

BAMBOO

Dell develops an ecological bamboo computer

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

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

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

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

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

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

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

Dell develops an ecological bamboo computer

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

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

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

Bamboo speakers

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

Bamboo "silk" protects against ultraviolet rays and bugs

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

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

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

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

Greener gear for skiers and boarders

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

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

Thaw, a brand that designs thermal base

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

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

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



BERRIES

Açai berries make jump from food into skin care

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

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

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

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

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

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

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

Indian berries may fight dengue mosquitoes

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

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

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

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

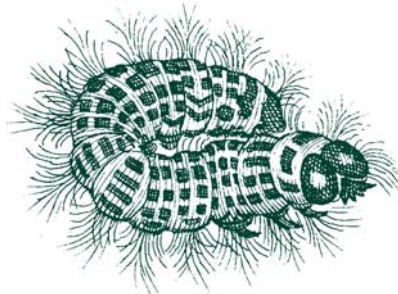
People in the valleys of the autonomous region of Tibet and Mongolia cherish the *goji* berry (also known as the wolfberry, *Lycium barbarum*). In fact, they honour it in celebrations that last two weeks each year. It is believed this berry is what gives them their disease-free lives, which often last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

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

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

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

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



 EDIBLE INSECTS

Beastly bugs or edible delicacies

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

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

Source of protein, vitamins and minerals

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

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

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

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

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

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

Commercial potential

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

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

FOR MORE INFORMATION, PLEASE CONTACT:
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Recipes for southern Africa's edible insects

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

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

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

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

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

RECIPES FOR COOKING SOME EDIBLE INSECTS

Mashonzha mopane worms

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

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

Thongolifha stink bugs

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

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

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

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

Nzie locusts

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

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

Madzhulu termites

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

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

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Insectes en République Démocratique du Congo

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

Parmi les insectes les plus recherchés figurent:

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

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

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

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



Major ginseng research programme

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

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

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

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

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

Wild ginseng in Bhutan becomes endangered

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

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

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

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

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

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

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

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

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

Ginseng aids vaccination response in horses

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

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

Ginseng helps cancer patients reduce fatigue, increase energy

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

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

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

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

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

GUM ARABIC

Pectin replaces gum arabic for better beverage stability

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

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

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

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

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

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

MAPLE SYRUP

Untapped resource

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

The problem? Limited access to private land.

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



Sugar Maple

designing and implementing their own grant programme.

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

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

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

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

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

Season not so sweet for maple syrup producers in Canada

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

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

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

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

MEDICINAL PLANTS AND HERBS

New yardstick for medicinal plant harvests

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

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

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

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

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

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

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

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

Medicinal plants "facing threat"

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

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

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

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

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

MEDICINAL PLANTS FOR LIVELIHOODS

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

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

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

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

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

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

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

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

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

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

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

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



Harpagophytum spp.

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

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

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

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

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

Cheap malaria medicine from endive

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

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

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



Herbal tea may help diabetes

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

Nature's pharmacy: African herbals on the rise

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

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

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

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

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

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

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

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

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

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

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

Recherches faites sur l'importance du *Vernonia conferta*

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

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

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

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Chelidonium majus

Cancer drug to be produced in the United Arab Emirates

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

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

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

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

MORINGA OLEIFERA

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

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

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

1. Excellent human food resource

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

2. Improvements in human nutrition and health

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

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

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

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

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

3. Animal feed sources

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

4. Water purification

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

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

5. Mats, dyes and tanning

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

6. Pulp and paper source

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

7. Oil production and utilization

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

8. Plant growth enhancer and soil fertilizer

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

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Moringa oleifera leaves

Student researchers study natural water purifier

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

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

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

Body Shop launches a moringa bath and body range

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

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

Philippines biotechnology firm to sell moringa oil to the United States

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

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

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

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

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

"Buy a Miracle Tree" campaign

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



NUTS

Maya nut: a forgotten treasure

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

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

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

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

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

MAYA NUT (*BROSIMUM ALICASTRUM*)

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

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

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

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

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

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

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

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

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

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

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

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FOR MORE INFORMATION, PLEASE VISIT:
www.ouroverdeagro.com.br

Schinziophyton rautanenii (mungomu) and its use in Mozambique

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

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

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

Inocarpus fagifer (Tahitian chestnut)

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

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

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Piper nigrum



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

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

Pepper and piperine are now widely used throughout the world.

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

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

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

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

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

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

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

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Sandalwood oil deal with Lush (United Kingdom)

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

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

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

Fresh bid to check sandalwood smuggling in India

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

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

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



Fair Trade certification spreads to cosmetics

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

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

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

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

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

Shea butter: an essential luxury

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

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

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

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

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



GLG ramps up stevia production for Rebiana supply

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

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

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

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

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

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

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

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



Caiman yacare in Bolivia

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

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

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

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

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

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

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

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

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



The high price of wild meat

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

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

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

Trade is virtual but wildlife isn't

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

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

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

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

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

Gorilla Agreement enters into force

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

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

A clear conscience is a soft pillow.

German proverb