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ISSN 1430-953X

15. Dezember 1997
Chairs’ Note

A.B. Cunningham & Uwe Schippmann

Issue number 4 is finally out! We apologize to our authors for the considerable delay which has been caused by the unexpected leaving of our editor, Andreas Gröger (see below). You may notice the editorial improvement we have made by incorporating some b/w photos in the text. Plant material for the photos in this issue was kindly provided by the German phytochemical company Salus-Haus, Bruckmühl.

Conferences. The MPSG has been invited to organize conservation symposia at two major medicinal plant conferences: (1) The Second World Congress on Medicinal and Aromatic Plants for Human Welfare was held in Mendoza, Argentina, from 10-15 November, 1997. Although widely dedicated to pharmacological and cultivation issues, it also included a conservation element. (2) Surely more focussed on conservation and resource management will be the International Conference on Medicinal Plants Conservation, Utilization, Trade and Biocultures. Theme: Medicinal Plants for Survival. This will be held from 16-19 February, 1998, in Bangalore, India. The conference is being organized by FRLHT, which is represented on the MPSG and is extremely active in in-situ medicinal plant conservation efforts in India. The final programme has been printed recently and includes a number of MPSG members active in the symposia and workshops.

MPSG meeting. A meeting of the MPSG will be held in Bangalore in February, 1998, in conjunction with the conference hosted by FRLHT (see above and on page 17). Moving forward on the “Top 50 Strategy” and the formation of MPSG regional subgroups will be among the items on the agenda. Please contact Danna Leaman for information on time and place.

Membership. As most of you know, IUCN works in the form of triennial terms and all Commissions and Specialist Groups formally cease to exist at the end of each period. The 1994-1996 triennium ended in October 1996. We were informed by IUCN that the process of re-constituting the SSC Specialist Groups has been delayed for a few months owing to the implementation of a new membership database system.

Currently, the MPSG is working on the basis of its earlier terms comprising 53 members to date. Invitation to join the SSC and its Specialist Groups is a standard process. The beginning of the new triennium is a time when existing membership is assessed and evaluated on the basis of the contribution made to the group. Re-invitations are issued and new members are then invited. This process will take place in due course.

Feedback. Our mailing list now covers some 500 people worldwide who have at some stage expressed their interest in receiving this newsletter. To find out how many of these are still interested in receiving (and reading) it, we have produced a form which is enclosed in this mailing. You will receive future issues of this newsletter only if you return this form.

Acknowledgments. To end with, we want to thank Andreas Gröger, the editor of this newsletter, for his work on the new issue. Meanwhile, Andreas has left the Bundesamt für Naturschutz in early November 1997 for a new post as Scientific Curator at München Botanic Garden. We will miss him and wish him all the best for this new challenge.

We also wish to thank Uschi Euler, Natalie Hofbauer and Helmut Uhlish for their continuing support in producing this newsletter, Danna Leaman for reviewing the final draft, and the Bundesamt für Naturschutz for providing the mailing to the readers worldwide.

Humulus lupulus

Medicinal Plant Conservation 4
Directory for Medicinal Plant Conservation Now on Internet

Uwe Schippmann

The hardcopy version of the Directory for Medicinal Plants Conservation by Kasperek, Gröger & Schippmann can be ordered at: Landwirtschaftsverlag, D-48084 Münster, Germany, Fax ++49/2501/801-801 (price DM 19,80 plus postage).

The directory describes 139 medicinal plant projects and institutions, based in more than 80 countries worldwide, which are characterized by their status, objectives, activities, geographic interest, databases, publications, funding resources, and contact address.

With support of the German Zentralstelle für Agrarbildung und -information (ZADI), the Directory has now been made available on the Internet as a searchable database: http://www.dainet.de/genres/mpc-dir. It now forms part of the German Clearing House Mechanism of the Convention on Biological Diversity (http://www.dainet.de/bmu-chd). Amendments and corrections of its contents are highly appreciated. The website provides for a simple procedure to send new or correct existing institutional information by e-mail to the authors.

Healing Forest Conservancy Project in Nigeria on Ethnobotanical Research and Benefit Sharing

Katy Moran

Those concerned with the conservation of medicinal plants recognize that when local custodians of biodiversity benefit from the sustainable use of their medicinal plants by others, conservation opportunities increase. The Convention on Biological Diversity codifies this principle, but the absence of applicable models leaves it largely untested.

The Healing Forest Conservancy (the Conservancy), a non-profit organization founded by Shaman Pharmaceuticals, Inc., will test a process for benefit sharing through a trust fund pilot project in Nigeria in late 1997. Shaman uses ethnobotany as well as isolation and natural products chemistry to discover and develop novel pharmaceuticals. Shaman founded the Conservancy explicitly to develop and implement a process to return benefits from drug discovery to countries and cultures that contribute to drug discovery. Though the young company has not yet commercialized a product, it has donated $40,000 for a pilot project to test the efficiency and efficacy of the trust fund process now, using a step-by-step process with which to assess the feasibility of future trust funds.

With high levels of biological and cultural diversity, Nigeria is an ideal country in which to launch a pilot project. The Bioresources Development and Conservation Programme (BDCP), an NGO based in Nigeria, is the institutional focal point to work with the Conservancy. The Fund for Integrated Rural Development and Traditional Medicine (FIRD-TM), an independent trust fund, was established as the financial mechanism to distribute benefits among such stakeholders as government agencies, scientific institutions, scientists, indigenous cultures, traditional healers and healer associations. 20% of the fund is designated for programs and projects in Nigeria designed to promote sustainable economic development relating to biodiversity conservation. Another 20% is designated to universities in Nigeria, through the University of Nigeria at Nsukka, for...
training graduate students. The Nigerian National Botanical Garden and Herbaria will receive 10% of the fund.

Culture groups will receive 50% through traditional healers' organizations and village communities consistent with their governing customs. Town associations, village heads and professional guilds of healers are empowered to make decisions regarding projects in their localities. Those funded will follow the criteria of promoting conservation of biodiversity and drug development, as well as the economic well-being of rural communities. The objective is to build technical skills in Nigeria so bioresources are a viable vehicle for sustainable development. Improved skills generate pharmaceutical leads that target therapeutic categories for tropical diseases suffered in Nigeria such as malaria, leishmaniasis, and trypanosomiasis. At the local level, technical skills gained from benefit sharing help standardize phytomedicines, information that benefits traditional healers and the health of the communities they serve.

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Faulty Export Policy of Herbs and Crude Drugs in India

N.C. Shah

In India, due to exorbitant demand of the wild growing herbs and crude drugs in the pharmaceutical, perfumery and cosmetic industries within the country and abroad, the natural resources of the plants are dwindling. It is a matter of serious concern because it is depleting our important herbal treasure and ultimately disturbing the biodiversity of the country.

However, from time to time, the Government as a precautionary measure also imposes restrictions on export of such herbs and lists these as negative or banned items.

From a study of the Monthly Statistics of Foreign Trade Journal published by the Ministry of Commerce, Government of India, we generally find that the herbs are exported under two main categories, viz, the specified and the unspecified or Not Essentially Specified (NES). Under the specified items the exporter has to declare the botanical or standard trade names of the herbal commodity, while under unspecified or NES, it is not essentially required to declare the botanical or standard trade names of the herbs but any unstandardised vernacular or common or any irrelevant name will do.

In the year 1975-76, for example, according to the Commodity Study of Crude Drugs and Herbs published by the Institute of Foreign Trade, New Delhi in 1975, Rauwolfia serpentina, a banned item, was then exported under two pseudo-names, Radix Benth and Radix Benth Canescens under the NES category.

The export figures of NES herbs and crude drugs under different codes of the last four years are given in table 1.

We do not know how many items under these categories are illegally being traded through export under official stamp. It is clear from table 1 that, in the year 1991-92, herbal drugs to the value of US$ 61 millions, in 1992-93 of US$ 87 millions, in 1993-94 of US$ 67 millions, and in 1994-95 of US$ 63 millions, were exported under unspecified items. Therefore, if the present export policy is not rectified

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<td>20.38</td>
<td>34.79</td>
<td>29.87</td>
<td>34.93</td>
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<tr>
<td>Ayurvedic and Unani herbs NES</td>
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<td>1211.9050</td>
<td>35.92</td>
<td>50.74</td>
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<td>Other plants or plant parts NES</td>
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<td>1404.9009</td>
<td>4.40</td>
<td>1.83</td>
<td>1.23</td>
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<td>Other crude and vegetable material</td>
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<tr>
<td>Total</td>
<td>60.70</td>
<td>87.36</td>
<td>66.75</td>
<td>62.52</td>
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</table>

Table 1. Export figures of Not Essentially Specified (NES) herbs and crude drugs (US$ in millions).
or modified, banned items of herbs and crude drugs will continue to go out of the country as NES.

The following suggestions are offered to check the export of negative items:

1. The unspecified items of herbs under code no. 1211.9026, 1211.9030 and 1404.9009 may be allowed to be exported, if and only if they bear recognized botanical or standardised trade names.

2. The extracts (alcoholic, hexane, etc. extracts and essential oils) of the banned or negative items such as Podophyllum, Taxus, Berberis, etc. and essential oils of Nardostachys grandiflora, Saussurea costus, Aquilaria agallocha are presently open for export as value-added products. If we allow export in these cases, the main purpose of imposing a ban on endangered species is completely forfeited as their collection from the wild continues hence depleting the species.

3. Items of export under specified and unspecified herbs or crude drugs or plants and the extracts should regularly be subjected to scientific identification. For this purpose, the export authorities should either have their own pharmacognosists or get the samples tested from the National Laboratories of the country dealing with medicinal, aromatic or herbal plant researches.

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Permits and agreements. When working in the natural areas of origin of medicinal plants, permission is sought at the national and local level from both governmental and civil authorities. Because of the common heritage of medicinal plants, we establish working relationships with community organizations rather than with traditional medicine specialists.

Study areas. Medicinal plants from arid and semiarid regions are of primary interest. The Mexican states where current studies are carried out include: Chiapas, Chihuahua, Distrito Federal, Durango, Oaxaca, Puebla, Querétaro, San Luis Potosí, Sinaloa, and Sonora.

Plant selection and processing. Plants are selected for study based upon their reported medicinal uses in the literature and personal interviews. Specific plants are chosen based upon availability, recommendations of collaborators and priority of ailments treated in relation to the severity of the illness in the national mortality rates as well as upon exhibited biological activity. It is anticipated that the plants will produce unknown chemical structures of biological interest or that they will contain known chemical compounds that will exhibit unreported biological activities.

Initial plant material may be derived from the market or the field. The market specimens which reflect major consumer demands (and possible high activity or danger of overexploitation) are obtained from reliable vendors and follow up visits to the source areas in order to confirm the taxonomic identification and the condition of the plant population and associated habitat. The field-derived samples are gathered from less than 20% of the plants of the population. Standard herbarium voucher specimens and data are collected and corroborative specimens may be obtained. If feasible, propagation material is obtained from subsequent processing and cultivation.

The extracts of the plants are used for 45 selected bioassays in Mexico as well as shipped to collaborating laboratories at GWL Hansen’s Disease Center and American Home Products. Corp. Subsequent chemical analyses are carried out in Mexico.

Community development and conservation. The main objective of the ICBG program is to promote local responsibility for the conservation of biological diversity. In particular, we are interested in deriving products from ecologically healthy, diverse habitats.
that will enhance the well being of the local people as well as be of benefit to humanity. If an industrialized product is developed, the community from which the plant sample originated will have economic priority in producing *materia prima* from *in-situ* populations if management allows a sustainable production or through cultivation. Also, the manufacture of the commercial product will take place in Mexico.

Even if the plant is not selected for industrialization by the private sector partner, the community along with the UNAM has option of further development if either one decides that it is feasible. The phytopharmaceutical industry has a great potential in Mexico.

**Benefits.** The immediate benefits are associated with the support of the ongoing collaborative medicinal plant research program of the Facultad de Química and the Instituto de Biología de la UNAM. The immediate benefits for the communities have been determined by the community representatives. Hand tools, training workshops and sanitary facilities have been some of the gains obtained by collaborating groups. Published data and project information will be made available to many communities that are interested in complying with the federal registration of herbal products.

An environmental trust fund will be set up at UNAM to administer any royalty that could be generated by products derived from this ICBG. Collaborators whose information and plants have resulted in the profits from commercial products will be informed of the royalties and invited to submit proposals for community improvement projects which will be financed by the royalties.

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**Field Grant Proposals**

The Center for Field Research invites **proposals for 1998-99 field grants** funded by its affiliate Earthwatch. Earthwatch is an international, non-profit organization dedicated to sponsoring field research and promoting public education. In the past, successful projects such as chronicling the use of medicinal plants in developing countries and conserving forest plants in Africa have been funded. Other projects have been funded in the following disciplines: animal behavior, biodiversity, ecology, ornithology, endangered species, entomology, marine mammalogy, ichthyology, herpetology, marine ecology, and resource and wildlife management. Interdisciplinary projects are especially encouraged as is multinational collaboration.

Information can be found at [http://www.earthwatch.org/cfr/cfr.html](http://www.earthwatch.org/cfr/cfr.html), or through: The Center for Field Research, 680 Mt. Auburn Street, Watertown, MA 02272, USA; Tel. +1/617/926-8200; Fax +1/617/926-8532; e-mail: cfr@earthwatch.org.

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*Harpagophyllum procumbens*

The production and mailing of this issue was made possible through the support of the German Ministry of Environment and the Federal Agency for Nature Conservation, Bonn.
Sustainable Use in Semi-Wild Populations of *Harpagophytum procumbens* in Namibia

*Ernst Schneider*

The oldest method of obtaining medicinal plants known to man is the gathering of herbs growing wild in the natural environment. The main problem with uncontrolled harvesting of wild herbs lies in the danger of over-exploitation accompanied by the risk of constant deterioration of the quality of the herbs gathered (Foster 1991). Examples of controlled collection of medicinal plants exist (e.g. Maison 1988) and can help to define new rules and behaviours for collection. One possible solution can be the use of plants in their natural habitat combined with a precise management plan, for which the example of the South African *Harpagophytum procumbens* DC (Pedaliaceae), locally called Devil’s Claw or Grapple, provides a good example.

The natural habitat of *H. procumbens* are steppe-like areas of the Kalahari desert in Namibia and in parts of adjacent South Africa, Botswana and Zimbabwe (Hilfenfeld & Hartmann 1970). Flowers and leaves of the plant can only be found during the short rainy season. To survive the dry period, the plant forms water-storing secondary root tubers branching off horizontally from the primary taproot (fig. 1).

These secondary storage roots are the parts of *H. procumbens* which are used in phytotherapy in many European countries to treat rheumatic problems (Bradley 1992). For commercialization the roots are sliced and dried. The drug consists of hard discs, which may break into fan-shaped pieces, with characteristic radial structures (fig. 2). The active ingredients are bitter iridoids, such as the glycoside harpagoside in a concentration of 0.1 to 2%.

Until today, the roots are obtained solely from wild collections (Nott 1986). For this, the soil is shovelled up by hand in the area around the parts of the plant that are above-ground, until the turnip-shaped primary roots are revealed. From these, thin side roots branch off, at the end of which tuberous or cylindrical secondary storage roots can be found which can be up to 25 cm long and up to 6 cm thick, and which reach to a depth of 2 m. These tubers are collected, washed, sliced and dried in the sun. After harvesting the root in one area, the collectors move on and normally do not close the excavated holes.

In order to avoid this unsustainable method of harvesting and because of the remoteness of the areas...
of collection, in some cases, considerable thought was given to the possibilities of cultivation. Because of its peculiar ecological requirements, commercial cultivation of this plant has been regarded as not feasible (Blank 1973). A project in a farm area in the south of Namibia, at the foot of the Schwarzerand mountains, shows that sustainable use of populations of *H. procumbens* can be possible. The naturally occurring plant stocks are regularly harvested in a supervised way. At the same time measures are taken to ensure the stability or even increase of the number of plant individuals.

Of the 12,000 hectares on the farm, 2,000 hectares are offering suitable soil and climatic conditions for *Harpagophyllum*. This area was divided into four sectors of 500 hectares. In each of these sectors, every 4 years the secondary roots of all individuals are dug out in the months of March and April. The holes created by this procedure are closed up again to obviate the risk for the livestock on the farm. The primary roots, which are not used, are buried again, together with fruits of *Harpagophyllum* lying in the surroundings. Since the primary roots are generally damaged during the excavation, the rate of regrowth is only about 50%. But in the case of the death of the primary root, seedlings, which are normally suppressed by root competition, can establish and replace the mother plant. Young plants only stand a chance of growing into generative plants if the primary roots of the older plant die.

This principle of shifting harvesting combined with supporting restoring methods is especially suitable for gathering medicinal plants of arid zones. The described technique does not harm the existing stocks of wild plants since, in the best case, they will continue to grow in their original location. No genetic erosion will occur either, because the natural seed potential is ideally distributed, which gives a maximum stock density.

Under natural circumstances, Nott (1986) estimates for *H. procumbens* in Namibia an average stock density of around 5-7 plants/ha, which can be much higher locally. The same author indicates that, at the location described, wild populations reach a density of 1200 plants/ha. With the described harvesting method, the stock density varies between 500 and 2,000 plants/ha.

These results show that if the harvesting technique takes account of the plant’s ecology, it should be possible to harvest *H. procumbens* in the natural habitat on a sustainable yield basis. Although large scale harvesting is undertaken on this farm the species is not endangered and there is no genetic erosion. In fact, the populations of *H. procumbens* even increase in number. The natural appearance of the landscape is not altered by this form of resource utilization. In addition, the people of the region also benefit, since jobs are retained and a larger harvest is achieved with a simple management of this resource.

The described example is intended to encourage users of medicinal plant resources to carry out similar projects with other plants. It is necessary to determine the ecological profile of the plant in question in its natural habitat, since these data are essential to understand the requirements of the plants and to estimate the possible quality of the product.

Fig. 2. Dried, transverse slices of the secondary tubers of *Harpagophyllum procumbens*. (Photo: Euler)
harvested. In addition, all measures should be accompanied by scientific studies. Similar projects in Nepal with the medicinal plants *Nardostachys jatamansi* and *Swertia chirata* are already showing positive results (Dürbeck & Schütte 1993).

References


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**Ravensara aromatica: A Threatened, Aromatic Species of Madagascar**

Philippe Rasoanaivo

The genus *Ravensara* (Lauraceae), endemic to Madagascar, comprises 26 species. One of them, *Ravensara aromatica*, was first described in 1642 by de Flacourt as an aromatic tree of great interest in all plant parts. He reported that local people, instead of climbing the tree, cut it merely to collect clove-flavoured seeds which are cooked with ginger and fishes to give a highly appreciated dish. Full botanical characterisation of this plant was achieved in 1782 by Sonnerat. It grows mainly in the evergreen, humid eastern forests at mid altitude (700-1000 m) but it is also found in low numbers in the eastern coastal forests. There was yet a great confusion about the exact botanical identity of this plant, since in some phytochemical papers, it is named *Ravensara anisata*. In fact, Danguy in 1925 described a species under the botanical name *R. anisata* because probably of its aniseed odour. Kostermans established in 1950 the botanical identity of *R. aromatica* and *R. anisata*, both of which had previously been erroneously described as two distinct species. *R. anisata* Danguy is therefore synonymous with *R. aromatica*. What's more, the botanical word *Ravensara* came from the latinization of the Malagasy word Ravintsara (good leaves) which designates widely the introduced species *Cinnamomum camphora* (Nees (Lauraceae) in the local language, and this is another source of confusion. *Cinnamomum camphora* is sometimes erroneously named *Ravensara aromatica* since its vernacular name is Ravintsara and it is aromatic.

*Ravensara aromatica* is now one of the rare aromatic plants of Madagascar which has acquired a commercial significance for its essential oil content. The major essential oil component of stem barks of *R. aromatica* is by far estragole (methyl chavicol) amounting to 90%, along with several minor volatile constituents. It is reported that one export company produces annually 1 tonne of essential oils of *R. aromatica* stem barks. However, the exact quantity exported annually is unknown due to lack of adequate information. Assuming that 1.5 tonnes of essential oils with 1.5% yield are produced annually, about 100 tonnes of stem bark are destructively harvested per year. Indiscriminate collecting is taking place in some areas both to satisfy the pressing demand of the exporters and to have additional income-generating activity for the farmers. Appropriate measures should be therefore taken into consideration by the Forest Department of Madagascar to secure a long-term survival of *Ravensara aromatica*.

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1. November 1997
**Taxus at Risk in Yunnan, Southwest China**

Xu Jianchu

**Distribution.** The *Taxus* forest, with two species, *Taxus chinesis* var. *mairei* and *Taxus yunnanensis*, is found in the east Himalayan foothills in the Lijiang, Nujiang, Zhongdian and Dali Prefectures of Northwest Yunnan. It is narrowly distributed on northern aspects at elevations between 700m and 2,500m for *T. chinesis* var. *mairei*, and between 2,000m and 3,500m for *T. yunnanensis*. These species are very important indicators of environmental pollution because of their sensitivity to pollutants. Formerly a poorly known genus in China, despite local knowledge of its timber and medicinal values, *Taxus* is now well known because of its anti-cancer properties. Among the three *Taxus* species in China, *T. cuspidata*, *T. chinesis* and *T. yunnanensis*, the latter contains the highest concentration of active compounds.

**Exploitation.** The history of extraction of the active ingredient, paclitaxel, from *Taxus* began when the Kunming Institute of Botany (KIB) started to screen compounds in 1988. KIB is one of only two institutions in China that can manufacture 98.5% pure paclitaxel. The extraction from dry leaves or branches varies from 0.003% to 0.008%, and from bark it reaches 0.009%. However, the ecotype found in Weixi county could reach 0.01% from bark. The clear-cutting of big trees by loggers and the collection of bark from young trees by local villagers has resulted in the disappearance of *Taxus* forest in this region. Economic attraction and weak policy controls have resulted in the over-exploitation of *Taxus* all over Northwest Yunnan and its extinction in Lidiping of Weixi County, Caojian of Yunlong County and Rushui County.

**Utilization and Trade.** The rapid clinical and commercial acceptance of Bristol-Myers Squibb taxol for anti-cancer treatment took most of the industry by surprise even though the success rate is very low (about 36% for breast and ovarian cancer). The prohibition of *Taxus* exploitation in the United States has led to exploitation in the developing countries such as China and India. Other *Taxus* products include *Taxus* tea and wine for direct drinks, and chopsticks, tea pots and chopboards for indirect use because of the misperception of *Taxus* as popular anti-cancer drug. In fact, *Taxus* is not beneficial and may be even harmful to human health if *Taxus* wood is used directly. Many middlemen, from small scale rural enterprises to large pharmaceutical companies are involved in the trade of such *Taxus* products and extraction. The fluctuation of market prices is a big problem because of limited demand, lack of information and no export licenses for most companies. The highest price for pure compounds (98.5%) was 1000 US$/g and the lowest 400 US$/g.

**Conservation.** The ecological degradation, extractive exploitation and depletion of *Taxus* resources peaked during 1990 and 1992. An extraction factory with a 150 kg/year production capacity was established in Lijiang City in 1995, which needs 500 tonnes/year of dry *Taxus* leaves or bark. It is estimated that a total of about 2,000 tonnes of leaves and branches, and 5,000 to 10,000 tonnes of bark has been collected from natural *Taxus* forest in Northwest Yunnan. The Department of Forest and Institute of Botany in Yunnan have paid much attention to the accelerated destruction rate of *Taxus* forest in Yunnan. In 1995, *Taxus* was declared by Yunnan Provincial government as a grade two endangered and protected species. The following actions for the conservation and sustainable use of *Taxus* resources in Yunnan have been recommended: (a) *in-situ* conservation of *Taxus* forest through provincial laws; (b) reforestation through cuttings; (c) support for research on tissue culture and artificial synthesis; and (d) strict control of issuance of extraction licenses and trade permits.

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![Hippophae rhamnoides](image)

**Medicinal Plant Conservation**
The Status of *Panax ginseng* in the Russian Far East and Adjacent Areas: A Matter for Conservation Action

Roland Melisch, Pavel Fomenko & Barbara Hejda

Wild Oriental Ginseng and its population decline: Oriental Ginseng *Panax ginseng* is a medicinal plant species widely recognized for its pharmaceutical value. However, little is known about the threats to its wild populations. In the Russian Federation, Oriental Ginseng only occurs in the Far Eastern regions fringed between the borders of Korea, China and the Sea of Japan. As a rare species of the herb layer, its occurrence is scattered among mixed forests of Korean Pine (*Pinus koraiensis*) and associated deciduous trees Manchurian Ash (*Fraxinus mandshurica*) and Amur Cork Oak (*Phellodendron amurense*) (Kharkovtis 1978, Knystantas 1987). In the Russian Far Eastern (RFE) Province of Primorye, *Panax ginseng* occurs at least within four Far Eastern nature reserves (Kedrovaya Pad, Lazovsky, Ussuriysky, Sikhote-Alinsky) and reportedly along the Bikin Valley (Shibnev & Bocharnikov 1993). However, the species' northern and northwestern limits of occurrence are yet indeterminate.

In China, according to Mackinnon et al. (1996), Hebei Province marks the southern limit of *P. ginseng*, from where it extends to the three northeastern provinces of Liaoning, Jilin and Heilongjiang. However, the Changbai mountain range is reportedly the only area in China, where wild *P. ginseng* still occurs. The amount of wild *P. ginseng* obtained from registered collectors in China has decreased from 500kg (1930s) to 150kg (1950) and 3.5kg in 1991. Similarly in the Russian province of Primorye, the officially granted collection under a permit system revealed a constant decline of both the amount and quality of Oriental Ginseng roots over the last decades. Russian scientists have since feared that a recovery of wild ginseng populations may be doubtful due to overharvesting and illegal root digging. On the Korean peninsula, the species' wild populations have already been depleted near to extinction (Zhuravlev 1997, Chang Vei Chun, cit. in Zhuravlev 1997).

Uses of *Panax ginseng*: Roots of *P. ginseng*, the most valuable parts of the plant in medicine, come from cultivation and from permitted and illegal harvest in the wild. Pharmaceutical use is similar to that known for Traditional Oriental Medicine in other cultures (see Gaski & Johnson 1994), and in the RFE the medicine is applied by Russians, Koreans, Chinese and other small indigenous communities of Primorye and Khabarovsk Provinces (Nanai, Orochi, Tazy, Udege). Furthermore, in the RFE the roots are commonly used in several locally produced and traded herbal liqueurs called 'balsam'. For a compilation of the synonyms and many other ginseng and Araliaceae-related species and their uses traded in Eastern Asia, refer to Gaski & Johnson (1994).

**Protection status**: *P. ginseng* is among the species listed in the Russian Red Data Book and therefore any extraction of and any trade in *P. ginseng* coming from the wild is strongly prohibited under Russian law, with the only exception for a few locally permitted schemes. Under the Primorye Territory Administration Decision No. 334 (June 31, 1996) a protection plan on wild ginseng has been elaborated recently.

Under China's nationally protected species schedule, *P. ginseng* is subject to the protection category one, thus applying the same protection status to the species as in Russia. Also other medicinal plants related to the family Araliaceae are protected under category two in China (i.e., *Opiopanax elatus* and *Diplopanax stachyanthus*). Only American Ginseng (*P. quinquefolius*) is protected under CITES and trade is regulated according to Appendix II. In addition, the Russian Federation, China and South Korea prohibit the export of live *P. ginseng* roots and seeds. However, similarities between the various

<table>
<thead>
<tr>
<th>Period</th>
<th>Amount confiscated</th>
<th>Total weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jul - Sep 1995</td>
<td>240 roots</td>
<td>3.34</td>
</tr>
<tr>
<td>Oct - Dec 1995</td>
<td>3 roots</td>
<td>?</td>
</tr>
<tr>
<td>Oct - Dec 1996</td>
<td>8kg damp roots (incl. one lot of 5.5kg)</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total 2 years</strong></td>
<td></td>
<td><strong>&gt;11.34</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Root weight (g)</th>
<th>Price per gram (in US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-20</td>
<td>2.5 -4</td>
</tr>
<tr>
<td>20-30</td>
<td>4-6</td>
</tr>
<tr>
<td>30-42</td>
<td>6-8</td>
</tr>
<tr>
<td>42 and more</td>
<td>10 and higher</td>
</tr>
</tbody>
</table>


species of *Panax* are considered to be an enforcement problem effecting a region far larger than the Far East (Knees & Read 1994; Lyapustin, pers. comm.).

**Recent threats:** Since the early 1990s, the global opening of the Russian economy has resulted in a constant increase of illegal harvest, hunting and trade of rare and endangered species. In Primorye Province, seven official anti-poaching brigades aiming at *in situ* protection of Siberian Tigers (*Panthera tigris altaica*) have been active since 1994 with support from the World Wide Fund for Nature (WWF) and the Global Security Network (GSN). Their goal, however, is not only to intercept the poaching of tigers and their prey base, but also to curb the exploitation of other endangered species. Since 1995, reports of illegal trade in wild Oriental Ginseng roots have been collected, revealing new threats which may be critical to the survival of the species in the wild. Data on confiscations of illegally collected wild ginseng from two years, all based on reports from two federal anti-poaching brigades operating in southern Primorye Province have been compiled in table 1.

The average annual amount of confiscated wild ginseng in the RFE (>6kg) doubles the aforementioned legal annual quota harvested in total China during the early 1990s.

A special zone on the Russian side of the Sino-Russian border extends from some hundreds of metres to a width of several kilometres. This particular border zone is only accessible by the Federal Russian border services, anti-poaching brigades are not allowed into this area. However, several reports from Kedrovaya Pad Nature Reserve and other adjacent border sections have revealed ongoing illegal border trespassing from China, involving people digging after wild ginseng in the respective zone for subsequent smuggling (Korkishko, Lyapustin, Shetin, pers. comm.). Given the latter fact and the situation that confiscations usually only reveal a very limited amount of smuggling, conservation experts active in the Russian Far East are even more alarmed about the situation of Oriental Ginseng in the wild.

**Prices of wild ginseng roots:** Information available to TRAFFIC Russia has exposed blackmarket prices for Oriental Ginseng in the RFE (table 2). For comparison, table 3 shows prices for wild ginseng roots in other countries.

Lewington (1993) expressed concern that imports of *P. ginseng* into Europe at least partly derive from collections from the wild. According to Lange & Schippmann (1997), exports from China, Hong Kong and both Koreas (some 110 tonnes annually of raw and processed ginseng in 1994 and 1993) made up 90% of all ginseng traded into Germany. However, the species and the percentage of wild collected Asian Ginseng found in this trade is unknown.

<table>
<thead>
<tr>
<th>Species</th>
<th>Location</th>
<th>Prices in US$/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Wild origin</td>
</tr>
<tr>
<td><em>Panax quinquefolius</em></td>
<td>Wholesaler, USA¹</td>
<td>1,000</td>
</tr>
<tr>
<td>Wild Asian <em>Panax</em></td>
<td>Department store in Guangzhou, China²</td>
<td>155,200</td>
</tr>
<tr>
<td><em>Panax ginseng</em></td>
<td>China³</td>
<td>106,000 - 352,000</td>
</tr>
</tbody>
</table>

Table 3. Average prices for wild ginseng roots from selected countries (sources: ¹ according to Robbins 1997; ² Lee in litt. 1997; ³ Gaski & Johnson 1994)
From the above given facts the authors’ preliminary conclusion is that a significant amount of wild Oriental Ginseng (*P. ginseng*) is traded, at least for the Far Eastern and the European markets. The population status of the species in the wild should be considered to be of international conservation concern.

**Acknowledgements:** The authors are particularly grateful for the assistance of TRAFFIC East Asia during the preparation of this paper.

**References**


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**Pavel Fomenko, WWF Russian Far East, Vladivostok, Russia; e-mail: wwfrefe@gin.global.ru.**

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**Panax quinquefolius Popularity Prompts Probe**

Christopher S. Robbins

Ginseng (*Panax* spp.) is arguably the most revered medicinal plant in traditional Chinese medicine and is quickly becoming one of the most popular herbs in western markets. In the United States, where the market for medicinal botanicals is $3 billion and growing, Ginseng is the top selling herb among first-time herbal users and ranks third, surpassed only by *Echinacea* and garlic, in sales of herbs in U.S. health food stores (Johnston 1997). No other plant better represents the cultural and economic value of medicine harvested from the wild in North America than *Panax quinquefolius*, American Ginseng (fig. 1). This herbaceous plant grows in the understory of eastern U.S. and Canadian deciduous forests and is sought for its high-value, garrled root, most of which is exported to east Asia - the dominant Ginseng market.

Four factors prompted TRAFFIC USA to examine the harvest, trade, conservation status and management of *P. quinquefolius* in North America. First there is a continuing strong demand for Ginseng in Asia. Second there are a growing number of herbal products containing Ginseng available in the United States and Europe. Third there is substantial collection of Ginseng from the wild in the United States. And fourth habitat alteration through logging and suburbanization, particularly in the U.S. eastern hardwood forests of Appalachia, where much of the wild harvest occurs, is a formidable threat to the species and, if left unaddressed, could whittle away wild populations and deny consumers a promising source of medicine.

The purpose of the study was to (1) review harvest and trade levels, and (2) determine whether management of *P. quinquefolius* in the United States and Canada is adequately protecting wild populations from intensive collection and increasingly pervasive habitat loss. The first phase of this study is nearing completion.

The early 18th century commercial discovery of *P. quinquefolius* in North America propelled Canada and later the United States into a lucrative trade with the Far East that has lasted for nearly three centuries. Canada was once the leading North American exporter of wild *P. quinquefolius* and is currently a major exporter of cultivated Ginseng. However, Canada now prohibits the collection of wild roots for
export because of the vulnerability of its wild Ginseng populations, which occur predominately in Ontario where the species’ status is considered uncommon and Québec where its status is classified as to uncommon. Forest clearing and historical exploitation have both taken their toll in Canada. Today, the United States is the chief supplier of wild *P. quinquefolius* to overseas markets, exporting annually an average 60 tonnes of wild root, 80% of which goes to east Asia. *P. quinquefolius* occurs in 34 of the 50 states and is listed as *Endangered* in one state, *Threatened* in four, *Rare* in one, and *Vulnerable* in another. Nine states consider *P. quinquefolius* a “species of special concern” or include it in a “watch list” and seven peripheral range states do not afford the species any protection. 24 states, in cooperation with the federal government, regulate the harvest and/or sale of *P. quinquefolius*.

The commercial trade in *P. quinquefolius* has been regulated since 1975 when its CITES Appendix II listing went into effect. In the United States, the U.S. Fish and Wildlife Service (USFWS) is the designated U.S. CITES Scientific and Management Authority and as such, must ensure that all *P. quinquefolius* roots being exported were legally acquired and, before issuing a CITES export permit, must determine whether exports will be detrimental to the species’ survival. In order to make these determinations, USFWS has established a Ginseng management program with states to monitor wild Ginseng populations and regulate Ginseng harvest and commerce. Per program requirements, Ginseng dealers must be registered with each state in which they intend to purchase and sell wild and cultivated *P. quinquefolius* roots, and must report their transactions to the states. States submit annual information on Ginseng harvest, biology, laws and regulations to USFWS which the federal agency uses to approve or disapprove Ginseng export on a state-by-state basis.

Since the export of wild *P. quinquefolius* root is banned under provincial law in Québec and Ontario, the Canadian government has not been obliged to make a “non-detriment” finding for exports. However, cultivated *P. quinquefolius* is exported from Ontario and British Columbia, which together are the top North American producers and exporters of cultivated roots.

Of the 24 U.S. states approved by the USFWS for *P. quinquefolius* export, 19 are authorized to export wild and cultivated roots and five are authorized to export cultivated roots only. In 1996, approximately 64 tonnes of wild Ginseng root was harvested in the United States: 46 tonnes (85%) was exported to Hong Kong and smaller amounts were exported to Taiwan (3.6 tonnes), Singapore (2.7 tonnes), Malaysia (769 kg), and Canada (459 kg). The United States is also a sizable importer of wild Ginseng. According to U.S. Bureau of the Census data, the United States imported 208 tonnes of wild Ginseng.
from China from 1990-96; 59 tonnes from South Korea; 34 tonnes from Mexico; and 19 tonnes from a handful of other countries, including Canada. Owing to the extreme rarity of wild Panax ginseng in China, the large volume of reported U.S. imports of wild Ginseng from that country is perplexing. Presumably, these imports consist of processed of U.S.-origin wild or semi-wild *P. quinquefolius* and/or specimens of transplanted or seeded wild Panax under cultivation in China. Erroneous reporting of cultivated ginseng as wild by the exporting is also a possible explanation. U.S. imports of wild Ginseng from Canada could be *P. quinquefolius* which was harvested in the United States, exported to Canada for processing and subsequently re-exported to the United States.

Kentucky is located in the center of *P. quinquefolius*’ range and has consistently been the top wild Ginseng producing state; in 1996, it reported a harvest of 14.8 tonnes. Other states producing significant amounts of wild Ginseng in 1996 include West Virginia (8.4 tonnes), Tennessee (8.3 tonnes), Virginia (5.5 tonnes) and Indiana (5.4 tonnes). Wisconsin, which produces little wild Ginseng, is the leading producer of cultivated *P. quinquefolius* in the United States, producing nearly 1,000 tonnes of cultivated roots annually. Wisconsin also serves as a major center for the foreign and domestic redistribution of wild roots harvested in other states.

The amount of wild *P. quinquefolius* harvested and exported has remained constant in recent years, although there is some indication that domestic consumption of and interest in wild roots among diggers may be escalating. One measure of the increase in demand for *P. quinquefolius* might be extrapolated from the number of collecting permits issued for the species in U.S. National Forests; national forests in seven states reported increases in permits issued for *P. quinquefolius* in 1996 or 1997. In Indiana, the Hoosier National Forest, where the number of permits issued for *P. quinquefolius* increased from 176 to 519 (nearly 300 percent) from 1993-1996, may raise permit fees and impose additional restrictions on collection later this year.

TRAFFIC USA has noted that problems exist in the government’s efforts to monitor the trade of wild *P. quinquefolius* and is determining the impact they may have on the species' management. For example, there is concern that wild harvest may be higher than actual harvest of wild-dug Ginseng because *“woodsgrown”* *P. quinquefolius* is increasingly reported as wild *P. quinquefolius*. Seeds of *P. quinquefolius* planted under natural shade (forest canopy) yield “woodsgrown” roots, which can have a wild appearance and, in some states, are being reported by dealers to states as wild roots. Reporting woodsgrown as wild *P. quinquefolius* inflates true wild harvest figures, misrepresents the status of wild populations and can result in misguided management decisions.

Given the burgeoning demand for and commercial value of wild *P. quinquefolius*, which show no sign of weakening internationally and may be increasing domestically, it is critical that harvest and trade continue to be monitored, reported and regulated to identify and avert potential conservation problems.

TRAFFIC USA believes the federal-state Ginseng program could be streamlined while enhancing the quality of harvest and biological information states submitted to USFWS. A Ginseng program that encourages sustainable harvest through a system of verifiable checks and balances but with minimum financial and administrative burden to the states is the most constructive course of management for this species.

References


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*Echinacea purpurea*
CITES News

After COP 10

Uwe Schippmann

The tenth meeting of the Conference of Parties to CITES (COP 10) was held in Harare, Zimbabwe, from 9-20 June 1997. Three medicinal plant species were accepted for inclusion in Appendix II of CITES (proponent country in brackets): Hydrastis canadenensis (United States of America), Picrohiza kurrooa, Nardostachys grandiflora (India; fig. 1). Appendix II allows for a trade in plants and their derivatives from wild sources provided the consignments are accompanied by the relevant export documents from the country of export and the harvest is not detrimental to the survival of the species.

The MPSG has played an important role in providing scientific advice on the medicinal plant proposals before the conference. The MPSG has collaborated with TRAFFIC to provide the Parties to CITES with an authoritative evaluation of all amendment proposals submitted for consideration. The Analyses of Proposals to amend the CITES Appendices were published shortly before conference. We wish to thank all members of the MPSG who have contributed to this process.

The Significant Trade Study for medicinal plants listed in CITES Appendix II is carried out jointly by the MPSG, the German CITES Scientific Authority and the TRAFFIC network. A draft report on 15 target species with draft recommendations was tabled at the 8th meeting of the CITES Plants Committee which was held in Pucon, Chile, from 3-7 November 1997.

This meeting also discussed a report prepared by Michelle and Tony Cunningham on the trade, conservation status and identification problems of Prunus africana and the deficits of the CITES Appendix II implementation. It was agreed that official reporting of trade data has to be improved by the authorities of both exporting and importing countries.

Fig. 1. Dried samples of roots of Nardostachys grandiflora, complete (right) and chopped (left), as occurring in trade. (Photo: Euler)

Training Package for CITES-Listed Medicinal Plants

Dagmar Lange & Uwe Schippmann

Over the last years, CITES has broadened its plant scope from horticultural plants to plants traded for medicinal purposes. More than 160 medicinal plants sensu lato are listed in the Appendices. About 20 of them are significantly traded, such as Panax quinquefolius, Saussurea costus, and Prunus africana.

The trade in Appendix II requires CITES documents which form the basis of annual reports compiled by the CITES parties. Trade figures are then collected in the CITES Trade Database at the World Conservation Monitoring Centre (WCMC).
Cambridge. However, preliminary results of the Significant Trade Study on Appendix II medicinal plants (CITES project S-109) show a polarized picture: Although some of these taxa are traded internationally on a regular and significant level, there is only very little trade data reported in the official CITES records.

CITES management and custom authorities find it very difficult to identify botanical drugs that may originate from protected species. This is due to several reasons: (i) CITES-listed species appear in trade under their trade name or their pharmaceutical name which mostly differs from the accepted scientific name of the taxon. (ii) No identification manual exists for plant parts and derivatives traded for medicinal purposes.

A specific training programme regarding botanical drug species would therefore assist national CITES authorities in efficiently implementing the Convention. Therefore, the German Scientific Authority for plants has commissioned Dr Dagmar Lange to develop a training module on CITES-listed botanical drug species, which will be used at national German training workshops and the CITES Secretariat’s training seminars.

Objectives are (i) to draft a comprehensive lecture script, (ii) to prepare a collection of commodities of CITES-listed medicinal plants which are present in international trade, (iii) to prepare exercises for practical training, and (iv) to compile a checklist of CITES-listed medicinal species with their pharmaceutical, vernacular and trade names.

This project is developed in close co-operation with the CITES Secretariat and will be finished end of January, 1998.

For authors’ addresses see list of members

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Malva silvestris

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Conferences and Meetings

Andreas Gröger

Role of Medicinal Plants Industries in Economic Development and Biodiversity Conservation in India. 16-17 December 1997, New Delhi, India.

To this national colloquium 50 representatives from the major Herbal Industry of India are invited. Objectives of the meeting are: (a) identification of key medicinal plants and targeted conservation, (b) cultivation, (c) improvement of social and cultural acceptance of medicinal plants, and (d) long-term partnerships between industry and communities dependent on medicinal plants. The meeting is sponsored by IDRC (Canada). The outcome of the colloquium will be presented at the International Conference on Medicinal Plants in Bangalore (see below). Participation in this meeting is by invitation only.

International Conference on Medicinal Plants: Medicinal Plants for Survival. 16-20 February 1998, Bangalore, India.

The conference is being organized by FRLHT, which is represented on the MPSE and is extremely active in in situ medicinal plant conservation efforts in India. Contact: Foundation for Revitalisation of Local Health Traditions, No. 50, 2nd Stage, 3rd Main, Anandanagar, Bangalore, 560 024, India; fax: ++91/80/3334167, e-mail: root@frlhternet.in.


International conference. Contact: Conference Coordinator, National Herbalists Association of Australia, PO Box 403, Morisset, Australia.


Contact: Caroline Martinet, IUCN-The World Conservation Union, 28 Rue Mauverney, CH-1196 Gland, Switzerland; tel: ++41/22/9990001, fax: ++41/22/9990025, e-mail: ccm@hq.iucn.org.

4th Conference of the Parties to the Convention on Biological Diversity. 4-15 May, Bratislava, Slovakia.

Contact: CBD Secretariat, World Trade Center, 393 St. Jacques Street, Suite 300, Montreal, Quebec, Canada, H2Y 1N9; tel: ++1/514/288220, fax: ++1/514/2886388, e-mail: biodiv@ml.net.
**Symposium on the Conservation of Medicinal Plants in Europe.** 22-23 June 1998, Royal Botanic Gardens Kew, United Kingdom.

This international symposium on the conservation of medicinal plants that are in trade in Europe is organized by TRAFFIC Europe in collaboration with the IUCN/SSC MPDG and WWF. The symposium will offer opportunities to disseminate the results of a number of recent medicinal plant trade surveys. The main goal of the symposium will be to channel attention to establishing long-term conservation strategies for wild medicinal plant species in trade. Contact: TRAFFIC Europe; tel: ++32/2/3438258, fax: ++32/2/3432565, e-mail: traffic_europe@compuserve.com.


Main topics of this ASOMP meeting are: (a) chemistry, (b) biological studies, (c) ethnobotany and biodiversity, (d) biochemistry and biotechnology, and (e) product development and commercialization. At the end of the conference an open forum on ethnobotany and community rights will be held. Contact: Secretariat of ASOMPS IX, Institute of Natural Products Chemistry, National Centre for Natural Science and Technology, Nghiaod, Tuolim, Hanoi, Vietnam; tel: ++84/4/836-0830, -3375, fax: ++84/4/3487111, 8531615.

**5th International Botanic Gardens Conservation Congress.** 14-18 September 1998, Kirstenbosch, Cape Town, South Africa.

Contact: Brian J. Huntley, National Botanical Institute, Private Bag X7, Claremont 7735, South Africa; tel: ++27/21/762-1166, fax: ++27/21/761-4687, e-mail: bhc98@nsbic.nbi.ac.za.

**16th International Botanical Congress.** 1-7 August 1999, Saint Louis, USA.

XVI IBC consists of invited oral presentations (plenary sessions, keynote symposia, general symposia) and contributed poster sessions. The scientific program will be subdivided in following sections: (a) Botanical Diversity - Systematics and Evolution, (b) Ecology, Environment, and Conservation, (c) Structure, Development, and Cellular Biology, (d) Genetics and Genomics, (e) Physiology and Biochemistry, and (f) Human Uses of Plants - Economic Botany and Biotechnology. Contact: Secretary General, XVI IBC c/o Missouri Botanical Garden, PO Box 299, Saint Louis, MO 63611-0229, USA; fax: ++1/314/577-9589, e-mail: ibc16@mobot.org.

**African Network on Medicinal and Aromatic Plants (ANIUMAP) Founded at Abuja, Nigeria**

Max Kasperek

An **International Workshop on the Cultivation, Processing and Conservation of Medicinal and Aromatic Plants** was held at Abuja, Nigeria, 18-20 March, 1997. Delegates from Kenya, Ghana, Sierra-Leone, Congo-Brazzaville, Malawi and Zambia attended the workshop. The workshop was organized by the National Institute for Pharmaceutical Research and Development (NIPRID), Abuja, in cooperation with the United Nations Industrial Development Organization (UNIDO). Max Kasperek attended the workshop upon invitation of NIPRID on behalf of the MPDG.

The workshop recognized the need to develop linkages and collaborations between research institutes, universities and the private sector in order to optimize the facilities in the various centres. To achieve this goal, it was agreed that a network called **African Network for the Industrial Utilization of Medicinal and Aromatic Plants (ANIUMAP)** be set up with NIPRID as the headquarters. ANIUMAP will co-ordinate dissemination of information on medicinal and aromatic plants to other focal centres in African countries, training of personnel in R&D, industrial utilization of medicinal and aromatic plants, clinical trials, commercial production and rational use of phytomedicine. Focal points to co-ordinate the activities of the network on national level will be set up in each country.

The workshop recognized the important role particularly of the **Convention on Biological Diversity** and CITES as instruments for the conservation of medicinal and aromatic plants. Emphasis should be given to the sustainable utilization of medicinal and aromatic plants, and to the establishment of protected areas. Workshop participants encouraged in their final communique national governments to establish a system of protected areas comprising 25% of each local government area.

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Internet Web Sites

Andreas Grüger

In this section we want to present some selected websites related to medicinal plant conservation. It is obvious that this selection gives only a restricted glimpse of the immense offer of information in this field in internet. Nevertheless we hope that these references may act as appetizers for some surfing. For any useful reference to be included in forthcoming issues of this section, we would be very grateful.

http://ece.iisc.ernet.in/ernet-members/frliht.html

Homepage of the Foundation for Revitalisation of Local Health Traditions.

http://www.nybg.org/bsci/seb/seb.html

The Society of Economic Botany web site includes news of upcoming meetings, publications and other information for members.

http://www.plantsavers.org

United Plant Savers, a US-based non-profit organization devoted to protecting and replanting threatened native medicinal plant species.

http://iucn.org/themes/ssc

The IUCN Species Survival Commission web site provides information about Specialist Groups, recent publications, and upcoming events.

http://home.inreach.com/famdoc

Costa Rica Venture - a proposal for sustainable development. This homepage gives an elaborate example for a research proposal on ethnobotany.

http://www.cgiar.org/cifor

Centre for International Forestry Research.

/info/research.html

Presentation of research activities on sustainable use and development of non-timber forest products: outputs, expected gains, duration, users, collaborators, and system linkages.

/info/publications.html

Overview of CIFOR publications, occasional papers and its strategic plan. The Newsletter CIFOR-News, issues 7-14, can be viewed.

http://www.dainet.de/genres/mpc-dir

Directory for Medicinal Plant Conservation (see p. 3).

http://www.fao.org/waicent/faoinfo/forestry/nwnews/

Non-wood News, the newsletter produced by FAO’s Wood and Non-Wood Forest Products Utilization branch.

http://www.geocities.com/rainforest/5410/mps1.html

International Conference on Medicinal Plants: Medicinal Plants for Survival, Bangalore, 16-20 February 1998. Agenda, expected outcomes, expected participants of the symposium are presented.

http://www.helsinki.fi/kmus/botmenu.html

Internet Directory for Botany, a general index to botanical information. Within the sections Conservation and Threatened Plants, links arranged in regional order. The sections Economic Botany and Ethnobotany mainly link to herbal medicine subjects.

http://www.rbgkew.org.uk/ceb/ebinfo.html

This page of the Centre of Economic Botany Resources of the Royal Botanic Gardens Kew provides useful links to other web sites with information on Economic Botany.

http://www.biotrade.org

The Biotrade Initiative was launched by UNCTAD. It aims at “strengthening emerging markets for biological resources as a means of promoting conservation and sustainable development”.

http://www.infomed.sld.cu/fitomed

This page presents data sheets on some Cuban medicinal plants.

Tussilago farfara
Reviews and Notices of Publication

A.B. Cunningham & Uwe Schippmann


The aim of this publication is to outline approaches suitable for use by developing countries to assess, with reference to socio-economic factors, the status and sustainability of national biodiversity. In an Annex a comparative overview of the major biodiversity assessment techniques is given. (schp)


The authors present the results of a student excursion to Madagascar. New populations of Catharanthus corniculatus were found in the central plateau and in the south of Madagascar. Based on these findings the primary habitat is redefined and the IUCN threat category is assessed as Rare. (schp)


This paper provides a detailed analysis of the exchange of different medicinal plant species across different ecological zones in Mexico, based on an analysis of medicinal plants sold in two regional trade houses. 69% of medicinal plants received by these warehouses were from more remote locations. Two species which are becoming increasingly difficult to get (and are being substituted by other species) are Smilax aristolochiacefolia and Valeriana edulis (abc).


This report highlights the efforts China and India are making to ensure the long-term health of their medicinal plant resources on which the health care of 2 billion people is based. Production and sales values from 1975-1995 are tabled for China. For India the demand and supply of some Himalayan taxa is tabled, e.g. Picrohriza kurrooa with a demand of > 5,000 t and a supply of < 100 t. (schp)


Leaves of Duboisia myoporoides and D. leichhardtii are traditionally used by aboriginal people in Australia as a source of the narcotic pituri. In the 1940’s there was a large-scale trade in leaves of this species as a source of tropane alkaloids. Between 1945 and 1952, plantation trials were established, but then lapsed. These were resumed by Boehringer Ingelheim (the main buyer of the leaves) in Australia in the mid-1960’s. This has been very successful, with sophisticated methods developed for planting, field maintenance and harvesting. Since the 1980’s, all raw material from Duboisia has been derived from cultivated plants and not from the wild (abc).

New Journal Rates

The *Journal of Ethnopharmacology* has become the official journal of the International Society for Ethnopharmacology, permitting joint membership and subscription at a very low cost (especially in view of what the cost of personal subscription to the *JEP* has been in the past: ~US$ 900). Membership includes personal subscription to the *Journal of Ethnopharmacology*.

Rates are US$ 125/year in USA, Canada, Europe, Australia, New Zealand, Israel, and Japan; US$ 90/year in all other countries. Please send subscription/membership directly to: Professor Ulf Nyman, ISE Representative, Department of Medicinal Chemistry, Pharmacognosy Section, School of Pharmacy, Universitetsparken 2, DK-2100 Copenhagen, Denmark.


The paper provides useful data on wild harvest and plantation development of Jaborandi leaves by the company Merck and on prices and trade volumes. Between the late 1970's and early 1980's production of leaves was over 2000 t/yr. In the past 10 yrs it dropped to around 1000 t/yr. Extractive use by local communities in the state of Maranhao, Brazil, has damaged many of the wild populations. The paper gives an interesting perspective on the "conservation through cultivation" debate. One conclusion is that in this case, cultivation does not necessarily lead to conservation because there are advantages to maintaining wild harvest and cultivation in parallel, maintaining wild harvesting as alternative source when periodic declines in cultivation yields occur (abc).

**MPSG & BfN Publications**

The following publications are available from Landwirtschaftsverlag, D-48084 Münster, Germany; fax: ++49/2501/801-801:


The paper presents details of the methods used over the years that enabled the Sudan to supply 85% of the world's demand for gum arabic from Acacia senegal. Maintaining the gum gardens, tree tapping and gum collection are described. Export volumes from SD are given. Exports are in the monopoly of the Gum Arabic Company. Acacia senegal is used in the "bush-fallow" system, where trees are planted and tapped in the fallow period and subsequently felled when crop production is resumed. (from summary)


Tubers of this species contain forskolin, a labdane diterpene which lowers blood pressure. The pharmaceutical company Hoechst have been involved in developing this species as a crop, following heavy exploitation of wild populations in arid and semi-arid areas of India. One objective has been to select varieties that have high tuber yields and higher yields of the active ingredient. This process is described in this paper (abc).


This monograph examines the supply, demand, and conservation problems of medicinal plants through several case studies, including wild collection of Sanguinaria canadensis, cultivation of Catharanthus roseus and regeneration of Pilocarpus spp., Prunus africana, and Panax quinquefolius. The authors consider conservation concerns and strategies associated with use of plants in both traditional medicine and pharmaceutical production, and evaluate the incentives for conservation through cultivation and other means (D. Leaman).


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Copies of the Newsletter are available from Uwe Schippmann. Contributions for the next issue of Medicinal Plant Conservation are most welcome and should be sent to Uwe Schippmann as word processing files. Files in ASCII or Word Perfect for Windows are equally welcome.

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Any article that is not signed by an author’s name is in the responsibility of the Chair.