



Medicinal Plants: Conservation and Sustainable Use in Sri Lanka

In Sri Lanka, *ayurveda* (a holistic system of medicine and health care which originated in India—in Sanskrit, “Ayu” means “life” and “veda” means “the knowledge of”) and the traditional system of health care have been systematically used for over two thousand years to treat illnesses. When last listed, 1,414 plant species have been used for this purpose. These species include several endemic species which are becoming increasingly rare and under threat of extinction. Approximately 200 species of medicinal plants are in common use, and of these 50 are heavily used in *ayurvedic* and traditional health care systems. Nearly 80 medicinal plant species are now considered threatened. In addition to recognizing their curative and therapeutic value, Sri Lankans use medicinal plants in rituals, cultural activities and in religious functions.

It is estimated that about 30–35 percent of the people use *ayurveda* and traditional systems of health care. *Ayurvedic* physicians and traditional practitioners of medicine are a part of the society, and there is an interwoven relationship between the

communities and such practitioners. In the rural areas, people collect their requirements of medicinal plants from forests and communities practiced sustainable use concepts, with minimal damage to the habitats in which these precious plants are found. The increased demand both for local medicinal use as well as for export has placed a great strain on the natural populations of plants. Collectors of medicinal plants are now resorting to unsustainable exploitation causing serious threat to the survival of some species. Dwindling supplies are exacerbated by the rapid depletion of natural habitats. Indeed, habitats too are threatened.

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Equally threatened is the knowledge base on which the traditional medicinal systems is based, as only a small proportion of the traditional knowledge and the ethnobotanical information is documented; the majority remains recorded in ancient, obscure *ola* (palm leaf) manuscripts scattered around the country or in the memory of elderly practitioners. This *gurukula* system of ancient teaching of traditional knowledge is fast disappearing. This knowledge not only addresses the health care of individuals; it also addresses the traditional care and management of the natural resources in which the rural communities are situated.

It is obvious that medicinal plants are a world treasure to be nurtured for the benefit of mankind. The need to conserve medicinal plants, and use them sustainably, is facilitated by the Convention on Biological Diversity (CBD), ratified by over 175 countries. CBD provides the background for sustainable use and for equitable sharing of benefits arising from the exploitation of medicinal plants.

The Conservation and Sustainable Use of Medicinal Plants Project

The conservation and sustainable use of medicinal plants project began to be implemented by the Government of Sri Lanka in 1998, with a US\$4.6 million grant from the Global Environment Facility (GEF). The project seeks to secure conservation of globally and nationally significant medicinal plant species and their habitats. The project has achieved these objectives through (a) *in situ* conservation by establishing five medicinal plant conservation areas (MPCAs) in different ecological zones of Sri Lanka, as a part of, or adjacent to existing natural forests which are the home for some of the threatened species of medicinal plants; (b) *ex-situ* cultivation by promoting nurseries, home garden and plantation cultivation and supporting propagation and agronomic research; and (c) by providing information and institutional support, including promotion of an appropriate legal and policy environment.

An important element of the strategic approach adopted is to define and demarcate medicinal plant reserves in biogeographically representative areas and use these as centers for a wide range of activities.

For this purpose, five Medicinal Plant Conservation Areas (MPCAs) have been established in Bibile and Ritigala (dry zone), Rajawake and Naula (intermediate zone), and Kanneliya (wet zone), adjacent to natural forests which harbor medicinal plant species.

Each MCPA consists of about ten Grama Niladhari Divisions (GND)¹ abutting the core conservation forest. The project tries to actively involve the communities living in the MPCAs for promoting conservation and sustainable use of medicinal plants. Each MCPA has a site consisting of a medicinal plant garden, which will serve as a demonstration site, a medicinal plant-processing center for the use of communities, an ayurvedic dispensary, which is expected to mainly depend on preparations made by the communities, and an information center.

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Overview of activities

In situ conservation

IDENTIFICATION OF GRAMA NILADHARI DIVISIONS IN MPCAS AND SOCIAL MOBILIZATION. The ‘villages’ (*Grama Niladhari* Divisions) for the MPCAs were identified after extensive discussions with communities, their organizations and other stakeholders at the village level. The identification of GNDs was based on close proximity to the core forest area, levels of dependency on the forest resources, in particular medicinal plants, and the readiness of community members to accept participatory approaches to ensure conservation and the sustainable use of medicinal plants.

In order to facilitate the efficient participation of communities in the conservation efforts, community management structures have been established at the GND level. These are the Village Project Management Committees (VPMCs) consisting exclusively of the community members.

BASELINE DATA COLLECTION. Baseline data consist of data from three separate yet inter-related areas, viz., a socio-economic survey; an ethnobotanical survey, and the Resource Inventory.

(a) *Socio-economic survey.* The socio-economic survey provided a benchmark of the socio-economic status of communities living around the medicinal plants conservation areas. The data required to plan conservation strategies and related development activities were also collected under the survey. This survey, completed in the latter part of 1999 in all MPCAs, has revealed that more than 68 percent of the population in the GNDs surveyed belong to low-income groups. The majority of the people are engaged in farming and agriculture-related activities. There has been gradual environmental degradation in the MPCAs due to adverse human activities. The major threats to forests include illegal encroachments, forest fire and uncontrolled extraction of non-timber forest products, including medicinal plants. Over the years, farming practices of people have been converted from subsistence agriculture to cultivation of commercial crops. The socio-economic survey has also underlined the need for introducing joint forest management with people living around MPCAs.

(b) *Ethnobotanical survey.* The ethnobotanical survey was designed to be carried out in two phases. The preliminary phase is to develop a clear picture of the roles of medicinal

plants and other forest products in the livelihoods and economies of all stakeholder groups in each target community. In general, Phase 1 of the ethnobotanical survey has generated a great deal of information relating to the medicinal species, ranked according to the cumulative score of domestic importance, commercial interest, threatened status etc. Phase II of the ethnobotanical survey collected information on the use of medicinal plants and the collection of voucher specimens.

(c) *Resource inventory.* MPCA base maps at the scale of 1:20000 were prepared using aerial maps and survey maps, and were digitized. The major forest types / natural vegetation structural types [dense (>75% canopy cover); sparse (50–75 percent canopy cover); scrub / grassland (< 50 percent canopy cover)] were interpreted to the maps from air photos. Resource verification in these maps was carried out using the Global Positioning System (GPS).

The main objectives of the resource inventory are (a) to provide a baseline assessment of the distribution, associated population structures and densities, and ecological requirements of medicinal plant species in MPCAs; and (b) to provide an informed basis for ongoing *in situ* conservation of medicinal plant species and *ex situ* cultivation in home gardens and nurseries.

Analysis of data would provide the following information:

- A detailed assessment of the distribution and abundance of individual species (e.g. priority medicinal plant species) based on plot information
- A basis for predicting the likely distribution and abundance of individual species (including priority species) elsewhere in the MPCA.
- A basis for future sustainability and resource assessment studies and conservation planning
- Solid criteria for zoning habitats for user categories.

PREPARATION OF VILLAGE PLANS (MICRO PLANS). The baseline data, ethnobotanical and resource inventory data collected during the first two years of the project were used in preparing village plans with emphasis on *in situ* conservation. Village planning has been undertaken in GNDs using participatory (PRA/PID) techniques with the active involvement of the community members and the office bearers of the VPMCs.

Ex situ conservation

Several approaches have been prepared for *ex situ* conservation of medicinal plants, and these activities will complement the *in situ* conservation efforts described earlier. As a major activity in this component, cultivation of medicinal plants in homesteads in the MPCA is being encouraged and supported. Additionally, agriculturally-oriented members of the communities have been trained in nursery practices, simple agronomic practices and in related areas. Also, medicinal plant nurseries have been established mainly for holding collections of germplasm of important medicinal plant species and for providing mother plants to prospective nurserymen. Concomitant with the expansion of homestead cultivation and commercial cultivation, arrangements have been made for providing marketing information and marketing outlets to enable the communities to obtain the best prices for their produce.

As a complementary activity, research on the propagation and cultivation of selected medicinal plant species is being supported.

INSTITUTION AND CAPACITY BUILDING. The project lays special emphasis on the capacity building of communities particularly in the skills required for project activities and management of community organizations.

There is special emphasis on safeguarding intellectual property rights relating to project activities. In this regard a legal framework to safeguard traditional knowledge associated with the use of medicinal plants has been prepared.

In regard to traditional knowledge, the project has taken several noteworthy initiatives. These include the transcription of ancient palm leaf writings (*Ola* leaves) referred to earlier into Sinhalese. The old palm leaves are several hundred years old, and contain information on diseases and their diagnosis, as well as prescriptions.

The project has also launched a program in the MPCA areas to preserve traditional knowledge available with elderly traditional practitioners. In this program, traditional practitioners with specialized knowledge on certain diseases (and on the use of medicinal plants) have been selected, and acolytes have been attached to them for learning. This system of apprenticeship is as old as the traditional healing systems, and the acolytes will remain attached to the physicians for a period of nearly two years.

1 GND is an administrative unit and contains several villages.