



Anna Lawrence

Here's a problem exercising the minds of some conservationists. How do we know when the harvesting of a wild medicinal plant is sustainable? And, even when we know this ourselves, how can we convince others that this is the case?

This is not an esoteric matter. Far more species of medicinal plants are harvested than any other product from the natural world. Some years ago, a careful survey in China revealed that 10,027 species of flowering plants are used medicinally, a very high proportion in a country with around 24,300 native species. Possibly 50,000 species of higher plants are used medicinally worldwide, representing between one in six and one in ten of all species.

Of course, not all medicinal plants are subject to over-harvesting and a few species are cultivated, including some of those in highest demand. Several factors can make a species vulnerable, such as being slow-growing, living in rare habitats, being used for multiple purposes or being popular in the market. The great majority of medicinal plants are actually used only in folk medicine, while scholarly medical systems, such as Traditional Chinese Medicine (TCM), use comparatively few (500–600 commonly in TCM). The gathering of medicinal plants for village use is generally not a problem. It is the pressure of plant trade, whether for traditional medicine or for botanical industries, which puts pressure on the plants.

▲ A member of the Task Team, Savanna Durga Regional Forest, and
◀ Medicinal plant market near Bangalore, India

TOWARDS A SUSTAINABLE HERBAL HARVEST

A work in hand

ALAN HAMILTON, KLAUS DÜRBECK
AND ANNA LAWRENCE



Anna Lawrence

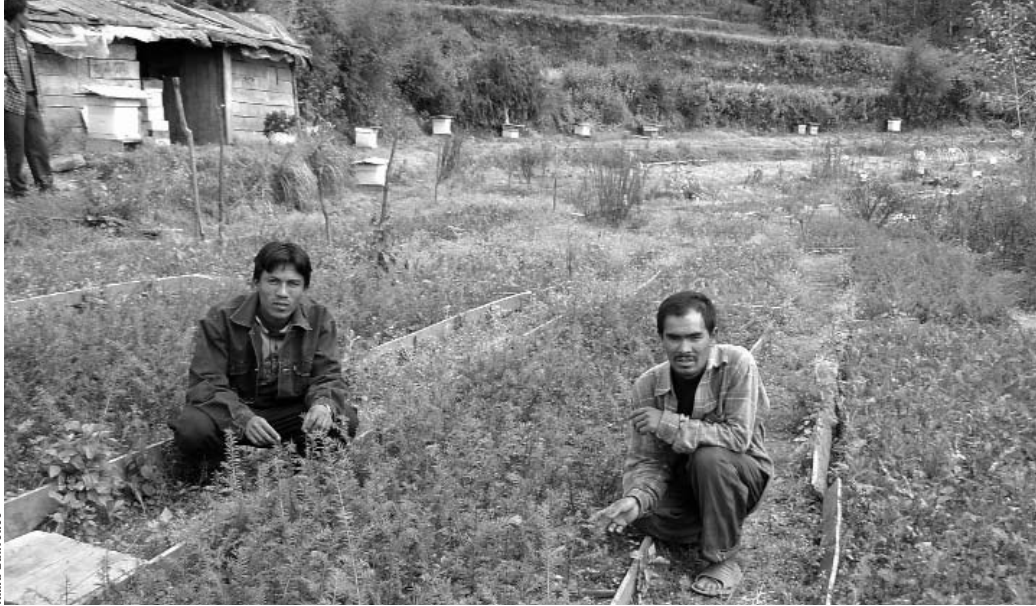
TRAFFIC – the non-governmental body that monitors plant trade – has brought international attention to the challenges posed by the over-harvesting of medicinal plants, through research in Africa, Europe and elsewhere. Plantlife International has also helped raise public awareness, through its 2004 report *Herbal Harvest with a Future* on the sources of herbal ingredients in the UK. Harvesting of medicinal plants can lead to local extinction, loss of genetic diversity and degradation of habitats, this last when the harvested species are keystone plants whose loss adversely affects other species.

With medicinal plants, problems of conservation and development can be intimately linked. Shortage of a plant can lead to a vital medicine being in short supply or fetching a high price. When plants become locally scarce or extinct, harvesters may lose their source of income and suffer cultural erosion, as medicinal plants are central to many traditional cultures. The potential loss of earnings can be substantial. Half of all households in the northern part of central Nepal and about a quarter to half in the middle part of the same region collect medicinal plants for sale. The money received makes up 15–30% of the total income of poorer households. And, in Bosnia-Herzegovina, some 100,000 rural families collect and sell wild medicinal and aromatic plants (MAP).

Over-harvesting is not the only cause of decline in medicinal plants. The Himalayas are famous for high altitude medicinal herbs that are essential ingredients in Ayurveda, Tibetan Medicine and TCM. Sheep, yak and other domestic animals, today responsible for massive grazing pressure in the high pastures of the Himalayas, are putting many of these species under heavy pressure.

A matter of maths or process?

There are different ways of looking at sustainable use. FAO places supply and demand at the heart of its definition “*The use of plant resources at levels of harvesting and in such ways that the plants are able to continue to supply the products required indefinitely*”. FAO’s definition



Anna Lawrence

has the merit of simplicity (replenishment at least to match off-take) and fits the long-term needs of many harvesters, who are poor and likely to be glad if they can continue to rely on the availability of medicinal plants, year after year.

For agricultural systems, however, sustainable use is usually defined quite differently than for wild plants. The definitions refer more to maintaining the quality of the land, particularly the soil, but do not require the continuing production of any particular crop. But, how should sustainable use be regarded for species growing in those large areas of habitat that are part tended and part wild, for example many natural grasslands in Europe and the forest gardens of the tropics? And why place so much emphasis on maintaining certain levels of population size (defined in terms of resource supply), when populations of wild species can be subject to major fluctuations that are entirely natural?

Sustainable use is also a social process. Most conservationists would probably agree that wild plants under pressure from trade should be managed and, also, that adaptive management is the type of management most likely to succeed. In adaptive management, management prescriptions are periodically reviewed and adjusted as necessary; efficient systems of monitoring are therefore vital. Adaptive management is the best option because of the complexity of these systems (with botanical, ecological, social and economic dimensions) and the many uncertainties about how they function and about what effects management interventions will have.

▲ Members of the Baishakeshwori Forest User Group showing nursery beds for medicinal plants, Dolakka, Nepal

Experience suggests that an effective management system for wild medicinal plants will often include some common elements:

- a defined area for management
- strong tenure
- a responsible person
- community involvement
- a management plan, and
- procedures for monitoring and setting prescriptions for harvested species.

However, what is less clear are the levels of detail or certainty that are desirable or achievable for these various elements: how precisely must an area be delimited, how strong must the tenure be, how authoritative must the responsible person be, how much and what type of community involvement are needed, how detailed should be the management plan, and how precise should be the monitoring of the harvested species and the prescriptions set for their management? These are all big questions to answer.

Experiments in the Subcontinent

Funded by the Forestry Research Programme of the UK, one of us (AL) is currently engaged in experiments in India and Nepal to evaluate methods for the sustainable harvesting of medicinal plants. Under the project, two collaborating institutions – the Foundation for



Anna Lawrence

▲ The ForestAction site at Dolakka, Nepal

Revitalisation of Local Health Traditions (FRLHT) in India and ForestAction in Nepal – are working with local communities to establish and monitor the health and yield of medicinal plants in trial plots in forests. In India, the study sites are in forest reserves under joint forest management, meaning that the government forest departments responsible for the forests have agreements with local communities covering aspects of their use. The forest being studied in Nepal is a community forest under local control.

The project's approach combines participatory methods with scientific rigour. FRLHT and ForestAction have encouraged the establishment of local Task Teams, which have played a key part in devising and conducting the research. The Teams have chosen the species for detailed study and brainstormed about how to improve their management. They have then established numerous plots in the forests to monitor the effects of new methods of collecting or managing the

▼ Collecting area for *Helichrysum italicum* (foreground) in Herzegovina



Klaus Dierbeck

chosen species; for example they might collect only parts of tuberous roots so that the remainder of the plant can regenerate. With multiple replications, the plots in each forest are being subjected to three or four types of treatment: habitual harvesting (business as usual), no harvesting, and one or two of the new treatments chosen by the Task Teams.

It is early days, but some interesting results are emerging. Just the fact of creating Task Teams has proved useful: team members sit down to discuss the state of medicinal plants in the forests and how harmful trends might be reversed, and then make periodic visits to inspect the comparative treatments in the forests. Eventually, it is hoped, the project will find some standard procedures to encourage sustainable use on a wider scale. And we will have to find out how best to catalyse these changes, similar to roles played in the experiments by FRLHT and ForestAction.

Developing standard operating procedures in Bosnia-Herzegovina

In south-eastern Europe harvesting of wild medicinal plants is on a large scale. Triggered by the weakening of tight state-controls in these once communist states, unregulated collection of MAP has burgeoned in recent years, and concern is growing about the erosion of plant resources and biodiversity generally. One of us (KD) is working closely with governments, companies and development agencies to find ways of introducing more sustainable use.

Traders in MAP are becoming increasingly aware of the need for greater traceability for their medicinal materials; many believe that the European Union will require full traceability to source by 2010. In Bosnia-Herzegovina, a joint project supported by the German development agency GTZ and the Swiss Import Promotion Programme (SIPPO) has identified companies that purchase MAP from collectors. These companies occupy pivotal positions in the supply chain connecting collectors to consumers.

Being directly connected with the harvesters, these companies are in a good position to influence how the plants are harvested. Accordingly, the project has started a training programme in sustainable harvesting practices for two to three employees per purchasing company.

A key tool is the Collectors Manual, which is a portfolio of information and advice on every aspect of the collection and handling of these plants. Evolved through expert guidance and collaborative research, the 2003 Manual contains information on good collection practices, including pre- and post-harvest aspects. Collector monographs on some 50 species show how to identify the species and explain collecting techniques, harvesting times and post-harvest treatments. Another manual explains social requirements, such as the need to have a responsible person for each harvesting area and for this person to assign a specific harvesting zone to each collector (to avoid competitive collection) for the purpose of organic certified collection. For more details, see please see www.sippo.ch.

The documentation requirements in the manual are designed to prove full traceability. If the procedures are followed, then every batch of plant materials received by the manufacturers can be traced back to the bundles harvested by a particular collector on a particular day. The project lays great emphasis on the introduction of such new 'standard operating procedures'. Of course much effort may be needed to introduce the new procedures, but once established, it is thought, they will become matters of routine and no longer particularly burdensome.

Signalling sustainability

When consumers choose products containing wild medicinal plants, how can they know whether these plants have been harvested sustainably? It would help if there was a credible system of labelling on sustainability that is widely recognized around the world, but as yet this is a pipedream. The UN Conference on Trade and Development (UNCTAD) has expressed interest in developing sustainability standards for wild-collected natural products and has established principles,

criteria and indicators for its BioTrade Initiative (www.biotrade.org). Further development by UNCTAD can be expected.



actually increase unsustainable practices,

because many consumers

likely have the impression that organic labelling indicates environmental responsibility in general.

To establish an independent system for certifying the sustainability of wild medicinal plants from scratch would be a formidable undertaking. It would require the introduction of a whole new third party certification operation, involving networks of certification bodies in countries around the world. Expanding certification systems designed primarily for timber, such as that of the Forest Stewardship Council (FSC), might work in some cases, but as yet these have been little applied to medicinal plants.

Many herbal products are already beset with multiple labels, providing information (some required by law) on many aspects of quality and use. If it is to push the trade towards sustainable use through consumer pressure, labelling for sustainability needs to gain public recognition amidst this clutter of information. It could make sense to move towards combined labelling for all three aspects of product quality that refer to how the botanical ingredients have originated, that is: a) product quality (i.e. the right species have been collected, correctly dried, etc.); b) Fair Trade; and c) sustainability.

Currently, 'organic' is by far the most widespread type of labelling used by herbal manufacturers to signal the production quality of the plants used. Systems for organic certification already exist in many countries and so, if sustainability could be credibly added to the requirements of organic certification, this could prove a big step forward towards sustainable use. One advantage of organic certification is that it can cover both wild-harvested as well as cultivated plants, potentially making it a relatively uncomplicated signalling system for consumers. However, there is a major danger. Most wild-harvested medicinal plants will be 'organic' in a product quality sense anyway. If the requirements for sustainability are insufficiently rigorous, then the use of organic labelling might

In fact, some organic certification requirements do already refer to sustainability for botanical ingredients from wild sources, but unfortunately this generally means very little. The most common organic standards applied to wild-harvested medicinal plants in Europe are based on the EU Regulation on organic standards (No 2092/91), which is exceptionally weak when it comes to sustainability. It would be extremely helpful if the global organic certification movement could embrace sustainability in its standards in a way that is credible.

A workshop at the Veterinary University Vienna in July 2005 considered several of these issues. Participants voiced the opinion that, when it comes to matters of sustainability, conservationists and industry work in totally different worlds. However, the workshop provided an opportunity to introduce a positive development – a project of the IUCN Medicinal Plants Specialist Group, WWF and TRAFFIC Germany and the German Federal Agency for Nature Conservation (BfN) to produce a new *International Standard for the Sustainable Wild Collection of Medicinal and Aromatic Plants* (ISSC-MAP). The draft ISSC-MAP, as it currently stands, is a long document, covering matters of product quality and Fair Trade, as well as sustainability. It has been more recently discussed at a meeting on the Island of Vilm, Germany, in December 2005, including hearing about the results of field tests to test its practicality.

Suggestions

We suggest that the following next steps might prove helpful for promoting sustainable use for wild-collected medicinal plants:

TOWARDS A SUSTAINABLE HERBAL HARVEST

A work in hand

◀ The difference between rotten (left) and marketable seeds of harro (*Terminalia chebula*)

Photo by Anna Lawrence

■ The draft ISSC-MAP should be further developed, concentrating especially on aspects relating to sustainable use (which is the recognized area of expertise of the organizations involved). The aim should be a short (e.g. 2-page) list of conditions needed for sustainable use. The standard should be practically achievable in diverse circumstances by interested communities, resource managers and industry. Reality checks should be made with ethical herbal companies and with those organic certifiers that have already demonstrated an interest in higher standards for organic wild-crafting (e.g. the Soil Association of the UK, which has developed an *Organic Wild Crafting Standard*, containing many useful pointers). A distinction between *required* and *recommended* conditions might prove helpful. Conditions relating to social structures and processes concerned with the monitoring and regulation of resource use should figure prominently among the former.

■ A recommendation should be made to the international organic movement to incorporate the ISSC-MAP standard for sustainable use of medicinal plants into its regular standards for organic certification. 🌿

Alan Hamilton is with Plantlife International based in Salisbury, UK. Klaus Dürbeck is a consultant in Raubling, Germany. Anna Lawrence works for the Environmental Change Institute, University of Oxford, UK.

Alan Hamilton acknowledges generous support from the Allachy Trust and the Rufford Foundation, enabling Plantlife International to develop its Medicinal Plant Conservation Initiative.