

# ***Darwin Initiative Annual Report***

## **1. Darwin Project Information**

Project Ref. Number	14-013
Project Title	Community Management of NTFPs in Kangchenjunga Conservation Area, Nepal
Country(ies)	Nepal
UK Contractor	WWF UK
Partner Organisation(s)	WWF Nepal Program
Darwin Grant Value	GBP 170,100
Start/End dates	April 2005-March 2008
Reporting period and annual report number	1 April 2005-31 March 2006 Annual report 1
Project website	
Author(s), date	Suresh K. Ghimire, Bal Krishna Nepal, Parag Bijukchhe, Yeshi Lama, Jennifer Headley & Ros Coles 23 May 2006

## **2. Project Background**

- Briefly describe the location and circumstances of the project and the problem that the project aims to address.

Situated in the remote, north-east corner of Nepal, bordering Sikkim (India) and Tibet Autonomous Region (China), Kangchenjunga Conservation Area (KCA) is characterized by great variations in elevation, climate, landscape, habitat, vegetation, and cultural diversity. Phyto-geographically, it forms the meeting ground of the Indo-Malaysian (S.E. Asian) and Sino-Japanese (E. Asian) floras. KCA has been declared as a "Gift to the Earth" in 1997. In 1998, WWF initiated the Kangchenjunga Conservation Area Project (KCAP) to conserve its rich biodiversity and promote community-based management of natural resources. About 1500 species of flowering plants have been documented thus far in KCA (Shrestha and Ghimire 1996), including over 150 species of non-timber forest products (Shrestha and Ghimire 1996; Sherpa 2001, Oli and Nepal 2003). NTFPs play an important role in supporting the livelihood of about 5000 people living in the four village development committees (VDCs) of Lelep, Tapethok, Yamphudin, and Walangchung Gola. Despite their importance as a source of valuable income, food, medicine, building materials and fuel, NTFPs are threatened by over-harvesting for trade. This is due to: a) inadequate local knowledge on the ecology and vulnerability to over-harvesting and sustainable yields of highly-traded NTFPs; b) lack of involvement of local communities in natural resource management; and c) insufficient opportunities for local value addition. Recent studies conducted by WWF in KCA clearly demonstrate the need to strengthen community management of NTFPs and links between conservation and livelihoods. This project is based on the premise that conservation and sustainable use of NTFPs and enhancement of livelihoods in KCA can be

achieved if: a) communities take on increased responsibility for management of forest resources; b) ecological monitoring and sustainable harvesting practices are developed and followed; c) communities have greater access to and understanding of the market system; d) sustainable enterprises bring local benefits especially to poorer households; and d) local and scientific knowledge underpins appropriate management systems.

### **3. Project Purpose and Outputs**

- State the purpose and outputs of the project. Please include your project logical framework as an appendix and report achievements and progress against it (or, if applicable, against the latest version of the logframe).
- Have the outputs or proposed operational plan been modified over the last year, for what reason, and have these changes been approved by the Darwin Secretariat? (Please note that any intended modifications should be discussed with the Secretariat directly rather than making suggestions in this report).

The overall purpose of the project is to develop community capacity to manage NTFPs for sustainable production and plant conservation in KCA (Annex 1: Logframe). The outputs include the following:

- 26 community forest user groups (CFUGs) in KCA practice community-based management of NTFP
- Local livelihoods in KCA enhanced through sustainable utilisation of NTFPs
- Community-based monitoring system of key NTFP species in place

No outputs have been modified over the last year.

### **4. Progress**

- Please provide a brief history of the project to the beginning of this reporting period. (1 para)

WWF is currently supporting the hand-over of the Kangchenjunga Conservation Area to the Kangchenjunga Conservation Area Management Council (KCAMC) for community management of the protected area, setting the stage for strengthening the role of local communities in protected area management. In this regard, the KCAMC and its affiliated institutions have prepared a Management Plan which is currently awaiting endorsement by the government. Since NTFPs are crucial for improving livelihoods in KCA, this project has been designed to develop community capacity to manage NTFPs for conservation and sustainable livelihoods. During the first year of implementation, WWF Nepal Program drew up a work plan for the period July 2005 to June 2006 (based upon WWF's annual planning cycle). However, the project could not be initiated until October 2005. The Maoist insurgency that has been ongoing in Nepal since 1996 had escalated in recent years in the rural districts, affecting the smooth implementation of conservation and development initiatives. In the case of KCA, the initiation of new activities in the field was affected and project staff had to work towards developing a suitable working environment and a conflict-sensitive implementation modality. With the call of a unilateral ceasefire by the Maoists in September 2005, the project was launched in October 2005.

- Summarise progress over the last year against the agreed baseline timetable for the period and the logical framework (complete Annex 1). Explain differences including any slippage or additional outputs and activities.

The following section contains a summary of progress from project initiation in October 2005 until March 2006.

i) Project inception and planning:

An inception and planning workshop was held in KCA on 13 December 2005 at which key species were prioritized for more in-depth research, monitoring and management prescriptions by the 42 participants representing various stakeholders. The objectives and expected outputs of the project were highlighted and feedback was received on further planning for implementation during the insecure field operating environment.

ii) Participation of KCA community institutions in NTFP trade fair:

Representatives of KCA community institutions participated in a national NTFP trade fair in Nepalgunj, a major trade centre for NTFPs in Nepal, in November 2005, at which policy makers, traders, producers and collectors gathered together in a common platform to discuss the key challenges to sustainable and equitable commercialization of NTFPs. The participants from KCA came away from this trade fair with recommendations for in-depth research for determining sustainable harvesting levels for the priority species, developing marketing linkages and promoting community-based NTFP nurseries and enterprises.

iii) Presentation on the commercially important NTFPs of KCA at regional conference:

A presentation on important NTFPs of KCA was made at the Society of Conservation Biology~Asia Section Meeting, Kathmandu, in November 2005. The presentation was made by Bhesh Raj Oli, who is working on WWF's NTFP business development services in the Terai lowlands, based on previous research conducted in KCA by WWF Nepal Program, which provides a basis for developing community-based management of NTFPs.

iv) Participatory research and training on ecological monitoring of NTFPs:

Two young researchers, Bal Krishna Nepal and Dr Suresh K. Ghimire have initiated field work and established permanent plots in two community forest areas for long term monitoring of key NTFPs in KCA. They have engaged and trained community forest user group members in NTFP inventory, community and ecological monitoring of *Edgeworthia* (argeli) and *Daphne* (lokta). Seven local youth have been trained intensively on resource mapping, designing permanent and temporary sampling plots, collection of data from the plot, use of GPS, altimeter, compass and clinometer and sustainable harvesting methods (Table 1). Inventories of NTFPs have been completed inventories by the local youth in four community forests, namely Tiptala, Dorangyabo, Lungthung and Dobate (Also see Annex 2).

**Table 1: Local youth involved in NTFP inventory**

No.	Name	Address
1	<i>Chheten Sherpa</i>	<i>Lelep</i>
2	<i>Mingma Sherpa</i>	<i>Lelep</i>
3	<i>Krishna Rai</i>	<i>Hellok</i>
4	<i>Kumar Hellok</i>	<i>Hellok</i>
5	<i>Gyabu Sherpa</i>	<i>Sekathum</i>
6	<i>Chheten Sherpa</i>	<i>Wolangchung Gola</i>
7	<i>Tashi Sherpa</i>	<i>Wolangchung Gola</i>



**Loyal youth using GPS**

v) Hand over of community forest:

Altogether seven community forests in KCA, including one to be managed entirely by a women's group, were handed over to user groups through the user committees. During the process of handover, 45 members were provided forest management training.

vi) Feasibility study for NTFP enterprises:

In March 2006, a feasibility study for NTFP enterprises was carried out by an entrepreneurial development organization, WEAN. Focus group discussions were organized with local communities with the objective of gaining an overview of the resources and skills available and the local market situation for feasibility of NTFP enterprises. Target groups were identified and community planning was carried out. In addition a sub-sector analysis of NTFPs was initiated by Lotus Intellect, an organization providing business development services for NTFPs, to identify the key constraints to and provide recommendations for sustainable commercialization of NTFPs in KCA.

vii) Sustainable livelihoods training:

WWF Nepal Program's livelihoods specialist Tara Gnyawali provided training on sustainable livelihoods to 35 members of community institutions of KCA from 26-30 January 2006. The training dealt with the concept of sustainable livelihoods and the linkages between livelihoods and conservation.

viii) Cooperative establishment and operation training:

Training on cooperative establishment and operation was held on 31 January and 1 February 2006 for 26 participants, including representatives of various mother groups in KCA. A committee was formed for managing the Ghanlung multipurpose shop which will gradually be changed into a cooperative. The cooperative will help eliminate exploitation by middlemen and help plough back profits to the communities in KCA.

ix) NTFP enterprise development:

The Kangchenjung Conservation Area Management Council (KCAMC) has started the process of managing a revolving fund for establishing NTFP enterprises in KCA. Enterprises will be prioritized based on the sustainability of the sources of the NTFPs, commercial potential and benefits generated to the poor, marginalized and women members.

x) Market information system and linkage support:

The Chamber of Commerce (Udyog Banijya Sangh) – Taplejung Chapter has provided technical support for improving access to market information for NTFP collectors and traders. In this regard, Udyog Banijya Sangh – Taplejung has set up price information boards in Tapethok and Yamphudin.

Udyog Banijya Sangh – Taplejung Chapter also participated in an agriculture and industrial products fair held in Biratnagar in March 2006 where products from KCA were displayed and information about the availability of these products was distributed. The products included seabuckthorn juice (*Hippophae tibetana*), chiraita (*Swertia chirayita*), kutki (*Neopicrorhiza scrophulariiflora*), bikhma (*Aconitum spp.*) dhupi (*Juniperus spp.*).

xi) National inception meeting:

The national inception meeting was held on 15 March 2006 in Kathmandu with key experts, local and national NGOs working in conservation and sustainable use of NTFPs, government departments, particularly the Department of National Parks and Wildlife Conservation, Department of Plant Resources and Department of Forest, representatives of the Kangchenjunga Conservation Area institutions and project staff. The workshop highlighted the key objectives and expected outputs of the project, shared preliminary field activities, and discussed ways to effectively implement the project.

xii) Planning and monitoring:

Project staff are conducting periodic field visits for review and planning for the next year. In June 2006, a review and planning meeting will be held in KCA at which the work plan of the second year will be finalized.

- Provide an account of the project's achievements during the last year. This should include concise discussion on methodologies and approaches by the project (e.g. research, training, planning, assessment, monitoring) and their consequences and impacts as well as results. Please **summarise** content on methodologies and approaches, and, if necessary, provide more detailed information in appendices (this may include cross-references to attached publications).

One of the major achievements of the project, despite the constraints posed by the unfavourable field situation and escalated violence of the Maoist insurgency, was the initiation of the participatory research on key NTFP species in KCA and the NTFP inventories conducted by young researchers with the participation of local youth and community forest user group members. (Detailed methodology and preliminary results are presented in Annex 2).

- Discuss any significant difficulties encountered during the year and steps taken to overcome them.

The most difficult challenge was to initiate implementation of the project in KCA, where the impact of the conflict is most severe and field activities of WWF had been severely curtailed by the Maoists. However after much effort by the project staff, local organizations and human rights groups and journalists, a conducive working environment was created and the project activities were launched.

- Has the design of the project been enhanced over the last year, e.g. refining methods, indicators for measuring achievements, exit strategy?
- Present a timetable (workplan) for the next reporting period.

<b>Date</b>	<b>Activities</b>
<i>Jun 06</i>	<i>Annual review and planning; finalize annual workplan</i>
<i>Jul 06</i>	<i>Community indicators for monitoring and training; NTFP inventory in Upper KCA; designing community based management system (high altitude species)</i>
	<i>Value addition training; Establish NTFP database; Community exchanges to successful NTFP projects</i>
<i>Aug 06</i>	<i>NTFP harvesting, monitoring and management training</i>
<i>Dec 06</i>	<i>Market and price information systems in place</i>
<i>Jan 07</i>	<i>Market linkages support</i>
<i>Mar 07</i>	<i>Pilot NTFP established; NTFP action plans</i>
	<i>Monitoring and sustainable harvesting guidelines</i>
	<i>Documentation and dissemination of lessons</i>
	<i>Annual review and planning workshop; annual workplan</i>

##### **5. Actions taken in response to previous reviews (if applicable)**

- Have you responded to issues raised in the review of your last year's annual report? Have you discussed the review with your collaborators? Briefly describe what actions have been taken as a result of recommendations from last year's review.

## 6. Partnerships

- Describe collaboration between UK and host country partner(s) over the last year. Are there difficulties or unforeseen problems or advantages of these relationships?

In the past year, WWF UK and WWF Nepal Program worked together to implement the project. After the WWF UK team leader went on extended leave, the Coordinator for the Himalayas and South Asia has been based in the Kathmandu office. This has enabled close communication and interaction on the project.

- Has the project been able to collaborate with similar projects (Darwin or other) in the host country or other regions, or establish new links with / between local or international organisations involved in biodiversity conservation?

The national inception meeting has allowed for sharing of the project objectives on a wider scale and has provided an opportunity for collaboration with key people. WWF Nepal Program is working on developing a larger NTFP program in Nepal based on the concept of this project.

## 7. Impact and Sustainability

- Discuss the profile of the project within the country and what efforts have been made during the year to promote the work. What evidence is there for increasing interest and capacity for biodiversity resulting from the project? Is there a satisfactory exit strategy for the project in place?

Although the project has experienced considerable delay in initiating the activities in the field, the capacity building initiated so far show that local communities are interested in strengthening management of NTFPs and improving marketing of their products on a sustainable and equitable basis. So far researchers (botanists) have trained 7 local youth in conducting NTFP inventories in KCA. These local youth have completed inventories in their community forests.

A formal exit strategy has not been developed yet. But sustainability of the project has been inbuilt into the design of the project in the involvement of the Kangchenjunga Conservation Area Management Council (KCAMC) and its affiliated institutions. WWF is working closely with the KCAMC and its affiliated institutions such as the community forest user groups who are currently developing NTFP action plans. Once the community forests are handed over, the community forest user groups will be continuing with the management of NTFPs based on the community-based management system that has developed.

On the sustainable commercialization aspect, work is underway to develop business development services providers at the local level. The District Chamber of Commerce-Taplejung Chapter and the District Cottage and Small Industries Development Board are involved in providing services and providing marketing information and developing market linkages for NTFP products of KCA. Similarly, local capacity for managing NTFP enterprises on a sustainable and equitable basis is being developed through training in cooperatives formation and operation and enterprise development.

## 8. Outputs, Outcomes and Dissemination

- Explain differences in actual outputs against those agreed in the initial 'Project Implementation Timetable' and the 'Project Outputs Schedule', i.e. what outputs were not or only partly achieved? Were additional outputs achieved?

Due to the delayed start of the project in October 2005, some of the key activities for the first year have been initiated, but not completed. Some of these activities however are to be completed over two years. Among them, the NTFP inventory has been initiated and work has been completed in 7 community forests. However, due to the large project area that is to be covered and the delayed start of the project, this work will be completed in the second year. Similarly, the participatory research and

the establishment of the ecological plots for monitoring key species have been initiated but could not be completed in the first year. In regard to enterprise development, the feasibility study has been completed but a detailed sub-sector analysis of prioritized species will be completed in the second year. Cooperative and enterprise training will also be continued in the second year to cover a larger number of participants and sites.

- Provide details of dissemination activities in the host country during the year, including information on target audiences. Will dissemination activities be continued by the host country when the project finishes, and how will this be funded and implemented?

Dissemination activities have taken place in the form of workshops at the field and national level. For the sharing of project experience and lessons, project technical reports and other materials will be produced and disseminated in the second year. The project newsletter has been used as a means to disseminate information about the project. This will be continued after project completion.

- Please expand and complete Table 1. **Quantify** project outputs over the last year using the coding and format from the Darwin Initiative Standard Output Measures (see website for details) and give a brief description. Please list and report on appropriate Code Nos. only. The level of detail required is specified in the Guidance notes on Output Definitions, which accompanies the List of Standard Output Measures. Only the summarised totals after the end of your project will be recorded on the Darwin project database from your final report (the totals below will help you to keep track on a yearly basis).

**Table 1. Project Outputs (According to Standard Output Measures)**

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	TOTAL
6	Training of over one year	0				
6A	Training of under one year: 1 cooperative establishment and operation training (2 days) for 26 persons ; 1 plot monitoring training; 1 NTFP inventory training (7 days) for 7 persons; 1 subsector training; 1 community forest management training (4 days) to 45 persons; 1 sustainable livelihoods training (5 days) for 35 persons	6	events			
7	Training materials produced	0				
8	WWF UK in host country					
9	Number of action plans					
10	No of field guides/manuals	0				
14A	1 inception workshop held in the field in Taplejung with 42 participants  1 inception meeting held in Kathmandu with 40 participants	2				

15A	Number of national press releases/local press	1 in local press
15B	releases in host country(ies)	press
16A	Newsletter; estimated circulation	1 (4 articles on NTFPs)
16B		
17A	Dissemination network established: NTFP price information through the District Chamber of Commerce	1
19A	National radio interviews/features	0
20	Physical outputs: 1 community based NTFP enterprise	Ongoing
21	Organizations:7 community forest user groups with operational plans	7
22	Permanent plots	2
23	Other sources of funds: WWF UK/Nepal; community contribution	

- In Table 2, provide full details of all publications and material produced over the last year that can be publicly accessed, e.g. title, name of publisher, contact details, cost. Details will be recorded on the Darwin Monitoring Website Publications Database. Mark (\*) all publications and other material that you have included with this report.

**Table 2: Publications**

Type *	Detail	Publishers	Available from	Cost £
(e.g. journals, manual, CDs)	(title, author, year)	(name, city)	(e.g. contact address, website)	



## 9. Project Expenditure

- Please expand and complete Table 3.
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- Highlight any recently agreed changes to the budget and explain any variation in expenditure where this is +/- 10% of the budget.

## 10. Monitoring, Evaluation and Lessons

- Discuss methods employed to monitor and evaluate the project this year. How can you demonstrate that the outputs and outcomes of the project actually contribute to the project purpose? i.e. what are the indicators of achievements (both qualitative and quantitative) and how are you measuring these?

WWF staff based in Kathmandu made several field visits to KCA in the past year during which the activities and achievement indicators outlined in the annual work plan were monitored. In addition, a preliminary sharing on the project was done at the national inception meeting held in March 2006 in Kathmandu.

- What lessons have you learned from this year's work, and can you build this learning into future plans?

The key lesson is that local level capacity building is key to sustaining the project outcomes and impact. This is being addressed by the project through the training of the local youth and community forest user group members. The training component will be continued in the next year.

*OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum)*

### ■ I agree for ECTF and the Darwin Secretariat to publish the content of this section

In this section you have the chance to let us know about outstanding achievements of your project over the year that you consider worth highlighting to ECTF and the Darwin Secretariat. This could relate to achievements already mentioned in this report, on which you would like to expand further, or achievements that were in

addition to the ones planned and deserve particular attention e.g. in terms of best practice. The idea is to use this section for various promotion and dissemination purposes, including e.g. publication in the Defra Annual Report, Darwin promotion material, or on the Darwin website. As we will not be able to ask projects on an individual basis for their consent to publish the content of this section, please note the above agreement clause.

Despite the challenging circumstances under which the project is being implemented, the project has been able to initiate important work in the KCA on developing community management of NTFPs. Although the initiation of the project was delayed due to the constraints posed by the armed Maoist insurgency, such as the inability of researchers to visit the field, two young researchers Mr Bal Krishna Nepal and Dr Suresh Ghimire visited the community forest areas to conduct NTFP inventories, trained local youth in inventorying and monitoring and set up permanent plots for ecological monitoring of key species. Similarly, project officer Mr Parag Bijukche worked incessantly with local communities and organizations, journalists and human rights groups to create a conducive working environment.

Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2005/2006

Project summary	Measurable Indicators	Progress and Achievements April 2005- Mar 2006	Actions required/planned for next period
<p><b>Goal:</b> To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve</p> <ul style="list-style-type: none"> <li>• The conservation of biological diversity,</li> <li>• The sustainable use of its components, and</li> <li>• The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</li> </ul>			
<p><b>Purpose</b> <i>(insert original project purpose statement)</i></p> <p>To develop community capacity to manage NTFPs for sustainable production and plant conservation in KCA</p>	<p><i>(insert original purpose level indicators)</i></p> <p>By 2007, 26 community forest user groups (CFUGs) have action plans for sustainable management and use of NTFPs</p> <p>By 2008, a community-based monitoring system and sustainable harvesting guidelines for key NTFP species established and tested</p> <p>By 2008, 26 community forest user groups in KCA are sustainably accessing NTFPs for livelihood</p>	<p><i>(report impacts and achievements resulting from the project against purpose indicators – if any)</i></p>	<p><i>(report any lessons learned resulting from the project &amp; highlight key actions planning for next period)</i></p>
<p><b>Outputs</b></p> <p><i>(insert original outputs – one per line)</i></p> <p>26 community forest user groups (CFUGs) in KCA practice community-based management of NTFP</p>	<p><i>(insert original output level indicators)</i></p> <p>-By 2007, 26 CFUGs develop NTFP action plans while 16 CFUGs implement their action plans</p> <p>By 2006, capacity of KCA institutions enhanced for sustainable NTFP</p>	<p><i>(report completed activities and outcomes that contribute toward outputs and indicators)</i></p> <p>Project initiation workshop conducted at the field and national level</p> <p>NTFP inventories have been initiated in the community forests of KCA with the</p>	<p><i>(report any lessons learned resulting from the project &amp; highlight key actions planning for next period)</i></p> <p>Year 2: Community exchanges to successful NTFP projects in July 2006</p> <p>26 CFUGs have NTFP action plans in March 2007</p>

	<p><i>management</i></p>	<p><i>participation of local youth</i></p> <p><i>7 Community forests in KCA have been handed over to the community forest user groups</i></p> <p><i>Sensitisation training for collectors, traders and other stakeholders</i></p>	<p><i>NTFP harvesting, monitoring and management training in August 2006</i></p>
<p><i>Local livelihoods in KCA enhanced through sustainable utilisation of NTFPs</i></p>	<p><i>By 2008, 26 CFUGs practice sustainable harvesting for wild collection of NTFPs for subsistence and trade</i></p> <p><i>By 2008, NTFP enterprise established and viable (pilot site)</i></p> <p><i>By 2007, access increased for poor /disadvantaged groups to NTFP-based livelihood opportunities</i></p>	<p><i>Feasibility study for NTFP enterprises conducted; including a subsector analysis (Interventions will be implemented in the second year)including commercial potential, resource inventory, sustainable yield survey, market linkages and information (year 1)</i></p> <p><i>A revolving fund has been mobilized for establishing NTFP enterprises; this is being managed by the KCAMC</i></p> <p><i>Target groups for project interventions have been identified on a preliminary basis. Further work will be conducted in the second year.</i></p> <p><i>Work has been initiated for formation of cooperatives to manage the NTFP enterprises and improve marketing</i></p> <p><i>Market information and marketing linkages information is being provided by the Taplejung Chamber of Commerce; this will</i></p>	<p><i>Year 2: The recommendations from the subsector analysis will be implemented in the second year.</i></p> <p><i>Identification of target groups, community planning, site identification and institutional arrangements (e.g. development of cooperatives), trainings, market/price information systems will be continued in the second year.</i></p> <p><i>Value addition training in July 2006</i></p> <p><i>Market and price information systems in place in December 2006</i></p> <p><i>Market linkages support in place by January 2007</i></p> <p><i>Pilot NTFP enterprise/s will be established in March 2007</i></p>

		<i>be refined over the next year. -</i>	
<i>Community-based monitoring system of key NTFP species in place</i>	<p><i>-By 2007, NTFP database developed</i></p> <p><i>-By 2007, ethno-botanical knowledge documented</i></p> <p><i>-By 2007, monitoring system and sustainable harvesting guidelines of key NTFP species established</i></p>	<p><i>Permanent ecological plots have been established in two sites for monitoring key traded species through participatory planning and involvement of local youth/members of community forests user groups.</i></p> <p><i>Preliminary consultations have been held with community members for developing community Indicators for monitoring NTFPs</i></p> <p><i>Participatory research on the status of high value NTFPs and ethnobotanical knowledge, establishing permanent plots for ecological monitoring, community consultations for developing indicators for monitoring (Yr 1 and 2); publication and distribution to other mountain areas (yr 3)</i></p>	<p><i>Year 2: Permanent ecological plots in two more community forest and high altitude pastures</i></p> <p><i>Development of community indicators for monitoring</i></p> <p><i>Establishment of NTFP database in Dec 2006</i></p> <p><i>Monitoring system and sustainable harvesting guidelines in January 2007</i></p> <p><i>Documentation and dissemination of lessons in February 2007</i></p> <p><i>Annual review and planning workshop; annual workplan in March 2007</i></p>

*Note: Please do NOT expand rows to include activities since their completion and outcomes should be reported under the column on progress and achievements at output and purpose levels.*

*Annex 2: Developing a Community-based Monitoring System and Sustainable Harvesting Guidelines for NTFPs in Kangchenjunga Conservation Area: A Preliminary report by Suresh Ghimire and Bal Krishna Nepa*

Two weeks desk study was undertaken which included literature collection and review on potential NTFP species. Three species (*Daphne spp.*, *Edgeworthiana gardneri*, and *Swertia chirayita*), which were selected for sustainable management in KCA at lower altitude, were considered in this first phase of the study. Central level interaction meetings were held in Kathmandu with the staff of KCA and WWF to discuss about the issue of NTFP management in KCA. Field methods were developed for the inventory of NTFPs, and for their ecological monitoring in research plots. Checklist, questionnaire, inventory form, ecological monitoring form and community monitoring form were prepared.

#### District Level Meetings and Prioritization of NTFP Species

Several informal and formal community meetings were held in Taplejung with participants from the KCA to discuss about the potential NTFP species for local livelihood and conservation. Out of the identified 24 potentially important NTFPs in KCA, 13 species were prioritized on the basis of their economic potential, socio-cultural values and local health care importance (Table 1). Five species, viz. *Saussurea tridactyla* (maikopila), *Daphne bholua* (lokta), *Edgeworthia gardneri* (argeli), *Swertia chirayita* (chiraito) and *Neopicrorhiza scrophulariiflora* (kutki) are largely harvested in high amounts for trade in KCA (Fig. 1). The participants further agreed to carry out research and monitoring on the impact of use of three NTFPs – *Swertia chirayita* (chiraito), *Daphne bholua* (lokta, seto baruwa) and *Edgeworthia gardneri* (argeli) in lower KCA. Species previously prioritized by WWF were also taken into consideration. The criteria for selecting these latter species from lower KCA were based on their high economic potential, their biological characteristics (regeneration potentiality, growth pattern and life cycle), socio-economic practices (parts use, methods of harvest) and possible impact from haphazard collection, forest fire, and grazing. The approximate amount of the present stock of three NTFP species has been assessed in four VDCs of KCA. About half of the argeli and lokta have been harvested over the past 10 years mainly by the employees of the lokta processing factory (Fig. 2). According to the local people, the lokta processing factory has hired people from a neighboring district (Bhojpur) despite the availability of manpower in KCA. Comparative analysis of present stock of lokta revealed that Wolangchung Gola and Yamphudin VDCs have satisfactory amounts. The actual amount of these resources would come after the detail inventory of each site. Likewise, the rough estimation of chiraito in both cultivated and natural land revealed that Tapethok VDC has the highest stock at present, followed by Yamphudin (Fig. 3). The lowest value of available stock of chiraito is in W. Gola VDC due to the altitudinal range (most of the area lies above 2500m altitude).

*Table 1. Some highly important NTFPs in KCA*

Species	Local Name	Distribution	Mean score			Total score
			Economic	Health care	Socio-cultural	
1 <i>Saussurea tridactyla</i>	Maikopila	4500-5800	<b>3.0</b>	3.0	4.0	10.0
2 <i>Hippophae tibetana</i>	Bhuichuk	3800-4500	2.8	3.3	3.0	9.0
3 <i>Juniperus spp.</i>	Dhupi	3500-4500	2.5	2.0	4.0	8.5
4 <i>Rhododendron anthopogon</i>	Sunpati	3400-4900	2.5	2.0	4.0	8.5
5 <i>Daphne bholua</i>	Lokta	2000-3100	<b>4.0</b>	1.3	3.0	8.3
6 <i>Dactylorhiza hatagirea</i>	Panchaunle	3500-4200	<b>4.0</b>	4.0	0.0	8.0

7	<i>Rheum australe</i>	Khokim	3200-4200	1.0	3.0	4.0	8.0
8	<i>Edgeworthia gardneri</i>	Argeli	2400-3500	4.0	0.0	3.0	7.0
9	<i>Swertia chirayita</i>	Chiraito	1500-2500	4.0	3.0	0.0	7.0
10	<i>Neopicrorhiza scrophulariiflora</i>	Kutki	4000-4800	4.0	2.5	0.0	6.5
11	<i>Aconitum bisma</i>	Bikhma	3500-4800	2.0	4.0	0.0	6.0
12	<i>Arundinaria maling</i>	Malingo	2500-3000	2.0	0.0	4.0	6.0
13	<i>Nardostachys grandiflora</i>	Jatamansi	3200-5000	2.0	0.0	4.0	6.0

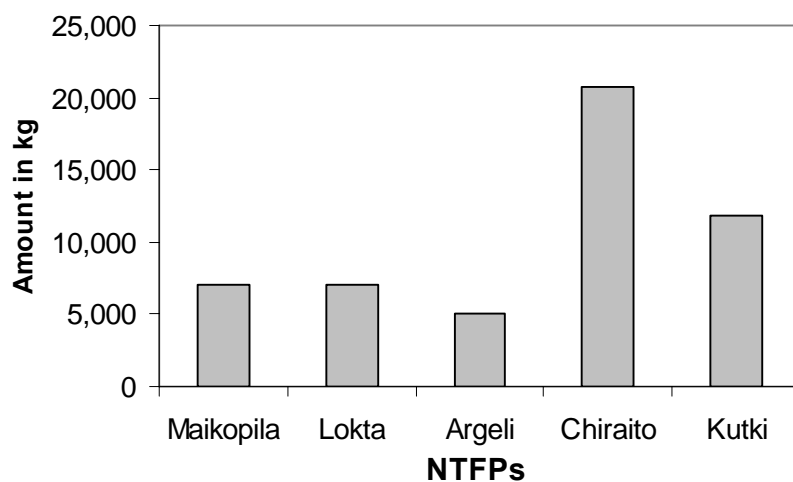


Fig. 1. Trade volume of the six major species involved in trade from KCA (source Oli and Nepal 2003).

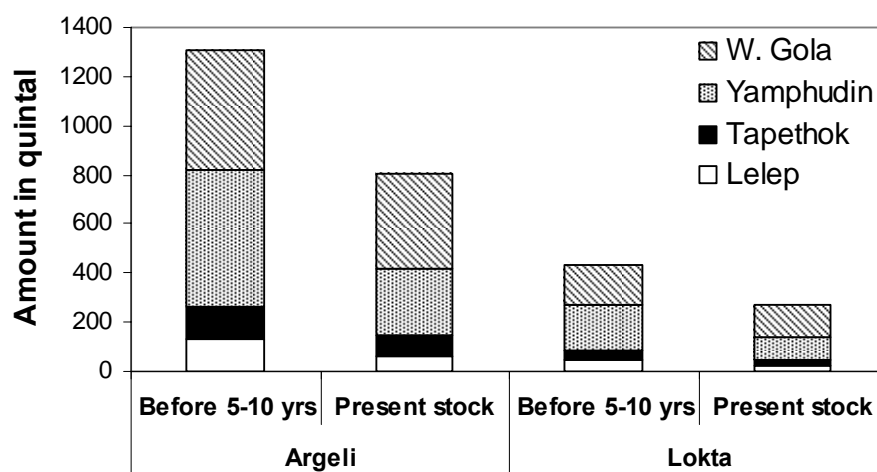


Fig. 2. Volume of *Edgeworthia* (*argeli*) and *Daphne* (*lokta*) available in KCA (only harvestable size)

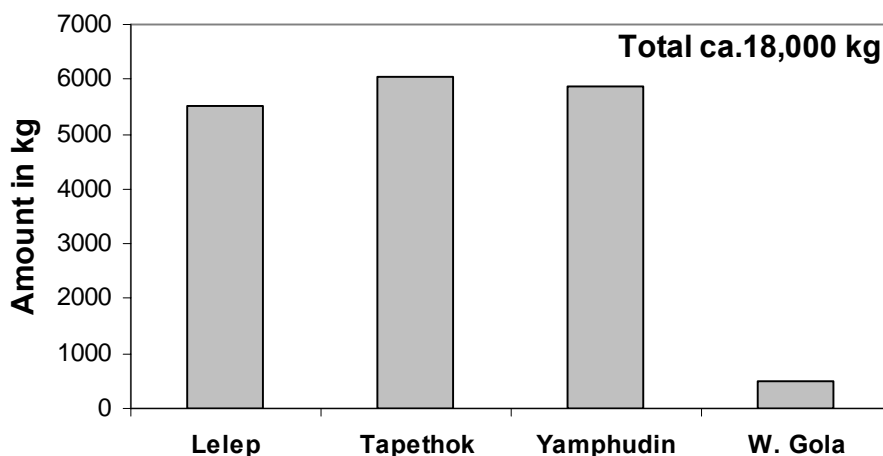


Fig. 3. Volume of *Swertia chirayita* (*chiraito*) available in KCA

#### Training to local assistants and CF members

Field trainings were given to community members, members of CFUGs and local field assistants on NTFP inventory, and community and ecological monitoring of *Edgeworthia* (*argeli*) and *Daphne* (*lokta*) in selected CF sites in Lelep. Three young people were hired as field assistant - Chheten Sherpa (Lelep VDC), Krishna Rai (Tapethok VDC) and Migma Sherpa (Lelep VDC). The field assistants and members of CFUGs were participated during the inventory of two community forests. Trainings were provided on resource mapping, designing permanent and temporary sampling plots, collection of data from the plot, and use of GPS, altimeter, compass and clinometer.

#### Distribution and status of high value NTFPs

Participatory meetings and group discussions were held with local communities in Lelep for identifying NTFP species available in the CFs, their use, and status, and verifying proposed high value species for monitoring and ecological analysis. Distribution and status of NTFP species in CFs were assessed by participatory resource mapping exercise and interviewing the local people about their locality, habitat type and population size.

#### Community forest blocking and resource mapping

Two CFs – Lawagin Devi and Dobate in Lelep VDC – were visited for the inventory of *Daphne* (*lokta*). Before actual sampling, detail information was obtained through participatory discussion with the users and members of CFUG about the distribution and availability of *lokta* in the respective CF. Participatory mapping was done locating target NTFP in the CF and we divided the CF into different management blocks based on the availability of the target species.

Sampling was then done in each block by placing series of random plots of 10 m x 10 m size along pre-determined transects. In each plot all NTFP species were enumerated. During the field study two species of *lokta* were identified, they were *Daphne bholua* (*seto lokta* or *seto baruwa*) and *Daphne papyracea* (*kalo lokta*). Local people prefer the former species for harvesting because of its high quality bark for making Nepali paper. In both of these cases, following data were collected in each plot: (i) number of seedlings and juveniles (plants < 2 years old), (ii) number of adults (> 2 years old), (iii) size (stem diameter) and height of all adult individuals, (iv) number of individuals in flowering/fruiting, (v) number of flowers/fruits per plant, and (vi) production of bark per adult individuals of harvestable size (> 6 years old). Based on these information population structure and harvestable stock of target species will be determined which



will help in identifying the impact of resource use. The information will be very useful for the preparation of NTFP action plan. Based on which the CFUGs can use the resources in a rotational basis or provide collection permit.

In lokta, whose barks are harvested, the major threats observed were: exploitation of whole plant, removal of bark even from root (Fig. 4), low regeneration (by seed), and low vegetative propagation. Preliminary analysis of inventory data from two CFs showed that in both the species of lokta harvesting mostly involved large-sized individuals (i.e. of older age). There was a strong positive correlation between stem diameter and plant age (Fig 5). The population structure showed a hump-shaped pattern where the proportions of seedlings and large-sized adults were comparatively low, and the proportions of medium-sized individuals were high. This clearly indicates lower regeneration of lokta and very high human impact.

*Fig 4. Lokta in flowering (a, b); bark harvesting of lokta (c); dead plant of lokta due to heavy bark collection, even from the root (d).*



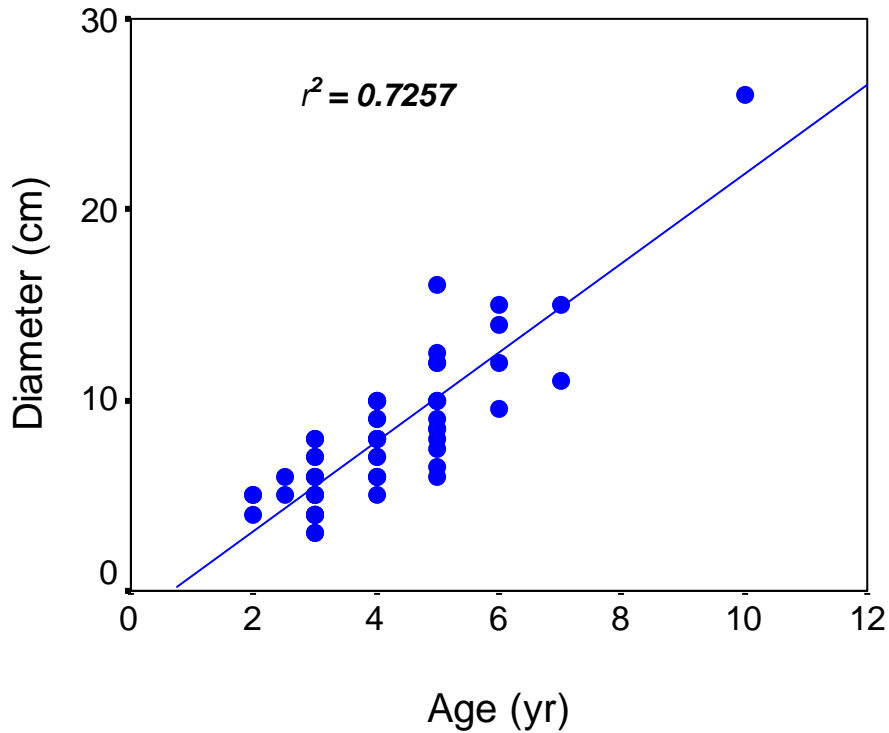


Fig. 5. Age-stem size relationship of *Daphne bholua* in Lelep, KCA

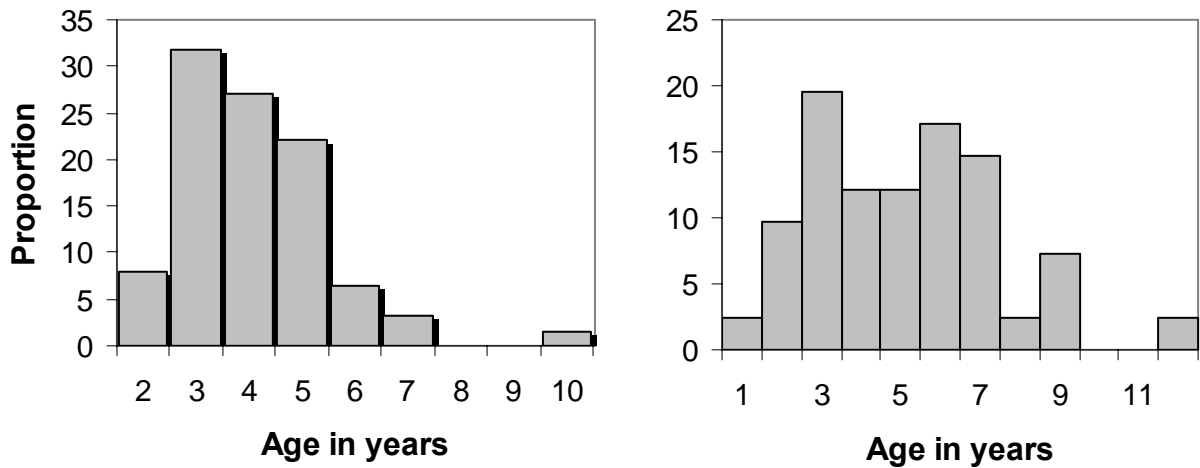


Fig. 5. Size class distribution of (a) *Daphne bholua* and (b) *Daphne papyracea* in Lelep, KCA

#### Establishment of Permanent Monitoring Plots

Permanent research plots were established in Lawagin Devi and Dobate CFs in Lelep VDC for the long term monitoring and impact of harvesting of lokta. Altogether, four permanent plots (10 m x 10 m size) were established for *Daphne bholua* and four for *Daphne papyracea*. Each of these plots was demarcated and the exact location was noted with the help of GPS. Following ecological data were collected in permanent plots with different levels of harvesting impact: (i) population structure (number of individual in different size/age classes), (ii) rate of asexual propagation (coppicing), (iii) rate of seedling recruitment (sexual reproduction): seed germination, fecundity. In each plot individuals were tagged and survivorship and growth of tagged individuals will be

monitored in the next season. Three successive monitoring of population data will enable the estimation of the overall population growth rates, harvestable size, amount and frequency of harvesting.

#### Development of Community Based Indicators for Monitoring NTFPS

The aim of this part of the work is to develop indicators for monitoring impact of use of NTFP/medicinal plants species. At the moment, species which are most threatened are species which are traded in large volumes. It is the highest priority to develop indicators for monitoring these species. CFUG and council members of KCA are actually able to monitor these species. There is a need to set up a plan of monitoring for each of these species. This will include:

- i. A prioritization of areas of collection based on sound criteria to be established with the local people. This is area specific and CF specific.
- ii. Monitor harvesting techniques and impact of use
  - Monitor amounts collected by local people, by Tibetan encroachers, by enterprise,
  - Monitor harvesting technique

#### Characterization and prioritization of areas of collection

By Whom? CFUG members with the help of local people may characterize and prioritize collection areas and CFUG members to field check information given by other people.

How? Making a list of harvesting sites and habitats for each species and pointing these in resource use map and ranking their importance.

Example of criteria:

- Finding out what is considered to be the best area/habitat of collection by commercial collectors and NTFPs entrepreneurs (for traded NTFPs) or healers (for medicinal plants) and discussing the validity of the criteria in relation to sustainable use
- Crosschecking this information by CFUG members on the field, also a way for them to learn more about these plant populations.
  - Size and type of population
  - Distance
  - Population vigor: what is considered by resource specialists as a vigorous population for each species. It can be the size/percentage of flowering individuals at flowering season, presence of other indicator species.

#### Indicators as perceived among plant populations in Lelep

- Plant vigor: rosette size, rhizome size, size of trunk, height, biomass and yield
- Availability/Overall population size:
- Physical characters: soil (e.g., chiraito, kutki – plant yield), aspect and altitude (e.g., lokta – thickness of bark), light availability (e.g., chiraito – plant yield)

Monitoring harvesting techniques and impact of use:

There is a need to develop a sampling system. Line/belt transects and plots seem the most appropriate type of method when working with local resource users. The sampling system in general is not random however need to think carefully the length and number of line/belt transects and number and size of plot to establish for each of the species.

What type of indicators to monitor along transects/plots: a set of indicators which relate to the harvesting method. This may consist at looking attentively in the areas of collection of

- traces of collection or other disturbances (trampling, grazing)
- size classes left following collection: uprooted plants, broken branches, debarked trunks;
- overall vigor (size) of the population along a transect through
  - either a general estimate of flowering individuals or fruit bearing individuals or
  - a precise counting of number of mature individuals (if number of mature individuals is considered as a sign of vigor)
- presence/absence of other indicator species (which may indicate the good health of a population).

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