Medicinal plants as a conservation tool in East Africa and the Himalayas

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Plant conservation is needed across the landscape – to safeguard endangered species, ensure supplies of plant resources and deliver the many ecosystem services that plants provide¹. Local residents must be engaged, but current ways of doing so (such as integrated conservation and development projects) have produced only modest results². Here we propose an additional conservation tool based on medicinal plants, deployable wherever communities rely on these resources to serve their fundamental interests (healthcare, income, culture). Such is the case in East Africa and the Himalayas³⁻⁶, regions where the great majority of medicinal plants are wild-collected⁷. The conservation question is how to translate the actual or potential motivating forces represented by these resources into improved management of the plants and their habitats on the ground. Here, we present a model for community-based conservation based on analysis of sixteen projects in East Africa and the Himalayas. The basic elements of the model are: (1) community groups with a special interest in medicinal plants; (2) a
favourable enabling environment; and (3) project teams to catalyse progress at the community and national levels. We offer a set of principles, actions and conditions favourable for community-based conservation based on medicinal plants (Table 1). We suggest that civil society organisations well represented at village level (such as faith-based and women’s organisations) can be well placed to deploy this tool on a significant scale, once Standard Operating Practices appropriate for community deployment have been established.

The model is based on analysis of lessons learnt at twelve community-based field projects on the conservation of medicinal plants, undertaken by ten organisations in six countries in East Africa and the Himalayas (but 3 projects by one organisation in Kenya). Additional guidance on best practice was provided at three meetings for experience-sharing between the countries, and conclusions reached from testing the applicability of a new international standard for the sustainable harvesting of medicinal plants.

The field projects were all independently conceived though united in receiving grants from Plantlife International and in sometimes being modified after receipt of suggestions from an international advisory group established for the programme. The field projects (as supported by Plantlife) represent either short time-periods in longer running projects or are the initial stages of new projects intended to continue. Considering the range of phases in project development represented, we detect considerable commonalities in their approaches and methods, justifying this cross-continental analysis of lessons learnt.

The model refers to three social levels, the community, the district and the state. The community is taken as the level of social organization relevant to the field management of medicinal plants, and the district to be associated with the local headquarters of government agencies (such as forestry departments) and often dominated by people of a particular cultural type (thus with certain common ways of relating to medicinal plants). The actual social levels and institutions relevant to medicinal plants need to be determined for each case.

According to our analysis, two types of social group are critical for success. One is a project team of highly motivated people with cross-disciplinary expertise (e.g. in applied ethnobotany). The other is a community group composed of local people with a special interest in medicinal plants and dedicated to community service. If suitable groups already exist within communities, this can be helpful for accelerating project progress. The primary concerns of such groups may not necessarily be medicinal plants, as was the case with five of our projects – their primary interests variously included agriculture, community forestry, healthcare and women’s affairs. In five of our other projects, new community groups were created, all composed of people centrally interested in medicinal plants. Our experience is that folk healers have a major role to play in community groups – as too women, because of their home-carer role.

We present these conclusions (Table 1) with the caveat that every community and person should be approached as unique, and that thought and creativity will always be needed for success in community projects. For communities, questions about medicinal plants are
matters of development, specifically how to ensure future supplies of the plants to serve community needs. We judge the primary motivational interests of communities at our twelve field sites to be equally divided three ways – between home healthcare, income, and a combination of the two. All sources of medicinal resources are relevant to community development, from closely tended plants in home gardens to wild plants growing freely in forest or field.

We do not claim that our projects have been instantly successful – solid progress will take time. However, we note optimistic signs, for example that self-declared community reserves for medicinal plants have been established at three of the field sites and with progress in joint forest management (involving forestry departments) at another three. An example of new community reserves is Ludian in northwest Yunnan, where two villages have each established a 300 ha Medicinal Plants Conservation Area in a species-rich part of its community forest – an innovation for China. The prefectural authorities have welcomed this initiative, which they see as providing a practical example of how to implement three of their political priorities – biodiversity conservation, support for minorities (Naxi at Ludian) and economic development. The medicinal plants in these reserves may not be commercially collected, but can be used for local herbal healthcare (363 plant species are currently so used at Ludian) and as sources of germplasm for the development of new agricultural crops.

Plant conservation must rest on an interest by some local residents in the details of their local botanical worlds. Medicinal plants constitute by far the biggest category of use of the natural world in terms of number of species (50,000-70,000)\textsuperscript{7}. East Africa and the Himalayas still host a wealth of traditional ecological knowledge relating to medicinal plants, though this is rapidly eroding\textsuperscript{1,12,13}. A project focus on medicinal plants carries the advantage that some of this knowledge will become available for finding practical answers to pressing problems of conservation and development, allied to that available from scientific sources\textsuperscript{14}. An added benefit is our observation that communities can gain more confidence in their own cultures when their knowledge is taken seriously by project teams, creating a more secure foundation for sustainable development.

References

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Author contributions
All authors (except AH) were members of project teams at field projects. AH administered the programme from Plantlife International and the analysis of lessons learnt, which involved correspondence with members of all project teams. AH wrote the paper. HH, PS and YL were responsible for the project at Ludian (China) mentioned in the text.

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Table 1. Summary of principles, actions and conditions that favor community-based conservation based on medicinal plants.

Suggestions for community groups

- Ensure that the whole community is served by the group’s activities.
- Identify local developmental concerns relating to medicinal plants.
- Strengthen the conservation of wild medicinal plants: (1) identify priority species and places for improved management; (2) develop local teams to take care of these sites (this may require an umbrella group if communities are collecting on each others’ land); (3) seek recognition of community rights over the medicinal resources, if needed (this may require negotiation with landowners, such as forestry departments); (4) establish adaptive systems of management, based on cycles of monitoring, reflection and decisions on management (e.g. rotational harvesting, quotas, restoration, distribution of tasks and benefits).
- Encourage the cultivation of medicinal plants identified as local priorities.
- Develop home herbal healthcare by identifying best practice within the community and seeking advice from research centres.
- Seek information on medicinal plant markets and negotiate improved terms with traders (assured high quality materials in exchange for better prices).
- Seek technical guidance on how to add value to medicinal plants and products (e.g. proper drying, primary processing).
- Record local knowledge of medicinal plants and raise appreciation for local culture (e.g. through cultural centres or school programmes).

Suggestions for policy makers (the enabling environment)

- Develop policies supportive of indigenous groups and minorities.
- Support national centres of excellence for medicinal plants (orientated towards community development).
- Develop district resource centres to serve the practical needs of communities relating to medicinal plants.
- Develop Standard Operating Procedures providing step-by-step guidance for local government officers (e.g. in forestry departments) and community leaders (e.g. associated with faith-based or women’s groups).
- Develop and promulgate protocols for the propagation and cultivation of priority medicinal plants, and ensure the availability of high quality seed.
- Integrate herbal medicine (based on local traditions) into national healthcare systems.
- Regulate herbal and pharmaceutical industries to ensure that they obtain their raw materials from sustainable sources.
- Encourage communities to record and maintain their traditional knowledge.

Suggestions for project teams

- Include community members in the project team.
• Learn about local medicinal plants, livelihoods and stakeholders before starting community work. Identify institutions that support local ecological knowledge.
• Form a cross-disciplinary advisory group.
• Provide in-service training to team members.
• Include awareness-raising as an integral component of projects.
• Make long-term commitment to communities.
• Identify community groups with a special interest in medicinal plants. If lacking, assist in their formation.
• Undertake joint research with community groups to identify key local concerns relating to medicinal plants and find practical ways to resolve them.