood News* (14) was really amazing and interesting and the use of colour makes it more attractive. (Reader in Noakhali, Bangladesh)
- I am receiving *Non-Wood News* for the last eight years and I find it very informative. (Reader in West Bengal, India)
- *Non-Wood News* is a wonderful publication. (Reader in Michigan, United States of America) ♣

**LET'S KNOW MEDICINAL HERBS**

I would like to invite readers to watch this 32-minute Hindi film regarding some medicinal herbs. Names of botanical names are given in subtitles: [www.cgnet.in/av/pankaj.wmv/audio\\_view](http://www.cgnet.in/av/pankaj.wmv/audio_view). This is a very first effort but I am planning to go along in this way.

I look forward to receiving your comments and suggestions. (Pankaj Oudhia, India, e-mail: [pankajoudhia@gmail.com](mailto:pankajoudhia@gmail.com))

## Creative use of Non-Wood Forest Products



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An imaginative use of the abundant pine needles from a nearby forest has enabled local women in one community of Honduras to create original handicrafts. The use of this NWFP brings benefits, both direct (income-generation) and indirect (protecting the forest). With over 2 million hectares of pine forests in Honduras alone, this innovative and creative use of pine needles could be copied by other communities, not only in Honduras but also in other countries around the world.