

“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)

## AMAZON CHIC

The latest in luxury is buried deep in Brazil's Amazon rain forest where entrepreneurs are carving out a multimillion-dollar global market in everything from designer fish-scale running shoes made from giant Amazon river fish to seed jewellery and shampoos and bath oils made from exotic fruits such as *cupuaçu* and *açaí*.

In Brazil alone, Natura, a direct sales company that markets cosmetics based on Amazon oils and essences, controls 23 percent of the market share in a country of 185 million people. Last year, sales of Brazilian cosmetics, much of them based on Amazon products, topped US\$484 million, up more than 150 percent from 2001, according to the Brazilian Toiletry, Perfumery and Cosmetics Association. Companies such as Natura are now starting to make their products available in North America and Europe. Natura has already made important inroads in the world's cosmetics Mecca, France.

Another company, Amazônia Natural, markets a range of hair products made from the *guaraná* berry, a natural stimulant indigenous to the Amazon region that acts as an astringent and is said to prevent baldness. The company also sells bath oils and creams made with passion fruit, which is marketed in Brazil as a relaxant. Other skin and hair care lines produced by both Amazônia Natural and Natura draw on the hydrating powers of *cupuaçu*, an Amazonian fruit whose oily

seeds are used in the manufacture of skin creams, and *açaí*, a purple berry renowned for its rich antioxidant powers. *Açaí*, which is being heralded as a wonder food, is sold as a deep purple frozen slush at health food stores throughout North America and Europe. The berry, whose chemical properties are still the subject of scientific research, has been found to help combat premature ageing and has ten times more antioxidants than red grapes.

The Rio de Janeiro-based jewellery designer Maria Oiticica was born in the Amazon region. Several years ago, she began to design sophisticated jewellery using seeds from rain forest berries and nuts, and the leathery scales from giant Amazon river fish. Osklen, another high-end Brazilian retailer that recently opened its first North American store in New York, is also using fish scales in a collection of shoes and handbags. Like Osklen, Oiticica's unique designs are featured in fashion magazines around the world. Chunky rings and bracelets made with silver and dyed *jarina* and *açaí* seeds in a riot of bright colours retail at stores in London and in North America. Oiticica's accessories range in price from about \$20 for a bracelet with woven palm fronds to several hundred dollars for bracelets and necklaces made with dyed fish scales and sterling silver.

Like most of the companies that market Amazon products, Oiticica works with local Indian tribes. She currently runs a programme for native women who have left their Amazon tribes to seek work in cities such as Manaus and Belém, only to find themselves living in abject poverty. Oiticica has set up a workshop for the women, and pays them to prepare the seeds and palm leaves that she uses in her jewellery production. “We take from the forest,” says Oiticica, whose raw materials in her so-called “biojewels” are mostly seeds that have already fallen from the trees. “But we all have a responsibility to give back.” (Source: Macleans.ca [Canada], 8 October 2007.)



## BIOPROSPECTING/ BENEFIT-SHARING OR BIOPIRACY?

### Boreal forest may be home to new medicines

Is the boreal forest the new Amazon rain forest? That's what the Great Lakes Forestry Centre (GLFC) and Northern Ontario School of Medicine (NOSM) are trying to find out. Long a source of the anticancer compound known as paclitaxel, the boreal forest is now being mined for other biological chemicals that could help humanity. “Most research in the past, in regard to drug discoveries, took place in the Amazon and South America. Recently, we have been looking at resources in our own backyard,” said GLFC research scientist Mamdouh Abou-Zaid.

GLFC is collaborating with NOSM to launch the Boreal Bioprospecting Initiative. Bioprospecting is the search for economically valuable biological molecules, organisms or genetic materials using NTFPs such as trees, mushrooms, herbs and shrubs that could lead to nutritional or medical therapies.

Based on Abou-Zaid's considerable knowledge of disease-preventing antioxidant compounds derived from forests and NTFPs, NOSM approached him to be the project's research director. The core of the Boreal Bioprospecting Initiative will be his extensive library of about 1 000 natural product crude plant extracts and 800 purified compounds, many of which are novel natural products with antioxidant properties to prevent and halt damage from diseases triggered by overactive internal defence reactions in our bodies. In that library could be the key to new therapies for victims of cancer, stroke, Parkinson's disease and the like.

Abou-Zaid already has a few leads, such as the antioxidant properties present in maple syrup.

It has also been found that northern plants differ from their neighbours to the south in a significant way. With many more predators such as insects and plant-eating animals in South America, plant life there has evolved to develop a “wide range of compounds in low concentrations,” he said. “The boreal forest plant, with its shorter growing season, focuses on producing a high concentration of specific compounds.”

At this stage, paclitaxel (which is marketed under the brand name Taxol) remains Northern Ontario's greatest pharmacological export. In cooperation with an Ottawa-based company, Ensyn

Technologies, Abou-Zaid has applied for an international patent to extract paclitaxel more efficiently from the needles and twigs of eastern yew. The method they have developed is called byrolysis, which in its simplest terms means exposing the plant to a few seconds of heat to release the taxanes into an oil.

The impetus is both economic and environmental. Abou-Zaid estimates that just 2 percent of chemical-rich plant material is currently utilized from an available 10 percent, moreover using "harsh solvents".

NOSM has funding applications in various agencies to create the infrastructure to process and bring the raw material from the boreal forest to the marketplace, while maintaining intellectual property rights in northern Ontario.

In September, Member of Provincial Parliament (MPP) David Oraziotti announced a Northern Ontario Heritage Fund Corporation \$1.1-million funding to create NOSM's Biomaterial Collection Assembly and Central Processing and Analytical Facility at Algoma University College (AUC) in Sault Ste. Marie. The AUC site will collect plant samples from surrounding forests and identify the chemicals they contain. Those considered likely to have medicinal properties will be forwarded to researchers at both of the medical schools campuses, in Sudbury and in Thunder Bay. [Source: *Sault Star* [Canada], 12 June 2007 and 8 September 2007.]

#### Africa must patent traditional medicines

African medical practitioners have been urged to use their intellectual property rights in order to patent and protect traditional medicines and indigenous knowledge. South African Health Minister Manto Tshabalala-Msimang made this call on Monday, at the Africa Regional Consultative Meeting on Public Health, Innovation and Intellectual Property.

The two-day meeting is part of WHO's initiative to develop a global strategy and plan of action aimed at enhancing needs-driven, essential health research and development that are relevant to diseases disproportionately affecting developing countries. The high prices of medicine, the Minister said, makes it imperative that Africa takes a common position on issues of fair trade with regard to medicines affecting public health; the consultative meeting sought to consolidate Africa's position on this matter. The meeting was attended by

representatives of at least 16 African countries and experts from various local and international organizations, including WHO.

In April this year, South Africa established the Medicinal Plant Incubator Project (MPIP) to protect its indigenous plants. This will be achieved by ensuring that those who need to use these plants do not pluck plant species in an uncontrolled manner from the wild. The indigenous plants will be grown in a nursery environment, be well cared for and be sold to traditional healers and others who have a use for them.

The project has, as one of its primary objectives, a duty to ensure preservation, propagation and recording of plants, and informing the public how to manage ethnobotany. This is a critical task especially considering the local and international pressure arising from competing land use and sheer arrogance from some quarters, in relation to biodiversity.

WHO estimates that between 70 and 80 percent of the populations of developing countries rely on traditional medicines. Over 30 000 of South Africa's plant species are said to be utilized as medicines and about 350 of these are still commonly used and traded as medicinal plants.

It is estimated that almost 20 000 tonnes of medicinal plants are used by at least 27 million consumers each year. In Gauteng, numerous species are harvested, particularly from the province's grasslands, which are already under pressure for land demand for housing and agriculture.

The success of this project will ensure that consumers have easier access to culturally acceptable and affordable medicine that promotes their physical and spiritual well-being. Other benefits of the project will include access by healers to a regular supply of plants that are important for treating some ailments, thereby promoting their businesses. A wider range of plants will also be available for healers to dispense and for consumers to purchase. [Source: *BuaNews* [Tshwane], 8 October 2007.]



#### Drug companies looting South Africa's bounty of medicinal plants

The government has stepped in to save a tiny South African plant from extinction after hundreds of tonnes were harvested for foreign drug companies, one of which has patented its use to fight HIV/AIDS.

Traditional healers, who have used the plant for centuries, are now trying to win back the patent which they claim is rightfully theirs.

The matter has become so heated that the Eastern Cape government has banned all further harvesting of the plant *Pelargonium* – part of the geranium family – until further notice. But illegal harvesting of pelargonium, also known as *umckaloabo* and *klawerbossie*, continues in the hills around Grahamstown and Alicedale and has led to dozens of arrests, according to Eastern Cape researchers.

Now the Department of Environmental Affairs has decided to review all bioprospecting projects to make sure they conform to new regulations that protect the commercial rights of traditional healers.

The pelargonium tug of war will be discussed next week in Canada at a special United Nations working group meeting on biopiracy and biodiversity.

Pelargonium is one of dozens of South African plants being targeted by drug companies eager to develop new medicines. Other plants successfully targeted in recent years include *Sutherlandia* and *hoodia*, succulent plants used by San communities to suppress appetite and thirst on long hunting journeys. [Source: *The Times* [Johannesburg], 7 October 2007 [in BIO-IPR].]

#### Namibian Government to act against plant pirates

The Government will set up a special committee to combat unlawful exploitation and trade of biological products, which include plants such as *hoodia* and devil's claw, and marula nuts. Namibia needs to guard against unlawful exploitation and biopiracy, but has no such policies and laws in place, Cabinet noted during its latest meeting.

The Ministry of Environment and Tourism is drafting a law on Access to Biological Resources and Associated Traditional Knowledge, which Cabinet expects to be finalized before the end of this year.

Trading in these products, which often means exploitation for financial gain without including indigenous people who

have centuries-old knowledge of the use of such plants, requires regulation to avoid exploitation.

Bioprospecting contracts lay down the rules of benefit-sharing between researchers and countries, and can bring royalties to less developed countries. The fairness of these contracts has been a subject of debate.

"Cabinet gave approval for the establishment of an Interim Bioprospecting Committee to coordinate Government's approach on biotrade and bioprospecting according to terms of reference still to be proposed," the latest Cabinet briefing paper stated.

Namibia has a large genetic diversity in plants and animals that has potential for commercial development. Biotrade has the potential to generate significant economic benefits to Namibia if properly controlled.

Cabinet noted that "in the absence of a regulatory framework, Namibia stands to lose millions of dollars in potential revenues from renewable plant, animal, fungal and microbial resources, if these are exploited by international pharmaceutical, medicinal and agrochemical interests without sound benefit-sharing arrangements". (*Source: The Namibian*, 20 August 2007.)

## CAN TREES GROW ON MARS?

*Mexico City.* Scientists are using the pine-forested slopes of a Mexican volcano as a test bed to see whether trees can grow on a heated-up Mars, part of a vision of making the chilly and barren red planet habitable for humans one day. Planetary scientists at the National Aeronautics and Space Administration (NASA) and Mexican universities believe that if they can warm Mars using heat-trapping gases, raise the air pressure and start photosynthesis, they could create an atmosphere that would support oxygen-breathing life forms.

Getting trees to grow would be a crucial step. The scientists' quest has taken them to the snow-capped Pico de Orizaba – a dormant volcano and Mexico's tallest mountain – to examine trees growing at a higher altitude than anywhere else on Earth.

The scientists are studying what makes trees refuse to grow above a certain point, where temperatures drop and the air becomes thinner, to see how easily they could grow on Mars. (*Source: Independent Online [South Africa]*, 16 July 2007.)



## CERTIFICATION DES PFNL EN AFRIQUE CENTRALE

Une récente étude de la FAO a été menée sur les perspectives de la certification des produits forestiers non ligneux (PFNL) en Afrique centrale, en général, et dans les pays membres de la Commission des forêts de l'Afrique centrale (COMIFAC), en particulier. Sur la base d'une revue bibliographique et des discussions avec les différentes parties prenantes, l'étude a révélé des points importants relatifs à la certification des PFNL.

En ce qui concerne l'état des lieux en Afrique centrale, aucun PFNL n'est encore certifié. Cet état des choses est dû à de nombreux problèmes représentant déjà autant de contraintes à la certification des PFNL en Afrique centrale. Ces contraintes sont entre autres:

- Les PFNL sont souvent récoltés/collectés pour la subsistance, exception faite de quelques produits telles les écorces de *Annickia chlorantha*, *Gracnia cola*, *Prunus africana*, *Pausinystalia yohimbe*, les feuilles de *Gnetum* spp., de Marantacées (*Thaumatococcus daniellii*), les amandes de *Ricinodendron heudelotii* et *Irvingia gabonensis* en ce qui concerne les végétaux, et les perroquets (*Psittacus erithacus*) chez les animaux.
- Dans la plupart des pays sinon tous, le bois a toujours été considéré comme produit forestier principal tandis que les PFNL ont longtemps été désignés comme produits secondaires. A ce titre, le commerce des PFNL se fait régulièrement dans le secteur informel à une échelle souvent locale et nationale et, dans quelques cas, régionale et internationale.

Pour ces raisons, et bien d'autres, la certification des PFNL devient alors problématique. En effet, la certification, procédure par laquelle une tierce partie

donne une assurance/label commerciale écrite attestant qu'un produit, un processus ou un service est conforme à des normes spécifiques sur la base d'un audit conduit suivant des procédures agréées, suppose l'évaluation d'une gestion et, par conséquent, des coûts pour la mise en place du système de ladite gestion et pour son évaluation. Elle suppose aussi et surtout que le produit possède une certaine/grande valeur commerciale pour pouvoir couvrir les coûts de gestion et dégager des bénéfices. A ce titre, la certification des PFNL dont la production se fait sans véritable système de gestion, et dont la commercialisation est généralement informelle et pour la subsistance, devient pratiquement difficile à mettre en œuvre pour ne pas dire sans objet pour l'Afrique centrale.

Toutefois, lorsque l'on considère qu'un PFNL fait partie intégrante d'un écosystème qui est la forêt, on peut alors envisager une alternative pour la certification des PFNL en Afrique centrale: on certifie la gestion de la forêt où le PFNL est récolté, puis la traçabilité de ce dernier, pour vérifier que toutes les étapes de sa production et de sa transformation respectent des normes élaborées suivant des procédures agréées. Cette approche représente une potentialité importante, on pourrait même dire la plus importante dans le processus de certification des PFNL en Afrique centrale. On pourrait alors encourager la certification des Unités de gestion: Unités forestières d'aménagement (UFA), Permis forestiers associés (PAF), Périmètres d'exploitation forestière (PEF), Unités forestières d'exploitation (UFE), Forêts communautaires et Forêts communales (FC). Le gestionnaire de la forêt supporte les coûts de gestion tandis que l'exploitant des PFNL supporte les coûts liés à l'évaluation de la traçabilité des ses produits. Une autre opportunité pour la certification des PFNL en Afrique centrale est le développement de plus en plus croissant d'outils politiques et cadres institutionnels de promotion de gestion forestière durable dans cette région.

Enfin, l'étude a défini des critères d'éligibilité des PFNL à la certification. Ainsi, les PFNL possèdent un potentiel de certification lorsqu'ils: a) ont accès à un marché international avec une demande significative; b) sont l'objet d'une commercialisation importante avec une valeur ajoutée; c) font l'objet d'une collecte organisée dans une filière bien structurée;

d) ont un cycle de production bien connu et maîtrisé pour une meilleure planification des récoltes et une bonne satisfaction de la demande: cet aspect suppose une production régulière avec une périodicité bien connue; et e) ont une haute valeur pour la conservation (hvc).

Certains PFNL peuvent satisfaire les exigences énumérées ci-dessus. Il s'agit, chez les végétaux:

- des feuilles de *Gnetum* spp. et de Marantacées;
- des écorces diverses comme celles de *Annickia clorantha*, *Garcinia cola*, *Prunus africana* et *Pausinystalia yohimbe*;
- des fruits, graines et amandes divers, entre autres ceux de *Iringia gabonensis* et *Ricinodendron heudelotii*;
- des encens, résines et exsudats divers comme l'encens de *Canarium schweinfurthii* et la gomme arabique;
- de l'huile des amandes par exemple l'huile des amandes de *Allanblackia* spp, *Baillonella toxisperma* et *Vittelaria paradoxa*.

Chez les animaux, ce sont les perroquets (*Psittacus erithacus*), les escargots et autres mollusques, ainsi que les trophées de nombreuses espèces telles que l'éléphant, le bongo, l'éléphant de derby et le buffle particulièrement convoitées dans les marchés des pays développés. [Source: *Les perspectives de la certification des produits forestiers non ligneux en Afrique centrale*. Produits forestiers non ligneux. Document de travail N° 4, FAO, 2006.]

## CHEWING STICKS

Across Africa south of the Sahara, many people go about their daily business with a small stick or twig protruding from their mouths, which they chew or use to scrub their teeth. Cut from wild trees and shrubs in the bush, this is the African toothbrush. Its users swear it is much more natural, effective – and cheaper – than the prettily packaged but pricey dental products on sale in pharmacies and supermarkets.

In Senegal, the chewing stick is called *sothiou*, which means “to clean” in the local Wolof language. In East Africa, the stick is called *mswaki*, the Swahili word for toothbrush.

Their users say the sticks are also medicinal, providing not just dental hygiene but also curing a variety of other ills. Dental

experts agree that they appear to clean teeth well and some upmarket health stores in the United States have been selling chewing sticks as a natural form of dental care.

Traders in Dakar and other Senegalese cities sell neat bundles of the pencil-sized sticks – usually about 6 inches (15.2 cm) long – on the pavement, offering a variety of different types of wood at different prices.

If chewed, most of the twigs fray into finer strands, which have the effect of “flossing” between the teeth or, if rubbed up and down, can scrub tooth enamel clean as well as any toothbrush. But they can taste bitter compared with commercial toothpastes.

The World Health Organization has encouraged the use of chewing sticks as an alternative source of oral hygiene in poor countries where many cannot afford commercial dental products. While a manufactured toothbrush can cost upwards of CFAF300 (60 cents), a chewing stick costs only CFAF25 or 50. (Source: Conserve Africa, 18 June 2007.)



*Pistacia khinjuk*

## DRIED FLOWER MAKING: A POTENTIAL COTTAGE INDUSTRY

Himachal Pradesh (India) is endowed with a wide variety of flora and fauna. Its forests and valleys harbour several plant species that are ideal for making dried flowers.

Dried flower making is an upcoming industry. Dried flowers need less care and are virtually everlasting. They can be painted, coloured or dyed and various floral products, such as cards, pictures, wall hangings, arrangements, potpourris and pomanders, can be prepared from them.

Examples include the following.

- The beautiful reddish leaves of *Pistacia khinjuk*, leaves of various types of ferns such as *Cheilanthes albomarginata*,

*Atryium* spp., *Christella dentata*, *Woodwardia unigemmata*, flowers of *Clematis gouriana*, *Reinwardtia indica* and different grasses can be used for making cards, calendars and wall pictures.

- The turgid leaves of *Quercus* sp., *Ilex dipyrena*, *Cycas* sp., flowers of *Verbena erinoides* and fruits of *Dioscorea* sp., *Hedera canariensis*, *Mallotus philippensis*, cones of *Cunninghamia lanceolata* and hips of *Rosa brunonii*, *R. webbiana* and ferns such as *Polystichum* spp. and *Pteridium aquilinum* can be used for making bouquets, dried flower arrangements and potpourris.

At present, only tree cones and a few ferns are being sold. Dried flower products are sold at very high prices and there is great potential for setting up cottage industries. It is imperative, therefore, to preserve and cultivate such native species, not only for their aesthetic importance but also to restore the ecological balance. With its varied climatic condition, the region creates a congenial environment for cultivating many other ornamental plants that would be suitable for dried flowers, e.g. *Molucella*, *Helichrysum*, *Limonium* and *Nigella*. (Source: MFP News, XVII(3), 2007.)

## HOME GARDENS

Home gardens worldwide are integrated into family life. Living space, boundaries and materials are integrated into gardens. Trees provide shade and shelter under their canopy and their roots stabilize soil around the home.

Multipurpose plants, such as sea buckthorn in cold areas, *Leucaena glauca* in tropical areas and even cassava, are planted as living fences to provide crop protection, privacy, firewood, materials, food and animal fodder. For example, a living fence of cassava provides a boundary to keep out wandering livestock, but also holds a food reserve in its starchy roots ready for an unexpected food shortage.

In Asia, parents traditionally plant a neem tree (*Melia azadirach*) in their home garden for every child born in their family, so that when they are adults there is timber for them to build their own house. Oil from leaves and seeds of the neem is a natural pesticide and the tree is now planted in African home gardens. (Source: *Livelihoods grow in gardens*. FAO Diversification booklet 2, 2004.)

## LES PFNL ALIMENTAIRES EN AFRIQUE CENTRALE

En Afrique Centrale, il existe une grande variété de PFNL. Les plus importants sont

le gibier, les plantes comestibles, les plantes médicinales et les rotins. Le tableau nous présente les PFNL essentiels en fonction des différents pays d'Afrique Centrale.

Pays	Principaux PFNL
Burundi	Gibier, animaux vivants, plantes médicinales
Cameroun	Plantes comestibles (fruits, noix, feuilles) ; plantes médicinales, rotin, gibier
République Centrafricaine	Gibier, plantes comestibles, plantes médicinales
Guinée Equatoriale	Plantes médicinales, plantes comestibles, rotin, gibier
Gabon	Plantes comestibles, osier, gibier
République du Congo	Plantes comestibles (fruits, champignons, légumes); plantes médicinales ; miel, gibier, plantes ornementales, matériaux de construction
République Démocratique du Congo	Plantes comestibles, gibier
Rwanda	Plantes comestibles (fruits); plantes médicinales, miel, animaux vivants.
São Tomé et Príncipe	Plantes médicinales

Ces produits jouent un rôle significatif dans l'existence des communautés locales de cette région car, ils leur fournissent de la nourriture et des revenus. La récolte, la transformation et le commerce relèvent essentiellement du secteur informel si bien que l'on ne dispose d'aucune information digne de foi à propos du rôle de ces différents produits sur l'économie rurale.

Les PFNL alimentaires peuvent être repartis en deux grands groupes: les PFNL alimentaires d'origine végétale et les PFNL alimentaires d'origine animale.

### Les PFNL alimentaires d'origine végétale

Les plantes alimentaires font partie des principaux PFNL dans chaque pays de cette sous-région. Ils sont consommés comme aliment de base ou plat principal, aliment d'appoint, liant, condiments ou comme aromates, excitants ou aphrodisiaques, «amusegueules».

De nombreuses espèces sont utilisées pour une ou plusieurs de ces parties utiles, mais seules les plus importants (c'est-à-dire ceux qui sont économiquement rentables), sont commercialisés au niveau national et international. Parmi ces derniers, nous avons:

- les fruits d'*Irvingia gabonensis* (mangue sauvage); *Dacryodes edulis* (safou); *Cola acuminata* (kola); *Elaeis*

- guineensis* (palmier à huile);
- les légumes-feuilles de *Gnetum africanum* et *Gnetum buchholzianum* (okok/eru);
- les écorces de *Garcinia lucida*;
- les racines et les tubercules, à l'instar de *Dioscorea sp.* (Ilgname sauvage);
- les sèves de *Raphia sp.* (Vin de raphia) et d'*Elaeis guineensis* (Vin de palme);
- les exsudats de *Baillonella toxisperma* (Huile de moabi).

### Les PFNL alimentaires d'origine animale

En général, dans la zone d'Afrique Centrale, les PFNL d'origine animale ont une moindre importance comparés à ceux d'origine végétale; néanmoins ils occupent une place indiscutable dans l'alimentation car ils constituent la principale source de protéine.

Il existe plusieurs types de PFNL d'origine animale qui sont consommés dans la sous-région d'Afrique Centrale. Les principaux sont les suivants: le gibier (mammifères terrestres et aquatiques), les insectes (chenilles, larves de hanneton, les criquets, les termites) et les produits apicoles (miel), les escargots géants, les poissons, les oiseaux et les reptiles. Le gibier est le produit d'origine animale le plus important de cette région, suivi par les produits apicoles et les animaux vivants et les insectes comestibles (chenilles, termites).

### LES INSECTES



Dans la zone d'Afrique Centrale, de nombreuses catégories d'insectes sont consommées. Parmi ces insectes, on distingue:

**Les larves de Hanneton** qui se développent dans les troncs d'*Elaeis guineensis* et de *Raphia monbuttorum* en décomposition, les pétioles des palmes de *Raphia hookeri* sur pieds. Nous avons par exemple *Rhynchophorus phoenicis*, qui est très apprécié au Cameroun. Ces larves sont récoltées toute l'année; mais dans certaines localités, les autorités délimitent les périodes de récolte.

**Les chenilles** sont consommées aussi bien par les populations urbaines que par celles rurales des pays d'Afrique Centrale. Les espèces consommées appartiennent à diverses familles entre autres: Agaristidae, Attacidae, Bombycidae, Noctuidae, Nymphalidae, etc. Au Cameroun et en République Centrafricaine, l'on constate une nette préférence pour les Attacidae. Elles se nourrissent des feuilles de différentes espèces: *Bridelia ferruginea*, *B. micrantha*, *Erythrophleum suaveolens*, *Entandrophragma spp.*, *Petersianthus macrocarpus*, *Triplochyton scleroxyton*, *Trema orientalis*. En général, on récolte les chenilles pendant la petite saison sèche, durant les mois de juillet et août et parfois septembre.

**Les criquets** apparaissent surtout en début des saisons sèches, surtout dans la zone du Cameroun. Elles sont aussi consommées par les populations camerounaises. Deux espèces sont communément appréciées au Cameroun, aussi bien dans les grandes villes que dans les zones rurales: le criquet puant et la sauterelle verte.

(Source : Gestion des ressources naturelles fournissant les produits forestiers non ligneux alimentaires en Afrique Centrale. Produits forestiers non ligneux Document de travail N° 5, FAO, 2007.)



## MEDITERRANEAN FORESTS: REGIONAL DIVERSITY SETS THE SCENE

Mediterranean forests play a key role in the lives and the welfare of the local people, not only for the goods and services they provide, but also for the challenges they pose for conservation and management.

Mediterranean flora is extremely rich with around 25 000 vascular plant species, widely distributed throughout the diverse ecosystems of the region. Climatic, geomorphic and anthropogenic factors have resulted in a mosaic-type landscape of a variety of forest types that cover an area of 73 million ha, or about 8.5 percent of the region's area. However, purely Mediterranean forests and maquis cover about 56 million ha, i.e. 7.5 percent of the total land.

Mediterranean forest ecosystems provide multiple wood and NWFPs and services that are crucial for the socio-economic development of rural areas as well as for the welfare of the urban areas of the Mediterranean region. In this context, Mediterranean forests require special attention for the following reasons.

- They constitute a unique world natural heritage and play a key role in the welfare of urban and rural Mediterranean societies. The goods and services that they produce are very diverse (multifunctionality) and have a great market (many NWFPs) and non-market value (externalities).
- They represent an exceptional richness in terms of biodiversity.
- They are very vulnerable to numerous factors: forest fires, overexploitation, degradation and desertification.
- Their conservation and management affect the availability of soil and water resources, the latter being a key strategic resource for Mediterranean societies.
- As a transitional zone, their future is seriously endangered by climate change.

The situation of Mediterranean forests differs clearly from the northern rim to the southern and eastern subregion. In the northern part, the socio-economic changes of the past decades, triggered by the urbanization of society and better living standards, have increased the relevance of the ecological, recreational and landscape functions of Mediterranean forests. But

these externalities do not always provide revenues for forest owners. Forest management lacks more human resources and profitability than ever before. As forests have become of low interest for their owners, forest lands are abandoned rather than cultivated or maintained. This, in turn, increases the risk of natural hazards such as forest fires, pests and diseases.

On the other hand, in the southern and eastern Mediterranean subregions, the current socio-economic conditions make forests, maquis and rangelands and their products (firewood, grass, aromatic and medicinal plants, etc.) relevant primary resources for the livelihood of local communities. In addition, forest environmental functions (fight against desertification, regulation of the microclimate, regulating water resources, etc.) are crucial for the sustainable development of society as a whole.

The harsh and unpredictable climate, the current socio-economic conditions and the unique and long-lasting history of human-forest-landscape interaction require the development of our knowledge for better conservation and sustainable management of Mediterranean forests. [Source: "Regional diversity sets the scene" by Marc Palahí, EFIMED, Yves Birot, Chairman of EFIMED Advisory Group, Aristotelis C. Papageorgiou, Demokritos University of Thrace, Greece [in European Forest Institute, Mediterranean Regional Office, *EFI news*, June 2007].

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## MOSS PLAYS IMPORTANT ROLES

*Petaling Jaya, Malaysia.* That the diminutive moss plays an important role in retaining water in catchment areas comes as a significant discovery to researchers in the field of bryology (the study of bryophytes – commonly known as mosses), especially since it has always been assumed that trees were more important in slowing water from runoff when it rains, which in turn helps to prevent floods. According to research carried out in Genting Highlands, just 1 m<sup>2</sup> (2–3cm thick) of a particular moss found there can store one tonne of water for a week.

Prof. Mohamed Abdul Majid of the Institute of Biological Sciences, University of Malaya, said that the destruction of forests also meant that the moss growing on branches would be destroyed. Speaking during the five-day World Conference of Bryology here, Prof. Mohamed said that there were numerous other uses for mosses that were only now being explored. He added that Mount Kinabalu, in Sabah, probably contained the most diverse number of mosses in the world with more than 1 000 species present.

International Association of Bryologists President Prof. Janice M. Glime said that mosses have been found to contain anticancer and antibacterial properties. One of the mosses that had anticancer properties was found in the Cameron Highlands. "This is why it is important to research it. It is a largely untapped field and we still don't know enough about mosses and their potential in medicine," Prof. Glime said. She added that some countries have used mosses for insulation, air-conditioning or purely aesthetic purposes, while in Australia and parts of America, the use of mosses in horticulture or to provide fuel has depleted the amount present in forests prompting the need for harvesting guidelines. [Source: *Malaysia Star*, 23 July 2007.]



## NON-PROFIT ORGANIZATIONS AND NGOS

### Global Forestry Conclave and Sustainable Development, Cameroon

The Global Forestry Conclave and Sustainable Development (GFCSDD) (*Partenaire à la gestion durable des ressources naturelles*) is an NGO working

on natural resource management that was formed through a coalition of three Cameroonian environmental working groups: wildlife management, agroforestry and fishing management, and forest lands ecosystems research.

The NGO's name resulted from the fact that the three original working groups had the same objective, namely a development priority of sustainable management of natural resources and environmental protection.

Among its activities, GFCSD encourages the promotion of community forest projects based on NWFP conservation and sustainable management by the creation of agroforests in our sites. GFCSD also has a special programme of traditional forest products' use with various indigenous forest peoples, which will contribute to participatory learning action and is very important for sensibilization.

**FOR MORE INFORMATION, PLEASE CONTACT:**  
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#### **Primary Environmental Care Association, Uganda**

Primary Environmental Care Association (PECA) is an NGO based in Kampala, Uganda. We empower communities to meet their needs while conserving the environment. Currently we are teaching communities how to collect herbs from the wild in a sustainable way. We are also planning to set up a centre for indigenous knowledge and will collect, document, research and disseminate the knowledge in a participatory manner. We are seeking funding for this.

**FOR MORE INFORMATION, PLEASE CONTACT:**  
**Mr Lakuma Opiro, Chairman, PECA, PO Box 23250, Kampala, Uganda. Fax: 256 41 345597; e-mail: peca-kol@excite.com**

#### **Resource Centre for Development Alternatives, Pakistan**

The Resource Centre for Development Alternatives (RCDA) is a small multidisciplinary information and resource centre established to meet the organic development needs of the country. This non-profit educational organization was started in 1992 and formally registered in 1998. RCDA works to promote a vision of

holistic development through education, training, awareness raising, counselling, linkages and information networking.

RCDA's educational areas – based on holistic approaches only – cover all aspects of ecological agriculture, natural health care, alternative technology, environment, alternative education and advancement of women. It collects all the relevant educational and resource materials [i.e. books, manuals, periodicals, directories and audiovisuals] from around the world for its resource library, which it is seeking to expand. Please contact RCDA if you can help in any way.

**FOR MORE INFORMATION, PLEASE CONTACT:**  
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#### **Trees for Life**

Trees for Life is a non-profit, people-to-people movement that helps plant fruit trees in developing countries. These trees provide a low-cost, self-renewing source of food for many people and protect the environment. Our programmes include three elements: education, health and environment.

Volunteers in the villages are trained by Trees for Life and provided with essential support for programmes that respond to the needs of their communities. Through their own efforts and labour, the villagers reap the benefits. Trees for Life provides hope, not handouts. Each person thus empowered pledges to help at least two more people.

Since the inception of Trees for Life in 1984, more than 3 million people have helped plant tens of millions of fruit trees in countries such as India, Guatemala, Haiti and Brazil.

Trees for Life also produces an online scientific journal – *Trees for Life Journal* – that focuses on traditional knowledge and scientific studies of beneficial plants. The journal provides a forum on beneficial trees and plants and brings together international articles about traditional medicine, small-scale field studies and scientific evidence regarding natural

remedies and medicinal plants that could benefit humanity. The journal is available at [www.tfljournal.org/](http://www.tfljournal.org/)

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#### **SCIENCE FOR THE POOR**

In the lower Tocantins region of Brazil, one Amazonian woman questioned why scientists publish principally for elite audiences. Her experience suggests that the impact may be enhanced by also sharing data with people who depend upon forest goods.

Having defended her family homestead near the city of Cameta against loggers in the late 1980s, Glória Gaia became interested in strengthening the information base of other villagers so that they would not lose their forests for meagre sums. She challenged scientists to defy norms such as extracting data without giving back to rural villagers and publishing primarily for the privileged. Working with researchers, she helped them to publish an illustrated manual of the ecology, economics, management and cultural importance of key Amazonian forest species. With and without funds or a formal project, she travelled by foot and boat to remote villages to disseminate the book. Using data, stories and song, she brought cautionary messages to villages about the impacts of logging on livelihoods.

She also brought locally useful processing techniques regarding medicinal plants, fruit and tree oils. Her holistic teachings challenged traditional forestry to include the management of fruits, fibres and medicines. A new version of the book, requested by the Government of Brazil, contains the contributions of 90 leading Brazilian and international scientists and local people. Glória Gaia's story raises the following questions. Who is science for and how can science reach disenfranchised populations? Lessons for scientists and practitioners from Glória's story include: broadening the range of products from research to reach local people; complementing local ecological knowledge with scientific data; sharing precautionary data demonstrating trends; and involving women and marginalized people in the research and outreach process.

(Source: Shanley, P. 2006. Science for the poor: how one woman challenged researchers, ranchers, and loggers in Amazonia. *Ecology and Society*, 11(2): 28 [online]. [www.ecologyandsociety.org/vol11/iss2/art28/](http://www.ecologyandsociety.org/vol11/iss2/art28/))

## THE ROLE OF NWFPs IN POVERTY REDUCTION

NWFPs play a crucial role in meeting the subsistence needs of a large part of the world's population who live in or near forests. They provide shelter, food and medicines on a daily basis as well as in times of crisis. For poor households, NWFPs are rarely the primary source of revenue, but can supplement income or lessen unexpected hardships such as the loss of crops. As long as people rely on these products for their basic survival and nutrition, care must be taken to prevent the resource from shrinking or being degraded.



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

NWFPs are also important in terms of their potential to improve livelihoods through the sale of surplus products. In these instances, increasing forest areas or processing raw materials to add value could significantly enhance returns – making plant-based essential oils or manufacturing lotions and creams from shea butter – for example. Fair

trade organizations can increase the amount of income that poor people earn as well, for example, by encouraging producer cooperatives to offer reasonable prices to suppliers, by providing good working conditions and by reducing the number of intermediaries in market transactions. (Source: extracted from *Better forestry, less poverty: a practitioner's guide*. FAO Forestry Paper 149. 2006. Rome, FAO. [www.fao.org/docrep/009/a0645e/a0645e00.HTM](http://www.fao.org/docrep/009/a0645e/a0645e00.HTM))

## WEAVING WITH NWFPs

### Bamboo fibre goods to set new fashion trends

Because of the global focus that environmental issues have received, bamboo-fibre products have caught the fancy of consumers, who are considering their many ecofriendly advantages. Experts have predicted that bamboo-fibre products will set new fashion trends for 2008/2009 autumn-winter clothing such as scarves, ties and outdoor sportswear.

There are many local clothing, textiles and fabric enterprises that produce bamboo-fibre products. One such success story is that of Hebei Jigao Chemical Fiber Co. Ltd, whose products made of bamboo-fibre have become popular both in the domestic as well as the overseas markets. Currently, Hebei Jigao's products occupy over 90 percent of China's bamboo-fibre market. Despite high prices, bamboo-fibre products sell very well: a leisure suit made from bamboo-fibre material costs 40 000 yuan in Japan and even in China, bamboo-fibre clothes are sold for hundreds of yuan. (Source: Fibre2fashion News Desk [China], 20 August 2007.)

### Grassroots support for raffia growers in the United Republic of Tanzania

Weaving lengths of fibrous palm leaves, the women of Tanzania's Nou forest are busier than ever. Situated in the Manyara region of the country's temperate northeast part, over 200 000 people depend on the forest which for generations has provided them with food, water and a valued raw material – raffia (*Raphia*).

Raffia is part of daily life in the forest, where an abundant water supply and fertile soils provide favourable growing conditions. The versatile palm has multiple uses: raffia culms (stems) are commonly used as supporting beams in buildings and the leaves make effective roof covering. There is also a long-standing tradition of raffia use in textiles

## HOW NWFPs CAN BETTER CONTRIBUTE TO LIVELIHOODS AND POVERTY REDUCTION

In order for practitioners to assist poor people to overcome obstacles to collect, consume and sell NWFPs, they need to:

- discuss the importance of NWFPs with users and identify the type of contributions that they make to livelihoods, recognizing that households rely on these products to varying degrees, depending on the extent of their poverty and vulnerability;
- find out which groups gather which NWFPs, how they access them, and whether they use them for personal consumption, trade or both;
- be aware of traditional practices regarding harvesting and collection, including traditional norms of access;
- determine which households can afford to invest in commercial activities and whether this option is more appropriate than other potential sources of income for vulnerable groups;
- identify opportunities and constraints related to access, collection and trade of NWFPs.

Once practitioners obtain this information, they can start working

with community leaders, users and other stakeholders to:

- compile an inventory as a first step in formulating or revising management plans and practices that reflect local needs and promote sustainable use;
- form local associations/cooperatives and develop cottage industries or community-based enterprises if commercialization of particular products appears viable;
- choose sites that have the potential to yield maximum benefits such as those where plants that are used for medicinal purposes could be grown in home gardens for households to consume or sell;
- document knowledge on and experiences with cultivating medicinal plants and disseminate this information in local languages to inform village residents which ones to use for what illnesses and how to set up this type of home garden;
- lobby authorities to give priority to local residents or communities when issuing permits to collect NWFPs, based on management agreements that regulate, monitor and control harvesting levels.



– baskets, mats, hats and rope can be woven from the flexible fronds. These goods were produced primarily for use within the villages but are now sold locally and abroad, generating much-needed income. Previously the situation was very different when a combination of rapid population growth and the need for productive agricultural land devastated large areas of the forest. Overharvesting and unsustainable methods of collecting raffia also contributed to the destruction of parts of the state-owned forest, threatening the village's water supplies and depleting most of the raffia. Faced with a potential environmental catastrophe, the Tanzanian Government banned the collection of raffia from the forest.

With the help of two NGOs, the ban has been revoked and forest communities are now weaving their way to a brighter future. FARM-Africa Tanzania and SOS Sahel Ethiopia established the Nou Joint Forest Management (JFM) project, a participatory forest management scheme, bringing villagers and the government together to manage the forest sustainably.

As a result raffia production has been domesticated, with large quantities now grown in homesteads on the forest perimeter. Areas of the forest have been replanted and the crop is also grown in swampy areas to avoid clearing more land. Furthermore, villagers no longer uproot the raffia during harvesting but leave the roots intact to allow plants to regenerate.

While the men of the villages harvest and collect the raffia, the women weave. In 2005, also as part of the Nou JFM project, raffia weavers' groups were established to help villagers improve the quality of their products and identify new market opportunities. As a result, demand has been increasing in local and foreign markets.

Although many women from the Nou forest have been weaving with raffia since childhood, the weavers' groups have helped change their fortunes. Typical is Paulina Hotay. "Before joining this project I made less than TSh2 000 (US\$1.50) per month," she said. "Now I make TSh15 000 per month through raffia." (Source: The New Agriculturist Web site, viewed 8 October 2007; www.new-ag.info/07/05/focuson/focuson3.php)

#### Medicinal plants used in organic clothing line

Threads for Life, the first Ayurvedic apparel company in the United States of America, successfully launched its first collection in California. Infused with over 25 medicinal plants and herbs to help address both serious



and everyday ailments, each garment is 100 percent organic and woven by hand.

Based on the 5 000 year-old medicinal science of Ayurveda, each Threads for Life garment is infused by hand with unique formulas to address various emotional and physical health challenges. Through the transdermal process of fibre to skin contact, the herbs and plants are diffused into the pores of skin to restore vitality and balance for healing and optimum health. (Source: *Daily Green* [United States of America], 16 August 2007.)

#### Promoting the use of the "bayong" in the Philippines

*Apalit, Pampanga.* The wife of Pampanga Representative Juan Miguel Arroyo and the spouses of 20 of the province's mayors have spearheaded an effort to promote the use of "bayong" (native bags), instead of plastic bags, as one way to protect the planet from pollution. On Sunday they began distribution of at least 200 000 pieces of bayong or hand-woven rattan or *buri* bags throughout the province.

Television host and environment advocate Christine Bersola-Babao joined the launch at the public market, giving also a short talk on how plastic bags, if not reused or disposed of properly, hurt nature and people. "I started using bayong when I was in high school. It's my personal little way of helping Mother Earth." Bersola-Babao told the crowd of about 400 women who lined up to get their free bayong. (Source: *Inquirer.net* [the Philippines], 16 September 2007.)

#### Stripped of a natural fibre

Every year during the Mah Meri's *Hari Moyang* (Ancestors' Day), the Orang Asli would proudly wear beautiful bark clothing called *teghap*, enhanced with sashes and headbands woven from *nipah* palm leaves. However, trees have become such scarce commodities in Malaysia that even the Orang Asli can barely afford to use the bark.

"We wear our traditional bark clothing as a form of identity," explains Julida anak

Uju, 38, from Sungai Bumbun Orang Asli Village, one of five villages in Carey Island. She had had to wade in knee-deep mud to harvest the *nipah* leaves for her costume, which takes a full day to weave into the *songkho* (plaited headband), *selipang* (sash) and *dendan* (skirt). The beige and dark green colours are obtained by interweaving young and mature leaves. "We also wear the costume for dances and it gives us a sense of pride in our traditions and customs. But due to the scarcity of terap trees, we can barely produce the clothing for our children."

She shows us the terap tree (*Artocarpus elasticus*, belonging to the mulberry family Maraceae) from where she obtains the bark. The sapling stood forlornly in a grove of palm oil trees. Like the *nyireh batu* wood, which men use for their magnificent carvings, these native plants are increasingly rare because of scarcity of land.

Bark is among nature's most versatile materials used by indigenous people for generations. Beaten bark clothing is found across tropical regions, mainly in the tropical Pacific Islands, Southeast Asia and parts of Africa and South America.

In Malaysia, the Mah Meri continues using bark clothing, but are these distinctive garments on their way to extinction? Julida says that they are very careful when washing the clothing so as not to tear them. "We don't know how long they can last and we can't make new ones." (Source: *Malaysia Star*, 17 June 2007.)

#### Woven bamboo products and crafts

Bamboo crafts and woven mats are traditional products in China, India, Malaysia, the Philippines and Thailand. The technique has been known for several thousand years. These diverse products have become an indispensable part of daily life, literature and art.

There are nearly 20 categories of woven bamboo products in Asia, including fruit baskets, trays, bottles, jars, boxes, cases, bowls, fans, screens, curtains, cushions, lampshades and lanterns. (Source: *World bamboo resources. A thematic study prepared in the framework of the Global Forest Resources Assessment 2005*. Non-Wood Forest Products 18. Rome, FAO. 2007.) ♣

In the middle of difficulty lies opportunity.  
Albert Einstein