Project sponsored by
Government of India

जहाँ है हरियाली।
वहाँ है खुशहाली॥

United Nations Development
Programme Global Environment

Mainstreaming Conservation and Sustainable use of Medicinal Plant Diversity in three Indian States: Project profile of Uttarakhand

For additional information, please contact

Chief Executive Officer
State Medicinal Plants Board (SMPB), Uttarakhand
Dehradun Office: Additioanl Secretary (Medicinal Plants)
Secretariat, 4-Subhash Road, Dehradun, Uttarakhand, India
Telefax: 0135-2712950, e-mail: undpgefuk@gmail.com

Mainstreaming Conservation and Sustainable use of Medicinal Plant Diversity in three Indian States: Project profile of Uttarakhand

The project is being implemented in three Indian States, Uttarakhand, Arunachal Pradesh and Chhatisgarh. This brochure contains project profile of Uttarakhand.

Photo-Landscape MPCA Kandara-Arnebia benthamii

Background

India's natural forests are home to about 8000 medicinal plants that form the primary source of health care for 60-80% of the country's population, particularly the rural poor. However, efforts aimed at equitable use of these resources are largely inadequate and harvesting remains unsustainable. The State of Uttarakhand in north west India was carved out from the state of Uttar Pradesh by separating the predominately hill region on 9th Nov, 2000. The state consists of 13 districts with total geographic area of 53,483 sq.km. Uttarakhand has extensive forest cover (about 66% of its geographical area). Eight forest types occur in the state. The state has nearly 700 species of medicinal plants used in traditional system of medicine. The state also has a wealth of traditional knowledge associated with the use of these plants. The State Forest Department manages approximately 70% of the forest area in the state. These forests are managed as per Working Plans that provide guidelines for ecological and sustainable exploitation. Some forests areas are also managed by local communities

Alpine Meadow

through Van Panchayats. Functioning of the Van Panchayats in Uttarakhand is guided by Uttaranchal Panchayati Forest Rules, 2001 as amended in 2005. Presently, there are 12,089 Van Panchayats managing 5,241 sq. km. of forests in Uttarakhand.

Fritillaria roylei HK

Aim of Project

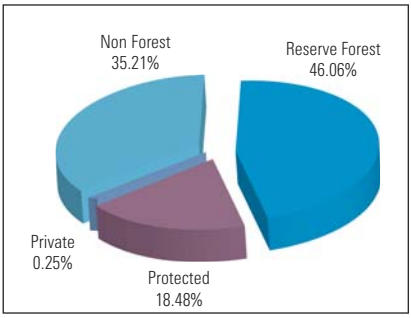
Project aims to mainstream the long-term conservation, sustainable and equitable use of medicinal plant diversity into forest management policy and practice at the national, state and local level. Uttarakhand state provides a broad range of ecological conditions, and hence medicinal plant diversity as well as a range of institutional arrangements relating to forest management. The project will facilitate an enabling environment to mainstreaming the conservation and sustainable use of Medicinal and Aromatic Plants (MAPs) into forest management policies and practices. Conservation and sustainable use of MAPs will also be mainstreamed at the local level into government and community forest management norms and practices at demonstration sites in all Medicinal Plants Conservation Areas (MPCAs) in this project.

Partner Agencies

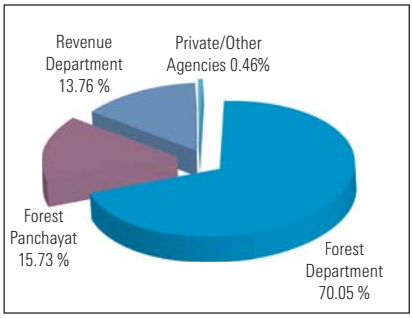
- Funding Agency
  - United Nations Development Programme: Global Environment Facility (UNDP-GEF)
- Implementing Agency:
  - At National Level: Ministry of Environment and Forests (MoEF), New Delhi
  - At State Level: State Medicinal Plants Board (SMPB), Uttarakhand, Dehradun
- Project Partners:
  - State Forest Department (SFD), Govt. of Uttarakhand
  - Herbal Research and Development Institute (HRDI), Gopeshwar
  - Foundation for Revitalization of Local Health Tradition (FRLHT), Bangalore

- Govind Bhallabh Pant Institute of Himalayan Environment and Development, Almora
- National Medicinal Plants Board (NMPB), New Delhi

Forest area according to legal status in Uttarakhand



Forest area according to Management/ Control in Uttarakhand



Objectives

- To prepare state medicinal plant conservation and sustainable use strategies.
- To revise state level Joint Forest Management/ Van Panchayat Orders and Guidelines that integrate MAP conservation and sustainable use objectives within overall JFM/Van Panchayat programs and practices.
- To develop state level legal mechanisms to protect traditional knowledge on harvesting, cultivation and use of Medicinal and Aromatic Plants (MAPs).
- To identify MAPs suitable for cultivation and inclusion in afforestation and income generating programmes in the state.
- To revise Forest Division Working Plans that provide clear guidelines for the conservation and management of MAPs.
- To devise comprehensive baseline for Monitoring & Evaluation of the status of medicinal plant resources in state.
- To demonstrate *in-situ* and *ex- situ* conservation management, including sustainable use of MAP diversity, especially Globally Significant Medicinal Plants (GSMPs) in state forests and community owned and managed lands.
- To strengthen MAP conservation and management capacity within State Forest Department (SFD).
- To improve community capacity for the conservation and sustainable use of MAPs.
- To strengthen capacities of State Medicinal Plants Board.
- To improve community capacity for documenting and conserving traditional knowledge relating to MAPs, including traditional medicine, harvesting techniques and how to protect their IPRs.

- To develop materials and methods for replicating the successful models of conservation and sustainable use of medicinal plants across other sites in the state and more broadly in replication states of Himachal Pradesh and Jammu and Kashmir.

Uttarakhand: MPCAs established

Name of MPCA	District	Agro-climatic Zone	Forest Divisions	Forest Type	Mean Altd. (m)	Proposed Area of MPCA (ha)
Kandara	Uttarkashi	Alpine	Uttarkashi	Alpine Meadows	3500	250.00
Khuliya	Pithoragarh	Sub-Alpine	Pithoragarh	Sub-Alpine Forests	3000	259.00
Jhuni	Bageshwar	Dry Temperate	Bageshwar	Himalayan Temperate Forests	2500	250.00
Gangi	Tehri	Temperate	Tehri	Himalayan Temperate Forests	2200	201.10
Mandal	Chamoli	Moist Temperate	Kedarnath Wildlife	Himalayan Moist Temperate Forests	1800	350.70
Bastiya	Champawat	Sub-tropical	Champawat	Sub-tropical Dry Deciduous Forests	600	232.80
Mohan	Almora	Sub-tropical	Almora	Sub-tropical semi evergreen Forests	500	250.00
	Total					**1,793.60**

Concepts and Objectives of MPCAs: Conservation of Medicinal plants

Measures are necessary to conserve medicinal plants that are growing in wide variety of habitats in the country. Conservation of genetic diversity of any species is possible through maintaining its viable breeding population in the wild. A way to conserve species is to let it follow its natural evolutionary course and afford protection to it in the wild. Medicinal plant species exist mainly in forests and hence it is necessary to promote *in-situ* conservation. A network of natural sites or forests representing the diversity of forest types need to be established for *in-situ* conservation of medicinal plants and the same has been named as Medicinal Plant Conservation Areas (MPCAs) network.

The MPCAs *per se* would mean natural sites of viable breeding population of medicinal plant species of the area taken up specifically for conservation of those species in their natural habitat through adaptive management practices.
The objectives of establishing MPCAs are:

- To conserve viable populations of prioritized native medicinal plant species in their natural habitat
- To conduct studies on biological and ecological aspects of medicinal plants for developing appropriate conservation approaches.
- To sensitise and enable the local communities and the resource managers to manage the MPCAs for their effective conservation.
- To design and develop strategies and mechanisms for long term conservation of medicinal plants.

Nardostachys grandiflora DC.

Globally Significant Medicinal Plants (GSMPs)

It is known that the demand for medicinal plants-based products continues to grow inexorably. Given the limited ability of cultivation to supply that demand and given that 95% of all medicinal plants are found in natural forests, conservation and sustainable use of these GSMPs become indispensable. Those species that are likely to be at most risk from destructive harvesting are also most difficult to cultivate on large scale. Equally, while consumers have access to very low-priced wild products there is little incentive to purchase more costly cultivated stocks of raw materials and thus little incentive for investment in cultivation by potential MAPs farmers. Thus, it becomes imperative to focus first on ensuring the viable populations of medicinal plants are conserved *in situ* and that the harvesting of wild MAPs is sustainable, especially of GSMPs and species that are more vulnerable to extinction. Out of 87 GSMPs identified at national level the current project will be dealing with at least 40 GSMPs, including several critically endangered species in the state.

Rhododendron spp.

Globally Significant MAPs of Uttarakhand

S. N.	Scientific Name of Spp.	Local Name	Family	Parts used
1.	*Abies pindrow* Royle	Ragu	Pinaceae	Leaf
2.	*Abies spectabilis* (D.Don) Spach.	Ragu	Pinaceae	Leaf
3.	*Aconitum balfourii* Stapf	Meetha Bish	Ranunculaceae	Tuber
4.	*Aconitum heterophyllum* Wall.	Atis	Ranunculaceae	Tuber
5.	*Aconitum violaceum* Jacq.ex Stapf	Doodh Atis	Ranunculaceae	Tuber
6.	*Aegle marmelos* (L.) Corr.	Bael	Rutaceae	Leaf, fruit
7.	*Allium stracheyi* Baker	Faran	Liliaceae	Whole Plant
8.	*Angelica glauca* Edgew.	Choru	Apiaceae	Root
9.	*Anogeissus latifolia* (Roxb. ex DC.) Wall. Ex Guill. & Perr.	Dhoudu	Combretaceae	Leaf, Bark
10.	*Arnebia benthamii* (Wall.ex G. Don) Johnston	Balchad	Boraginaceae	Root
11.	*Berberis aristata* DC.	Kingor	Berberidaceae	Root, Bark
12.	*Bergenia ciliata* (Haw.) Sternb.	Silpadi	Saxifragaceae	Rhizome, Leaf
13.	*Bergenia stracheyi* (Hk.f.&Thomson)Engl.	Chon Silpadi	Saxifragaceae	Rhizome, Leaf
14.	*Dactylorhiza hatagirea* (D.Don) Soo	Hathajadi	Orchidaceae	Tuber
15.	*Dioscorea deltoidea* Wall. ex Griseb.	Genthi	Dioscoreaceae	Tuber
16.	*Emblica officinalis* Gaertn.	Amla	Euphorbiaceae	Fruit
17.	*Fritillaria roylei* Hk.	Kakoli	Liliaceac	Bulb
18.	*Habenaria intermedia* D.Don	Ridhi	Orchidaceae	Tuber
19.	*Malaxis muscifera* (Lindl.) O.Kuntze	Jeevak	Orchidaceae	Pseudobulb
20.	*Nardostachys grandiflora* DC.	Jatamasi	Valerianaceae	Rhizome/Root
21.	*Paeonia emodi* Wall. ex Royle	Chandra	Paeoniaceae	Roots & Leaf
22.	*Paris polyphylla* Smith	Satwa	Liliaceae	Roots
23.	*Picrorhiza kurrooa* Royle ex Benth.	Kutki	Scrophulariaceae	Rhizome/Root
24.	*Podophyllum hexandrum* Royle	Bankakdi	Phodophylaceae	Fruits, Rhizomes
25.	*Pueraria tuberosa* (Roxb. ex Willd.) DC.	Tipatta	Fabaceae	Roots
26.	*Rheum emodi* D.Don	Dolu	Polygonaceae	Root
27.	*Rheum moorcroftianum* Royle	Archa	Polygonaceae	Root
28.	*Rhododendron campanulatum* D.Don	Shemuru	Ericaceae	Leaf & Wood
29.	*Selinum candollii* DC.	Bhutkesi	Apiaceae	Root
30.	*Selinum vaginatum* (Edgew.) CB Clarke	Bhutkesi	Apiaceae	Root
31.	*Swertia chirayita* (Roxb. ex Fleming) Carsten	Chirayita	Gentianaceae	Whole plant
32.	*Taxus baccata* L.	Thuner	Taxaceae	Leaves, Bark
33.	*Terminalia bellirica* (Gaertn.) Roxb.	Baheda	Combretaceae	Fruit
34.	*Terminalia chebula* (Gaertn.) Roxb.	Harad	Combretaceae	Fruit
35.	Tinospora cordifolia	Giloy	Menispermaceae	Tuber
36.	*Valeriana jatamansi* Wall.	Samoya	Valerianaceae	Whole plant

A view of Himalayas

Highlights of State –level Project Steering Committee (SPSC)

Since the inception of the GoI, UNDP-GEF Project in the state in 2008 three SPSC meetings were held:

a) Ist-7th Sept., 2009

b) IInd-12th Jan, 2010

c) IIIrd-30th June, 2010

The various issues discussed in these meetings are as under:

a) Capacity building of State Forest Deptt. officers and field staff.

b) Training to be imparted to members of Local Management Groups (LMGs) on cultivation of MAPs, their processing, post harvest and value addition.

c) Ensuring adequate fire protection in MPCA.

d) Water conservation measures to be taken in MPCA.

e) Natural trails to be used in MPCA.

f) Earlier studies of vegetation etc. in MPCA also to be recorded.

g) Revolving fund to be developed for strengthening LMGs after end of the project.

h) Information on status and importance of GSMPs to be highlighted through publicity and extension.

i) Work plan to be developed for each MPCA.

j) Monitoring and evaluation of activities to be done in MPCA.

k) Exit strategy to be developed for the project.

l) Involvement of Van Panchayats in the project

M) Dovetailing with other schemes of State or Govt. of India.

An orchid in Mandal Valley

Accomplishments

- State-level Project Steering Committee (SPSC) has been formulated in the Chairmanship of Principal Chief Conservator of Forests (PCCF), Uttarakhand.
- State-level Project Management Unit (SPMU) has been formulated in the Chairmanship of Chief Executive Officer (CEO), State Medicinal Plants Board, Uttarakhand.
- State Medicinal Plants Board reorganised with its headquarters at Dehradun.
- Seven Medicinal Plants Conservation Areas (MPCAs) identified in the state.
- Three MPCAs established at Kandara (Uttarkashi), Gangi (Tehri) and Jhuni (Bageshwar).
- Local Management Group (LMG) formed in these MPCAs for management of MPCA.
- Capacity building of Project staff and State Forest Dept. officials through training by Foundation for Revitalization of Local Health Tradition, Bangalore.

- Capacity building of LMG member through orientation training on conservation and management of MAPs.
- Brainstorming on Village Herbal Garden for Local Health Care held with medicinal plants experts and herbal healers.
- Draft report on Review of Forest policy and Legal status of MAPs in Uttarakhand is prepared.
- Work on botanical and ecological surveys initiated in the identified MPCAs.
- Documentation of Traditional knowledge on MAPs in progress.
- Four new MPCA sites identified as Mandal (Chamoli), Khuliya (Pithoragarh), Mohan (Almora) and Bastiya (Champawat).
- MoU signed with FRLHT Bangalore for capacity building of State Forest Deptt., LMG, community members and SMPB.
- An ambitious Chief Minister Medicinal Plants Development Programme launched for development of MAP sector in the state. Approximately 50,000 farmers will be covered in this scheme for commercial cultivation of MAPs on approximately 6,500 ha. of land in next five years.

Picrorhiza kurrooa (Kutki)

State Medicinal Plants Board (SMPB), Uttarakhand was established on 14 August, 2001 in the Chairmanship of Hon'ble Chief Minister of Uttarakhand. Minister for Horticulture is the Vice Chairman of the board. Another Vice Chairman is nominated. Other members include Minister for Forests, Minister for Cooperation, Forests and Rural Development Commissioner (FRDC), Secretary of Health, Industry, Forests, Tourism and Horticulture. It has its headquarters at Dehradun. SMPB is nominated as a nodal agency for co-ordination of activities of concerned governmental departments/institutions and non governmental organisations for development of medicinal plants in general and specifically in the following fields:-

1. Assessment of demand/supply position relating to medicinal plants both within the country and abroad.
2. Advise concerned Ministries/ Departments/ Organizations/ State/ UT Governments on policy matters relating to schemes and programmes for development of medicinal plants.
3. Provide guidance in the formulation of proposals, schemes and programmes etc. to be taken-up by agencies having access to land for cultivation and infrastructure for collection, storage and transportation of medicinal plants.
4. Identification, inventorisation and quantification of medicinal plants.
5. Promotion of *ex-situ/in-situ* cultivation and conservation of medicinal plants.
6. Promotion of co-operative efforts among collectors and growers and assisting them to store, transport and market their produce effectively.
7. Setting up of data-base system for inventorisation, dissemination

of information and facilitating the prevention of Patents being obtained for medicinal use of plants which is in the public domain.

8. Matters relating to import/export of raw material, as well as value added products either as medicine, food supplements or as herbal cosmetics including adoption of better techniques for marketing of product to increase their reputation for quality and reliability in the country and abroad.
9. Undertaking and awarding Scientific, Technological research and cost-effectiveness studies.
10. Development of protocols for cultivation and quality control.
11. Encouraging the Protection of patent Rights and IPR.

The various state departments/institutions/agencies under (SMPB) are Herbal Research and development Institute, Mandal (Gopeshwar), Centre for Aromatic Plants, Selaqui (Dehradun), Bheshaj Vikas Ikai and Bheshaj Sanghs in each district. These agencies deal in research activities, extension, quality testing and marketing of MAPs in the state.

United Nations Development Programme – Global Environment Facility

UNDP is the United Nations global development network, an organization advocating for change and connecting countries to knowledge, experience and resources to help people build a better life in over 150 countries. It has its headquarters at New York. UNDP derives its mandate on the environment from the United Nations, international conventions and the relevance of the environment to its work on poverty reduction and sustainable human development. The UN system has refined its environment goals around the WEHAB (Water and Sanitation, Energy, Health, Agriculture and Biodiversity) framework of priorities agreed at the 2002 World Summit on Sustainable Development, which underpins the Millennium Development Goal.

Dactylorhiza hatagirea(D.don)

The Global Environment Facility was established in October 1991 as a $1 billion pilot program in the World Bank to assist in the protection of the global environment and to promote environmental sustainable development. As an independent financial organization, the GEF provides grants to developing countries and countries with economies in transition for projects related to biodiversity, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants. These projects benefit the global environment linking local, national and global environmental challenges and promoting sustainable livelihoods. The Global Environment Facility (GEF) unites 182 member governments in partnership with international institutions, nongovernmental organizations and the private sector to address global environmental issues. UNDP-GEF functions as an advisory team to UNDP staff, providing technical advice on the global environment as well as guidance on the Global Environment Facility (GEF) and its project cycle.

Taxus bacatta L.

Compilation and Editing
G.S. Pande

Acknowledgement
M.S. Gusain