



# “Development of a Methodology on Medicinal Plant Conservation to Strengthen Tibetan Medicine in Ladakh”

Final Report – April 2007



Nomad Recherche et Soutien International /  
Ladakh Society for Traditional Medicines  
for  
Plantlife International

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## Executive Summary

The "*development of a methodology on medicinal plant conservation to strengthen Tibetan medicine in Ladakh*" project aimed to develop integrated conservation and healthcare initiatives that would ensure sustainable access to medicinal and aromatic plants (MAPs) for local healers in the long term. It represents the first stage in an ongoing programme of work planned by the international NGO Nomad RSI and its local partner, Ladakh Society for Traditional Medicines (LSTM), who have been working together in the region since 1998. The project was funded almost entirely through a Plantlife International Allachy Award, which commenced in September 2005 and finished in February 2007. This final report describes the project, from its origins and conception through the entire implementation phase, details the evaluation of the project, highlights the successes and weaknesses and provides recommendations for future action, as well as tools that may be of use for other organisations working on similar issues.

The main objectives of the project were: to build the capacities of the project team and their key partners to develop and conduct such work; to build a sound knowledge base on which to build activities; to raise awareness of MAPs conservation issues in target areas; and to lay the groundwork for future project phases in which appropriate and effective conservation activities could be implemented by the concerned communities themselves (with continuing support from Nomad RSI / LSTM). A further objective was to contribute to regional and global MAPs conservation efforts through the dissemination of information on the project's approach and outcomes, and of a toolkit of methods that could be adapted and used elsewhere. Building the local capacities required to achieve the desired outcomes was a fundamental component underlying all of these objectives and a great deal of stress was placed throughout the project on enhancing knowledge and skills concerning MAPs conservation, and on ensuring the participation of the target communities at every stage.

The main activities carried out to achieve the objectives were as follows:

1. A series of training workshops attended by the staff of LSTM and key project partners, focused on improving their knowledge and practical skills concerning all aspects of MAPs conservation and development
2. An awareness campaign, conducted in twenty villages across Ladakh, focused on increasing villagers' knowledge of medicinal plants, making them aware of the important connections between the plants and local medical practices and sensitising them to the potential threats facing the plants
3. The collection of detailed information on MAPs (local names, distribution, abundance, uses etc) in each village visited and the compilation of the data into a comprehensive database, plus the constitution of a herbarium
4. A seminar / workshop which brought together all the key stakeholders and project partners, to raise awareness, promote discussion and start working on a coordinated action plan for MAPs in the region
5. The formation and training of a Medicinal Plants Conservation Committee in one village, to facilitate community control of MAPs harvesting and to serve as a model for future committee formation in other areas
6. The production of educational materials (a poster and a newsletter) relating to MAPs and their widespread distribution
7. The dissemination of a report and a toolkit to help others conduct similar projects in other parts of the Himalayas and beyond (ongoing)

The final evaluation of these activities demonstrates that each of them has achieved a fair degree of success and suggests that the desired outcomes were largely secured. A great deal of progress has been made towards improving the level of knowledge and skills amongst the project team and the key partners, which was a fundamental aim of the project. A large amount of detailed information has been compiled on MAPs, and a seminar / workshop brought together many important stakeholders, raising their awareness of the key issues and starting ongoing discussions on how they will together manage Ladakh's MAPs in future. The potential value of these activities for shaping a sustainable

future for medicinal plants and Tibetan medicine in Ladakh cannot be underestimated. The awareness campaign has brought a much better understanding of the contemporary situation of MAPs and the threats they face to a large number of people right across Ladakh, while the distribution of posters and a MAPs-focused newsletter have made information on these issues available to a significant proportion of the population.

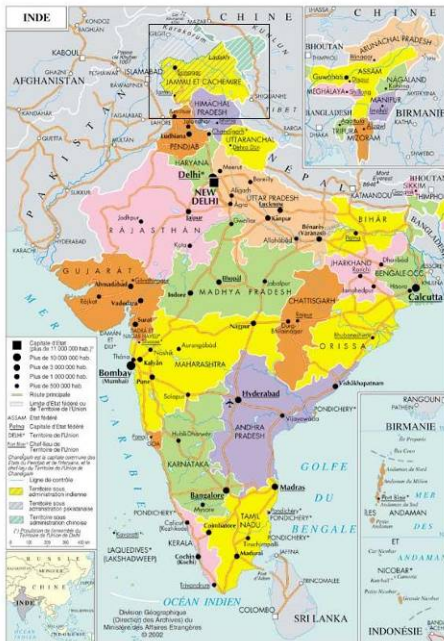
In spite of these achievements however, the main conclusion of the project is that they are just the first steps: there remains a great deal to be done to ensure that Ladakh's population are empowered and enabled to effectively protect their medicinal plant resources and to sustainably support their traditional healers in a period of rapid and profound socio-economic and environmental change. Effective medicinal plant conservation which supports practitioners of local medical systems is a complex, long-term process and must centre on activities owned and implemented at the community level, as much as it must also connect to wider national and international processes. Nomad RSI and LSTM are well placed to continue working towards these aims and to support such efforts in Ladakh in future, using the lessons learned from the completed project and building on the approach and skills that they have developed during its implementation.



# 1- Introduction

## 1.1 Project context: Tibetan medicine in Ladakh

Ladakh is a trans-Himalayan region of northwest India with a unique environmental and cultural heritage. It is a semi autonomous province within Jammu & Kashmir State, Indian Union. Located in a high altitude zone between 2900m and 5900m above sea level, Ladakh is characterized by extreme physical factors, including severe cold in the winter season and high solar radiation during summer. Annual rainfall is very low, making the area a high-altitude cold desert. These conditions are highly challenging for the growth of plants, for agricultural production and also for the balance of healthcare in the region.



Tibetan medicine is one of the great scholarly medical systems of Asia and has been practiced in Ladakh for well over a thousand years. Tibetan medicine remains extremely important for the health and well being of the Ladakhi people, is widely accepted as being highly effective - especially in the treatment of common and chronic illnesses - and is today a culturally embedded alternative to biomedical treatment. It is particularly valued in the many remote rural areas of Ladakh, where access to biomedical treatment is problematic and often impossible during the winter months.

## 1.2 Tibetan medicine and medicinal plant conservation

In spite of its enduring popularity, the Tibetan medical system is undergoing a period of considerable transition and is under pressure from various directions. One important factor contributing to this pressure concerns the medicinal plants on which the majority of treatment relies. The majority of Tibetan medicines are based on medicinal and aromatic plants (MAPs), many of which are found in Ladakh. The Indian trans-Himalayan cold desert region, comprising Ladakh and Lahaul & Spiti in Himachal Pradesh, supports a wide and unique array of MAPs<sup>1</sup>, yet the high altitude and harsh conditions severely restrict the range and population size of most plant species.

Many of the region's rare and valuable MAPs are under threat due to a variety of reasons, including increased commercial harvesting and overgrazing by livestock. Ineffective management and collection practices are also central to this issue: collection of roots / rhizomes, unseasonable

<sup>1</sup> A recent survey found 425 species of plants utilised by amchis in the cold desert region (B.Singh and O. Chaurasia, 2000). Ethno-medico-botanical survey of Nubra Valley, in O.Chaurasia, B.Singh and S. Sareen (2000), *Ethnobotany and Medicinal Plants of Indian subcontinent*, Johdpur.

collection, collection prior to seed ripening, misidentification and collection by unskilled outside labour all contribute to the pressures MAPs are facing. Developmental pressures such as road construction, increasing trekking and tourism, damage by vehicles, diversion of land for dams, housing, industry and general environmental degradation are other threats to medicinal plants in the area. The characteristics of Himalayan MAPs also make them particularly vulnerable, as many of them are perennial herbs with slow growing rhizomes. Based upon the CAMP process<sup>2</sup> and the IUCN<sup>3</sup> Red List Criteria, many species found in Ladakh are considered 'critically endangered' and many more are 'endangered' or 'vulnerable'. Critically endangered species include *Aconitum heterophyllum*, *Meconopsis aculeata*, *Dactylorhiza hatagirea*, and *Podophyllum hexandrum*<sup>4</sup>. Together, the factors mentioned above represent a considerable and mounting threat to the region's unique biodiversity and also to its medical system and cultural heritage.

Nevertheless, Tibetan medicine's dependency on MAPs and the strong link between the plants and healthcare offers major incentives to the population to engage in conservation and to ensure sustainable access to the plants in future, as the following quote illustrates:

*"People, especially when living in remote areas far from national health care services, are highly dependant on medical materials immediately available in their area such as medicinal plants. It is therefore assumed that they have a major incentive to conserve these resources"* (Ghimire and Thomas 2002).

### 1.3 Origins of the project

In September 2005, Plantlife International granted Nomad RSI an Allachy Award for the "Development of a methodology on medicinal plant conservation to strengthen Tibetan medicine in Ladakh" project. The Plantlife-supported project aimed to develop integrated conservation and healthcare initiatives which would improve access to essential MAPs for local healers and assist the concerned communities to take a more active stand in the management of collection sites, so as to guarantee sustainable access in the long term. This project arose directly from the 'Revitalisation of Tibetan medicine in Ladakh' programme and a series of research projects that Nomad Recherche et Soutien International (Nomad RSI) and Ladakh Society for Traditional Medicines (LSTM) have been implementing since 1998. In 2000, the Ladakhi staff working for Nomad RSI formed LSTM as a local NGO. Since this time, the two organisations have worked in close partnership, with Nomad RSI providing funding, overall direction and supervision, whilst LSTM took responsibility for day-to-day implementation<sup>5</sup>.

Remote rural communities in Ladakh are often deprived of primary healthcare, being far from any medical services. Owing to this situation, a wide range of projects have been implemented within this programme, with the aim of: improving standards of practice; making amchi (physicians of Tibetan medicine) available in rural areas; preserving and supporting this knowledge system and guaranteeing sustainable access to essential medicines.

The main components of this programme have been:

- Medical education – Four-year "Dusrapa" training programme (15 young amchis from remote villages fully trained)
- Ongoing medical training for *amchis* - seminars, refresher courses etc
- Awareness raising campaigns in remote areas
- Seminars focused on a wide range of medical and social issues
- Publications – including a trans-Himalayan medical education newsletter
- Medicine supply – raw materials and medicines supplied to remote areas
- Clinic establishment – 10 Tibetan medicine clinics established in remote areas

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<sup>2</sup> Conservation Assessment and Management Plan

<sup>3</sup> The International Union for the Conservation of Nature

<sup>4</sup> Data from conservation assessments and management plan workshop by FRLHT: "Identified endangered medicinal plants of Jammu & Kashmir".

<sup>5</sup> From 2000 to 2006, LSTM received 90% of its project funding through Nomad RSI.

It became clear during this programme that access to MAPs underlies much of amchi practice and that many aspects of the programme were linking back to them. Since local plant resources form a significant proportion of the raw materials used in Tibetan health care practices, Nomad RSI/LSTM became increasingly aware of the difficulty of access and increasing scarcity of these resources. In response to this, Nomad RSI/LSTM began to develop a specifically MAPs focused project during 2004 and 2005. The route Nomad RSI/ LSTM is taking towards the conservation of MAPs is through the amchis and the local people, as they are the major users – and thus natural stewards - of these resources.

#### 1.4 *Project Objectives*

The overall objective of the Plantlife International supported project was therefore to develop integrated conservation and health care initiatives which would improve access to essential plants for local healers and assist the concerned communities to take a more active stand in the management of collection sites. These objectives were to be approached in a way that would establish good practices through small-scale pilot projects and then replicate successful interventions on a wider scale in later phases.

The specific objectives of the project were as follows:

- 1- **To build the capacities of key local partners** regarding the conservation and sustainable management of MAPs, including Ladakh Society for Traditional Medicines (design, implementation and monitor of MAPs project, trainings on MAPs issues), amchis and community groups (training on the concepts and methods of conservation, the technical aspects of medicinal plant protection and cultivation).
- 2- **To raise awareness, form partnerships and lay foundations for future collaborative and effective actions** by organising awareness campaigns on MAPs issues at the village level and by bringing together key actors inside Ladakh and external expertise.
- 3- **To gather information** on environmental characteristics, MAPs distribution, collection practices, use and trade (creation of herbariums and an electronic database).
- 4- **To prioritise Medicinal Plants species for different purposes:** to establish criteria which would facilitate the selection of target species for *in situ* conservation action, for cultivation (choice of species for the establishment of gardens) and for other focused activities.
- 5- **To produce and distribute materials** (in local languages) for raising awareness of MAPs conservation and cultivation in Ladakh and to enable information sharing, training and activities on these issues, including the publication of a newsletter, the production of posters and the production and distribution of a final project report (in English).
- 6- **To contribute to more effective medicinal plant conservation worldwide.** Materials emanating from the project add to the pool of documented information on how to achieve community-based MAPs conservation, useful for other workers in the Himalayan region and beyond.



## 2- Project Activities and Areas

### 2.1 Main project activities

A series of activities were designed in order to achieve each of the objectives of the project whilst keeping in mind the overall aim of improving conservation so as to ensure sustainable practice of Tibetan medicine.

#### *Activities to attain objective 1: To build the capacities of key local partners*

- Close **partnership** in project design and implementation between LSTM and Nomad RSI.
- **Training and guidance** from experts for LSTM team, especially from experts from the Foundation for Revitalization of Local Health Traditions (FRLHT) and a field study for LSTM staff to Himachal Pradesh to visit MAPs projects.
- Regular **village visits and monitoring** trips to improve the LSTM team field work skills, to build strong relationships with partner villages and expand their already extensive experiences of working with local communities.
- **Participation and capacity building** for amchis and other representatives from participating villages, NGO and government workers throughout the project, both in formally organised training sessions, monitoring visits and in ongoing collaborative actions.

#### *Activities to attain objective 2: To raise awareness and form partnerships*

- **Village visits** to raise awareness on medicinal plant issues and to initiate collaboration on project activities with selected amchis and village representatives.
- A **3-day seminar** held at Leh in October 2005 brought together all the project partners (trained *amchis*, villagers, key project actors) and all others interested in MAPs in Ladakh (other *amchi*, government representatives and NGOs) to work together to conserve medicinal plants and to form partnerships.
- A major component of the seminar was the drafting of an **action plan** for coordinated action around MAPs in Ladakh.
- **Establishment and training of local level committees**, in charge of the management of MAPs resources in their villages.

#### *Activities to attain objective 3: To gather information on MAPs in Ladakh*

- **Village visits and interviews with amchis and others to collect information** on plants, the parts of the plant collected, the amount used, the sizes of plant population, the ecology and growth patterns of the species (practical input).
- **Constitution of a Herbarium** during village visits, especially in "hot spots", places where a huge diversity of MAPs can be found and that are currently under collecting pressure.
- **Collection of information from relevant institutions:** Forest Range Officer, Field Research Laboratory, Sowa Rigpa Research Centre, Ladakh *Amchi* Sabha, Foundation for Revitalization of Local Health Tradition (theoretical input and field visits to medicinal plant "hot spots").
- **Working baseline survey** (database) offering an overall picture of plant knowledge, use and management (botanical name, Tibetan medicine name, local names, habitats, trade values, cultivation potential and distribution, medicinal uses, photographs.)

#### *Activities to attain objective 4: To prioritise Medicinal Plant species*

- **Develop methodologies for prioritising medicinal plant species:** for different purposes, e.g. based on their scarcity/availability, use value in health care, market value, etc.
- **Establishment of a rank list** based on the prioritisation criteria and according to the type of project activities (cultivation, in situ conservation...) that may follow, in order to facilitate the implementation and guarantee the efficiency of the selected activity.

**Activities to attain objective 5: To produce and disseminate materials**

- **Production and distribution of posters** on MAPs issues (identification, conservation and use)
- **Publication and distribution of THAME<sup>6</sup>** to stakeholders across the Himalayan region.
- **Preparation of a final report**, based on monitoring visits and the final evaluation.
- **Dissemination** of the final report to all relevant organizations within Ladakh and in other Himalayan regions.

**Activities to attain objective 6: To contribute to more effective medicinal plant conservation worldwide**

- **Identify and document information** on case studies, approaches and methodologies considered potentially useful for other organisations interested in medicinal plant conservation in the Himalayas and beyond.
- **Include this information in the final project report** (Activity 5).
- **Make this information available to Plantlife** for inclusion on its website, so as to increase its availability worldwide.

**2.2 Project Timeframe**

Activities	09/05	10/05	11/05	12/05	01/06	02/06	03/06	04/06	05/06	06/06	07/06	08/06	09/06	10/06	11/06	12/06	01/07	02/07	03/07	
Village Visits (awareness campaigns, collecting information on MP)	Green	Green		Green			Green			Green	Green		Green	Green		Green				
Medicinal Plants Database Management			Dark Blue		Dark Blue			Dark Blue				Dark Blue				Dark Blue				
Seminar		Pink																		
Capacity Building for project team and other partners									Purple		Purple		Purple	Purple	Purple					
Preparation of THAME and poster						Light Purple	Light Purple			Light Purple		Light Purple								
Printing and distribution of THAME													Cyan	Cyan						
Printing and distribution of posters													Yellow	Yellow						
Evaluation and redaction of the final report																Orange	Orange		Orange	
Dissemination of the final report																				Dark Red

<sup>6</sup> THAME: Trans Himalayan Amchi Medical Education newsletter.  
Plantlife International – Nomad RSI / LSTM Final Report - April 2007

## **2.3 Target areas**

### **2.3.1 Dusrapa amchi network:**

Between 1999 and 2004, Nomad RSI and LSTM ran an amchi school, offering four years of training to 15 students from remote villages and providing them with the Dusrapa diploma, the first academic degree level in Tibetan medicine. Strong and close relationships have thus been built between these amchis, the communities of their native villages and the Nomad RSI / LSTM team. Students were selected in collaboration with the villagers; regular visits were made by the students to the villages during the training in order to maintain the link with their communities and to participate in the everyday activities of agriculture, such as the harvest. Moreover, Nomad RSI / LSTM helped each young amchi to set up clinics in their own villages and conducted an awareness campaign in each village after graduation, to introduce the new amchis and to underline the continuing importance of Tibetan medicine. Since the graduation, Dusrapa amchis remain closely associated with the Nomad RSI / LSTM programme, through ongoing knowledge building activities (seminars, refresher training courses) and notably as participants in MAP conservation projects.

Since 2003, the Dusrapa amchis have been practicing in their villages in different parts of Ladakh, including the Nubra, Markha and Zaskar valleys, and the Changthang plateau. Thus they are spread across various parts of Ladakh, which gives LSTM the opportunity to work and raise awareness on the importance of medicinal plant conservation and its access to amchi in the future in all these places. Awareness campaigns on MAPs conservation took place in the following Dusrapa amchis villages in 2005 and 2006: Domkhar, Diggar, Kyungru, Kullum, Hemis, Abran, Hamiling, Chalak, Hankar, Kharnak, Tiri and Lingshed (see map section 2.4).

### **2.3.2 Selected "hot spots"**

The following villages and areas are famous across Ladakh for their medicinal plant wealth and diversity. Many amchis from all over Ladakh travel to these "hot spots" to collect MAPs and they are thus sites of intense collection. For this reason they were selected as priority zones for conservation activities by the project team.

#### **Sapi**

The village of Sapi is located in Kargil district, the extreme North Western district of Ladakh, which is very close to the Pakistani border. It is a remote village, with a mixed Muslim / Buddhist population of 250 residents. It was connected by a new road to the highway in 2005 and this has resulted in increasing numbers of amchis and others seeking to harvest MAPs there. The Sapi area is probably the most well known place throughout Ladakh for its medicinal plant wealth.

Two awareness campaigns on MAPs conservation took place in Sapi in August 2005 and July 2006. The first awareness campaign brought a very positive and active response from the villagers, who decided to set up their own medicinal plants conservation committee (MPCC) at the village level, with aim of facilitating better management of medicinal plant harvesting and ensuring that it takes place in a sustainable way.

#### **Kanji**

Kanji is located at a distance of 155 km from Leh in a very remote and secluded valley and is well known in Ladakh for its wide range of medicinal plants. Although the main economy of the village is agriculture (as with most places in Ladakh), tourism has become a substantial means of livelihood for many and a number of trekking routes now pass through the village. Many trekkers are attracted by the unique floral diversity of the area. The development of trekking has increased the pressure on the plants of this area, largely through the destruction wrought by the horses and donkeys of the trekking parties. Also, 2004 witnessed the first visit of a commercial trader in medicinal plants to Kanji. Given that this village is likely to be connected by road within a year (thus opening up access to the outside

world), the time is clearly right to strengthen the management of medicinal plants and to secure their conservation, so as to ensure their sustainable use in the future.

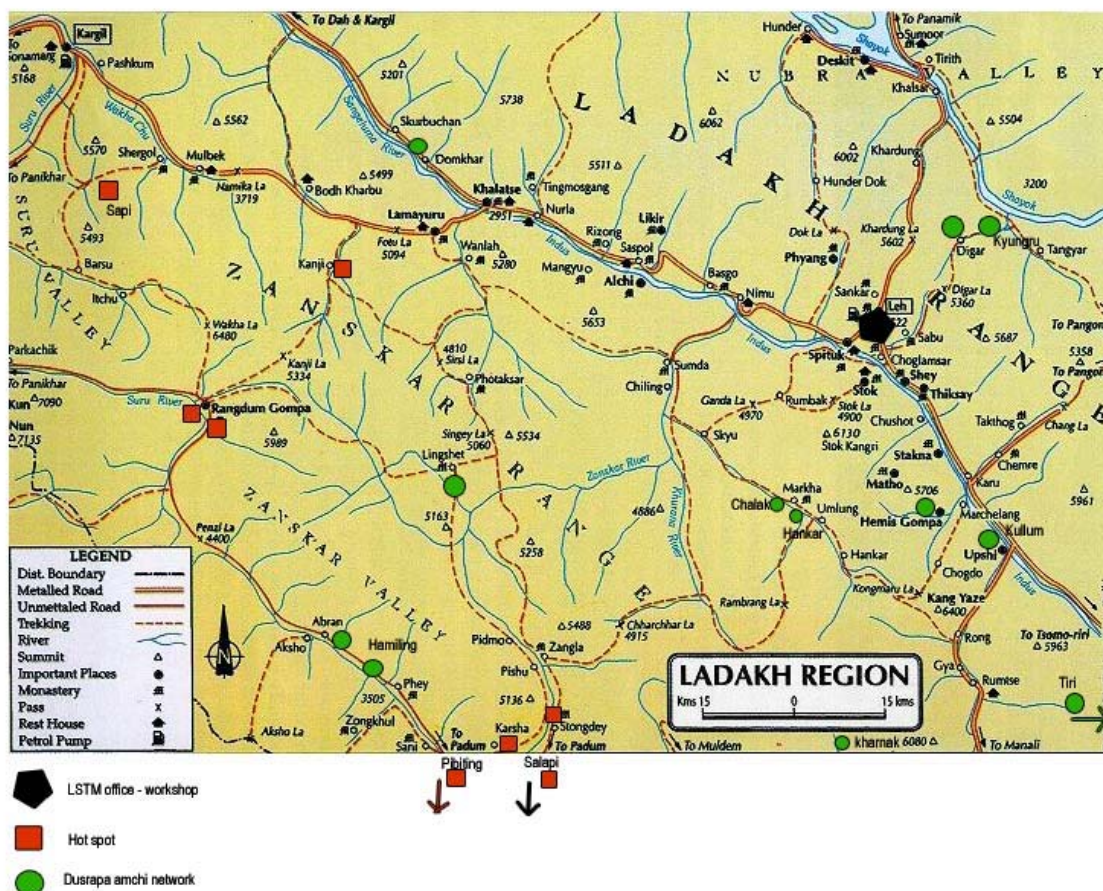
Due to the increasing pressures on the general flora of the area and particularly the MAPs, and the fact that it is home to so many types of medicinal plants used by amchis, LSTM felt that it was important to raise awareness about the conservation of medicinal plants among the population and thus decided to work in Kanji. One awareness campaign on MAPs conservation took place in Kanji in October 2006.

### Zanskar valley

The habitats of Zanskar are placed on an approximate elevation of 3500 to 4500 meters above sea level. Vehicular access is still highly limited in the area, but conditions are changing very quickly and new road links are under construction. Vegetation in general is dense compared to other parts of Ladakh, and Zanskar is home to a wide range of medicinal plants, including many rare and endangered species. Based on this and the high level of dependency on Tibetan medicine in this extremely remote area, LSTM considered it vital to conduct a far-reaching conservation campaign in the Zanskar region. Eight awareness campaigns on MAPs conservation took place in Zanskar valley during October 2006.

## 2.4 Map of targeted areas

Project Targeted Area



## III – Methodology and Implementation

### 3.1 A participatory and capacity building approach

The overall project was designed to combine a community-based approach with a strong capacity building component for the main stakeholders, including community groups and the LSTM team members (see section 3.1.1). The entire project was built on the premise that long-term conservation of any resource is only possible if the local people are involved from the outset, are empowered and provided with the necessary knowledge and skills to take the initiative and manage the activities themselves. Outside experts can only trigger the process and provide technical guidance – ongoing conservation action should be owned and managed by those who both own and rely on the resources in question.

Thus, a crucial part of the project was to organize awareness campaigns on MAPs conservation at the village level. Working in villages combined the organization of the campaign (see section 3.2.2 and 3.2.3) and the collection of important data on the MAPs of the area (see section 3.3). Several tools were used during the work in the field, in order to facilitate the implementation of the activities as well as to increase the awareness on the need for MAPs conservation (see section 3.4)

#### 3.1.1 LSTM Capacity building

The local capacity building component was ongoing throughout project period and was inherent within all the other activities that took place. That a local organisation should be trained as a resource provider and facilitator for other stakeholders and local communities is vital for the successful implementation of conservation projects, as it makes feasible the transfer of global scientific and technical knowledge through a small team to a wider audience, who are then responsible for acting upon it. As Dr Goraya, of the Foundation for Revitalisation of Local Health Traditions<sup>7</sup> (FRLHT) states:

*“A need was felt to orient and train staff of some local NGOs on various issues related to conservation of medicinal plants, so that they can in turn act as local resource persons for and after these trainings. I feel that the LSTM team, after due orientation of its members, can discharge this function very effectively.”*

Through building local capacities, the project offered distinct and lasting benefits to the LSTM team and to key project partners, including the network of Dusrapa amchis. They improved their knowledge of MAPs conservation management and their skills in project design, implementation and monitoring, especially through several training sessions with local, national and international experts. The capacity-building activities undertaken during the project were as follows:

**April 2005: Mr Raju, of FRLHT / Gram Moolighai**, provided a one-week training workshop entitled *“Introduction to medicinal plant conservation participatory methods”* (theory and field) to the LSTM team and board members. The major foci of this training were:

- To fill key knowledge gaps on MAPs conservation in general
- To improve data collection methods for working with villagers in the field of MAPs: interview techniques, participatory consultation with individuals and groups; mapping and other Participatory Rural Appraisal (PRA) methods, preparation and management of research methodologies.
- To experiment with using the new methods in the field (Tiri village).

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<sup>7</sup> The Foundation for Revitalisation of Local Health Traditions (FRLHT- Bangalore) is the leading Indian NGO working on medicinal plant conservation issues.



**July 2005: Dr Gurinder Goraya, Joint Director of FRLHT**, provided a one-week training workshop to 25 participants, including amchi and the LSTM team, entitled "*Medicinal plant conservation and cultivation*". The main objective of this consultancy was to enable participants to have a clearer idea of the conservation needs and the potential strategies for meeting them, and to clarify their respective roles in such initiatives. The training included sessions on:

- Introduction to MAPs conservation – concepts and theory, including rapid threat assessment methods
- Overview of the medicinal plants of Ladakh – key species, major threats, specific problems
- Example of MAPs conservation initiatives from other parts of the country – FRLHT's projects
- Current harvesting practices and the scope for encouraging sustainable collection
- Potential conservation strategies for Ladakh (*in situ* & *ex situ*, role of communities, monitoring systems, etc)

**2005-6: Field Research Laboratory, Leh<sup>8</sup> (FRL):**

- Dr O.P Chaurasia was a key advisor throughout the project, especially for cultivation activities. He organized a number of visits for the project team to the FRL MAPs nursery.
- Support from Mr Basant, junior scientist at FRL, was helpful in the selection of species and the establishment of a medicinal plant garden in Kullum in April 2005

**May 2006: The GB Pant Institute for Himalayan Environment and Development<sup>9</sup> (Kullu)** provided a ten-day residential training workshop on "*Data generation, prioritisation and conservation of natural resources, including medicinal plants of the Indian Himalaya*". The training was attended by the LSTM team and Mohammed Abbas, Forest Range Officer from the Forest Department and a board member of LSTM. They were introduced to many global issues related to environment, ecology and MAPs, including lectures on:

- Biodiversity and conservation: an overview
- Medicinal plants diversity, prioritization and conservation
- Use of Participatory Rural Appraisal (PRA) for information generation and conservation
- Agro-techniques of some of the high-value medicinal plants of the Himalayas
- Appropriate technologies for the conservation of natural resources in the Indian Himalayan Region
- Bio-composting through solid waste management and its application in medicinal plants cultivation
- Vermi-composting; propagation and cultivation of medicinal plants

The training was designed in two major modes - field visits and classroom teachings - combined with time dedicated to queries and interaction. The Institute's research scholars from different universities also attended the training, allowing much fruitful interaction. Dr. Samant, the scientist in charge of the Institute conducted most of the lectures and also conducted a practical session on Participatory Rural Appraisal (PRA), in Dhora Nalla village (Himachal Pradesh).

**October 2006: Plantlife International (UK).** The visit of Mr Alan Hamilton to Ladakh was an important moment for the LSTM team, both for the advice that was offered regarding the implementation of the activities and general discussion of medicinal plants conservation, and also in terms of confidence building (recognition of the value of the project from an international expert).

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<sup>8</sup> FRL is a part of the Defence Research and Development Organization (DRDO). The Organization is notably mandated for documentation, collection of germplasm, conservation activities and evaluation of medicinal properties.

<sup>9</sup> The Institute is identified as a focal agency, to advance scientific knowledge, to evolve integrated management strategies, demonstrate their efficacy for conservation of natural resources and to ensure environmentally sound development in the entire Indian Himalayan Region (IHR).

**Ongoing: Nomad RSI (France)** provided overall direction, ongoing training and project advice to the LSTM team, and monitoring / evaluation of project activities.

- Miss Fanny Jamet, Programme Director, worked closely with LSTM throughout the project. A capacity building session was organized in autumn 2006 focused on reporting, project design and evaluation of project priorities.
- Mr. Calum Blaikie, a PhD researcher working on the trade and commercialization of MAPs in Ladakh, advised the team throughout the project, including advice on activities implementation and on definition of project priorities.
- Ms. Elisabeth Dodinet, an Ethnobotanist specialised in Himalayan plants, worked with LSTM in August 2005 as a botanical consultant, including support for the constitution of the herbarium and botanical identification.

### 3.1.2 Stakeholders participation

Since the beginning of the implementation of the “Revitalization of Tibetan medicine” programme in 1998, Nomad RSI / LSTM have considered the involvement of local actors at each stage as crucial for the effectiveness of their activities. They have facilitated many multi-stakeholders meetings, notably through the organisation of regular seminars in Leh.

In **October 2005**, LSTM organised a three-day long seminar entitled: “*A participatory workshop on strategic policy development for medicinal plants conservation*”, welcoming more than 80 amchis from Leh, Zaskar and Kargil Districts and various other stakeholders (i.e. Forest Range Officer, farmers, and community representatives from hot spot areas).



The key objectives of the seminar were:

- to bring together all the existing project partners
- to form new partnerships
- to establish strategic priorities and practical activities for the better management of medicinal plants

All participants to the seminar emphasized that, from their field experiences, a strategic policy for the development of MAPs conservation was urgently required. As there are no effective traditional restrictions preventing over-harvesting and there is an explosion in the demand for plants, both within and

beyond that related to local Tibetan medicine, plants are being pushed towards depletion and the threat of extinction of some species was seen as a mounting possibility.

Open house discussions allowed all the participants to exchange experiences and views and to ask questions to experts on various subjects, including specific identification problems, specific cases of MAPs depletion, and the possibilities for substituting rare or endangered species for more common species during medicine production.

## 3.2 Awareness campaigns in villages: “medicinal plant conservation and its access to amchi in the future”

### 3.2.1 Aims and objectives



These campaigns represent a crucial and central part of the overall project. They aimed to raise local awareness of the importance of MAPs for Tibetan medicine and draw attention to their increasing scarcity and also to empower communities to better manage their natural resources. LSTM works with *amchis* and local population towards the common goal of controlling harvesting and protecting the abundance and diversity of medicinal plants, thus ensuring sustainability of the amchi medical system and the environment.

### 3.2.2 Methodology approach

A range of factors have been kept in view while designing the methodology for conducting medicinal plants conservation campaigns in remote places of Ladakh. In view of the existing mentality and overall environment of a Ladakhi village, the campaigns have to comprise an extensive list of activities in order to clarify the needs and methods for conservation. Unless you give practical instances of the subjects under discussion, the receptiveness of the people remains limited. Treatment of patients on the spot, through medical camps, increases the value of the discussions and the preservation of the traditional medical system is placed higher in the priority list. This fact also makes it easier for the public to realize that MAPs are crucial for the health care system on which most communities depend.

In the beginning of the campaign, people are not ready to accept the fact that a plant could possibly disappear altogether, as this is not something that has ever been observed before. Thus it is required to stress the challenges faced by both Tibetan medicine and medicinal plants, to make people grasp the pressing need for plant protection and to make the participants think about the problems that may arise in the future.

### 3.2.3 Progress of an awareness campaign<sup>10</sup>

The following steps are followed when the team enters a community to conduct a workshop:

#### Step 1- Meeting with the community leaders

The first step is to identify key local stakeholders (*amchi*, village heads etc) of the particular place and to introduce the overall aims of the project and the specific objectives of the campaign. After taking the leaders into confidence, the time and venue for the next day's medical camp and awareness campaign is fixed. It has often been the case that the village heads and authority figures propose to speak to the public themselves, in order to convey first hand information and garner grass roots support. The LSTM team brief these representatives about the issues related to MAPs conservation and Tibetan medicine. It is of primary importance to make sure that these people have a clear understanding of the issues, because only then can they develop positive interest to collect the public and create a receptive atmosphere among the villagers.

Once a friendly bond has been created between the team, the village heads and villagers, frank discussions are much more likely to result. The accompanying *amchi* from Leh (known as expert *amchi*) and the *amchis* of the respective village become the main bridges between the LSTM team and the local population. Active participation of the local *amchis*, who are well known to the population, enhances peoples' participation.

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<sup>10</sup> This section has been written by LSTM team members, who are in the best position to describe their way of working in villages as they are in charge of day-to-day project implementation.

## Step 2 - Amchi medical camp

A whole process of live activities are demonstrated, solely to make the population fully realize the need to conserve and protect the plant wealth of an area. Linking amchi medicine and plant conservation proved to be vital, as it becomes easier for the general public to relate health care and their use of plants. The second day of the campaign is thus always dedicated to treating patients. It is quite common for 40–50 patients to attend the medical camps, which is a large number considering the small size of the villages visited. It is well understood from this that the traditional health care system is effective and indispensable for a rural Ladakhi village, for its complete and standardized knowledge in treating all kinds of diseases. Valuable traditional medicines like amchi medicine are often ignored and in some villages the system has breathed its last breath, but fortunately it is beginning to regain its position again in much of Ladakh.

## Step 3 - Lectures by the LSTM team and other experts



**Introduction:** One member of the team introduces Nomad RSI / LSTM, the history of the organisations and the overall objectives of their projects. A detailed introduction to the campaign aims is then given, along with an outline of the activities to follow.

**Preservation of Amchi medical system:** Although committed to conducting a medicinal plants conservation campaign, LSTM is always accompanied by one famous and highly knowledgeable amchi (see step two above). The first speech is delivered by this amchi, focusing on the importance of amchi medicine and its popularity, both in Ladakh and the rest of the world. The history of the amchi system is also evocated.

Secondly, the amchi stresses conservation needs and methods, as per the primary classical medical text book, known as the *Gyu zhi*. Amchi medicine and the sustainable use of plants are always two sides of a coin: every practitioner is well aware of the wise exploitation of the plants, but can offer a slightly different perspective on the same goal than the modern scientific discourse and methods.

**Reasons for growing pressure on Medicinal Plants / conservation methods:** The second speech is made by one expert (see section 3.2.4) who has extensive knowledge of the growing pressure on the medicinal plants in the modern economic structure and way of life. The speaker includes evidence about plants in an area or particular plants and the reasons for their decline: over-harvesting, over-grazing, unsustainable collection, ineffective management practices and increasing trade of particular medicinal plants in the world market – these issues are often mentioned in this part of speech. Modern techniques of conservation and collection methods are unfolded in a very detailed manner. The expert encourages the public to engage with cultivation and conservation by cooperating with the village amchis. It is also advised that every villager must become a watchdog for any action responsible for causing damage to the plant diversity of the village.

#### Step 4 - Video projection

Several videos are used as key tools to facilitate the raise of awareness on MAPs conservation. Videos edited by different conservation organisations, including FRL, FRLHT and LSTM are shown to the audience. For further details see section 6 above.

#### Step 5 - Data collection

The collection of crucial data on medicinal plants in the concerned area amongst the public is then conducted using Participatory Research Appraisal (PRA) methods, such as mapping and ranking. This data covers various facts, including availability (threat status), geographical location, part used by amchis etc. Amchis and the shepherds contribute a lot to this data collection. The crowd is divided into groups, usually with women, men and children separate. One villager among the group is asked to draw a rough sketch of the village including, grassy areas, springs, pastures etc. Each participant of the group contributes to the data bank maintained by one of them and is assisted by one of the LSTM team members. Participatory drawing of the village ecological map with a group of people shows the boundaries of different perceived landscape components, reveals the threat status of particular plants and helps to plan future conservation interventions based upon real local perceptions and needs.

#### Step 6 - Evaluation of the campaign

After the speeches and data collection are complete, a brief evaluation of the exercise is made and the public is informed about the outcomes. Each group gives a short presentation of the list of plants they made in the group including various information about each plant, as stated above. When the team and village heads feel that a particular area's floral diversity is seriously being affected by some known factors, they discuss specific interventions and activities that could address the problem, such as the formation of a Medicinal Plant Conservation Committee (MPCC) or inclusion of a certain area in traditional management systems.

### 3.2.4 Amchi and other experts that have accompanied the team during awareness campaigns

The amchis and other external experts who have participated in the campaigns are as follows:

**Amchi Gurmet Namgyal:** Ex-Research Officer in the Amchi Research Unit (Government of India) Leh and a renowned practitioner of amchi medicine, Gurmet Namgyal holds a very influential position in Ladakh, not only as an amchi but also as a social leader. Accompanied the team to Zanskar and Kanji.

**Amchi Tsering Phuntsog (Chief Amchi):** Chief of all the Ladakhi amchis who are registered under the department of health and family welfare. There are about 40 amchis under his supervision and at present he is serving as *amchi* physician in the biggest hospital in the town. His contribution in founding many of the volunteer organizations that are engaged in developing amchi medicine has been very high. Accompanied the team to Sapi.

**Amchi Rigzin Wangtak:** The President of Ladakh Amchi Sabha (LAS)<sup>11</sup> for two complete tenures (until 2005) and his contribution for preservation and promotion of this system has been relatively high. Accompanied the team to Markha valley.

**Amchi Tsering Paljor:** Ex-president of LAS and a very well known amchi, Tsering Paljor holds a very influential position, as an amchi and social figure, especially in eastern Ladakh. He is one of three surviving amchi who was trained in Tibet, and when H.H. the Dalai Lama visited Ladakh in 2004 Tsering Paljor received special blessings from him. Accompanied the team to Sapi.

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<sup>11</sup>LAS is the largest association of *amchis* in Ladakh and have been partners in Nomad RSI / LSTM projects since the beginning. LAS has run a number of small cultivation projects in the past and also runs one of the biggest MAPs / ready-made medicine production programmes in Ladakh.



**Mr. Mohd. Abass (Forest Range Officer):** A committed conservationist, Mr. Abass has a keen interest in both the floral and faunal diversity of Ladakh and the rest of the world. His personal interests and his profession go very well together and he has produced a number of handbooks and audio-visual tools that are useful for conservationists and amchi practitioners. His involvement with LSTM project activities has been of vital importance and his knowledge of plants has been very helpful in imparting conservation education among the Ladakhi population. Accompanied the team to Sapi.

**Mr. Tsetan Dorje:** Secretary of Zanskar Amchi Association (ZAA). ZAA has around 50 members and is dedicated to preservation of the amchi tradition and conservation of the medicinal wealth of the Zanskar region. ZAA managed a training programme for young amchi, supported by the French NGO Aide Medicale Zanskar. Tsetan Dorje joined the LSTM team during the Zanskar visit, where eight MAPs conservation campaigns were organised conjointly with ZAA. Accompanied the team to Zanskar.

**Mr Calum Blaikie:** PhD researcher in anthropology from University of Kent, UK on “the commodification of *materia medica* and the practice of Tibetan medicine in Ladakh, India” Former Nomad RSI Programme Director. Accompanied the team to Zanskar, Kanji and Nubra.

**Mrs Marguerite Swift:** Board member of Social Education Environmental Development Services (SEEDS) organisation working in the Tibetan Border region of Nepal. She spent three months with LSTM team in summer 2006 and participated in the awareness campaigns during this period.

### **3.2.5 Case study: Lectures during awareness campaign in Pibitting (Zanskar) – October 2006**

The following lectures were recorded in October 2006 in Zanskar. The translation from Ladakhi to English had been made by Thupstan Choszang, the coordinator of the LSTM team, who also selected the most interesting parts of speeches according to his own criteria. These extracts are included here in order to give an idea of the content of the speeches and the messages that the experts were transmitting to the villagers.

**Amchi Gurmet Namgyal:** *“Conservation of medicinal plants and preservation of Amchi medical knowledge, including its history”*

*This speech covered the history of Tibetan medicine in some detail – the text is not translated in its entirety, but some relevant extracts are given below:*

“I have participated the campaigns conducted by Ladakh Society for Traditional Medicines in various parts of Ladakh and recently we visited the village of Kanji for the same objective. Today I present to you my opinion on two main topics adopted for the campaign i.e. the link between Tibetan medicine and medicinal plants.

To begin, I must brief you about the history of Tibetan medicine, its origin in India and spread to Tibet and Ladakh [...] I would also like to stress how amchi medicine has been developing in Ladakh since its introduction and the challenges it has faced during its history. Although there was not any formal institution of Tibetan medicine, many Ladakhi amchis have been transferring their knowledge to younger generation very efficiently. This complete and time tested science of healing can be learnt by anybody, without any discrimination on the basis of gender, religion or caste.

Medicinal plants are an indispensable part of this system of medicine. According to the history, when a prominent expert in Tibetan medicine asked how the practitioners could survive to serve all sentient beings should they run out of medicinal raw materials, the answer came as “all that grows on this earth has the potency to be used in medicine.” This significantly conveys the message of caring for each and every plant, irrespective of its known value. For this reason, I strongly support the message being spread by LSTM on the importance of the protection of medicinal plants.”

## **Mr. Tsewang Gonbo- Secretary of Ladakh Society for Traditional Medicines**

*Tsewang Gonbo introduced LSTM and briefed the audience about their overall activities and objectives. He also made it clear to the people how LSTM came to be visiting Zanskar and their expected outcomes regarding amchi medicine and medicinal plants. Selected sections are reproduced below:*

“First of all, amchi medicine has become popular in the west and in many of the European countries. This signals that this medical system is important and hence it has a very unique and extraordinary quality. Zanskar has quite a good number of amchis, but it is evident that in many villages in Leh district there are no more amchi left. We appeal to the public wherever we go that we must strive to preserve this ancient science of healing. We have to think seriously about how we can keep this tradition alive in our villages.

It is known that the amchis face problems in generating enough income to sustain their practice - this owes to the sudden change in the economic structure and the introduction of money. Our amchis used to get a helping hand from the villagers during harvest time and in all other farming activities, yet this practice has now completely vanished in most of the villages. Therefore we need to help them in other forms. In the olden times, amchis used to treat us free of cost, as they benefited from free services of the public on almost every occasion, but now it seems urgent that everyone has to pay the amchi for their time, services and medicines. At the same time, we must also think of training new amchis, as many are old and may disappear from our villages altogether.

Keeping in view all these challenges, LSTM started an amchi school called Dusrapa, exclusively to train amchis from rural and far-flung areas. We had three students from Zanskar and they are now practicing in three villages of this area. We might run a similar school if the need is realized. We have the feeling that with the introduction of Allopathic medicine here in Ladakh at a subsidized price, many of us started to lose faith in our traditional medicine. Today fortunately this system is passing through a renaissance period. I don't mean to say that we should go only for Tibetan/amchi medicine, but our society needs both the systems urgently as it has now become clear that each has its own unique quality.

Like it is with our traditional system of medicine, many other traditional systems of medicines are reviving their practice and almost all of these are based on plants and minerals. This fact leads to intensive pressure on medicinal plants. The high altitude medicinal plants found in Ladakh are rich in medicinal properties and are prey to not just traditional medical systems but to the allopathic system, as well as to giant international companies producing cosmetics and other health tonics. This should stimulate our awareness that the conservation of medicinal plants is urgent and inevitable if we are to help this time-tested medical system to flourish and remain in service to our future generations.

We are aware that now there is road accessibility everywhere in Zanskar and the threat for medicinal plants is growing more and more every day. There are certain methods for protecting plants and the important stakeholders including the general public should be trained and made aware of them. We did a similar thing in Sapi and today there is a Medicinal Plants Conservation Committee looking after the overall biodiversity of the area.”

## **Mr Tsetan Dorje – Secretary of Zanskar Amchi Association.**

“Most of our guest speakers from Leh spoke about the amchi system of medicine and its importance in today's world in a much elaborated form - I will focus on a slightly different aspect. I am involved and have been trying to help the amchi community for about ten years, and in every endeavour you are bound to face obstacles: this is a known fact. Therefore I enfold the hardships I came across in my journey to work with amchi community. More important is to make everyone know about both the achievements and obstacles being faced. Also it important to accept the fact that everyone is bound to face health problems from birth to the end of their life. Everyone does their best to achieve happiness in life and if one member of a family is not healthy, the rest are bound to be sad and ultimately unhappy.

People have good education, good houses and every other comfort of life according to their own endeavours and these achievements would never mean that they won't be unhealthy. You can be sick at any time without any discrimination. Like it is with defence mechanism of a country, a nation has to have its army no matter if you are involved in war with any other nation or not<sup>12</sup>. The same is true of our health: you never know if you will fall sick anytime and we must have amchis in every village like it used to be before. There is an urgent need to preserve and strengthen our ancient medical health care system. This is connected to the villagers' responsibility to help amchis because they have been in the past, and are still, assisting our community through their knowledge and medicine. Unless there is considerable support from the community, their survival is not ensured. It is very simple to support an amchi, for example, if one amchi has to spend a thousand rupees on a particular medicine, it may be heavy for him and if every one in the village contributes one single rupee each it will not be as heavy as it could be for the single amchi for sure.

My observation so far during this campaign concludes that the amchi community's problems differ from place to place. Access to medicinal plants sounds like it is the most common everywhere. Here in Zaskar it is not true yet, but still, if we do not take a collective step to protect the plant wealth of the area we will soon be facing the same problems. To conclude, I would like to sincerely thank the LSTM team, who are striving to make the Ladakhi population aware about medicinal plant conservation needs and the importance of amchi medicine preservation, for their consent to conduct the same in Zaskar as per the request made by our association."

### **Mr. Thupstan Choszang - Project Coordinator of Ladakh Society for Traditional Medicines**

*Thupstan Choszang interpreted a video message by His Holiness the Dalai Lama for Amchis and commented on his own perception of this system of medicine. This advice by His Holiness the Dalai Lama was made exclusively for amchis of Ladakh during his visit in the year 2004 when he inaugurated the Men-Tsee-Khang (The Tibetan Medical and Astrology Institute) in Leh.*

"His Holiness the Dalai Lama believes that Sowa Rigpa is a complete medical system having all kinds of knowledge, compared to many other traditional systems of medicines in the world civilizations. This system is known to be very effective, especially for chronic diseases. Sowa Rigpa is a vast subject and a complete study of it leaves no other challenges in healing a variety of sicknesses even in today's world. I appeal to the amchis gathered here to continue your studies without any break, so that you can serve humanity well. This medical system employs a large number of minerals and plants and to have complete knowledge about plant collection and their proper usage is important. Having only scant knowledge of this medical science is not enough for an amchi, unless you have a very pure and benevolent heart for your patient. Compassionate treatment to the patient without any kind of discrimination is an inevitable part of this system"

*Thupstan Choszang also adds his own point of view:*

"I always remind the people that Tibetan medicine has been in service of people from all walks of life. The highly placed lamas, Kings and even the poor were dependent solely on this ancient and time-tested system of medicine and it is becoming more popular than ever in today's world. My idea is not to avoid allopathic medicine, but it certainly would be great if both can exist in a very balanced manner. On the other hand, I cannot skip the deadly side effects of modern medicines causing shocking imbalances in the human body and nature when a certain saturation point of consuming such medicines is crossed. Moreover, medicinal plants are the basic need of Tibetan medical system. The requirement of plants to meet modern desires, demands and trends is growing and it is becoming a very serious matter to protect and conserve the extraordinary plant wealth in our areas."

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<sup>12</sup> This comparison is not surprising in the Indian context and especially in Zaskar. The area is bordering Pakistan and wars between India and Pakistan took place in close areas to Zaskar, like in 1999 with the Kargil war. (Kargil is the second main town in Ladakh after Leh, Zaskar belongs to Kargil district).

### 3.3 Medicinal plants data collection and management

The “generation of close interaction with the plants have enabled local communities to develop precise knowledge on the life cycle, ecology and use of locally occurring plants” (Regmi and Bista 2002). Local knowledge and perception of resources and the inputs of local people are thus crucial for the development of species prioritisation criteria and for developing management guidelines for conservation, as the following quote illustrates:

*“Thus a key aspect of sustainable use of plants resources in the region would be the integration of this indigenous knowledge and scientific knowledge for developing formal community based management system of MP” (Ghimire and Thomas 2005).*

Based on a combination of local knowledge and external expertise, decisions can be made concerning the best courses of action to be taken and the next phases of work can be initiated. The appropriate conservation methods differ depending on the natural and social conditions of a place and the range and status of plants to be found there. Sometimes *ex-situ* cultivation may be more effective and useful, other times *in-situ* conservation may be a more appropriate method. In other situations, a combination of the two offers the best solution to balance local use and conservation needs.

In order to provide the basis for planning and for action, during each village visit the LSTM team collected crucial data<sup>13</sup> on medicinal plants from different local stakeholders including amchis, farmers, women and children. Data collected included:

- Resource assessment and distribution – listing and mapping
- Local names and uses of plants
- Biological and ecological characteristics of key species
- Multiple uses associated with MAPs (important in relation to plant management approaches)
- Changes in resource availability – over-harvesting, climate change, over-grazing etc

Firstly, data were collected during awareness campaigns (see section 3.2.3 above). These data were then further examined through open interviews in the field with the amchis, shepherds and farmers. Data were then entered and managed in a computer database, using excel software, at the LSTM office. This compiled the most accurate and up to date information across Ladakh, offering an overall picture of plant knowledge, use and management (botanical name, Tibetan medicine name, local names, habitats, trade values, cultivation potential and distribution, medicinal uses, photographs.) The database is useful for LSTM and also for others working on MAPs, will enable the construction of a complete species list and facilitate prioritisation of species.

### 3.4 Conservation Toolkit

#### 3.4.1 Videos

During awareness campaigns and other public meetings, the LSTM team showed videos dealing with the importance of Tibetan medicine and the need for MAPs conservation, including:

- **Medicinal Plants of Ladakh by the Field Research Laboratory (Leh):** A short but well-produced film on the medicinal plants of Ladakh and their uses, including their value in the international market and their possible uses by other medical systems and companies.
- **Traditional Healing System of South India by the Foundation for Revitalization of Local Health Traditions:** Glimpses of traditional healthcare systems of south India and FRLHT’s efforts to preserve these systems and the medicinal wealth on which they depend.
- **His Holiness the Dalai Lama’s Address to Amchis of Ladakh:** Definition of a good *amchi* and placing Tibetan medicine among the standard medical systems of the world. Filmed by Tsewang

<sup>13</sup> See Data collection form in annex

Gonbo, (LSTM) when the Dalai Lama visited Leh for the inauguration of the Ladakhi branch of the Men Tsee Khang.

- **Dusrapa Training Records:** An insight into the training structure, including information about teachers, founders, intensity of the training, areas covered and the strength of the training - Edited by the LSTM team, Leh.

- **Some locally produced entertaining videos:** Newly released cultural songs and dances are shown, to attract more people at the desired time and venue for the campaigns.

### 3.4.2 Trans Himalayan Amchi Medical Education (THAME) newsletter

The THAME newsletter is a bi-annual newsletter, the first of its kind, containing articles on a wide range of topics relevant for practitioners of Tibetan Medicine. It is published by LSTM in partnership with Ladakh Amchi Sabha and Nomad RSI and is distributed free of charge to all the amchi of Ladakh and also in India, Nepal, Bhutan, Tibet and the west, creating a link between amchis across the world.

Due to financial shortages, prior to the current project the production of THAME had been suspended for 18 months. Thanks to Plantlife International support, a special issue of THAME, was produced in September 2006 and gathered together articles and reports on medicinal plant related issues written by expert amchis and other key partners in the project, selected and edited by a scientific committee.

The special issue of THAME included the following articles in classical Tibetan:

- Editorial by amchi Tsering Phuntsog (Chief Amchi, Health Department).
- "The Himalayan Medicinal Plants" by amchi Thinles Yangjor, President of LSTM. This article emphasized the central place of medicinal plants in Tibetan medicine.
- "Plants of Ladakh" by Mohammed Abbas, Forest Range Officer. This article focused on the main dangers facing medicinal plants (i.e. over-harvesting, unsustainable collection practices, over-grazing)
- "Presentation of the Men Tsee Khang" by Konchok Tsering, Astrologer at the Tibetan Cultural Centre, Leh.
- "Changes in *Sowa Rigpa* practices" by Rigzin Lamo, *Sowa Rigpa* Research Centre, Leh. This article dealt with the evolution of the fabrication of medicines in the Tibetan medicine system.
- "Report on LSTM activities for the medicinal plants project" by amchi Karma Chodon, medical coordinator of LSTM.

It also included four articles in English:

- "LSTM's vision"
- "LSTM diary: Rupshu, Kharnak, Zara and Rokchen."
- "Sapi Medicinal Plants Conservation Committee training."
- "Medicinal Plants and Tibetan medicine in contemporary Ladakh."

The THAME newsletter's large-scale diffusion was made possible through partnerships with local associations of Tibetan practitioners in each area of distribution, including:

#### In India:

- Ladakh Amchi Sabha, Ladakh
- Central Institute for Buddhist Studies, Ladakh
- Zanskar Amchi Association, Ladakh
- Spiti Board of Amchi Sangh, Himachal Pradesh
- The Tibetan Medical and Astrology Institute of the H.H the Dalai Lama, Dharamsala, Shimla, Varanasi, Delhi and Mussorie
- Foundation for the Revitalization of Local Health Traditions, Bangalore, Karnataka
- Maha Bodhi Society, Bangalore, Karnataka
- G.B Pant Institute for Himalayan Environment and Development, Himachal Pradesh



- Chagpori Tibetan Medical Institute, Darjeeling
- Auroville, Tamil Nadu
- French Institute of Pondicherry

#### **In the Himalayas:**

- Himalayan Amchi Association, Nepal
- Tsomgong Lake Tibetan Hospital, China
- Department of Tibetan Studies, Central University of Nationalities, China
- Kar. Kal Sang Ta Shi, China
- Institute of Traditional Medicines Services, Bhutan
- Medi Tibetan Lhasa, Tibet, China

#### **In western countries:**

- Plantlife International, United Kingdom
- Laboratoire Himalaya (Dr Fernand Meyer), France
- Aide Médicale Zanskar, France
- New Yuthok Institute, Milano, Italy
- International Tibetan Medical Association and Tibetan Health Centre, USA
- Alternative Medicine Foundation, USA
- SEEDS, USA

Several copies of the newsletter are sent to these organizations for wider circulation amongst the *amchi* of their respective areas.

### **3.4.3 Posters**



Five hundred posters, with colour photographs of 20 important medicinal plants and information about them in Ladakhi, were designed and produced in September 2006. These posters were distributed to key partners in the project (i.e. amchis) and others (such as schools) during awareness campaigns. These posters are an important part of the conservation toolkit, as they aid in the identification of plants and in raising awareness and building capacity for the conservation, cultivation and management of MAPs.

## **IV- A case study: medicinal plants conservation in Sapi<sup>14</sup> village**

The case of Sapi village exemplifies the working methods of Nomad RSI / LSTM and provides a model which will be replicated, with some adaptations according to the context, in other parts of Ladakh. The work in Sapi is at a much more advanced stage than in the other target areas, was specially adapted for this “hotspot” area and combines the awareness / capacity building component (see section 4.1) and the data collection and management activities (see section 4.2). It is also notable because it was the site of the establishment of the first Medicinal Plant Conservation Committee (MPCC) in Ladakh.

### ***4.1 Awareness and capacity building on medicinal plants conservation***

#### **4.1.1 Awareness campaign, August 2005**

Before organising the awareness campaign the LSTM team, accompanied by Chief Amchi, Mohammed Abbas, Elen Gallien (Nomad RSI General Administrator) and Fanny Jamet (Nomad RSI Programme Director), met with the village heads to introduce LSTM’s goals and activities and to discuss with key partners the wealth, diversity and pressure on medicinal plants of Sapi area. It was the first

<sup>14</sup> For a presentation of Sapi village, see section 2.2.2.

time that the LSTM team had been to Sapi and they were not known by the villagers, unlike in the villages of origin of Dusrapa amchis where previous campaigns had been held. Thus the overall aim of this first meeting and this first visit was to build trust and confidence between LSTM and the villagers and heads of Sapi. After a medical camp (see section 3.2.3), the awareness campaign took place and gathered around 200 people. The campaign provided information to villagers on:

- The history, importance and present status of the Tibetan medical system in Ladakh
- The importance of medicinal plant conservation for the Tibetan medical system and for meeting local health needs
- The practical possibilities for local involvement in conservation / resource protection activities (including *in situ* conservation, *ex situ* cultivation and management committee formation)

#### 4.1.2 Formation of the Sapi Medicinal Plant Conservation Committee

The awareness campaign promoted discussion of medicinal plant issues amongst the local community. This brought a very positive and active response from the villagers, who decided to organise another village meeting during LSTM team visits, during which they would set up their own Medicinal Plants Management Committee (MPCC) at the village level. The aim of an MPCC is to organise villagers and to enable them to better manage medicinal plant harvesting and ensure that it takes place in a sustainable way.

The committee was formed with equal representation from the two religious communities (Muslim and Buddhist) and with gender equity (two women are constitutive members). Members decided that one of them would monitor and advise on the collection of medicinal plants in the Sapi area by outsiders, whether they are amchi or commercial collectors. It was also decided that fees would be gathered from collectors (around 100 rupees) and their visit would be registered using the MPCC receipt book (provided by LSTM). When a substantial amount had been collected, they would use it for purposes related to the development of the village and agreed by the committee members. If they decided to use it for a religious purpose, they promised to divide the funds equally between the two religious communities.



#### 4.1.3 Announcement of the establishment of the Sapi MPCC

The establishment of the first MPCC committee in Ladakh has been acknowledged through different mediums as a model case and as an encouragement for other villagers to organize themselves in order to conserve medicinal plants and to regulate their collection. This was publicised:

- **Through radio:** information about the Sapi MPCC formation was announced in the most popular bulletin of All India Radio (AIR) in September 2005.
- **Through other awareness campaigns:** presentation of the committee, its establishment and goals during awareness campaigns in other villages across Ladakh.
- **Through THAME newsletter:** an article explained the formation process, goals and means of action of the Sapi MPCC. This original village-level organisation toward medicinal plants conservation can be known by other stakeholders due to the large diffusion of THAME across Himalayas and worldwide.

#### 4.1.4 Members of Sapi MPCC attended the seminar - October 2005

One member of Sapi MPCC and one amchi from Sapi attended the seminar "*A participatory workshop on strategic policy development for medicinal plants conservation*" held in Leh in October 2005. For more details on the seminar, see section 3.2.

#### 4.1.5 Training for the Sapi MPCC – July 2006

The LSTM project team, accompanied by Amchi Tsering Paljor and the LSTM volunteer Marguerite Swift, conducted a Medicinal Plants Conservation Committee Training and Awareness Campaign for the

Sapi MPCC and villagers from July 20<sup>th</sup> to 24<sup>th</sup>. The three-day training session included discussions around the following subjects:

- Tibetan Medicine and the importance of medicinal plants conservation
- Increasing worldwide popularity of phytotherapies
- Sustainable harvesting techniques as specified in the *Gyu Zhi*
- Sustainable harvesting practices according to international standards



The last training session was dedicated to the functioning of the committee:

- Election of officers and nomination of members for the MPCC
- Collection of fees from outsiders harvesting MAPs (through receipt book)

#### 4.1.6 Second Awareness Campaign - July 2006

The training session for the Sapi MPCC ended with a general public meeting, where LSTM addressed the 70+ villagers in attendance regarding its goal to revitalize the Tibetan medicine, the importance of the conservation of MAPs and the critical role of the MPCC in ensuring the sustainability of the ecology of the region. MPCC members and the Sarpanch also spoke on the need to oversee sustainable harvesting. The programme was later followed by a video presentation of LSTM's visit to Sapi in 2005, and this year's visit, as well as other videos brought from Leh.

#### 4.1.7 Distribution of conservation tools

Copies of the special issue of the THAME newsletter and posters on MAPs were given to the members of the MPCC.

### 4.2 Medicinal Plants Data collection and management

#### 4.2.1 Mapping and consultation with villagers

Mapping and identification of the different habitats around Sapi village were conducted with the villagers. Consultations both during the awareness campaign and in the field allowed for direct interactions and detailed documentation of local plant names and uses.



#### 4.2.2 Collection of specimens in different habitats of the area

43 specimens were collected in Sapi area by the Project Team, in different habitats of the area, including around a high altitude lake (around 5000m above sea level), famous for its MAPs wealth.



#### 4.2.3 Constitution of an herbarium

Having been trained in herbarium constitution by Dr Goraya in July 2005 (see section 3.1.2) the LSTM team made a herbarium with all the 43 species collected in the Sapi area. Local names were written down simultaneously. The herbarium was exhibited in Leh during a workshop on NGOs work in Ladakh. It will also be used as a tool for identification purpose during the futures seminar and training sessions.

#### 4.2.4 Tibetan Medicine identification

Plants were identified by a recognised expert and a very old amchi trained in Tibet, amchi Tsewang Norphel, according to Tibetan medical criteria. This identification was then cross-checked by a panel consisting of two other amchi experts, Chief Amchi and amchi Tsering Paljor.

#### 4.2.5 Documentation of knowledge

A video was filmed by the LSTM team in order to document the knowledge relating to each specimen collected in Sapi area. Two amchis experts, Chief Amchi and amchi Tsewang Norphel, assisted by Mohammed Abbas, were filmed describing and discussing the habitats, medical potencies, uses, period of collection and threat status of each of the plants collected. This two-hour long video is a crucial register of medicinal plant knowledge and will be an important tool for the training of the next generation of amchi in Ladakh.



#### 4.2.6 Botanical identification

In Leh, the LSTM team invited other experts on medicinal plants to cross check the Tibetan medicine and botanical identifications. Amchi Tsering Paljor, Amchi Thinles Yangjor (LSTM President) and Elisabeth Dodinet (Nomad RSI board member and ethnobotanist specialized in Himalayan plants) joined Chief Amchi and Mohammed Abbas for further discussion and botanical identification of 32 specimens, amongst the 43 specimens collected.

#### 4.2.7 Update of the data base

All the data on MAPs collected in Sapi had been entered in the electronic database managed by the project team (see section 3.3).

### 4.3 Future Perspectives

Capacity building of the Sapi Medicinal Plant Conservation Committee is still needed, until the committee becomes really efficient. It is the first committee for conservation purpose in Ladakh and its functioning is thus experimental. Such village-level organisations have been recognised by experts as being of great value. Nevertheless, it is the beginning of a long-term process and members of the committee need to get more experience as well as more guidance over the coming years.

Capacity building of the members of the MPCC remains at the top of the agenda for the next phases of the MAPs conservation project.

Specific identified needs for improving the efficiency of the MPCC include:

- In depth training on sustainable harvesting practices for committee members in order to build their capacities for monitoring the harvesting practices of outsider collectors.
- Developing sustainable management practices with villagers (rotational harvesting areas, setting collection limits etc)
- Monitoring the harvesting impact through recording the amount collected by both amchis and other people, establishing threat status and variations in availability (regular field survey).

This model of MAPs management should be duplicated in other “hot spot” areas of Ladakh, with the necessary adaptations to the specificity of each area.



## 5. Evaluation and impact study

### 5.1 Objectives and Methods of Evaluation

#### 5.1.1 Evaluation Objectives

The evaluation of the "*Development of a methodology on medicinal plant conservation to strengthen Tibetan medicine in Ladakh*" project had several main objectives:

- To gather inputs from the stakeholders in the project at different levels including villagers, amchi, non-amchi and experts
- To evaluate the expected outcomes of the project, as defined in the original Plantlife proposal (September 2005)
- To allow for the capitalisation of lessons learnt by highlighting successes, constraints and areas of weakness
- To inform and improve the design of the next phases of the programme
- To evaluate the capacity of Nomad RSI / LSTM to implement the project in terms of activities, timeframe and financial constraints

The idea was thus to provide a space for exchange between the main stakeholders and the project team about the overall approach and methodology of the project and the specific activities conducted, as well as to enable the project team and the experts involved to identify the main strengths and weakness of the project.

#### 5.1.2 Evaluation Methods

As with the methodology of the project as a whole, the evaluation was conducted in a participatory manner, with great importance placed on the main stakeholders' words and opinions. There are several types of stakeholders according to their level of involvement, their knowledge and their understanding of MAPs issues. As these actors (villagers, amchis, experts and the project team) are those who will be the stakeholders in the next phases of the project, their perceptions are crucial to designing future action plans.

Evaluation of the project was jointly conducted by LSTM and Nomad RSI. Major inputs were provided by the LSTM project team of Thupstan Choszang, Tsewang Gonbo, Amchi Karma Chodon and Amchi Konchok Tsering; Nomad RSI Programme Director, Fanny Jamet and Project Advisor Calum Blaikie. Objectives and outputs were evaluated through different techniques including:

- Questionnaires, individual and group discussions in two villages where awareness campaigns had taken place
- Interviews with key stakeholders (especially the Dusrapa amchis) and project partners
- Interviews with the project team and team discussions

Three different interview guidelines (for villagers, amchis and key partners) were designed conjointly by the Nomad RSI Director and the project team. The main method used was semi-structured discussion, with interview guidelines including crucial questions but also enabling open discussion according to the interest and knowledge of the respondents. Listed below are the main groups involved in the evaluation process:

#### Interviews with Dusrapa amchis

As they have been involved in the Nomad RSI / LSTM programme for many years, the Dusrapa amchis were key stakeholders in the project. As explained before, the Dusrapa amchi network (see section 2.3.1) was central in defining the target areas for the project. Medicinal Plant conservation campaigns took place in their villages and they also benefited from other activities including: seminars, capacity



building sessions, distribution of THAME newsletters and posters. As they are the new generation of amchi, their involvement in the project is crucial for the future of Tibetan medicine in Ladakh. Interviews were conducted with:

- Amchi Tashi Dolma from Hemis
- Amchi Tsering Namgyal from Kharnak
- Amchi Tsewang Dolkar from Kyungru
- Amchi Nyilza Angmo from Diggar
- Amchi Sonam Tondup from Chushot

These interviews provided an excellent occasion to get their comments and inputs on many aspects of current and future project activities, as well as to hear their experiences and needs in terms of conservation knowledge and practices.

### Interviews with key project partners / experts

The Nomad RSI Director conducted interviews with several key project partners and other experts on MAPs issues, including:

- **Amchi Rigzin Wangtak**, the former president of Ladakh Amchi Sabha (LAS)
- **Amchi Tsering Phuntsog** (Chief Amchi), the head of the 40 government-supported amchis and the only amchi working at the Leh public hospital. He is also a former president of LAS and the vice- president of LSTM.
- **Mohammed Abbas**, the Forest Range Officer of the State Department of Forests. He is presently working in Changthang area for the management of biodiversity and is a member of the LSTM board.
- **Dr Padma Gurmet**, the Research Officer at the Sowa Rigpa Research Centre (Leh), which is supported by the Ayurveda, Yoga, Unani, Siddha and Homeopathy (AYUSH) Department of the Ministry of Health (Central Government).

These interviews focused on the partners' involvement in the project, on their opinions of the activities conducted and more generally on the effect of MAPs conservation on the future of Tibetan medicine in Ladakh.

### Interviews with the project team

Interviews were conducted with the four members of the LSTM team, to discuss their current positions, tasks and responsibilities, their opinions on the project and how they see their future at LSTM. This was an interesting and fruitful exercise, enabling more formal discussion of some important issues than is possible through their everyday involvement in LSTM. Following these interviews and also the evaluation in villages and with amchis, group discussions with the project team were organised to analyse the collected data, the comments on activities and to design the next phase of the project.

### Impact studies

Impact studies amongst villagers aimed to evaluate the memories and lesson learnt through the awareness campaign, to evaluate the extent to which the villagers are ready to act on MAPs issues, as well as to gather additional information about medicinal plants in the area (availability, ideas for conservation / cultivation) and discuss further their possible way of action and how the project team can support and advise on it.

Impact studies were conducted in two villages where awareness campaigns had taken place in an earlier phase of the project, namely Kharnak (Changthang) in June 2006 and Diggar (Nubra) in December 2005 (see map section 2.4 ). The choice of the villages was based on:

- Different situations concerning MAPs. Kharnak in Changthang is located close to the Manali-Leh road, the main road connecting Ladakh to the rest of India. Commercial collection is thus more likely to happen. The nomadic way of life of people in this area is also important in

designing an effective strategy for MAPs conservation. Kharnak is also located on a famous trekking route, increasing pressure on MAPs due to overgrazing and stamping. Digger, a village located near the Nubra valley has only been connected to the road network for the past few months. This area is more isolated but the situation is changing very quickly. People are sedentary and Digger is also situated on a famous trekking route.

- Dusrapa amchi network. Both villages have Dusrapa amchi living in them (see section 2.3.1).
- Climatic constraints: the evaluation was conducted in villages in November. Several targeted areas were already difficult to reach, notably because roads were already closed.

## **5.2 Evaluation of the main activities**

In the sections that follow, the results of evaluation of the project activities are given. Firstly, an overall evaluation of the activity is provided and then, where appropriate, specific evaluations are given according to the different methods and respondent groups. Finally, conclusions and future perspectives are given for each activity.

### **5.2.1 Awareness campaigns on MAPs conservation**

Raising awareness at the community level was unanimously seen as a crucial step towards making people aware of the strong dependency between Tibetan medicine and MAPs and thus making them understand that the risks facing MAPs in Ladakh have consequences in terms of healthcare. The importance of conducting such awareness campaigns was also emphasised through the testimony of the interviewed amchi, as well as some villagers, who all noticed that certain MAPs are becoming rare in their area and are able to list them.

The main output of the evaluation was that awareness-raising is a long-term process, which needs repetition, adaptation to the local context and tools that can be used to facilitate the understanding at the grassroots level. According to the team and the experts who participated in the campaigns, participatory activities such as mapping and MAPs listing are more efficient and suitable than lectures to ensure villagers involvement and thus to prepare the community to take an active stand on MAPs conservation at the village level. The showing of videos was also emphasised as a very efficient tool.

#### **Evaluation by the project team**

Since two years, the LSTM team have been conducting awareness campaigns in villages across Ladakh. Throughout the project, the team built their capacity in managing this type of campaign (organization, content of lectures, application of PRA methodology) and is now more self-confident in this field. It is the only organization delivering message on MAPs conservation in the region and it was also the first time that these kinds of events have taken place.

*" 20 to 30% of the villagers are concerned by MAPs and seem to understand.. Before, they were not so aware of conservation and that is why these campaigns are important. We don't have to expect so much though, as it was the first time that such things had been discussed at all in many places. We have to do it more times, but it doesn't mean going back to the same villages, and do the same things, we have to use different techniques and change the content." (Tsewang Gonbo - LSTM).*

The team, supported by experts, conducted 21 awareness campaigns in 20 villages. The situation of MAPs is very different from one place to another and the "hot spots" are especially under pressure as many outsider amchis are collecting in these areas. It was important to maintain the Dusrapa network and to pursue the training of these young amchis and thus to conduct awareness campaigns in their village. After this first phase, targeted areas need to be redefined in order to focus on the place where the MAPs situation is more critical. More time is needed to be spent in each place to establish proper action plans with the villagers and to support them in the implementation of conservation or cultivation activities, to collect more data on specific sites and to monitor harvesting practices.

*"We have to focus on real hot spots like Rangdum, Changthang, Sapi, Kardong, Zanskar, not every village. It would be better to work in fewer places, but with more detailed investigation and follow-up" (Thupstan Choszang - LSTM).*

## Evaluation by experts

Experts are also convinced that this type of campaign at the village level is crucial, as the main danger for the MAPs are linked to villagers' behaviour, notably over-harvesting and over-grazing, as the following sentences illustrate:

*"Campaigns should continue. Awareness is the main tool toward conservation. Participatory activities are more efficient. Let people know why it is necessary, who needs plants and then who needs amchi. Local people have to take charge in MAPs management in their area. If they have motivation, it is very effective. The main danger for MAPs is over-harvesting. People think that everything is grass. That's why awareness on conservation must start amongst people in order to avoid harvesting as fodder. If they don't know about plants, they just think it is grass" (M. Abbas).*

*"It is important to tell to people otherwise they don't know the value, they even use MAPs as fuel or fodder. If they know the value and can recognize MAPs, they will do conservation and won't misuse the resources" (Amchi Rigzin Wangtak).*

## Conclusions and future perspectives

It is essential that awareness campaigns continue as a component of future activities, but the target areas should be redefined and limited to a smaller number of "hot spots" instead of a larger number of villages in which conservation needs are less pressing. This will deepen understanding in those areas and thus enable the design of more suitable, targeted and easily implementable strategies for conservation in each place. Those tools that were found to be particularly effective, such as videos and participatory activities, must be continued, the content of lectures must be refined and new tools must also be developed.

### 5.2.2 Establishment of Medicinal Plants Conservation Committee

The establishment of the Sapi Medicinal Plants Conservation Committee (MPCC), the first village-based organization in MAPs conservation established in Ladakh, remains an important and symbolic step toward conservation at the grassroots level. The main stakeholders are all enthusiastic about this committee and encourage the establishment of more MPCCs, especially in hot spots. However, the success of such initiatives is strongly dependant on the villager's response and commitment and to be really efficient, this kind of committee needs strong monitoring as well as regular training. The following comments clearly illustrate these points:

Fanny Jamet: *"You were in Sapi last year when the committee was established - what do you think about it?"*

Mohammed Abbas: *"It was nice, people were so enthusiastic! They wanted to do something on their own. They were ready to volunteer for this kind of activity. But to be really efficient, it needs good monitoring, and regular as well, every 3 to 5 months, otherwise it is just a name."*

Fanny Jamet: *"Do you think LSTM should encourage the establishment of more of these committees?"*

Mohammed Abbas: *"Yes, but you know, it depends on the people. It is good to meet people and talk with them, but maybe they don't give a good response to this. They must want to do something on their own and it is not the case in every village - Sapi is a very special place."*

*"The Sapi MPCC is successful, a hard work but done in the right way. I heard also from amchis that it is successful: they were charged for collection in that area. Moreover, Sapi is a hot spot, a very special place in Ladakh, and so it can be more successful in the future, the committee*

*needs to be strengthened. In the future, the government has also to support it. Conservation is connected with the Forest Department, so they have to support. it also [...] LSTM have to encourage the establishment of more such committees, especially in hot spots.” (Chief Amchi)*

## Conclusions and future perspectives

The LSTM team has to provide support and training for the formation of more MPPCs in areas of high collection / threat. Through these committees (or their traditional equivalent, where appropriate) collection rules can be established and enforced, record books on MAP collection kept, and a range of *in situ* conservation practices instituted and managed (e.g. harvesting rotation and enrichment planting). The Sapi MPPC will be used as a model case, adapted according to the local circumstances. Ongoing monitoring, training and support are vital to ensuring that the Sapi MPCC, and those established in other hot spots in future, are capable and confident enough to effectively carry out their aims and objectives. Gaining government support for the MPCCs is also an important future aim.

### 5.2.3 Seminar

There is unanimity amongst the interviewed people concerning the fruitfulness of seminars. In addition to the primary themes that they address, they allow amchis from all over Ladakh to periodically gather together, exchange knowledge horizontally, dedicate time for learning, discuss the difficulties they are facing and possible solutions to them and different ways to raise the profile of their profession. They also offer the opportunity for some amchis to exchange MAPs which they have harvested from their different areas and to discuss whether such plants are becoming more difficult to find.

The need to organise other workshops and seminars on MAPs conservation was strongly emphasized, as it is a new subject for most of the amchis. Subjects mentioned for special focus included:

- MAP identification and their threat status
- Sustainable harvesting practices
- Cultivation techniques
- Medicine fabrication

Other subjects more focused on technical aspects of Tibetan medicine were also mentioned, especially the methods of diagnosis and treatments.

### Evaluation by experts

All the experts consulted agreed on the need to organise regular seminars. They felt that they are useful for both traditional amchi (lineage) and for younger amchi who have been trained in institutions. The former can improve their knowledge of medical theory, whilst the latter can learn a great deal from the traditional amchi about practical techniques and clinical skills. Seminars provide a vital forum for these kinds of exchanges and for the overall level of knowledge and practical skill to be increased.

Mr Mohammed Abbas gives priority for the next seminar to collection practices:

*“Amchis are the main stakeholders, those who collect 80 to 90% of MAPs, the ones who consume MAPs. They should be fully trained [in sustainable harvesting practices] before touching the wildlife. It is the main field in which they have definitely to enhance knowledge. It is the main danger for plants: dangers come from incorrect practices.”*

Amchi Rigzin Wangtak suggested inviting amchis and also more non-amchis, especially village heads and MAPs conservation committee members, to seminars on MAPs conservation, as they are all important stakeholders in these issues.

## Evaluation by amchis

Most of the amchis we met during the evaluation attended the seminar in October 2005, as well as the workshops previously organised by Nomad RSI / LSTM since 1998. They mostly had good memories of the subjects covered and were able to list many of the main issues addressed in the seminar. Two examples are given below:

**Nomad:** *“What did you learn at the seminar which is useful for you as an amchi?”*

**Amchi Tsering Namgyal:** *I learnt the botanical names of some plants, their threat status and also their properties, which helps me to use new plants. Their threat status is also useful; it can help to protect endangered plants. (...) My main difficulty is to dedicate time in order to increase my knowledge. In day-to-day life I have lots of work, which makes self-study is very difficult. Seminars allow me to dedicate time to enhancing my knowledge.”*

**Amchi Nyilza Angmo:** *“Seminars are important because they give us the opportunity to refresh our knowledge and to learn new things”.*

## Conclusions and future perspectives

Seminars are seen by all respondent groups as extremely valuable and useful activities. They provide vital platforms for the sharing of existing information, the learning of new techniques and the launching of concerted actions. However, regional workshops, attended only by the amchis of one area, some experts and the project team, could be more appropriate to increase practical knowledge of amchi, to mix lectures and field visits and to allow more exchange between amchis of the same area to encourage them to collaborate and collectively manage the MAPs issues, as they relate to their medical practice. A regional workshop is seen as more efficient in terms of learning practical skills and implementing a suitable strategy on MAPs conservation.

The first regional workshop will be organized in the Zanskar area in summer 2007 and will combine theoretical aspects under the guidance of experts (amchi and non-amchi) from Leh and an international expert (i.e. Mrs Elisabeth Dodinet, ethnobotanist and member of Nomad RSI board) with field visits and training on specific methods (sustainable harvesting practices, *in situ* conservation). The experts and the project team will spend a few weeks in the area, in order to support cultivation and conservation initiatives of amchis and to do field research on MAPs to establish species distribution, abundance / scarcity, collection and cultivation activities and to compare villager's data with the reality, especially in the “hot spots” of Zanskar.

### 5.2.4 THAME newsletter

The THAME newsletter was distributed across Ladakh in autumn 2006 (mostly by bus) and every amchi we visited had received it. None of them faced difficulties in reading it and understanding the main messages being put across. Amchis noticed the gap between the previous issue and this one and they were all very happy to receive a new issue. Many amchi emphasised the complementarity between THAME and the seminar held in October 2005, which focused on MAPs conservation. The new issue of THAME, one year after the seminar, gathered together articles related to the same subjects. This can thus be seen as a good way to refresh knowledge on key issues and increase the impact of seminars.

The most common feedback was the need to include more practical articles, with effective methods, as illustrated by here by Chief Amchi:

*“The topics should be more practical, easier to put into practice. It should focus more on effective methods, which will be more interesting for rural amchis. If the THAME reproduces what is written in books, it is not so useful. We should also add topics from old amchi, as many of them*

*have great experience and knowledge in treating fractures, setting broken bones, and dealing with eye problems” (Chief Amchi).*

Regarding MAPs issues, there is a need to edit another issue of the THAME newsletter focusing on MAPs, but this time with more practical information, including:

- A list of endangered plants for each area of Ladakh
- Details of sustainable harvesting practices for these endangered plants (when, how, which plant parts etc)
- Cultivation and conservation methods which can be implemented by amchis themselves

The LSTM team emphasized the difficulty in finding amchis motivated to write articles for THAME. The team also found difficulties in renewing the scientific committee, including new members and allowing more amchis to write about their experiences and knowledge. It is not only a question of motivation, but also of self-confidence as many old amchis are shy about writing articles, as the Chief Amchi's sentence below illustrates:

*“They (the LSTM team) need people who write practical articles. What can they do? They should motivate traditional amchis, make them confident. These old amchis have to realize the value of their experiences. But they hesitate, they see articles from people from Dharamsala, they feel shy and not enough self-confident. They need to realize and try to understand that this kind of contribution will stay for a long time.”*

Thus, the newsletter can also be a useful tool to transmit the knowledge of the elder amchi, not only regarding medicinal plants, but also for the treatment of specific diseases. It can be both an appropriate mean to preserve the knowledge of the elders and to insure its transmission to the younger generation.

### **Conclusions and future perspectives**

THAME is clearly a much-valued and very powerful tool for linking amchi together and disseminating important information. A new issue is therefore planned for the end of 2007. Nomad RSI / LSTM take into account the feedback of both the Dusrapa amchis and the expert amchis and will focus on practical experience and articles that can facilitate the implementation of simple conservation activities. The team will do their best to involve new writers, including older village amchis, and to reorganize the scientific committee to make it more open and flexible.

The need to preserve the knowledge of elder amchis is a central problem for the future of Tibetan medicine, especially the expert amchi knowledge and practices relating to MAPs. LSTM/Nomad RSI has decided to conduct video interviews with expert amchi, focusing on plant identification, uses, harvesting and preparation. Practical articles on those subjects, to be included in the newsletter, will be written based on these interviews. Moreover, as the video is also an efficient medium to pass on knowledge, a video tool can be designed and used during seminars and refresher training sessions, as well as during awareness campaigns in villages.

### **5.3 Impact study in villages**

Awareness campaigns on MAPs conservation have taken place in 20 villages (see map section...) across Ladakh. Each campaign gathered the inhabitants of the village and also inhabitants from nearby areas. Campaigns gathered from between 10 people (Kyungru, in Nubra) to above 400 people (Karsha, in Zaskar), with an average of around 175, including men, women and children of the targeted areas. An impact study was conducted in November 2006 in two villages, namely Kharnak (Changthang) and Diggar (Nubra)<sup>15</sup>. The total number of people interviewed was 66, including 45 people in Kharnak and 21 in Diggar.

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<sup>15</sup> For more details on location, objectives and methods of the impact study, see section 5.1 above.  
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### 5.3.1 Peoples' memories

90% of the interviewed people attended the campaign last year and they all participated in the mapping exercise. Those who did not attend the campaign were not in the village at that time. It was interesting to collect the participants' points of view and to hear their memories of that evening, as well as the words they used to qualify the LSTM team. These responses reflect the way people understood the LSTM project and are crucial feedback to pursuing future conservation work at the village level.

#### Feedback from villagers who attended the campaign

One of the main questions that had been asked to every interviewed person was *"What do you remember from the campaign held last summer?"* Examples of common responses include:

*"I remember that LSTM came and we spent the whole evening at the community hall. Mainly they were telling that we have to watch out and be aware of outsiders coming to collect plants in our yul (village area). They also told us that we should support the amchis, so that they can stay here and help us. They said we should help the amchi also by growing some plants in the village and helping them to collect them in the mountains" (young man – Diggar).*

*"People spoke to us about the plants and told us that they were important. They asked us which plants we had in our village and where they grow. They told us we should take some plants and put them in the greenhouses, to grow them. They said they would give us seeds and help us to grow them, but then nothing!" (middle-aged woman - Diggar).*

It was frequently specified by the interviewer that the campaign had included a "video show", which often helped people to remember the event and underlines the attraction that video projections hold in areas where there are no televisions. The "video show" was also the only memory that some respondents had from the campaign, showing both its potential to help people retain information and its capacity to distract from other activities.

The methodology of the awareness campaign appears to have been effective for the majority of villagers, as both amchis and villagers were usually able to explain, in their own words, why it is important to conserve MAPs. For example:

*"It is important to do MAPs conservation because anybody can be sick and need the amchi; and all amchis need MAPs" (old man – Kharnak)*

*"The campaign was on MAPs, their importance and the need for conservation. Not only do we have to protect MAPs but also amchis must use and collect MAPs according to their need and the sustainable method. It is an amchi's duty and also everyone's responsibility" (Amchi Nyilza Angmo).*

Amchis and village heads are key people in the villages and they are thus more able to take an active stand in conservation or cultivation activities. Their feedback generally emphasised that many ideas were discussed at the meeting (cultivation, helping the amchi with collection etc) but nothing actually happened afterwards: people often lost interest and stopped talking about it altogether. They said that they would be happy to work voluntarily and give their time to help the amchi, that they are prepared to give community land for cultivation and to support the amchi in growing plants. But certain vital questions remained: Who knows how to grow these plants and where to get the planting materials from? Who would supervise the cultivation? What would be done with the plants once they reached maturity?

The monitoring and support of the project team is strongly needed to help the community to organise itself. There are strong motivations amongst the key stakeholders, but nothing will happen if the team is not supporting local initiatives, as this sentence illustrate:



*“During the evening we did listing and mapping. Just after the campaign, MAPs conservation raised interest among villagers and we discussed about it but slowly people started to forget” (old man- Kharnak).*

*“It would be good if we could do conservation, it would be kind of outsiders to help us to do this and it would be good if we could support the amchi. But we don’t have any knowledge about this – we don’t have any ideas. All the villagers said they would collect plants to help the amchi and make a greenhouse to grow the plants, but we don’t know how, so how can we follow our promises?” (middle-aged man – Diggar).*

### **Feedback from villagers who didn’t attend the campaign**

In Kharnak, the main point amchi Gyaltsang (who had not attended the campaign) heard about the presence of the LSTM team was a “medical camp with a lots of medicine” and the MAPs conservation aspect came only after. It was the same for an old lady from the same area: “an amchi team came and there was also a medical camp” and an old man said he had heard about the campaign and a team “coming with a TV” and talking about MAPs. In Diggar, people who were not present at the time of the campaign mainly hadn’t heard about it at all and were not aware of this event. This means that people didn’t discuss the issue together afterward.

Again, these results suggest that campaigns will only have a limited effect unless they are followed-up with implemented activities which involve the communities in meaningful ways. There is no doubt that awareness was raised in all the areas visited by the project team, but the impacts will be magnified many times over if follow-up activities take place, such as formation of MPCCs, training in conservation and cultivation and the establishment of rotational harvesting, restrictions on collection and so on.

### **5.3.2 Indirect impacts of the evaluation**

Conducting the evaluation itself had some unforeseen and indirect positive benefits for the project. Going back to these two target areas and discussing the project with the inhabitants enabled the further raising of awareness on MAPs conservation, but through open discussions rather than through a formal campaign. The conducting of the impact study also gave the opportunity for Nomad RSI / LSTM to discuss further with villagers in Diggar and Kharnak about how it could be possible to take a more active stand in MAPs conservation in future. In both areas, the project team and the villagers have a clearer idea of what could happen in terms of MAPs conservation in their respective areas in the future phases of the project.

## **5.4 Evaluation of the expected outputs**

Overall, the project successfully achieved the six specific objectives presented in Plantlife International Application in September 2005. A summary of the outcomes, including an assessment of weaknesses and areas for improvement, follows:

### **5.4.1 Improved capacities for working with MAPs among local groups**

The project offered distinct benefits to the staff of Ladakh Society for Traditional Medicines, who greatly improved their knowledge of MAPs conservation management and their skills in project design, implementation and monitoring. LSTM have also enhanced their capacity to manage future projects independently of Nomad RSI. The other main partners, the amchis and village leaders, benefited also from the awareness campaigns, theoretical and practical training, and thus are now better able to protect natural sites, promote resource management at the community level and cultivate medicinal plants. Overall, this outcome has been successfully achieved, thus laying the groundwork for more effective and sustainable work in future.

### **Weaknesses and areas for improvement:**

The LSTM team, in spite of their greatly enhanced capacities, emphasised their need for more training on MAPs conservation techniques, sustainable harvesting practices and botanical knowledge (identification). This shows that capacity building is an ongoing process and one, which is never really complete – more training will be given in future phases of the programme. In more general terms also, support and monitoring from Nomad RSI is still needed, especially in the field of project management (reporting, financial management, and fundraising).

Similar shortcomings also exist for the other main project partners, who are now much better able to take an active stand in this field, but also need to enhance their knowledge and capacities in order to become more dynamic and autonomous in conservation and cultivation activities. The LSTM team will need to continue providing technical support and monitoring to these groups for some years to come.

### **5.4.2 Awareness raising at the village level and partnerships formed amongst key stakeholders**

**21 awareness campaigns** were organised in 20 villages across Ladakh by the project team between July 2005 and February 2006. The campaigns raised local awareness of the importance of MAPs for Tibetan medicine and drew attention to their increasing scarcity, as well as empowering communities to better manage their natural resources. These campaigns are a significant achievement, seeing that LSTM is the only organization working at the village level in this field and it was the first time that these issues were raised. Comments from the public, experts and from the team testify to the great success of these campaigns.

**The seminar** held in October 2005 enabled the exchange of knowledge and experiences from all major stakeholders regarding MAPs conservation and emphasise the importance of this subject for amchis across Ladakh. This seminar gathered around 80 participants and strongly contributed to the establishment of project priorities, including conservation strategies management and cultivation of MAPs in Ladakh. As told by the main partners, seminars are a very fruitful time for amchis.

### **Weaknesses and areas for improvement:**

The evaluation of the awareness campaigns showed that one year later, although awareness was raised among the majority of the population, many villagers either only remembered certain aspects of them, or felt that the follow-up activities which would enable them to actually act on what they had learnt, were absent. Therefore new awareness campaigns must be designed to extend the awareness of villagers on MAPs related issues, relying more on successful techniques such as PRA and videos, getting people more involved so that they remember the messages more clearly. Future campaigns will be more targeted on hot spot areas and will return more regularly to those areas, ensuring continuity in the process of awareness raising and enabling appropriate follow-up activities (*in situ* and *ex situ*) to be implemented.

Although the project priorities were central to the seminar and open discussion of the issues was well facilitated, a proper and implementable action plan was not established. This led to weaknesses in some of the partnerships and a drift away from concerted action once the seminar was finished. Future seminars and workshops must focus on turning shared goals and spoken agreements into proper written agreements and achievable shared targets for future conservation action.

### **5.4.3 Information gathered on MAPs in Ladakh**

During each village visit, the LSTM team collected crucial data on medicinal plants from different local stakeholders, including amchis, farmers, women and children. Data were subsequently entered and managed in a computer database using excel software at LSTM office. This database compiles the most comprehensive, accurate and up-to-date information on MAPs in Ladakh, including: botanical names, Tibetan medicine names, local names, habitats, trade values, cultivation potential and

distribution, medicinal uses and photographs. The database has great potential to become a valuable and useful tool for LSTM and others, both in Ladakh and across the Himalayas, in future.

#### **Weaknesses and areas for improvement:**

The LSTM team still faces difficulties in effectively inputting, managing and disseminating the wealth of data that has been collected. Either team members must be given suitable training, or an external expert must be brought in to help the team establish a more functional and user-friendly database. Such improvement would help gain a more accurate picture of plant knowledge, use and management and enable the construction of a more functional database, which would then facilitate prioritisation of species during the next phases of Nomad RSI/LSTM conservation programme.

#### **5.4.4 Development of species prioritisation criteria**

The data collected so far has given many pointers towards priority species in different areas and has helped to develop the following set of criteria:

- relative scarcity / availability + change over time
- plant parts used
- life cycle of the plant
- habitat range
- use value in health care
- market value
- cultivation potential

For the time being, these criteria are being used in an *ad hoc* fashion, helping to highlight candidate species for protection and cultivation in the different target areas. They provide the subjects for discussion with local stakeholders and also a broad set of guidelines that need to be considered by the project team when thinking about future interventions and discussing them with community representatives.

#### **Weaknesses and areas for improvement:**

Although a set of species prioritisation criteria were established, the relative weight of the criteria, and the best way to use them to assess threat, value and action to be taken in a systematic way, has not been achieved so far. This shortcoming is due to lack of time and capacity amongst the project team, linked to limitations with the database (see section 5.4.3). MAPs species prioritisation is seen as vital for deciding in a more ordered way which species, in which areas, will be targeted by the project for protection, cultivation and management and will be a key activity in the next phases of the programme.

#### **5.4.5 Project information published and disseminated**

Overall, the publication and dissemination of information on MAPs and conservation has been very successfully achieved, leading to a much higher profile for MAPs in the region and easier access to information regarding them. Five hundred posters, with colour photographs of plants and information on each of them in Ladakhi, have been produced and distributed to amchis, schools and public buildings right across Ladakh. These posters aid in the identification of plants and raise awareness of the importance of the conservation, cultivation and management of Ladakhi MAPs, both amongst stakeholders and the larger general public. The special issue of THAME, which was produced in 2006 and diffused widely in Ladakh as well as in other parts of the Himalayas, has provided more detailed information on these issues and is specifically aimed at those who work with MAPs and who rely on them for their medical practices. This newsletter thus provides an invaluable source of information for these healers, reaching those who may not have benefited from any of the other interventions, as well as providing a link between actors both within Ladakh and in other parts of the Himalayas.

### **Weaknesses and areas for improvement:**

The posters would be much more effective in conveying conservation messages and inspiring action if they could be accompanied by follow-up work, such as the provision of more detailed information, activities with schoolchildren and with members of the general public. It is hoped that such work could form part of future phases of the project, for example by providing additional information in the form of books, by building upon them using video, or by organising activity sessions in schools. It is also hoped that some form of radio broadcast could be made in future, discussing the posters and the importance of medicinal plant awareness and conservation activity.

As mentioned in section 5.2.4, the THAME newsletter provides much useful information, but lacks something in terms of practicality. A future issue may be produced in the next project phase, including practical information on specific threats and risks, and activities that can be acted on by readers, such as rational harvesting and cultivation.

#### **5.4.6 Production of toolkit**

The toolkit provides information from the project which could be of use to other organisations working on similar MAPs / healthcare projects elsewhere. The main output is this final report and the extracts of it that will be placed on the Plantlife website. With the agreement of Plantlife International, the dissemination of this final report will make information available to a wide audience on the overall strategy and approach of the project, the methods used, the activities conducted and the lessons learned, which could all be adapted for use elsewhere. This will hopefully contribute to regional and global networking, to enhanced communication and coordination, and help to avoid duplication of effort. Nomad RSI is committed to honest reporting of the successes and shortcomings of their projects. It is only through dissemination of such reports that the lessons learned can be carried forward and the design and implementation of more successful projects dedicated to the sustainable use of plants in healthcare and the revitalization of traditional medical systems can be facilitated in the future.

### **Weaknesses and areas for improvement:**

Although the toolkit provides information that will be useful to others working on similar projects, there is awareness in the project team that really successful and effective adaptation and use of the methods elsewhere would require something more. Conditions and objectives may be similar in other places, but they are also likely to be quite different in important ways, which suggests that the sharing of materials alone may not be sufficient to ensure successful adoption of methodological elements from this project. Face-to-face contact and discussion between Nomad RSI / LSTM and organisations in other areas would certainly aid the adaptation and effective use of these materials, as well as enabling lessons learned elsewhere to improve future phases of the Ladakh programme. Furthermore, the distinctive approach of Nomad RSI / LSTM, which focuses on the local use of plants in healthcare and their important role in the cultural survival of medical systems, is an important element that requires further dialogue between organisations. It is hoped that a regional cooperation project on MAPs conservation, currently in preparation by Plantlife International, will be successful in facilitating just these kinds of exchanges and thus aid in the adoption of best practices throughout the Himalayan region.

## **5.5 Main difficulties**

In addition to the weaknesses concerning individual activities noted above, the project faced a range of other difficulties during implementation. Most of these were linked to the natural environment of Ladakh, particularly the remoteness of many villages, the extreme weather conditions and the demands of the agricultural cycle. Further difficulties arose as a result of natural disasters, from the (necessarily) gradual improvement of staff capacities and from the lack of specific technical equipment.

2006-7 was a particularly difficult period in certain areas due to natural calamities, including the loss of much of the barley harvest due to locust invasion in Zanskar and Changthang, and severe flooding in other project sites. These disasters put a great deal of pressure on the local communities and meant that their priorities were focused on subsistence rather than more distant concerns such as medicinal plants. Conservation could not be at the top of the agenda for the people of those areas, as they were facing more important difficulties in their day-to-day lives. Such natural disasters also lead to further, unforeseen economic constraints and social mutations, such as the migration of the nomadic people from Changthang to Leh, putting even greater strain on conservation and medicine focused work:

*"In the mountains, there must be lots of MP in our area. It is good to speak about conservation and cultivation, but people are migrating to Leh all the time, so what is the use to protect MAPs?" (young man- Kharnak).*

To efficiently implement the project, careful planning was required to ensure maximum use was made of the short summer season – travel to remote areas is impossible during winter as roads are closed and extreme cold prevents walking. The ideal time to visit a remote area is between July and October, which effectively means that only a third of each year is available for fieldwork and it is difficult to cover many areas. This difficulty is compounded by the fact that people are extremely busy during the harvesting season (September – October) in many of the villages. The team must thus have plenty of time in each village, in order to benefit from every possible moment of leisure time available to the villagers.

There were also constraints to the project from the side of the project team, in terms of shortfalls in relevant tools, resources and the skills to use them effectively. When the project team plans to spend a long time in a village, they are dependent on external sources like availability of experts (i.e. expert amchi from Leh) and transport. Often experts were unavailable, or only available for short periods of time, which made planning and implementing campaigns even more complex. If the team had its own vehicle, such constraints could be greatly reduced. Possession of entertaining tools and techniques which are educational in nature and suitable for local structures are also required. Some villagers are reluctant to attend such occasions when it is dark, but festivities or entertaining excuses can encourage everyone to leave their homes, even at night. Modern tools and techniques should be updated and here an LCD projector and a better generator could play very important roles.

Finally, as this project was a new departure for LSTM, it took time for the team to fully understand the scope of the project, to digest the huge amount of information on medicinal plant conservation and to make this data available and useful to the target audience. Capacity building throughout the project has greatly improved their skills, confidence and abilities in this regard. Continued capacity building measures for the team and its extension to include more members will further improve the impact of the next phases of the project.

## 6. Conclusions and future perspectives

The "development of a methodology on medicinal plant conservation to strengthen Tibetan medicine in Ladakh" project aimed to develop integrated conservation and healthcare initiatives that would ensure sustainable access to medicinal and aromatic plants (MAPs) for local healers in the long term. The project thus sought to combine familiar conservation methods with a focus on local healing, which is unusual given that many MAPs conservation projects put greater stress on economic development and rural livelihoods than on local healthcare needs. As no such projects had ever been conducted before in Ladakh, the project started with a low level of knowledge and skills amongst the local resource personnel and from a position in which the target communities were largely unfamiliar with the concepts and requirements of biodiversity conservation in general. The main objectives of the project were therefore: to build the capacities of the project team and their key partners to develop and conduct such work; to build a sound knowledge base on which to design actions; to raise awareness of MAPs issues in target areas; and to lay the groundwork for future project phases in which appropriate and effective conservation activities could be implemented by the concerned communities themselves (with continuing support from Nomad RSI / LSTM). A further objective was to

contribute to regional and global MAPs conservation efforts through the dissemination of information on the project's approach and outcomes and of a toolkit of methods that could be adapted and used elsewhere.

Overall, the project has achieved its aims and has largely met each of these objectives. Through a series of training activities and through extensive periods of time in the field, the project team have significantly improved their knowledge of MAPs conservation and have developed a set of valuable skills for gathering and managing data, for working with stakeholders and communities and for involving these groups in conceptualising how this kind of healing-focused MAPs conservation could be implemented. Data on many aspects of MAPs distribution, collection and use have been collected from every part of Ladakh and have been compiled in a database, providing an extremely valuable tool for future action. Through an awareness campaign, twenty villages today have much greater knowledge of the potential threats that their local plants, and thus their traditional medical system, are facing and may face in future. One of these villages has formed a committee to oversee MAPs harvesting and to provide the basis for a range of future conservation activities. A seminar brought together many key actors and healers from all over Ladakh and enabled them to increase their understanding of the current situation, to share knowledge, and to begin discussing possible ways to address together the difficulties they are facing. Posters and a newsletter have been produced and distributed, further highlighting the importance of knowledge and action to ensure the long-term sustainability of Ladakh's MAPs and the Tibetan medical system that depends upon them.

In spite of these many achievements, the project was an enormous challenge and there were many difficulties and areas of weakness that emerged in the process of its implementation. Perhaps the most important lesson learned through this process was that conservation of MAPs and support for valuable local medical systems is a long-term and hugely complex undertaking, which must involve different groups of stakeholders with different interests and levels of understanding and must be ongoing for many years to achieve lasting and meaningful outcomes. It is felt that this project has made a good start towards achieving the overall goal of long-term, sustainable utilisation of MAPs for healthcare. However, there is a very long way to go and a great deal to be done to ensure that Ladakh's population are empowered and enabled to effectively protect their medicinal plant resources and to sustainably support their traditional healers in a period of rapid and profound socio-economic and environmental change.

Resulting from the experiences of implementing the project and from its evaluation, the following objectives have been defined for the next phase of the programme:

- To continue building the general capacities of the project team and key stakeholders, and to focus on improving their practical skills for implementing *in situ* conservation and *ex situ* cultivation / exchange activities
- To continue awareness raising activities, using the most successful methods from the previous campaigns, but to focus them in "hot spot" areas (i.e. Sapi, Zanskar and Changthang)
- To follow-up awareness-raising with community-based conservation implementation activities in hot spot areas: committee formation; *in situ* conservation (e.g. rotational harvesting, enrichment planting, sustainable collection training and protected areas); cultivation (e.g. demonstration MAPs gardens, nurseries, gardens attached to amchi clinics, community gardens); and exchange (support for formation of local exchange networks)
- To complete a detailed database of MAPs information, using an improved and more user-friendly format that can be more simply disseminated amongst partners and others. This also includes finalising a set of prioritisation criteria and establishing a system for effective species prioritisation.
- To conduct regional workshops and training sessions, so as to enhance skills-building, knowledge exchanges and cooperation in specific zones of Ladakh
- To establish a firm action plan and build more solid partnerships between local groups and bodies (communities, NGOs and government actors)
- To improve communication and collaboration with other organisations working on similar projects in other areas of the Himalayas (India, Pakistan, Nepal, Bhutan, Tibet)