Medicinal Plant Conservation

Volume 5

Newsletter of the Medicinal Plant Specialist Group of the IUCN Species Survival Commission Chaired by Uwe Schipmann

REGIONAL FOCUS - India & Nepal

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March 1999
Chair's Note

Uwe Schippmann

Welcome to the fifth edition of our newsletter. Five issues, is that something to celebrate already? I don’t know, but at least we can state that our readership is ever increasing and so is the number of pages from issue to issue: 8, 20, 28, 24 (this was our laid-back edition) and now 40 pages. No matter how many pages, I hope you enjoy reading this one.

As you can see in the short paper below, the MPSG has gone through a re-invitation process in 1998 as is requested by IUCN rules. I want to again thank all members of the first triennium who have contributed to our common goal of medicinal plant conservation. I especially welcome the 39 new members to the Group.

My special thanks go to Natalie Hofbauer for her assistance in keeping contact with all the new members, to Ralf Ohlemüller who has edited this issue of the newsletter and to Danna Leaman for all the work she did over the last year as voluntary Executive Secretary of our Group. Again, the Bundesamt für Naturschutz is thanked for making this issue possible and for posting it to our readers.

Since our last edition a significant change took place in our Group: My co-chair Tony Cunningham had to step down shortly after the Bangalore conference in February 1998. He had to do so owing to heavy work commitments as African coordinator of the WWF People & Plants Initiative. I am glad that he will stay on as a regular member and from his contributions in this issue you can tell that he is still active. I want to thank him for the effective and pleasant cooperation we shared over the last four years.

The saddest news I have to communicate to you is the tragic death of Cynthia Giddy, one of our former members. She died in a car accident together with her husband Ted. Everyone of our readers who knew Cynthia will agree with me that she was one of the toughest conservation ladies on the planet, she was fighting hard for the cycads she loved so much and at the same time she was the most pleasant and warm-hearted lady you could possibly be friend with. She will surely be remembered for that.

MPSG News

New membership invitations

Natalie Hofbauer

In April 1998 we started the (re-)invitation process of the IUCN/SSC Medicinal Plant Specialist Group. The rising interest in medicinal plant conservation finds its expression in the increasing number of MPSG members, who, in accordance with IUCN statutes, are invited by the Group’s chair. They are chosen according to their personal skills and activities. In the first membership phase, after its establishment in 1994, the MPSG consisted of 53 members. In the current triennium the number of members rose to 69, and we are especially happy that all 39 newly invited persons accepted the invitation to serve as a member until 2000.

Figure 1 shows a geographic breakdown of the MPSG members’ working areas. Numbers were calculated

![Diagram showing regional work focus of MPSG members.]

Figure 1. Regional work focus of MPSG members.

based on information given by the members and include double entries. Compared to the first period the range shifted slightly in favour of members from the Asian area. As intended earlier, it was achieved to strengthen the Group through the invitation of plant experts from the European region.
Obituary to a remarkable couple: Cynthia and Ted Giddy

A. B. Cunningham

In the conservation world, it is often useful to distinguish between “real conservation” and “conservation as usual”: the first based on strategic action and on-the-ground pragmatism, the second too often caught in the rarified air of biopolitics, sapping time, energy and funds away from implementation. Cynthia Giddy’s approach to conservation and life in general was characterized by the major contribution she made to “real conservation” of cycads and aloes: a practical, no-nonsense approach to plants conservation backed up by immense energy and field knowledge.

For this reason, she was also able to contribute to policy development within CITES in the way that policy is best developed - not from committees composed of “biopoliticians”, but by individuals like Cynthia who combine broad vision of problems and solutions with detailed knowledge on species and practical issues. Cynthia’s computer-like memory of court cases, consignment numbers and her dedication and generosity in travelling long distances to give evidence as an expert witness in many cases of cycad theft resulted in a remarkable contribution over many years to tightened national and international control over illegal cycad trade.

At the same time, she recognized the need to document the remarkable diversity of cycads in South Africa (29 species), writing the first book on cycads of this region (“Cycads of South Africa”, 1974). She and her husband Ted also recognized that the trade in aloes and cycads was not going to go away; if anything, the problem of damage to wild populations of these plants was going to get worse - so they started an early example of “conservation through cultivation”: a cycad and aloe farm at Umlaatas Road, outside Pietermaritzburg, South Africa. I remember my first visit there in the late 1960’s, wide-eyed at the range of cycads, aloes and clivias growing there, a little intimidated by Cynthia’s no-nonsense manner and relieved to see Ted’s casual bare-footed style: he hated wearing shoes.

A few years ago, after decades of developing the farm and contributing to conservation, Ted and Cynthia moved from their farm in KwaZulu/Natal to the Eastern Cape region of South Africa - a region renowned for its diversity of cycad species. Both Cynthia Giddy and Ted passed away as a result of a serious car accident in May 1998, but the lives of this remarkable couple will always be remembered for their link to an equally remarkable group of plants.

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Regional Focus - India & Nepal

Conservation of medicinal plants in Nepalese forests: Problems and perspectives

Narayan P. Manandhar

In Nepal, the forests which are annually depleting at the rate of 2.1% are the main habitat of medicinal plants. More than 800 species of drug plants occur in Nepal and about 90% of the Nepalese population rely on plant based native therapy for their primary healthcare. Moreover, medicinal plants are one of the sources of national income and more than 60 species of medicinal plants are exported regularly. Many of the medicinal species are also used in various other ways.

A large section of the population lives at or below the subsistence level. The collection and selling of forest products are their traditional business. They lack proper knowledge of sustainable techniques for the collection of medicinal plants from the forests. Their main intention is to earn money rather than to protect plants and their habitat. For them, the urge to survive is more important than conservation. In order to harvest the roots, often whole plants are uprooted. Likewise, the stems of trees are girdled throughout. Many species are collected at immature stage. As a result, the seeds have no chance for dispersal in nature.

Thus, the local people are stripping many species of plants faster than they can regenerate. People are less concerned about the surrounding ecosystem and they consider the conservation of forest resources to be in someone else’s responsibility. The drugs which were abundant about two decades ago are very difficult to find in the forest. Plants being in high demand are collected from a locality until it is completely depleted. Developmental activities are equally responsible for the degradation of the plant resources. The encroachment into forests for expansion of agriculture is often accompanied by new settlement which also contributes to the depletion of forests. Many herbal drugs are sensitive to survive in disturbed habitats.
So far, efforts to conserve medicinal plants were insignificant. There is a lack of infrastructure for setting up conservation activities. It is difficult to apply the existing rules and regulations for collection and export of medicinal plants as there is currently no alternative for the people. It is therefore suggested:

- to build public awareness about the uses of plants to our health care;
- to provide some income generating programmes to the local people with their indigenous knowledge;
- to encourage local people to propagate plants to meet their day-to-day requirements;
- to emphasize the cultivation of drug plants as cash crops;
- to publish an illustrated pamphlet on important medicinal plants which are banned for collection from the wild stock;
- to find new drug plants to minimize the constrain on highly demanded medicinal plants;
- to declare some areas with rich germplasm diversity as medicinal plant reserve;
- to make the administrative procedures simple and efficient;
- to establish co-ordination among the agencies involved in conservation activities on a local scale.

*For author’s address see list of members.*

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**Global medicinal plant trade and its impact on local traders and gatherers: A case study from Tamil Nadu**

*D. Winfred Thomas & M.R. James*

Madurai, a historical city of India, is one of the major international medicinal plant trading centres. The trade activities in Madurai go back to 300 B.C. Currently, there are 40 traders and about 10,000 gatherers in town, being actively involved in selling both dried raw drugs and fresh plants (Winfred *et al.* 1996). According to our studies, during the last financial year (1997-98) an average of 188 raw drugs derived from 169 medicinal plants were traded in large quantities (250 metric tons of dry material annually) in Madurai.

The uniqueness of Madurai is that it is blessed with all kinds of landscapes ranging from dry lands to rain forests (Baliga 1960). Traders identified those landscapes that are rich in biodiversity with the help of middlemen and gatherers and promoted such areas as their collection centres of medicinal plants. Madurai is linked with other parts of the country through rail, road and air routes. Tuticorin Port, located about 160 km from Madurai, lifts medicinal plants to other parts of the world. Medicinal plant trade needs enormous amount of manpower and every day thousands of families commute into the forested areas and other landscapes to collect and to semi-process the raw drugs. These are either landless gatherers whose primary occupation is medicinal plant collection or landless agricultural labourers who collect medicinal plants as a secondary occupation.

The transformation of landscapes and loss of natural resources that support the primary occupations of the many ethnic communities have compelled them to choose alternate occupations. Generally, families lacking agricultural skills choose medicinal plant collection as an additional source of income. Even though the gatherers are uneducated, they are highly knowledgeable bare-foot taxonomists with some of them being herbal healers. Their skills comprise (a) ability to classify plants according to the habits, habitats and uses, (b) identification of the plants using local names in all seasons with or without flower and knowledge about their population status and (c) capacity to develop sustainable harvest techniques and using it during appropriate seasons only (Winfred *et al.* 1998). At present, many people have given up their original primary occupation such as hunting and gathering and switched over to medicinal plant collection as their full time profession. Traders and contractors use the skills of gatherers and yet treat them as unskilled labourers. Nowadays however, many men who have no experience in medicinal plant issues are involved in collecting medicinal plants. These newcomers now dominate the scene and promote large scale and irreversible damages to medicinal plant populations.

Table 1 lists the top 50 plants that were identified based on the first and second steps of the methodology described in Cunningham (1996). Of these, more than 80% are exported from the Madurai trade zone. The medicinal plant trading centre at Madurai has linkages with the global market through various private agencies. For the last 75 years, raw drugs were traded across our globe from Madurai, but now international buyers are demanding high quality materials with a set of diagnostic test reports as well as prompt supply.

The local agencies are not able to cope with the requirements and demand of the international market. A few traders are trying to monopolize the trade. The driving forces of the trading centre are located overseas as the prices are determined by international
<table>
<thead>
<tr>
<th>Species</th>
<th>Part Used</th>
<th>Species</th>
<th>Part Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Cassia auriculata *</td>
<td>Leaf</td>
<td>26 Pedaliunum murex *</td>
<td>Fruit</td>
</tr>
<tr>
<td>2 Indigofera tinctoria *</td>
<td>Leaf</td>
<td>27 Terminalia chebula *</td>
<td>Fruit</td>
</tr>
<tr>
<td>3 Gymnema sylvestre *</td>
<td>Leaf</td>
<td>28 Teprosia purpurea *</td>
<td>Whole Plant</td>
</tr>
<tr>
<td>4 Cyperus rotundus *</td>
<td>Root</td>
<td>29 Trichosanthes cucumerina</td>
<td>Whole Plant</td>
</tr>
<tr>
<td>5 Mollugo pentaphylla *</td>
<td>Whole Plant</td>
<td>30 Tragia involucrata *</td>
<td>Whole Plant</td>
</tr>
<tr>
<td>6 Ocimum tenuiflorum *</td>
<td>Leaf</td>
<td>31 Argemone mexicana</td>
<td>Stem</td>
</tr>
<tr>
<td>7 Acacia nilotica *</td>
<td>Bark</td>
<td>32 Zizyphus xylopyrus</td>
<td>Fruit</td>
</tr>
<tr>
<td>8 Tribulus terrestris *</td>
<td>Whole Plant</td>
<td>33 Strychnos potatorum *</td>
<td>Seed</td>
</tr>
<tr>
<td>9 Phyllanthus amarus *</td>
<td>Whole Plant</td>
<td>34 Acacia sinuata *</td>
<td>Fruit</td>
</tr>
<tr>
<td>10 Coleus aromaticus *</td>
<td>Whole Plant</td>
<td>35 Aerva lanata</td>
<td>Whole Plant</td>
</tr>
<tr>
<td>11 Achyranthes aspera</td>
<td>Whole Plant</td>
<td>36 Sapindus emarginatus</td>
<td>Fruit</td>
</tr>
<tr>
<td>12 Boerhavia diffusa *</td>
<td>Root</td>
<td>37 Syzygium cumini *</td>
<td>Bark</td>
</tr>
<tr>
<td>13 Morinda corea</td>
<td>Fruit</td>
<td>38 Gloriosa superba *</td>
<td>Seed</td>
</tr>
<tr>
<td>14 Phyllanthus virgatus*</td>
<td>Whole Plant</td>
<td>39 Pongamia glabra</td>
<td>Seed</td>
</tr>
<tr>
<td>15 Cynas cirinalis *</td>
<td>Pith</td>
<td>40 Trianthemum sp. *</td>
<td>Root</td>
</tr>
<tr>
<td>16 Ocimum basilicum *</td>
<td>Leaf</td>
<td>41 Lichen *</td>
<td>Whole Plant</td>
</tr>
<tr>
<td>17 Curculigo orchioides</td>
<td>Tuber</td>
<td>42 Datura inoxia</td>
<td>Fruit</td>
</tr>
<tr>
<td>18 Strychnos nux-vomica</td>
<td>Bark</td>
<td>43 Hydrocotyle javanica</td>
<td>Whole Plant</td>
</tr>
<tr>
<td>19 Decalepis hamiltonii</td>
<td>Tuber</td>
<td>44 Indigofera enneaehylla</td>
<td>Whole Plant</td>
</tr>
<tr>
<td>20 Mangifera indica</td>
<td>Seed</td>
<td>45 Ocimum canum *</td>
<td>Leaf</td>
</tr>
<tr>
<td>21 Evolvulus alsinoide*</td>
<td>Whole Plant</td>
<td>46 Origanum majorana</td>
<td>Whole Plant</td>
</tr>
<tr>
<td>22 Abrus precatorius *</td>
<td>Seed</td>
<td>47 Solanum xanthocarpum*</td>
<td>Root</td>
</tr>
<tr>
<td>23 Cissus quadrangularis</td>
<td>Stem</td>
<td>48 Enticoestma littoral*</td>
<td>Whole Plant</td>
</tr>
<tr>
<td>24 Cenelila asiatica *</td>
<td>Whole Plant</td>
<td>49 Curcuma aromatica *</td>
<td>Rhizome</td>
</tr>
<tr>
<td>25 Withania somnifera *</td>
<td>Whole Plant</td>
<td>50 Tinospa cordifolia</td>
<td>Whole Plant</td>
</tr>
</tbody>
</table>

Table 1. Top 50 priority list of medicinal plants based on demand (species arranged in decreasing order) in Madurai.* plants exported from Madurai.

Demand. Through a well established trade network, the local scenario is transformed and tuned according to the market forces operating on a global scale.

The medicinal plant trade activities in and around Madurai have been monitored for the past five years by our student volunteers. Since there is no previous scientific analysis, understanding the present scenario was a rather difficult task. Moreover, the lack of communication between various participants of the trade makes the matter worse. In some areas we are witnessing species loss at local level. From our partial understanding, we feel that the current scenario of medicinal plant trade in Madurai is pathetic and it is in need of an appropriate remedial programme to equip the Madurai medicinal plant trade centre to meet the global demand.

If community based enterprises are designed and managed scientifically at every Panchayat (village cluster), this will transform the current scenario and strengthen the economic status of thousands of gatherers and empower them to have a stake in the medicinal plant trade. Since 1995, FRLHT, a well known NGO, and the state owned local forest department, have jointly initiated studies on the revitalisation of local health traditions. They are promoting in-situ and ex-situ conservation of medicinal plants on a small scale. In the same way, many integrated activities should begin at grassroots level to develop a holistic approach to promote conservation and sustainable use of medicinal plants.

Acknowledgements. The authors gratefully acknowledge Madhav Gadgil, IISc, Bangalore, who shared his PEW grants to initiate our study. Darshan Shankar, FRLHT for sustaining it, and our college administrators for encouraging our work. We also thank our student volunteers E.D. Oliver King, D. Alagesa Pandian, J. Soundra Pandian, P. Saravanan and M. Ganesh Babu for their voluntary efforts to monitor the trade at various levels.

1 March 1999
However, the reality just does not seem to bite. The record on the trade of biodiversity products such as medicinal plants continues to be dismal. And on the ground the reality is very much the case of being damned if you trade or if you do not: with trade, the commercially exchanged species seem to be those which enter the endangered lists, whereas without trade and local incomes to act as an incentive for conservation, there is little hope for galvanizing local conservation of valuable biodiversity.

A recent study ("Medicinal plants and other non-timber forest products in Himachal Pradesh: Aspects of their status, usage and trade in Kullu and Mandi" done by Manjul Bajaj for the Rural Development Office of DFID in New Delhi, India) of the Himalayan state of Himachal Pradesh in India, an important supplier of high value medicinal plants, throws up interesting data and insights on this particular conundrum. The forests of Himachal Pradesh contain about 260 species of known medicinal value of which 30 or so are extracted and sold on a regular basis and another 30-40 on a more sporadic basis. About 22 of these species are considered to be endangered and vulnerable (see table below), showing a high correlation between trade and destruction of the resource base. Thus, left to its own devices, the trade tends to be deleterious. Hope for successful intervention and reversal of the trend comes from the

<table>
<thead>
<tr>
<th>Endangered</th>
<th>Vulnerable/Likely to be Endangered</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Botanical Name</strong></td>
<td><strong>Local/Trade Name</strong></td>
</tr>
<tr>
<td>Aconitum deinorrhizum</td>
<td>Mohra bish</td>
</tr>
<tr>
<td>Angelica glauca</td>
<td>Chora</td>
</tr>
<tr>
<td>Atropa acuminata</td>
<td>Belladonna</td>
</tr>
<tr>
<td>Berberis asiatica</td>
<td>Kashmal</td>
</tr>
<tr>
<td>Colchicum luteum</td>
<td>Kukum</td>
</tr>
<tr>
<td>Dioscorea deltoidea</td>
<td>Shingli Mingli</td>
</tr>
<tr>
<td>Gentiana kuroo</td>
<td>Kadoo</td>
</tr>
<tr>
<td>Hyssopus officinalis</td>
<td>Tengu</td>
</tr>
<tr>
<td>Inula racemosa</td>
<td>Manu/Pushkar mool</td>
</tr>
<tr>
<td>Malaxis muscifera</td>
<td>Jeevak</td>
</tr>
<tr>
<td>Nardostachys grandiflora</td>
<td>Jatamansi</td>
</tr>
<tr>
<td>Saussurea gossypiphora</td>
<td>Ghugti badshah</td>
</tr>
<tr>
<td>Sverria chiraya</td>
<td>Chirayata</td>
</tr>
</tbody>
</table>

Table 1. Endangered and vulnerable medicinal and aromatic plants of Himachal Pradesh (Source: Chauhan, N.S., Dr. Y.S. Parmar University for Horticulture & Forestry, Solan, pers. comm.).
fact that local people have a substantial stake in the natural resources. Estimates of income done across twelve villages show that annual incomes range from Indian Rupees 1,500 to 18,250 per family. In per capita terms, this translates to 15% of the average per capita income in the region. If extractions for self consumption and medication are included, the dependence is even more striking - reason enough to believe that programmes for safe-guarding valuable plant resources are likely to gain popular support and participation in these parts.

The study also examines the role of the local trade. Comparisons of village prices with final wholesale market prices show mark-ups ranging from 120% to 300%, which is bad news for conservationists in the sense that the higher the proportion of gains going to outsiders the lower the incentive for conservation. As natural resources get destroyed local people stand to lose, traders not so - they simply shift their capital to alternate investments. Despite these high mark-ups however, the study concludes that the traders are doing a good job providing steady markets in remote, inaccessible mountain villages where organizations - governmental and non governmental - scarcely ever reach. The explanation for low returns to villagers is traced to two factors - the dispersed, unsteady nature of production from natural forests and the poor quality of rural infrastructure in the regions - roads, telephones, credit - which make the trading operations costly and high risk and market information with villagers imperfect. More systematic management of forests for particular high value species seems to be called for. Also government needs to wave its magic wand on the state of rural infrastructure - Cinderella is not going to make it to the ball on a pumpkin!

For author's address see list of members.

Medicinal plants and the Plant Research Division of Nepal

Nirmal Kumar Bhattarai

Nepal occupies the central portion of the Himalaya with the widest altitudinal range in the world (60 m-8848 m) within an area of 147,181 km². About 30% of the land is accounted as forest-land. The forestry sector contributes about four percent to the national economy. Non-wood forest products account for five percent of the revenue collected from the forestry sector. The flora consists of about 7,000 species of vascular plants including 800 species of medicinal and 250 species of endemic plants.

Wild medicinal plants form the primary source of medicines for traditional health systems at the community level, covering about 80% of the rural population with considerable effectiveness. About 100 species of wild medicinal plants are harvested for commercial and industrial purposes, amounting to about 20,000 tons per year, which is an important source of livelihood to the rural people. More than 90% of the crude herbs collected finds its way to India including plants considered threatened and endangered in India and other countries. Many medicinal plants have not yet been properly identified.

Although the traditional systems of collection and use have remained functional for a long period of time, this cannot serve as the model for the future. Currently, most medicinal plants are facing the fate of extinction on account of various human-related factors like deforestation, fire, shifting cultivation, over-grazing and over-exploitation. Therefore, prioritizing their conservation, management and development has become urgent.

The government of Nepal has banned the unprocessed export of nine species of medicinal plants without restriction on their collection and transport within the country: Nardostachys grandiflora, Rauvolfia serpentina, Cinnamomum glaucescens, Valeriana jatamansi, Abies spectabilis, Taxus baccata subsp. wallichiana and some lichens including Usnea barbata and Parmelia nepalensis. Concerning Dactylorhiza hatagirea and Cordyceps sinensis, even the collection is banned. Likewise, three species of tropical trees, Michelia champaca, Acacia catechu and Shorea robusta have also been protected.

The constitution of the Kingdom of Nepal in 1991 has formally recognized the need to preserve the country's environment and use its natural resources wisely. The
Plant Research Division, consisting of the Royal Botanical Garden and the National Herbarium is the only governmental organization in the country engaged in the study, development, conservation, and management of wild plant resources. It is subordinate to the Department of Plant Resources, Ministry of Forest and Soil Conservation. Among the 151 staff members, 75 are botanists and technical personnel engaged in research and development activities. The Plant Research Division strongly believes that the country's medicinal plant resources can contribute to both environmental and economic sustainability and development provided that necessary researches are conducted and recognized management practices are brought into action.

Ongoing research and development activities include the preparation of an inventory of wild medicinal plants, establishment of gene banks, assessment of threats to wild plant resources in different climatic zones, ethnobotanical studies among different tribes and ethnic groups, ex-situ conservation of selected medicinal plants, qualitative improvements in medicinal plants through conventional breeding, mutation breeding and biotechnology and development of their propagation techniques. Efforts to overcome constraints in propagation through improved nursery practices, transformation of successful technologies to the farmers providing them with seeds, seedlings, training, and other technical assistance and development of agroforestry models involving commercial medicinal plants, are noteworthy.

In recent years, the Plant Research Division has moved towards a more comprehensive approach to conservation by not only collecting information on threatened medicinal plant species, but also by analyzing the reasons for their threatened status, and by making recommendations to alleviate the situation.

For author’s address see list of members.

Development of protocols for the cultivation of selected tropical medicinal plants of India

V.P.K. Nambiar

Established in October 1993, the Medicinal Plants (India) Project is conducted by Arya Vaidya Sala Herbal Garden and sponsored by the International Development Research Centre (IDRC), Canada.

Project leader is P.K. Warrier, principal scientist and project co-ordinator is V.P.K. Nambiar. The project's main objectives are to (i) locate the species in their natural habitats, (ii) establish a germplasm bank, (iii) identify markers through pharmacognostical studies, (iv) evolve techniques for propagation, (v) develop models for on-farm cultivation and (vi) draw up recommendations for their conservation and regeneration in forests.

During the course of the project, the following ten medicinal plant species are thoroughly studied: Baliospermum montanum, Celastrus paniculatus, Coscinium fenestratum, Crateva magna, Embelia ribes, Hemidesmus indicus, Holostemma ada-kodien, Rubia cordifolia, Saraca asoca, Trichosanthes lobata. Of these, Coscinium fenestratum and Embelia ribes are critically endangered. In addition, the project develops strategies for sustainable supplies of the following ten selected species: Aegle marmelos, Asparagus racemosus, Bacopa monnieri, Holarrhena pubescens, Kaempferia rotunda, Limonia acidissima, Nervilta aragoana, Oroxylum indicum, Plumbago indica, Rotula aquatica.

Outcomes of the pharmacognostical studies of the project are published in "Aryavaiyan". Two national conferences under joint auspices of IDRC and Arya Vaidya Sala were held in September 1995 and December 1996. Current activities include the organisation of medicinal plant ex-situ conservation training programmes for farmers, distribution of medicinal plant propagules to farmers, conducting training on the conservation of medicinal plant species which could be used as first-aid in households and growing of species which may be reintroduced into natural habitats.

For author’s address see list of members.

CITES Appendix II re-visited: Is the listing of Nardostachys grandiflora and Picro rhiza kurrooa appropriate?

Carsten Smith Olsen

At the tenth meeting of the Conference of Parties to CITES in June 1997, the two Himalayan plant species Nardostachys grandiflora and Picro rhiza kurrooa were accepted for inclusion in Appendix II because it was concluded that the species may become endangered unless international trade is regulated.
Trade is permitted but requires an export permit from the country of origin and a re-export permit if exported from a country other than where it originated. This decision is briefly discussed here, based on research studies on trade in medicinal plants in Nepal from 1994 to 1998.

**Background.** *Nardostachys grandiflora* and *Picrorhiza kurrooa* are both high altitude species occurring only in the Himalayas. They have probably been commercially traded for thousands of years and form part of the huge trade in Himalayan medicinal herbs. Both species are exclusively collected in the wild. For Nepal alone, Olsen (1998) estimates that 470,000 households are involved in commercial medicinal plant collection; the annual export value is estimated at 22.70 million US$.

**Nardostachys grandiflora**

*Nardostachys grandiflora.* This species is one of the two most important species traded from Nepal. Interviews with wholesalers in India (Edwards 1996, Olsen unpublished) indicate that 80-95% of traded *Nardostachys grandiflora* rhizomes originate from Nepal. There is a lack of reliable trade data in Nepal. However, using existing case studies, a rough estimate would be an average annual export from Nepal to India of dried unprocessed rhizomes of around 1,000 tons. Despite these significant volumes, there are indications that this level of exploitation is sustainable: (i) Collection of rhizomes is not indiscriminate; established user rights are common and high altitude medicinal plants are not generally an open access resource. (ii) Collectors practise purposeful regeneration, e.g. sparing young plants and seedlings. (iii) Collection (August to October) does not generally take place prior to seed dispersal (August to September). (iv) Many of the habitats in which the species occurs are under formal protection through the protected areas system (9.2% of Nepal is covered by protected areas).

Furthermore, based on Indian wholesaler interviews, it is estimated that less than 17% of *Nardostachys grandiflora* rhizomes traded from Nepal to India is re-exported, i.e. the main consumption of *Nardostachys grandiflora* rhizomes takes place in India.

**Picrorhiza kurrooa**

*Picrorhiza kurrooa* and *P. scrophulariiflora.* The two species are very similar and their roots are traded under the same name, kutki. *Picrorhiza kurrooa* is harvested and traded from Pakistan to Uttar Pradesh while *P. scrophulariiflora* is found and traded from Nepal and the eastern Himalayas. Either none or both species should be listed in Appendix II.

Indian wholesalers estimate that 60-70% of all kutki originates from Nepal, i.e. kutki is mainly composed of *Picrorhiza scrophulariiflora.* A conservative and rough estimate for total annual export from Nepal to India is 100 tons air-dry rootstock of *Picrorhiza scrophulariiflora.* As above, there are indications that utilization is sustainable. Using IUCN figures quoted in the 1997 Indian CITES Proposal, it can be
calculated that between 6-17% of Nepali *Picrorhiza scrophulariiflora* is re-exported from India. Thus, trade levels, also for *P. kurrooa*, are again mainly determined by domestic demand in India.

**Conclusion.** As Nepal is the main supplier of *Nardostachys grandiflora* and kutki, and as utilization generally appears sustainable, there seems to be insufficient reason to include *Nardostachys grandiflora* and *Picrorhiza kurrooa* in Appendix II. On the other hand, populations of these species may be over-exploited in India. That is, however, a specific Indian problem to be solved through domestic measures in India, and not an issue for CITES. Only decisions taken within India will ultimately decide whether the species populations in India are sustainably managed. It is important to note that export/re-export from India is of minor importance compared to Indian domestic demand.

Thus, an appropriate solution could be to (i) allow the Nepal-India trade to continue without imposing additional costs on traders, while (ii) India undertakes increased domestic measures to protect its populations of *Nardostachys grandiflora* and *Picrorhiza kurrooa*. This would also take into consideration the situation of the rural medicinal plant collectors in Nepal, as listing on CITES Appendix II increases transaction costs for traders who may respond by decreasing prices paid to collectors.

**References**


*For author’s address see list of members.*

**CAMP workshop in Kullu**

Devandra K. Ved & Vinay Tandon

Conservation Assessment & Management Plan (CAMP) workshops bring together experts on all facets (ecology, taxonomy, cultivation, management, etc.) of a particular group of taxa under investigation. Their objective is to evaluate taxa for setting priorities for conservation action.

A CAMP workshop on ‘High Altitude Medicinal Plants of Jammu & Kashmir and Himachal Pradesh’ was held at Kullu/India from 16th to 18th April 1998. The workshop was fully conducted and facilitated by the Foundation for Revitalisation of Local Health Traditions (FRLHT) and financially supported by the Royal Netherlands Embassy, New Delhi, and the Department for International Development (DFID) of the UK, New Delhi. In contrast to the earlier three FRLHT-facilitated CAMP workshops assessing medicinal plants of southern India (see papers in volumes 2 & 3 of Medicinal Plant Conservation), the Kullu workshop focussed entirely on the state-wise assessment of medicinal plant species of the Indian North-West Himalaya.

<table>
<thead>
<tr>
<th>Threat Category</th>
<th>No. of Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jammu &amp; Kashmir</td>
<td>Himachal Pradesh</td>
</tr>
<tr>
<td>Critically Endangered</td>
<td>6</td>
</tr>
<tr>
<td>Endangered</td>
<td>11</td>
</tr>
<tr>
<td>Vulnerable</td>
<td>18</td>
</tr>
<tr>
<td>Lower Risk - near threatened</td>
<td>2</td>
</tr>
<tr>
<td>Lower Risk - least concern</td>
<td>2</td>
</tr>
<tr>
<td>Data deficient</td>
<td>1</td>
</tr>
<tr>
<td>Not evaluated</td>
<td>2</td>
</tr>
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</table>

Table 1. Threat categories of the 42 species assessed at the Kullu workshop.

The three-day work of the 32 participating experts resulted in an assessment of 42 medicinal plant species of the two states of Jammu & Kashmir (JMK) and Himachal Pradesh (HP). The species selected predominantly occur above 3000 m altitude, with the majority of these being restricted to the sub-alpine (3500-4000 m) and alpine zones (4000-5500 m). For the assessment of threat, the new IUCN Red List categories were applied and, for the vast majority of the species, assigned on the basis of population reduction. Of the investigated species, one is listed in CITES Appendix I (*Saussurea costus*) and four are listed in Appendix II (*Dactylorhiza hatagirea, Nardostachys grandiflora, Picrorhiza kurrooa, Podophyllum hexandrum*).

All of the 42 assessed species are traded, 14 of them
on a global level. The majority of the investigated species (76%) are traded for their roots, rhizomes or bulbs, hence being exposed to destructive harvesting methods. For several of the assessed species a decline in trade of wild collected plants has been observed over the last 30 years. According to local traders, this is mainly due to both declining availability and variation in market rates, depending on the quality of the raw drugs collected.

Three main recommendations for research priorities of the species were developed. For 38 of the 42 species "management actions primarily intended to protect and/or enhance the species’ habitat" is the most significant recommendation. Secondly, for 28 species field surveys in order to detect wild populations of the species are recommended, whereas for 24 species it is advised to initiate monitoring programmes to determine population status. Finally, for eleven of the investigated species life history studies are recommended.

This article is a condensed version of the full CAMP report (75 pages) by D.K. Ved & V. Tandon and was prepared by Ralf Ohlemüller - see list of members for full addresses.

<table>
<thead>
<tr>
<th>Species</th>
<th>Family</th>
<th>Local Name</th>
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</thead>
<tbody>
<tr>
<td>Azadirachta indica</td>
<td>Meliaceae</td>
<td>Toem ndan ou ntaan</td>
</tr>
<tr>
<td>Brucea javanica</td>
<td>Simarubaceae</td>
<td>Toem tanrakey</td>
</tr>
<tr>
<td>Cannabis sativa</td>
<td>Cannabaceae</td>
<td>Toem kancha</td>
</tr>
<tr>
<td>Cayratia cariosa</td>
<td>Vitaceae</td>
<td>Rattal tradet</td>
</tr>
<tr>
<td>Cinnamomum cassia</td>
<td>Lauraceae</td>
<td>Toem ichiyou</td>
</tr>
<tr>
<td>Coscinum ustatum</td>
<td>Menispermaceae</td>
<td>Rattao kinine</td>
</tr>
<tr>
<td>Eupatorium odoratum</td>
<td>Compositae</td>
<td>Toem mangleun</td>
</tr>
<tr>
<td>Harrisonia perforata</td>
<td>Simarubaceae</td>
<td>Toem rongon</td>
</tr>
<tr>
<td>Isora spec.</td>
<td>Rubiaceae</td>
<td>Toem bay khudan</td>
</tr>
<tr>
<td>Morinda citrifolia</td>
<td>Rubiaceae</td>
<td>Toem gnao</td>
</tr>
<tr>
<td>Prismonomaris albidiflora</td>
<td>Rubiaceae</td>
<td>Toem pramteuk</td>
</tr>
<tr>
<td>Rotula aquatica</td>
<td>Boraginaceae</td>
<td>Toem rye teuk</td>
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<tr>
<td>Sarcoccephalus cordatus</td>
<td>Rubiaceae</td>
<td>Toem kdol</td>
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<td>Streptocaulon juvenas</td>
<td>Asclepiadaceae</td>
<td>Rattao chuy</td>
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<tr>
<td>Strychnos nux-vomica</td>
<td>Loganiaceae</td>
<td>Toem krao</td>
</tr>
<tr>
<td>Tinospora crispa</td>
<td>Menispermaceae</td>
<td>Rattao bandol pich</td>
</tr>
</tbody>
</table>

Table 1. List of plants used for treatment of malaria in NE Cambodia.

The present study was carried out in the hill-tribes area of the province of Mondolkiri in NE Cambodia. It is part of a survey on the use of medicinal plants for the treatment of malaria and fever, which presents the healing procedures, diagnosis and treatment of the disease according to the Phong concept.

Table 1 shows a list of plants used for treatment of malaria. The study is also integrated in the NOMAD “Health and Education” programme, a global non-governmental programme on biodiversity conservation via education of children.

The province of Mondolkiri is one of the primary forest and wildlife sanctuaries of Cambodia and is also one of the most remote and isolated areas of the country. Considered as the traditional habitat of the Khmer-rouge, the place is still dangerous and most of the field visits conducted between November 1997 and January 1998 had to be done with military escorts. The population mainly consists of indigenous tribes.

Before the Khmer-rouge came into power (1975-1979), they had already set up traditional medicine centres where all healers of the province were gathered to attend the classes for medical education based on the Khmer’s concept. Courses held at the centres comprised the identification, therapeutic indications, and preparation of plants, and large-scale collection expeditions, leading to over-exploitation of particular species. It is reported that drugs were often tested on prisoners. With the onset of the Vietnamese regime in 1979, the modern medical system came back. Nevertheless, traditional practices still existed non-officially, as the healers were ordered to go in the villages to promote the use of Vietnamese modern treatments.
Nowadays, the tribes harvest the medicinal plants on a
day-to-day basis, according to the health needs. The
work is done by the traditional healers only. Wild
populations are the main source of medicinal plants in
the area. The plants are mostly collected for their roots
(50%) and/or the trunk and the bark respectively (25%
each).

According to our field analysis, none of the species is
dangerous except for Coscinium usitatum, which,
according to the healer’s reports, is only found in a few
places but also grows in some other areas of Cambodia. Harrisonia perforata on the other hand,
now grows in many places after it was over-exploited
by the Chinese in the area before the Khmer-rouge
regime. Accurate evaluation is difficult, though, due to
limited access (guerillas, landmines). Over-
exploitation of the medicinally used plant species does
apparently not happen nowadays.

The slash and burn technique, however, is traditionally
applied in this area and has probably some consequences on the local biodiversity, but no precise
data are currently available on that issue. The main
problem of the area is the deforestation which was
non-rational (no norms or any international
recommendations followed) and 100% illegal at the
moment of the survey.

In order to preserve biodiversity and to ensure
sustainable use of medicinal plants in the region, a
school curriculum for primary schools was set up. It
includes waste management, medicinal plant
awareness and natural resources management.

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TRAFFIC East/Southern Africa
completes medicinal wildlife trade
study

Nina Marshall

In 1996, TRAFFIC East/Southern Africa – the wildlife
trade monitoring programme of WWF and IUCN –
initiated an 18-month review of the trade in wildlife
medicinals in east and southern Africa and
Madagascar, with the aim of identifying species most
in need of conservation, management and/or research
attention. This review also entailed collecting
information about trade patterns, markets, source
areas, and impacts of harvest. Relevant information
was collected in 17 countries: Botswana, Eritrea,
Ethiopia, Kenya, Lesotho, Madagascar, Malawi,
Mozambique, Namibia, Somalia, South Africa, Sudan,
Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.

The study, published in the September 1998 Species in
Danger report Searching for a cure: Conservation of
medicinal wildlife resources in East and Southern
Africa, identified 102 medicinal plant species and 29
medicinal animal species as priorities for conservation
and management action. Plant species range from the
well-known afro-montane tree Prunus africana, to the
Sudanese succulent Aloe sinkatana, valued locally to
treat a variety of ailments including skin diseases,
fever, constipation and inflamed colon. Species
regarded as common in some countries have also been
identified as becoming scarce in others, such as the
Baobab Adansonia digitata, which despite its wide
distribution is experiencing local declines in Eritrea
and Sudan.

This survey revealed that use of wildlife medicinals in
east and southern Africa is largely for traditional
medicine, with few species being exported. Traditional
medicine is the most widely used medical system in the
region. Not only is traditional medicine popular and
accepted, but in many areas it is the only system
available. Western medicine is costly and often
inaccessible. The vast majority of plants and animals
used in traditional medicine, as well as those exported
from the region, are collected from the wild. While
some plant species are cultivated on farms, for
example as hedgerows, this supply is insufficient to
meet growing demand. There are reports of increasing
scarcity for many of these wildlife medicinals, and this
situation represents a concern not only from the
conservation point of view, but also because reduced
availability of wildlife medicinals will have a negative
effect on the health status of many people living in east
and southern Africa.

Recommendations pertaining to conservation,
management, awareness, regulation and research are
presented in the report. Specifically, conservation
action is recommended in the form of strict protection
for threatened species, as well as propagation or
captive breeding for certain species to increase supply
and reduce pressure on wild populations. Management
options include establishment of cooperatives to
investigate the sustainable harvest of medicinal
resources to meet demand on site as well as further
afiend, and investigation of the availability of medicinal by-products that already exist, such as by-products from crocodile and ostrich ranches. Throughout the region there is a lack of awareness about the increasing scarcity of medicinal resources, yet this issue is one that affects a variety of sectors. Lack of awareness is also manifested in poor regulation and record-keeping of the international trade that does occur, leading to insufficient information for management of key resources. Finally, for many species, there is inadequate data on the conservation status, trade and impact of harvest, and there is a great need to conduct basic research to better understand the situation in order to secure the conservation and sustainable utilization of these valuable resources.

Searching for a cure is available for £8 (Europe) or £10 (rest of the world) from: TRAFFIC International, 219c Huntingdon Road, Cambridge, CB3 0DL, United Kingdom; http://www.traffic.org.

For author's address see list of members.

Ex-situ conservation of Tunisian medicinal plants: The creation of a botanic garden

Rachid Chemli, A. Elaissi, F. Messelmanni & M.S.J. Simmonds

Scientists at the Faculty of Pharmacy, Monastir and the members of the Tunisian Medicinal Plant Association are interested in conserving the medicinal plants of Tunisia. In order to achieve this aim they have proposed the development of a 4 hectare botanic garden in the grounds of the Faculty of Pharmacy in Monastir. Monastir is a coastal town located in the semi-arid Mediterranean coastal region of Tunisia. It has an average annual rainfall of 350 mm and an average temperature of 27°C in the hottest month and 11°C in January with rare but occasional frosts occurring in January and February.

The main objective of the proposed botanic garden is to display representatives of the medicinal flora of Tunisia and provide specialist information on medicinal plants for education, research, conservation and recreation. Strategies to conserve medicinal plants include (i) the development of an inventory of Tunisian medicinal plants and their location and distribution within the country, (ii) the making of a rationally designed database to collect information on the medicinal plants, (iii) setting up a nursery to grow and cultivate the plants, (iv) establishing a seed bank as well as a herbarium for medicinal plants.

Detailed designs of the layout of the planting displays have already been produced. An inventory of the species to be grown in the gardens was completed and the collection of seeds for the seed bank has been started. The garden's position near the tourist centre of Monastir and within University ground offers a good opportunity to attract both tourists and scientists. Co-operation with the Faculty of Pharmacy with its established medicinal research project will facilitate research. Also, there is a close co-operation with various institutes (e.g. staff training in garden management and seed conservation at Royal Botanic Gardens, Kew). A fully costed management plan was proposed and already received some governmental funding.

This project is supported by Ministère de l'Environnement et de l'Aménagement du Territoire (Tunisia), Secrétariat d'État à la Recherche Scientifique et à la Technologie (Tunisia), Jardin Botanique du Nancy (France), École Supérieure d'Horticulture de Chott Mariem (Tunisia), Jardin Botanique Royal de Kew (UK), British Council (Tunisia), Darwin Initiative (UK).

For R. Chemli's address see list of members.

Conservación y domesticación de plantas medicinales del trópico húmedo

Raphael A. Ocampo Sanchez

El jardín agroecológico Bougainvillea (empresa privada), cuenta con una extensión de 110 acres, 50% con bosque, bajo la categoría de Reserva Forestal Privada, dedicada a la conservación y desarrollo de los recursos medicinales nativos. Fueron seleccionadas siete especies nativas, considerando diversos criterios, entre ellos, mercado, sobreexplotación, condiciones biológicas, peligro de extinción, falta de técnicas de manejo, que son objeto de mayor atención.

Los recursos principales que se investigan son: Quassia amara (Arbusto), Dracontium gigas (Hierba), Arrabidaea chicha (Liana), Smilax chiriensis (Liana), Smilax aff. domingensis (Liana), Petiveria alliacea (Hierba), Justicia pectoralis (Hierba). Estas siete especies se encuentran

1 March 1999
towards the protection of native medicinal plants. We understand that the issues are complex and there is much research needed to better understand the full implications of our present actions. Some of that research includes population studies, cultivation studies and wild harvesting sustainability studies. As a grass roots organization we plan to stay intimately involved with planting and protection efforts across North America.

United Plant Savers' activities include (i) identifying which native medicinal plants are at risk of extinction, (ii) raising public awareness of the current plight of these species, (iii) creating and managing botanical sanctuaries, (iv) providing seed and root stock and information for replanting at risk medicinal plant species, (v) replanting and restoring at risk medicinal plant species, (vi) consulting with those growing and harvesting medicinal herbs regarding sustainable land practices, (vii) sponsoring programs for school systems and communities to replant at risk medicinal species back into their natural habitats, and (viii) carrying out focused research to help accomplish the above mentioned goals.

Our UPS Botanical Sanctuary project is a 370 acre forest and organic farm in the medicinally rich Appalachian foothills of southeast Ohio. The Botanical Sanctuary will serve as an educational center, a research center, a repository of important native medicinal plant germplasm, and as an economic model. We have identified over 750 species of plants (of which 150 species are trees) and 200 species of fungi. UPS is co-ordinating a voluntary program to help the US Fish and Wildlife Service make its non-detrimental and legal acquired finding for _Hydrastis canadensis_, now that it is on CITES Appendix II.

As part of our ongoing work, we also host conferences open to the general public, which focus on the sustainable cultivation of medicinal plants, identification of wild medicinal plants, ecological herbalism as well as plant conservation principles and techniques.

_The 1999 United Plant Savers conference schedule is listed under “Conferences and Meetings”._

_For author’s address see list of members._
Prunus africana: Striving for sustainable and equitable resource management in Cameroon

James Acworth, Bruno Njombe Ewusi

Introduction. Prunus africana or Pygeum is a common afro-montane forest tree species, attaining sizes of up to 130 cm diameter and 40 metres in height. It is the source of a number of internationally traded pharmaceutical products prepared with an extract from the peeled bark, for the treatment of benign prostate hyperplasia, a common ailment in ageing men. As a result of alarming international reports of increasing rates of destructive and unsustainable exploitation in recent years, P. africana was listed on the CITES Appendix II in 1994, for which trade regulations apply, requiring that exploitation and trade is monitored against acceptable targets. This article looks at efforts being made in Cameroon, a major producer and exporter of Pygeum bark and bark extract, to implement these regulations.

Export trends. Exports from Cameroon of Pygeum bark by Plantecam, an internationally owned pharmaceutical company under Groupe Fournier, have steadily risen over the last 20 years. Data from Ministry for the Environment and Forestry (MINEF) records show that Plantecam processed and exported the produce from an average of 1,923 tonnes of raw bark per year during the period 1986 to 1991, to supply an increasing market demand. Until this time, Plantecam were the sole licensed exporter of processed bark extract. Recently, additional exporters (whose legal position is not clear) have added to exports, but figures are not readily available.

Exploitation of Prunus bark on Mt. Cameroon. Mt. Cameroon harbours the largest accessible natural population of P. africana in Cameroon. The sole licence for the Mt. Cameroen area has been held by Plantecam since the early 1970s, and until recently harvesting was done only by its own employees. Their exploitation quota of 1,500 tonnes per annum was not scientifically founded. According to records from MINEF, Plantecam’s annual harvests rose from an average of 448 tonnes in the 1980s to approximately 926 tonnes per annum in 1994. Benefits to local communities were very small. In 1994, there was an outbreak of illegal exploitation. Unauthorised ‘midnight’ buyers encouraged villagers to harvest, giving the latter much greater rewards than they had previously benefited from the trade. Estimates of the illegal exploitation corresponded to an additional annual harvest of 590 tonnes. Thus, extraction increased to an unprecedented 1,500 tonnes per annum by the mid-1990s (Ewusi et al. 1996). Though the proportion (<30%) of the total harvest was small, this illegal exploitation was seen as both a threat but also an opportunity for more innovative and sustainable management, triggering MINEF, Plantecam and the Mt. Cameroon Project (a multilateral project under the MINEF with British, German and World Bank support) to mobilize their joint resources to address the situation by engaging villagers in sustainable exploitation.

Management inventory & yield studies. A 1% management inventory of Mt. Cameroon was carried out by Office National de Développement des Forêts (ONADF) in 1996 to assess the existing stocks, as well as the levels of damage and to serve as the basis for calculation of sustainable exploitation quotas for Pygeum bark. Of the P. africana stems inventoried, 20% were dead, mostly as a result of excessive or destructive bark exploitation (over-exploitation, felling, etc.).

![Map of Cameroon and Madagascar](image)

Figure 1. Sites where commercial Prunus bark harvesting takes place (after: Cunningham et al. 1997, see Reviews and Notices of Publication).

Of the living trees of exploitable size (>30cm diameter), 40% had been excessively stripped and will not produce again for at least another 10 years, if ever. The standing stock was estimated at 37,000 live trees.
of which 25% displayed signs of severe stress. Using this population data and actual yields per tree, a sustained yield for the 5 year period 1996-2001 was estimated at approximately 300 tonnes of fresh bark per annum. Assuming that if trees had not been killed or over-exploited, sustained yield would have been more than two times higher, at 614 tonnes per annum. The final bill for the ONADEF inventory of *P. africana* on Mt. Cameroon was over US$ 60,000. Given that the sustainable yield estimate based on this inventory was 300 tonnes, the costs of inventory alone amount to over US$ 0.20 per kg of sustainably harvested bark, more than half the price paid for *P. africana* bark on the local market. In the case of Mt. Cameroon, the costs of inventory were borne jointly by Plantecam (the licensed exploiter) and the Mt. Cameroon, and falls short of Plantecam’s requirements, who are reported to require about 2,000 tonnes/year, about 40% of which was expected to come from Mt. Cameroon. Plantecam now dispute the validity of the inventory and sustained yield estimates for their licence on Mt. Cameroon. A more detailed inventory (5-10%) of Mt. Cameroon will therefore commence in early 1999, though the percentage samples is not yet agreed. To allow yield to recover to its former potential, harvesting quotas necessarily have to be maintained at reduced rates for some time to allow the natural population to recover. Artificial regeneration is also being pursued but will not resolve the immediate shortfall.

**Community participation in exploitation and management.** In 1994, the Mt. Cameroon Project, local MINEF, and Plantecam started working with communities to put in place an organised and sustainable management system that will enable communities to harvest profitably and with the endorsement of the Government Forestry Service. In 1997, Mt. Cameroon Project succeeded in brokering a pilot agreement with two villages which permits them to harvest under Plantecam’s licence. Collaborating villages have been organised into unions, and members have been trained in correct harvesting techniques. This has minimized villagers’ desire to benefit from illegal exploitation which is poorly paid and destructive. A Participatory Monitoring & Evaluation System has been developed and tested in Mt. Cameroon area (Brocklesby et al. 1997). A joint team of MINEF, Mt. Cameroon Project, Plantecam, and village community representatives assess correct field harvesting, group stability, regeneration, illegal exploitation, benefit sharing, problem solving, and exploitation quota, using the results to plan improved management and exploitation. However, all the community harvesting agreements have been suspended by Plantecam since the reduction of their quota. This risks undoing all the efforts of the past two years and illegal exploitation has recommenced, as the only resort for villages to continue earning from the resource, albeit at very unfavourable prices per kilogram. A solution must be found which involves communities in legal and sustainable exploitation as a matter of urgency.

![Map of the Mt. Cameroon area](image)

*Figure 2. Detailed map of the Mt. Cameroon area (after: Cunningham et al. 1997, see Reviews and Notices of Publication).*

**Exploitation quota.** The Government of Cameroon, on the basis of the inventory results, has recently allocated an exploitation quota for Mt. Cameroon of 300 tonnes per year. This estimated sustained yield is much less than the quantity previously exploited from
Market prices and distribution of benefits. Cunningham et al. (1997) report that the global annual production of *P. africana* extract comes from approximately 3,225 tonnes of bark harvested per year. On the basis of rough values they estimate this trade to have an over-the-counter market value of US$ 220 million per year. Cameroon’s average harvest of 1,797 tonnes of raw bark per annum (Cunningham et al. 1997) therefore represents 55% of the international trade. From this we estimate that Cameroon’s contribution to global supplies has a final market value of some US$ 123 million. But at the current prices paid to national exploiters (US$ 0.38 per kg), this annual harvest is worth only US$ 683,000 as it arrives at the processing factory’s gates in Cameroon. Therefore it would appear that less than 0.6% of the global market value of Cameroon’s production is returning to local forest users, managers and traders. Illegal buyers are paying harvesters even less at US$ 0.12 per kg.

There is clearly scope - and need - for a greater proportion of the final market value to be re-invested in the sustainable and equitable management of *P. africana*. Prices paid must be sufficient to cover costs of inventory, exploitation, monitoring and control, and artificial regeneration of this resource. To date, management costs have been heavily subsidised by external funds from forest conservation projects. Community based management will never be sustainable until such costs are adequately covered by the market price, and there is a clear benefit for the community as a whole, and not simply the individuals who harvest.

Economics of *Prunus* exploitation. The discounted net economic returns from sustainable *P. africana* exploitation on Mt. Cameroon has been tentatively estimated by Yaron (1998) to range between US$ 1,100 and US$ 4,600 per hectare, depending on the richness of the forest. This estimate is based on average tree populations in montane forest area around Mt. Cameroon (ONADEF 1997), sustainable bark harvests repeated every five years (Acworth et al. 1998), and a price of US$ 5 per kg for exported bark. This economic value of the raw bark is based on higher prices achieved on the international export market of the bark, such as those reported by Cunningham et al. (1997) being paid in Kenya and Tanzania. This economic value is not perceived at the village level as there is a huge gap between the economic returns, and the financial returns estimated at between US$ 64 and US$ 420 per hectare (Yaron 1998), based on the same sustainable yield, and prices earned by legal bark collectors who receive US$ 0.38 per kg of fresh bark from Plantecam on the national market.

Lessons learned & recommendations. Sustainable exploitation of *P. africana* is more likely to succeed if the following elements of a strategy are achieved:
- ongoing implementation of biological studies, which provide objective estimates of sustained yields on which to base realistic quotas, and which carefully monitor the impact of exploitation,
- full involvement of all stakeholders, including government services, commercial enterprise, and especially local communities in the identification and resolution of resource management problems,
- development of community based resource management institutions which are themselves sustained by the fair and equitable distribution of benefits.

**National Prunus africana management strategy.** In order to comply with international commitments, proposals are being considered by the MINEF to appoint a Scientific Authority for plants to advise on the management of *P. africana*, and other threatened plant species in Cameroon. MINEF has also committed itself to carrying out a national inventory of *P. africana* and a regeneration programme with the participation of all stakeholders. This will form the basis for drawing up management plans for each zone where *P. africana* occurs and allocating yearly exploitation quotas. Improved mechanisms for monitoring and control will also be developed.

**Conclusion: Collaboration between government, industry & community.** Collaborative management of *P. africana* represents a real opportunity for an international pharmaceutical company to demonstrate the commitment to pursue its commercial objectives without compromising either this threatened species on which it relies, or the essential need of Cameroon at national and local level, to sustain an income from its natural resources, indefinitely. Application of the proposed national strategy by all interested parties (exploiters, traders, government agencies, and the local community) and further development of the institutional and managerial structures required is essential to ensure that sustained quotas are agreed and respected. Failure by any party to co-operate in implementing the proposed strategy must clearly imply that such a party is not committed to the long term sustained management of *P. africana*.

**References**


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Prunus africana: Harvest and resource management in Madagascar

Nat Quansah

The distribution range of Prunus africana (Hook.f.) Kalkman in Madagascar appears to be the mid-altitude to montane regions of the centre-east through to the north north-east and centre-north of the country. This is judging from the various local names and the areas where the bulk of the materials collected for industrial purposes have come from. Prunus africana is commonly known in the industrial circles in Madagascar by the local name Kotofihy despite the existence of other local names in other areas: Paisoloa (Betsileo region), Saripaso (Bealanana), Tsiposo (Moramanga), Sofoishihy (Brickaville, Vohimena), Menalaingo (Vatomandry) and Tsitsifeoto (Ambatondrazaka) [Randriamihalalina 1994; Walter & Rakotonirina 1995].

The exploitation of P. africana in Madagascar is for subsistence as well as industrial use and both have depended solely on wild collections. The most used parts of P. africana in traditional medicine are the bark and leaves for fever, fatigue and lower back pains while the bark is the main part collected for industrial production of a medicine used for prostate problems.

Harvesting for use in traditional medicine has often been done by collecting bark and/or leaves in small quantities from individual trees. Industrial collection is guided by the issue of a collection permit by the Ministry of Water and Forests under the Interministerial by-law No. 2915/87 of June 30, 1987 to the collector. This permit is given with the collector agreeing to harvest and collect materials in a manner that does neither deplete nor endanger the existence of the species. Harvesting and collection of the bark of P. africana for industrial purposes, however, have not been in line with the directives as spelt out in the permits. Debarking plants and the felling of plants to remove all bark (sometimes including debarking young trees to inflate collections) became the norm as a result of the get-rich-quick attitude of some in the trade. This has brought great pressure to bear on the species to the extent that P. africana has become a threatened species and has been placed accordingly under Appendix II of CITES.

This situation seems to have triggered off a positive response as Sodi/Sopraex, the main company involved in the industrial exploitation of P. africana in Madagascar, has suggested and agreed to participate financially in a national and international programme to look at the issue of sustainable harvesting and the cultivation of P. africana for industrial use (Ravelomanantsoa 1996), so as to ensure the survival and availability of this important species.

It is hoped that this gesture becomes a reality and motivates others (both companies and individuals) in the medicinal and aromatic plants business to do likewise. It is my hope that policies providing incentives for sustainable use of resources will be put in place and implemented to provide the appropriate enabling environment needed to carry out such acts.

References


For author's address see list of members.
Conservation data sheet 1:  
**Adonis vernalis L.**

_Dagmar Lange_

**Adonis vernalis L.**

**Family:** Ranunculaceae

**Synonyms:** Adonanthe vernalis (L.) Spach; Adonis apennina L.; Adonis davurica Reichb.

**Vernacular names:** Spring Adonis; Yellow Pheasant's eye; Adonide du printemps; Frühlings-Adonisröschchen; Adonis vernal.

**Selected trade names:** Adonidis herba; Herba Adonis (vernalis); Herb of Spring Adonis; Herb d'Adonide; Yerba de Adonis; Frühlings-Adonisröschkenkraut.

**Bioprofile:** _Lifeform:_ Perennial, rhizomatous herb.  _Morphology:_ stems erect, single, 10-45cm high; cauline leaves sessile, finely 2-pinnatisect; flowers big, single, terminal; petals 10-20, yellow; stamens numerous; fruits numerous, forming an elongated, oval head when ripening.  _Flowering period:_ March to June.  _Reproduction:_ mainly vegetative.

**Distribution:** Pontic floral element; main range from eastern part of Middle Europe through East and Southeast Europe, western Siberia to eastern Siberia; disjunct area in Middle, West and Southwest Europe.

**Habitat:** Typically in dry grasslands. _East Europe:_ in steppe vegetation (forest-steppe, meadow steppe), on black-earth-soils. _Middle Europe:_ in grassland on warm, dry, calcareous sites. _Altitude:_ 50-500m, in the south up to 1600m.

**Uses:** (1) Medicinal: for cardiac insufficiency, in homeopathy and phytotherapy (mainly in combination with other plant drugs, e.g. Sea Onion bulbs, May Lily herb); (2) folk medicine; (3) ornamental and (4) dye.

**Plant part used:** Aerial plant parts; dried in phytomedicine, mainly fresh in homeopathy.

**Commodity:** _Crude drug:_ dried herb, stems and leaves dominate, overall appearance green-brown; stems green or brown, round, 3mm thick, longitudinally striped, at the base often with brown-black scales; leaves eglabrous with narrowly linear pinnate lobes; sepals greenish, broadly ovate, pubescent; petals pale yellow, elliptical, 15-20mm long; stamens yellow; fruits 3-5mm long, globose, reticulately rugose, rather densely pubescent, with recurved pistils. _Cut drug:_ fragments mainly of the fine, pinnatisect leaves and stems, occasionally of the flowers, i.e. sepals, petals, stamens and fruits. _Powder:_ green. _Odour:_ odourless. _Taste:_ somewhat bitter and spicy. _Toxic!_

**Cultivation/wild-collection:** _A. vernalis_ is cultivated on commercial level only as an ornamental, but not for medicinal purposes (very low germination rate of 20%, blooming not before the third to fourth year); consequently all traded material originates from the wild.

**Trade:** _Countries of export:_ Romania (<1990: c. 200/a, >1990: 0-110/a), Bulgaria (<1990: c. 5-100/a, >1990: 0-110/a), Russia (harvest: c. 100/a, export?); in former times: Hungary, Ukraine; _countries of import:_ Germany, France.

**Threats:** _Habitat loss:_ (1) decrease of dry grassland due to meilerization, encroachment by shrubs and trees, or forestation; (2) intensive tourism at the Black Sea Coast. _Detrimental harvesting techniques:_ (1) harvesting from initial blossoming till abscission of fruits; (2) picking plants including stem base or even rhizome. _Overexploitation:_ (1) exploiting populations more frequently than every 3-4 years; (2) harvesting every flowering stem of a tussock.

**Red list assessment:** _Ex:_ IT, NL; _E:_ BG, CZ, HR; _V:_ CH, DE, (RO), SE, SK; _R:_ HU.

**Legislation:** _A. vernalis_ is subject to several types of legislation ranging from import/export monitoring (EC), a licensing system for collecting, trade and export (Bulgaria, France, Romania), to total prohibition of collecting and trade in national resources (Germany, Hungary).

**Recommendations:** To ensure sustainability of _A. vernalis_ populations it is recommended (1) to implement the provisions of Council Regulation No. 338/97, (2) to monitor wild-harvesting (quota system, rotation of exploited areas), (3) to protect their natural stands, and (4) to continue efforts in cultivation.


The author wishes to thank L. Eystatieve, B. Galambosi, Y. Gorbunov, M. Héija, C. Kirsch, M. Mladenova, É. Németh, V. Melnik, and A. Sárbu for providing their assistance.  

_For author's address see list of members._
Kava boom hits the Pacific

Bill Aalbersberg

The South Pacific has had its first herbal remedy make a major impact in international trade. The plant *Piper methysticum*, which has long played a central role in the traditional life of several Pacific countries, is the basis of a number of pharmaceutical products in Europe and the United States mainly as an anti-anxiety treatment and muscle relaxant.

Kava is also special to the Pacific in that it was domesticated in northern Vanuatu and then spread to Polynesian and Micronesian islands whereas most pan-Pacific plants originated in Malesia. The mixing of kava drink was part of religious ceremonies prior to European contact as well as welcoming ceremonies to visiting dignitaries. The kava plant was also used medicinally as a soporific, diuretic, for kidney troubles, filariasis, coughs, colds and sore throat. In more recent times kava is mixed and drunk socially on a regular basis by large segments of the community. It is also used as a contraceptive, to treat wounds and gonorrhea.

Kava has long been grown for subsistence use and to some extent commercially for the internal market. The shrub is vegetatively propagated and requires rich, well-drained soil. The plant is considered mature after about four years and is uprooted as the root and basal stem contain the greater proportion of active material, called kava lactones. These materials can either be pounded and strained as harvested or after drying. Kava is ideal for traditional Pacific multicropping systems as the plant requires shade when young but prefers full sunshine once established. Research on kava has been undertaken for more than 100 years originating with German chemists accessing material from Samoa. Numerous pharmacological properties have been found and in the 1920s kava drink was listed in the American Pharmacopoeia as a treatment for venereal disease. In the 1980s kava received Commission E approval for use in Germany. With the changes in the United States laws regarding herbal remedies in 1994, kava products also entered the United States market. In the United States, 1998 has seen a special boom in kava products due to television publicity and sales are expected to reach $50 million.

This boom has raised a number of issues. Given the unique traditional role of kava in the Pacific, there has been some anger at the perceived high profits being made by Western companies making products based on traditional uses of these plants. Unfortunately, intellectual property rights as currently written cannot protect such traditional uses of a plant. However, not less than five patents have been made relating to kava by Western pharmaceutical companies. Current strategies being pursued to at least maintain the Pacific islands' role as sole suppliers are a trademark, geographical indication or certification mark. Another strategy to improve local benefits from kava is to process the kava locally so that a value-added product rather than raw material is exported.

Environmental problems are already evident from the kava trade in the island of Pohnpei even in the absence of an export market. Many full kava plants are likely to be presented and consumed at a Pohnpei ceremony. Due to high rainfall, kava does not grow well on the flat coastal ground and the mountain rainforest is being increasingly cleared to plant kava. Besides being a threat to biological diversity, erosion from upland clearing is fouling coral reefs. In addition, 17 people in Pohnpei died in 1996 due to a landslide in the mountain area that had been cleared for kava planting.

Similar problems could be faced in the larger kava-growing islands if people move away from traditional cropping systems to monocrop kava plantations. The farmgate price of kava has more than doubled in the past year as American buyers try to satisfy the seemingly insatiable demand. This has often caused growers to uproot immature plants for sale. The sudden influx of money into rural areas is also causing sudden changes in way of life. Kava for local consumption is also at a record price. If this trend continues it is possible that the traditional and social use of kava will be changed.

There is already discussion about trying to achieve a more sustainable kava trade in the Pacific. Leaves and branches also contain kava lactones and could be extracted locally without having to uproot the plant. In Hawaii, many former sugarcane farmers are now planting kava using agroforestry techniques. Intercropping in coconut plantations is also under study. It is likely that attempts to develop a Pacific kava product with a certificate of origin will be more successful if it is tied to a certification of sustainable farming. It is hoped that as the Pacific benefits from its traditional plant it is careful that this does not lead to serious negative impacts in the future.

For author's address see list of members.
Coming Up

Ralf Ohlemüller

First International Conference on Indigenous Knowledge and Biodiversity of Medicinal Plants. 5-6 February 1999, Dhaka, Bangladesh.
This conference is organised by the People's University (Gono Bishwabidhyalay) and the People's Health Centre (Gonosasthiya Kendra) at Dhaka. It covers the following issues: i) Present state of the traditional medical system: indigenous knowledge; ii) Rural communities, herbs and traditional medicine: socio-economic issues; iii) Biodiversity: medicinal plants; iv) Indigenous knowledge, property rights and product development.
Contact: Organizing Secretary, Department of Environmental Sciences, Gono Bishwabidhyalay, P.O. Mirzanagar, Dhaka-1344; Ph: ++880/2/813811; Fax: ++880/2/866719/863567; E-mail: gk.mail@drik.bgdxtoolnet.org.

The symposium is organised by the Working Group on Plant Chemistry of the IOCD (International Organization for Chemical Sciences in Development). Contact: Prof. Ermiias Dagne, Chemistry Department, University of Addis Ababa, P.O. Box 30270, Addis Ababa, Ethiopia. Ph: ++251/1/114854 or 1/126276; Fax: ++251/1/551244; E-mail: eda@telecom.net.et.

International Ginseng Conference '99. 8-11 July 1999, Hong Kong.
The conference is organised by the Chinese Medicinal Material Research Centre and will be chaired by Dr. Paul But. It will bring together Ginseng professionals and experts of all fields, including biotechnology, medicinal applications and marketing aspects. Next to oral and poster presentations, various exhibitions will be displayed.
Contact: IGC '99 Secretariat, c/o International Conference Consultants Ltd., Unit A, 3/F Eton Building, 288 Des Voeux Rd, Central Hong Kong; Ph: ++852/2559/9973; Fax: ++852/2547/9528; E-mail: icc@asiaonline.net; http://www.cmmrc.cuhk.edu.hk/ginseng.

16th International Botanical Congress. 1-7 August 1999, Saint Louis, U.S.A.
The conference is held every six years and 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. Among others, a symposium on 'Economically Important Plants: Use and Conservation Issues' will be held.
Contact: Secretary General, XVI IBC, c/o Missouri Botanical Garden, PO Box 299, Saint Louis, MO 63111-0229, USA; Fax: ++1/314/577-9589; E-mail: libc16@mobot.org.

Conferences on the Conservation and Cultivation of Native Medicinal Plants of North America.
• 20 March 1999, Florida
• 23-25 July 1999, Montana
• 8-10 October 1999, Ohio
• 28 Dec 1999 - 2 Jan 2000, Hawaii
These conferences are hosted by United Plant Savers. They focus on the sustainable cultivation of medicinal plants, identification of wild medicinal plants, ecological herbalism, plant conservation principles and techniques and bioregional herbalism as a healthy way of living.
Contact: United Plant Savers, P.O. Box 98, East Barre, VT 05649, 802.479.9825; E-mail: info@plantsavers.org.

The first announcement for this conference just came out and is now available.
Contact: Prof. Nilufar Nahar, Secretary Organizing Committee ASOMPS X, Room 305, Khundkar Biggan Bhavan, Dept. of Chemistry, University of Dhaka, Dhaka - 1000, Bangladesh.
International conference Medicinal Plants for Survival
16-19 February 1998, Bangalore/India
Danna Leaman

More than 400 participants attended the conference on "Medicinal Plants for Survival", which was hosted by the Foundation for the Revitalization of Local Health Traditions (FRLHT). As Darshan Shankar, Director of FRLHT pointed out, it was a “festival of ideas” with the high number and wide variety of local and regional projects reported during the course of the conference. As one of the institutional sponsors of this large conference, the MPSG was involved in the organizing committee and as co-convenor of the Conservation Section.

One great expectation was that this meeting would “re-establish a global commitment to medicinal plant conservation” on the tenth anniversary of the WHO, IUCN, and WWF Chiang Mai Consultation in 1988, which produced a widely publicized declaration and guidelines for medicinal plant conservation.

The Chiang Mai Consultation broke fresh ground ten years ago by defining roles in medicinal plant conservation for specialists and policy-makers in health, agriculture, and public education, thus broadening the circle of responsibility beyond protected areas and botanic gardens. Today, with implementation of the international Convention on Biological Diversity dominating the global agenda for action on conservation, it is impossible to talk seriously about conservation and sustainable use of species and habitats without also talking seriously about local and national economies, trade, and community and cultural integrity. The Bangalore conference did focus one of four major sessions exclusively on conservation and sustainable use of medicinal plants, but these issues reappeared as a leitmotif throughout the other sessions on traditional systems of medicine, trade and enterprises, and access and benefit sharing. Uwe Schippmann gave a plenary talk on monitoring (and assessment) for conservation of medicinal plants.

An important outcome of this conference was a proposal by FRLHT to form a global electronic network on medicinal plants that will help to coordinate overlapping and complementary activities on medicinal plant conservation, traditional medicine, and intellectual property. Design of the network is just underway, with support from Canada’s International Development Research Centre (IDRC). Developing partnerships and exchanging information on conservation and sustainable use of medicinal plants will be a major objective of this network, building on the spirit and success of the many activities reported in Bangalore.

For author’s address see list of members.

Regional workshops on medicinal plants and traditional medicine in Africa
Ernest Rukangira

Two regional workshops on medicinal plants and traditional medicine were held in Conakry, Republic of Guinea, from 17 - 21 November 1997 and in Cape Town, South Africa, from 14 - 18 April 1998 respectively for french-speaking and for english-speaking African countries. The workshops were organized by the Environment Liaison Centre International (ELCI, Kenya) in conjunction with the International Development Research Centre (IDRC, Canada). The two workshops took place within the framework of the Medicinal Plants and Local Communities Programme (Africa) being implemented by ELCI with support from IDRC and DANIDA.

Both workshops brought together a multi-disciplinary group of more than 55 people from environmental NGOs, grassroots organizations, research institutions and government bodies. Participants included researchers, health professionals, traditional practitioners, herbalists, conservationists and representatives of environmental NGOs. Other countries represented in the workshop included Mozambique, the Dominican Republic, France, USA and Canada. Representatives from IDRC and IPGRI (Rome, Italy) also participated in the workshops.

Participants presented papers focusing on their own work and on the status of traditional medicine and medicinal plants in their respective countries. The workshops laid the groundwork for a continuing dialogue among key stakeholders in the effort to conserve medicinal plants and promote traditional medicine. They were an excellent occasion to build bridges between researchers, traditional healers and NGOs so that collaborative efforts can be initiated for future work in the area.

Among others, the following recommendations were formulated at the workshops:
To promote the training of traditional healers, plant collectors, and consumers in techniques for the sustainable harvesting of medicinal plants.

To involve local communities in all aspects of conservation, research, and programme development and implementation, while giving special attention to the economic concerns of practitioners and to fair compensation for the custodians of cultural knowledge.

To establish agreements between researchers, bio-prospectors and indigenous people regarding the manner in which traditional knowledge and medicinal plants are managed, used and protected.

To encourage, through appropriate mechanisms, collaboration between traditional medical systems and modern systems of public health.

To increase regional and international cooperation, especially for the exchange of information, the sharing of experiences, and the transfer of methods that are effective at the local level for conserving medicinal plants and developing traditional medicine.

To support preservation, documentation, inventory and ex situ collection, storage, use and marketing of medicinal plants.

To use community based participatory researching methods to identify existing threatened cultural practices that promote sustainable use, management and conservation of medicinal plants.

To undertake research on policy issues related to article 8(j) of CBD in order to make it applicable within the African context.

The workshop proceedings are now available and may be ordered from the author (Price: US$ 30).

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Medicinal Plant Symposium
22-23 June 1998, Kew
Anne Vanden Bloock

More than 120 plant specialists, government and industry representatives and conservationists attended the First International Symposium on the Conservation of Medicinal Plants in Trade in Europe that was held on 22 and 23 June 1998 in the Royal Botanic Gardens, Kew, in the United Kingdom. The event, organised by TRAFFIC Europe in collaboration with the IUCN/SSC Medicinal Plant Specialist Group, World Wide Fund for Nature UK office and the Conventions and Policy Section of Kew Gardens, provided a platform for discussions and presentations of facts related to the conservation of plant species, whether native to Europe or not, that are traded for medicinal and aromatic purposes in Europe.

The different presentations at the symposium shed light on certain characteristics and trends of the European market for medicinal and aromatic plants. The importance of this market in terms of species (at least 2,000 taxa are used on a commercial basis in Europe), volumes (annual European imports averages a minimum of 120,000 tons) and values (European imports are valued at, as a minimum, more than US$ 335 million annually) was highlighted. Different speakers also described Europe's herbal renaissance in recent years, with an increase in consumption of natural remedies as well as plant-based cosmetics and household products. This is demonstrated by an increase of 20% of trade in medicinal and aromatic plant material in Europe between 1992 and 1996. According to the results of a recently published TRAFFIC report on "Europe's Medicinal and Aromatic Plants: Their Use, Trade and Conservation", at least 150 medicinal and aromatic plant species are threatened as a result of overcollection, destructive harvesting techniques as well as habitat loss and habitat changes in one or several European countries of their area of distribution.

Two of these taxa, namely Arnica montana and Drosera spp., were the subject of specific talks at the symposium. In addition to European species, many other medicinal and aromatic plants are imported into Europe from all over the world. Some are unsustainably harvested in countries of origin to meet the demand of the European industry. This was illustrated at the symposium by presentations on the exploitation and trade of two African species, Prunus africana and Harpagophytum procumbens, and of one Asian species, Taxus wallichiana. It was also made clear that no or little information exists on the population status of a great number of medicinal and aromatic plant species that are traded in Europe. Further research is needed in order to obtain this information.

From the different talks and discussions at the symposium it was made clear that the wild harvesting of medicinal and aromatic plants provides significant incomes to rural communities in Eastern European
countries. It was also highlighted that the collapse of the Communist rule in these countries at the beginning of the 1990s has deeply modified the management and controls of the production, processing and trade in medicinal and aromatic plants in these countries from a small number of state-controlled enterprises to a great number of private companies. In Georgia and Albania at least, it was clear that cultivation of medicinal and aromatic plants as organised before the fall of Communism through collective farms, was now in decline.

The following legal tools that are available to ensure the sustainable exploitation and trade of medicinal plants were discussed: (i) the Convention on Biological Diversity of 1993, (ii) the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) that regulates since 1975 the international trade in wild species of fauna and flora that are or may be threatened with extinction, (iii) the recent European Union CITES Regulation of 1997 that implements CITES in the EU but also contains a number of measures that are stricter than CITES, (iv) the European Union Directive on the Conservation of Natural Habitats and Wild Fauna and Flora of 1992.

Solutions to ensure the sustainable exploitation of medicinal and aromatic plants in trade in Europe were discussed at length, among others the importance of using non-detriemental harvesting techniques, the need to promote the cultivation of threatened species to alleviate pressure from wild populations and the necessity to establish mechanisms for the setting up of harvesting quotas for natural populations based on good scientific data.

Different speakers advocated the need for the industry to get directly involved in the sustainable supply of medicinal and aromatic plant material to prevent future supplies of raw material on the market from diminishing or even disappearing altogether. Better access to information and technology by private enterprises in supplier countries is also required which would enable local companies to process the raw plant material produced in the country and therefore add a value to it. Local communities that live next to the resource have to benefit from its exploitation by external companies. This would be an incentive for them to conserve the resource instead of overexploiting it.

Finally, the need for collaboration between the private sector, NGOs and rural farming communities was reiterated on several occasions. This would ideally include the establishment of common objectives and decisions, the elaboration of national programmes and the setting up of study groups.

Anne Vanden Bloock, TRAFFIC Europe, 608 Chaussée de Waterloo, B-1050 Brüssel, Belgium; Tel.: 0032/2/343-8258; Fax: 0032/2/343-2565; E-mail: TRAFFIC_Europe@compuserve.com.

Rainforests for Health: A travelling exhibition

Arnould van Seters

Rainforest Medical Foundation was established in 1991 by a group of Dutch physicians, with the general aim to contribute to tropical rainforest conservation and to support the indigenous forest dwellers. The exhibition 'Rainforest for Health' was assembled for educational purposes and campaigns in tropical and non-tropical countries. Its successful display in the Netherlands (1992-94) and Suriname (1995-present) encouraged us to address the health aspects of the rainforest issue on a more global scale. External funds enabled the production of two English copies, which are now travelling through India and Ghana, whilst a Bahasa Indonesian version will soon be available.

The main themes of the exhibition are: (1) medicinal plants, their loss and significance for both traditional health care and western medicine; (2) 'diseases of deforestation', including malaria and mercury pollution; (3) the fate of the forest peoples, such as the Yanomami Indians in Brazil. In the exhibit, medicinal plants are being introduced as a vital component of the economically important non-timber forest products. Apart from their role in health care, medicinal plants can help generate local income and provide an alternative to non-sustainable logging.

The search for novel drugs from natural sources by pharmaceutical industry (biodiversity prospecting) is elaborated on as a fruitful means of North-South cooperation, on the strict condition that the issues of sustainability, indigenous property rights and profit sharing are being fairly dealt with. Data are provided to confirm the World Health Organization's postulate that herbal medicines can be less expensive than their pharmaceutical equivalents. Finally, case histories illustrate world-wide attempts to make traditional and western health care systems more complementary.

The exhibition features text fragments and a wealth of colour pictures from Latin America, Africa and Asia,
and shows how much their peoples have in common. With 44 permanent panels and three temporary panels to be used by local NGOs, audiotapes and a youth program, the display is geared to a variety of target groups.

In India, the tour proceeds under the supervision of the Foundation for the Revitalization of Local Health Traditions (FRLHT), which added its own display of medicinal plants in natura. The tour began in February 1998 at FRLHT’s International Conference on Medicinal Plants in Bangalore, and then travelled for seven months through South India. It received wide press coverage, and by the middle of July had already drawn over 100,000 visitors. The Ghana roundtrip started in May 1998 under the patronage of the Head of State, and included the seven capitals of all (former) rainforest regions.

The Centre for Scientific Research into Plant Medicine, our Ghanaian counterpart from Mampong-Akwam, rented a touring car for collecting school kids and transporting the exhibit’s components, a load of 650 kg in all. Both in India and Ghana the exhibition stimulated a variety of local activities. Next summer, the exhibition will be shown in the Chelsea Physic Garden (London, UK), whereas the African copy hopefully proceeds to Cameroon and Uganda.

Requests for presentation in subsequent countries and information on the costs involved can be addressed to RMF’s secretariat:

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Figure 1. Preparing for the exhibition in Bangalore. (photo: RMF)
Medicinal Plants Sourcebook India

This substantial publication (598 pages) provides information on all facets of medicinal plant issues in India. It is organised into three parts, subdivided into 22 chapters:

(i) Institutions: Two chapters list all relevant information on the objectives, research areas and resources of government and non-government organisations, university research centres as well as phytopharmaceutical research and manufacturing companies.

(ii) Education, information services and publications: Eleven chapters present information on audiovisual material, books, consultants, events, extension services, information systems and services, libraries, periodicals, publishers and distributors, theses and training organisations. This part includes information on various databases maintained by several Indian institutions.

(iii) Products, miscellaneous services and resources: Nine chapters provide information on analytical and testing facilities, certification services, gardens, germplasm banks, herb suppliers, herbaria, museums, plant material, and seed banks.

The extensive data presented in this publication is well structured. Each chapter is completed by an introductory user’s guide. A plant, key/subject or geographical index at the end of most of the chapters allows for quick answers to specific queries (e.g. which botanic garden of India has a major collection of a particular medicinal plant species?). All medicinal plants mentioned are listed with scientific, English, Hindi and Sanskrit names in the appendix. The Medicinal Plants Sourcebook India was compiled and edited by the International Library Association with the help of various contributors. It could well serve as a standard model for future compilations of medicinal plant data in other regions.

Price: Rs 795.00

Distributor: Natraj Publishers, 17 Rajpur Road, Dehra Dun - 248001, India, Tel.: ++135/653382 & 745221, Fax: ++135/749914 & 651108

Internet Sites

Ralf Ohlemüller

Following up the websites recommended in MPC 4, this chapter presents some sites on medicinal plants and related issues. Again, this list is far from being exhaustive. Neither the author nor the MPSG chair necessarily agree with the information or the objectives of the institutions mentioned here.

http://www.richters.com
Richter’s Herb Specialists’ web site provides online versions of Richters Herb Letters and information on catalogues as well as lecture and workshop series.

An annotated bibliography on medicinal plants and ethnobotany in Mexico.

http://www.hawaii-nation.org/canoe/index.html
Comprehensive information on 24 traditionally used plants of Hawaii (e.g. kava) and links to other Hawaiian plant sites.

http://www.flmnh.ufl.edu/natsci/herbarium/bib/bibhecon.htm
A reference list of literature on edible, herbal and medicinal plants of North America and the Caribbean.

http://hammock.ifas.ufl.edu/~michael/eb/index.html#anchor1681813
The well maintained Ethnobotanical Resource Directory provides various links to medicinal plant databases, institutions, etc.

http://www.rain-tree.com
The Raintree Group provides detailed information and numerous links to sites on rainforest preservation and sustainable use of rainforest plants.

http://wefind.com/co/shaman/about.htm
Overview of Shaman Pharmaceuticals’ objectives and philosophies, including a bibliography and a list of clinically used rainforest plant species.

This site was prepared by the Library staff at the Australian National Botanic Garden and provides a bibliography of native Australian plants, used as food and medicines.
Information on the Asia Pacific Information Network on medicinal and aromatic plants.

http://probe.nalusda.gov:8300/cgi-bin/browse/mpnadb
Search engine of MPNADB - Medicinal Plants of Native America Data Base.

http://www.funredes.org/endacaribe/Tramil.html
Information and contact addresses of the TRAMIL (Traditional Medicine for the Islands) research network in the Caribbean.

http://www.idrc.ca/
Homepage of the Canadian International Development Research Centre (IDRC).

http://elib.cs.berkeley.edu/docs/query.shtml
Search engine of the Digital Library Project at Berkeley. Type "Medicinal Plant Conservation" and find all past four issues of the MPC newsletter.

http://www.kew.org.uk/peopleplants
Homepage of the People and Plants Initiative.

http://www.stevenfoster.com
Information on activities and resources of the Steven Foster Group.

http://www.bib.wau.nl/prosee/home.html
The homepage of the Plant Resources of South-East Asia network offers links to the network’s newsletters, handbooks and databases.

http://www.nps.gov/plants/
The Native Plant Conservation Initiative homepage provides information and various links to sites on grant programmes, working groups, the initiative’s newsletter, etc.

http://www.xs4all.nl/~rainmed/
Homepage of the Rainforest Medical Foundation.

http://www.herbalgram.org/directory.html
This site informs about educational and research projects, pharmacy expeditions and publications of the American Botanical Society.

http://www.wri.org/
The homepage of the World Resource Institute has a wide range of information and up-to-date links to websites on all facets of natural resource management issues.

http://www.ffii.org.uk
The Flora & Fauna International homepage.

Selected Newsletters and Journals

Uwe Schippmann

In the following a bibliographic list of selected newsletters and journals is provided which regularly publish papers relevant to medicinal plant conservation. Some of the periodicals are received on an exchange basis with our newsletter and the exchange partners are thanked for this co-operation. Additional publication exchange agreements are welcome, please contact the author!


AMRUTH, Bangalore (IN), ISSN 0971-6793. Price: US$ 30 p.a., Editor & Orders: Thayil, S., Foundation for the Revitalization of Local Health Traditions, 50, MSH Layout, 2nd Stage, 3rd Main, Anandnagar, Bangalore 560024, India.


CONSERVACION VEGETAL, Madrid (ES), ISSN 1137-9952. Price: free. Editor & Orders: Dominguez Lozano, F., Comision de Flora, Comite Español de la
UNION MUNDIAL PARA LA NATURALEZA, UNIDAD DE BOTÁNICA, DEPT. BIOLOGÍA, FAC. CIENCIAS, UNIVERSIDAD AUTÓNOMA DE MADRID, 28049 MADRID, SPAIN.


ECONOMIC BOTANY, NEW YORK (US), ISSN 0013-0001. Price: US$ 84 p.a., quarterly. Editor & Orders: Kaplan, L., SOCIETY OF ECONOMIC BOTANY, NEW YORK BOTANICAL GARDEN, SCIENTIFIC PUBLICATIONS DEPARTMENT, BRONX, NY 10458-5126, USA.

ETHNOBOTANY, NEW DELHI (IN), ISSN 0971-1252. Price: $25, semiannually. Editor & Orders: Jain, S.K., SOCIETY OF ETHNOBOTANISTS, DEEP PUBLICATIONS, A-3-27-A DDA FLATS, PASCHIM VIHAR, NEW DELHI 110063, INDIA.

ETHNOPHARMACOLOGIA, METZ (FR), ISSN 1261-4572. Price: 50 F per volume, biannually. Editor & Orders: Mazars, G. & Schröder, E., SOCIÉTÉ FRANÇAISE D'ETHNOPHARMACOLOGIE, SOCIÉTÉ EUROPÉENNE D'ETHNOPHARMACOLOGIE, 1, RUE DES RÉCOLLETS, 57000 METZ, FRANCE.


GLOBAL BIODIVERSITY, OTTAWA (CA), ISSN 1195 3101. Price: 25-50 CA$ p.a., quarterly. Editor & Orders: McAllister, D.E., CANADIAN MUSEUM OF NATURE, SUSEN SWAN, CANADIAN MUSEUM OF NATURE, P.O.BOX 3443, STATION D, OTTAWA, ONTARIO K1P 6P4, CANADA.


HERBA POLONICA, POZNAN (PO), ISSN 0018-0599. Price: $30 p.a., quarterly. Editor & Orders: Krajewska-Patan, A., RESEARCH INSTITUTE OF MEDICINAL PLANTS, INSTYTUT ROSLIN I PRZETWAROW ZIELARSKICH, UL. LIEBELA 27, 61-707 Poznan, Poland.


ICMAP NEWSLETTER, PARIS (FR). Price: DFI 60 for 2 years, biannually. Editor & Orders: Bernath, J. & al., INTERNATIONAL COUNCIL FOR MEDICINAL AND AROMATIC PLANTS, ICMAP, C/O W. KRANT, NL-8081 HJ ELBURG, NETHERLANDS.


JOURNAL OF ETHNOBIOLOGY, FLAGSTAFF (US), ISSN 0278-0771. Price: US$ 60 p.a., semiannual. Editor & Orders: Pearseall, D., SOCIETY OF ETHNOBIOLOGY, BRIAN A. MEILLER, MISSOURI BOTANICAL GARDEN, CENTER FOR PLANT CONSERVATION, P.O.BOX 299, ST. LOUIS MO 63166, USA.


JOURNAL OF MEDICINAL AND AROMATIC PLANT SCIENCES, LUCKNOW (IN), ISSN 0253-7125. Price: $ 400 p.a., quarterly. Editor & Orders: Kumar, S., CENTRAL INSTITUTE OF MEDICINAL AND AROMATIC PLANTS, COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH, P.O. CIMAP, LUCKNOW 226016, INDIA.

MEDICINAL PLANT CONSERVATION, BONN (DE), ISSN 1430-953X. Price: free, annually. Editor


NEWSLETTER ON TCM RESOURCES, Hongkong (CN). Price: free. Editor & Orders: Lee, S.K.H., Traffic East Asia, Room 2001, Double Building, 22 Stanley St., Central, Hong Kong, SAR.


PLANT CONSERVATION NEWS. THE SSC NEWSLETTER FOR PLANTS, London (UK), ISSN 1354-6708. Price: free. Editor & Orders: Jermy, C., IUCN SSC, The Natural History Museum, Cromwell Road, London SW7 5BD, UK.


PLANT TALK, Kingston upon Thames (GB), ISSN 1358-4103. Price: L 15-35 p.a., quarterly. Editor & Orders: Akeroyd, J. & Synege, H., P.O. Box 500, Kingston upon Thames, Surrey KT2 5XB, UK; or P.O. Box 65226, Tucson, AZ 85728-5226, USA.


REVIEW OF AROMATIC AND MEDICINAL PLANTS, Ascot (GB), ISSN 1356-1421. Price: 140 L p.a., bimonthly. Editor & Orders: Centre for Agriculture and Biosciences International (CABI), CAB International, Library Services Centre, Silwood Park, Buckhurst Rd., Ascot, Berks SL5 7TA, UK.


TRAMIL CENTROAMERICA. BOLETIN INFORMATIVO, Managua (NI). Price: free. Editor &
Orders: Lagos-Witte, S., Tramil Centro-America, Programa Tramil Centroamerica/end caribe, A.P. 64, Managua, Nicaragua.


WORLD CONSERVATION, Gland (CH). Price: US$ 60 p.a., quarterly. Editor & Orders: Meith, N., IUCN The World Conservation Union, IUCN Publications Unit, 219c Huntingdon Road, Cambridge CB3 0DL, UK.


Reviews and Notices of Publication

Acworth, J., Njombe Ewusi, B. & Donald, N. (1997): Sustainable exploitation of Prunus africana on Mt. Cameroon. - 5 pp., Unpublished report, Limbe. The Mt. Cameroon Project is a multilateral project between the government of Cameroon, UK Department for International Development, German GTZ and the GEF. Extensive studies were carried out on the harvest of Prunus africana which has its most important population on Mt. Cameroon. Preliminary estimates claim a sustained yield of 213 tonnes of fresh bark per annum. This yield is less than the 500 to 1,300 tonnes per year which have been exploited from Mt. Cameroon in recent years. (schrp)


Universidad Veracruzana, Xalapa.


The brief paper gives some concise information on the development as well as the objectives and structure of this database. Medbase is an extension of PRECIS, a holistic information base on plant life of South Africa. Its primary objective is to facilitate responsible land use in South Africa and to form a basis for policy makers in regard to the conservation and appropriate exploitation of the state's medicinal (muthi) plants. Three independent, Access-based components provide information on (1) biological, ecological and conservation aspects, (2) horticultural aspects including propagation and cultivation and (3) ethnomedicinal aspects of the 260 most important medicinal plant species of South Africa. The data may soon be available on public domain. (roh)


The report reviews the current international trade in Prunus africana and makes recommendations for a better implementation of its listing in Appendix II of CITES. Trade structure and volumes are summarized and identification help for the main commodities unprocessed bark and extracts is presented. (schp)


The bibliography lists 449 serial publications with standardized data on order information and a summary of the publication's focus. It is arranged by continents but also provides for an alphabetical index of publication titles for easy access. In an appendix, internet addresses on forest resources are listed. (schp)


The brochure provides an overview of ongoing financial, technical and human resources cooperation projects carried out by the German Gesellschaft für Technische Zusammenarbeit (GTZ) in the field of implementing the Biodiversity Convention. Worldwide, Germany is supporting about 160 projects in which the conservation and sustainable use of biological diversity constitute the focus or a major subactivity. However, no projects relate specifically to mps (3 in the 1st edition) although medicinal plant aspects may be present in a number of projects with wider scope. Clearly, GTZ does not have a medicinal plant or NTFP focus. (scph)


The handbook is part of a training unit directed towards customs officers and CITES staff. The unit aims at a better awareness of medicinal plants in international trade. Main sections comprise the basic rules of pharmaceutical nomenclature, an introduction to plant morphology and plant parts used for drugs, an overview on trade volumes and the custom tariff headings used in the Harmonized System. In an Appendix, 19 CITES listed species and 7 species of Annex D of the CITES-EU-Regulation are presented by way of datasheets with information on synonyms, common names, distribution, protection, look-alike drugs. (scph)


A number of databases on non-timber forest products have been established over recent years but any information available is mostly scattered and poorly advertised. The Center for International Forest Research (CIFOR) has conducted a survey on NTFP databases and has held a workshop in December 1995. This publication includes 8 papers. It provides the summary results of the survey, brief reports on the databases and the conclusions from the workshop. (summary)


The one-page report gives a qualified estimate that some 10,000 medicinal plant species may be threatened world-wide. (scph)


The hypothesis that plant materials are selected and valued for use in traditional remedies based on their biological activity was examined in the context of the health, culture, and environment of the Kenyah people in the Apo Kayan Plateau, East Kalimantan, Indonesian Borneo. In an ethnobotanical survey conducted in 3 Kenyah villages in the Apo Kayan, 403 remedies involving 203 plant species were documented. Locally important remedies and taxa were identified, and the distribution of knowledge within the Kenyah communities was evaluated using a new quantitative medicinal importance value index based on cencensus. (Leaman)


In 1996, TRAFFIC East/Southern Africa initiated a 18-month review of the trade in plant and animal medicinals in east and southern Africa and Madagascar, with the aim of identifying species most in need of conservation, management and/or research attention. The review contains information about trade patterns, markets, source areas, and impacts of harvest. Relevant information was collected in 17 countries. The survey reveals that local traditional medicinal purposes dominates the trade in medicines in the region. International trade is of minor importance. Over 100 indigenous plant species were identified as conservation or management priorities on a national basis. Recommendations for an improved resource management are given. (summary)


The paper gives detailed information on the distribution of bearberry which extends from SW Europe north to Scandinavia and includes large parts of Siberia and N America. 90 tons of bearberry are used annually in Germany, half of it as tea drug, the other half in phyto medicines. All material is wild-collected. Countries of origin are Spain, Italy, Austria, Switzerland, the Baltic countries, Russia, and Bulgaria. (schp)


This paper analyses the plants of North America which have been used medicinally by native North Americans. The relative importance of 232 plant families of North America for medicinal use is assessed using a method based on residuals obtained from regression analysis. The Commelinidae produce by far the lowest number of medicinally used species, whereas the Asteridae and Hamamelidae contain the most medicinally used species in North America. The role of selected families and subclasses in medicinal usage is discussed. (roh)


The book contains data on 4029 taxa (species, subspecies, varieties) from 1200 genera from 242 families. It records a total of 44691 different uses of these plants by 291 native American societies. Of these usages, 24945 are recorded to be medicinal, 11078 are as food, 2567 as fibers and 607 as dyes. 2582 species included in this encyclopedia were used medicinally by native Americans, many of which for a variety of purposes. For Achillea millefolium alone 355 medicinal uses are recorded. (schp)


A CAMP workshop was conducted for 75 medicinal plant taxa of northern (37), northeastern (18) and central (18) India to assess their status in the wild. It was attended by 45 specialists from 25 institutions. Using the IUCN red list categories 33 taxa were assessed as Critically Endangered, 17 as Endangered and 16 as Vulnerable. Exploitation from the wild and trade is considered to be the main cause of threat for 89% of the species under review. Recommendations for conservation action are proposed for each taxon. (schp)


The data provided in this book (and in the accompanying CD-ROM) have been developed by WCMS jointly with IUCN/SSC. It identifies tree species which are threatened with extinction and records information on their distribution, uses, ecology, the threats they face and conservation measures in place. More than 10000 tree species have been reviewed, 95 were found to be extinct, 976 (17) Critically endangered, 1319 (33) Endangered and 3609 (91) Vulnerable on a global scale. The number of species for which medicinal uses are recorded are given in brackets. This is one of the first studies in which the new IUCN threat categories have been applied. (sohp)


Extensive deforestation and over-exploitation in E Himalaya have brought Captis teeta to the brink of extinction. Investigations on the distribution range, demography, ecology, cytology, reproductive biology and population genetic structure were carried out. It was found to be endemic to a small area, to occupy a very narrow habitat and to be highly dispersed with very small population sizes. It is recommended that its habitat be declared a protected area with the active cooperation of the local inhabitants. (summary)


Medicinal Plant Conservation now on the World Wide Web

Thanks to the excellent work of Tom Moritz and co-workers at the Berkeley Digital Library Project, we are pleased to announce that the MPC newsletter is now available on the Internet. It can be found by searching for "Medicinal Plant Conservation" under the query option at

http://elib.cs.berkeley.edu/docs/query.shtml

All the past four issues of the newsletter are available and can be viewed in three different ways:
- Page Images are scanned images (GIF files) of each page.
- OCR Text allows to view a plain text version (ASCII) of the entire document.
- 1.0 alpha Multivalent Document Image Browser.

This is a most handy solution and offers the possibility to access the information in the newsletter according to the different needs of its users. The scanned images allow to view the document as it looks in hardcopy, but because these are GIF images, they take longer to load. The plain text version, however, despite all the usual shortcomings coming along with text-scanning procedures, is downloaded much more quickly and allows to cut, copy, paste etc. parts of the document.

We are also grateful to Maria Sadowski of the IUCN Species Survival Commission for her efforts to put the MPC newsletter on the Internet.


The paper gives some concise information on local names and therapeutic details of 17 lesser known medicinal plant species of Kerala. The study follows the aim to preserve the knowledge that tribal communities in this region have on the medicinal uses of wild plant species. (roh)


The authors state that a total of 2500 species with ethobotanical uses are known in India. They record 1748 medicinal plant species (out of 18440 plant taxa) from the Indian Himalayan. These have been analyzed according their taxonomic diversity, altitudinal range, provenance, endemism and uses. A list of threatened taxa is provided. The main part of the book consists of a table in which the following data are provided for all taxa: scientific name, altitudinal range, plant parts used, use in six Himalayan regions, life form and provenance. Owing to its broad taxonomic range this is a very useful data source although the editing could have been done more carefully, e.g. to make references more consistent with the bibliography. (schnp)


The history of Anguraté tea utilization and the taxonomy and distribution of Mentzelia cordifolia is described. This Peruvian drug is collected from the wild and is used as a phytomedicine with anti-inflammatory activity in stomach ulcers since the fifties. Stems and roots are used and plants are frequently uprooted which causes concern for the survival of the species if demand increases. (schn)


The bark of the Lapacho tree (Tabebuia avellaneous) is a traditional Incan remedy which has been "discovered" by Brazilian scientists 40 years ago. The paper summarizes medicinal properties and gives limited information on distribution and taxonomy. (schn)


See article page 10.


Vo, Van Chi (1997): Tu dien cay thuoc Viet Nam [Encyclopedia of medicinal plants in Viet Nam; in Vietnamese]. - 1468 pp., Y Hoc, s.loc.

The book presents data on some 3200 medicinally used taxa in Viet Nam. They are illustrated by 2911 drawings and 768 photographs. The accompanying text is in Vietnamese, one index is on scientific names. (summary)


This paper describes the spatial distribution and ethnic background among herb-traders on the Witwatersrand, an urbanised region in the Gauteng Province in South Africa. The data are derived from a study undertaken in 1994 and are compared with data from the 1960s. In 1994, an estimated number of 244 herb-traders were expected to be in practice in the study area, with 70% of these being located in Johannesburg. The majority of the herb-traders on the Witwatersrand were found to be black (52.4%) and male (62.7%).


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The following list of members is as of 15 January 1999. Please look through it and advise the editor on all errors and missing information (e.g. e-mail numbers).

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