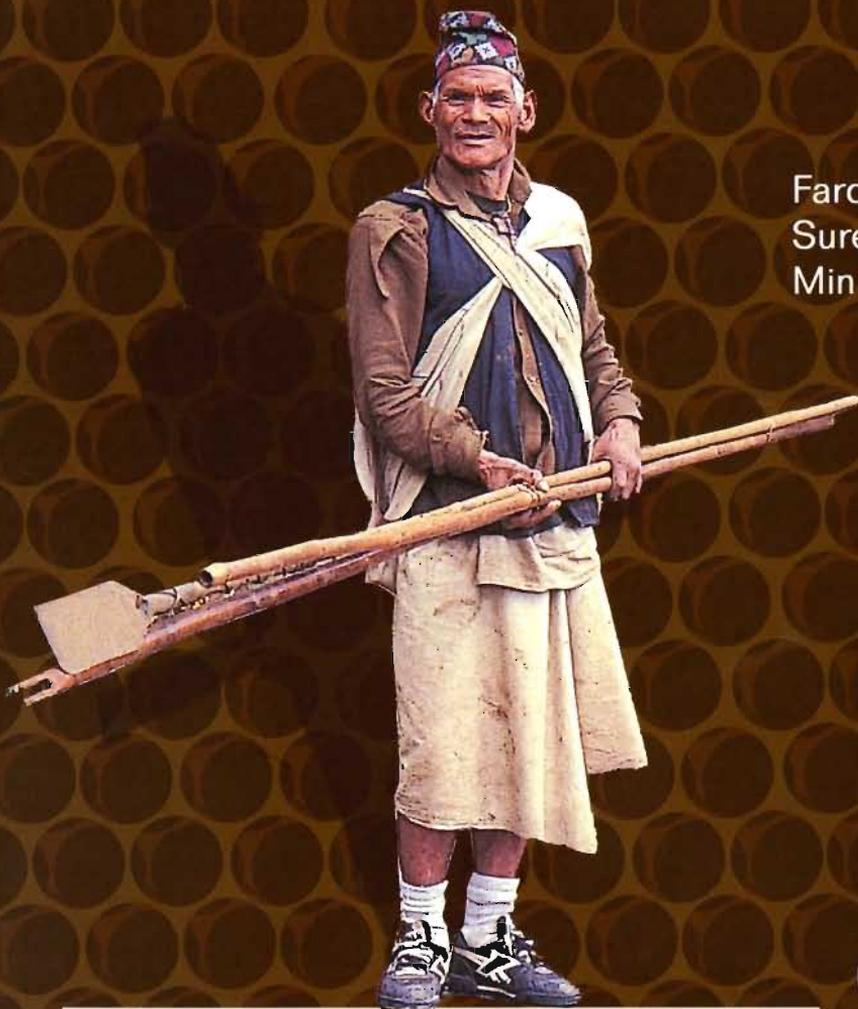


# THE HIMALAYAN CLIFF BEE *APIS LABORIOSA* and the Honey Hunters of Kaski

Indigenous Honeybees of the Himalayas (Vol 1)

Farooq Ahmad  
Surendra Raj Joshi  
Min Bahadur Gurung



# about ICIMOD

The International Centre for Integrated Mountain Development (ICIMOD) is an international organisation devoted to development of the Hindu Kush-Himalayan region covering all or parts of eight sovereign states, Afghanistan , Bangladesh , Bhutan , China , India , Myanmar , Nepal , and Pakistan . The Centre is located in Kathmandu, Nepal. The primary objective of the Centre is to promote the development of an economically and environmentally sound mountain ecosystem and to improve the living standards of mountain populations. The Mountain Farming Systems' Division at ICIMOD was established to promote improvement of farm productivity on small mountain farms without degrading the resource base.



# **Indigenous Honeybees of the Himalayas**

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## The Himalayan Cliff Bee *Apis laboriosa* Smith and the Honey Hunters of Kaski (Volume 1)

*Farooq Ahmad*  
*Surendra Raj Joshi*  
*Min Bahadur Gurung*

January 2003

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# Foreword

One of the major challenges in the mountains of the Hindu Kush-Himalayas (HKH) is to turn the vicious cycle of poverty, environmental degradation, and lack of access into a virtuous cycle of hope, sustainable development, and equitable access. ICIMOD is addressing this problem on many fronts in projects concerned with integrated approaches to environmental conservation and sustainable development. The indigenous honeybee project is concerned with the special aspect of honeybees and the roles they play in the challenging environment of the HKH in maintaining floral biodiversity and crop productivity, and in income generation – particularly for subsistence farmers in poorly accessible areas. The bee project uses an approach that combines the tools of community empowerment with the conservation and genetic improvement of indigenous bee species and streamlining the marketing of bee products. The aim is to help communities reap financial benefit from an indigenous resource whilst preserving a bee species that will contribute to ensuring pollination of crops and maintenance of plant biodiversity in the long-term.

Himalayan honeybees in general, and *Apis laboriosa* (the Himalayan cliff bee) in particular, are little understood elements of mountain biodiversity. Yet they play an important role in mountain livelihoods and cultures in addition to their critical role in pollination. This study illuminates the key role of honey hunting in strengthening some mountain communities, and in infusing their specialised livelihoods with indigenous knowledge and spirituality. It illustrates the indigenous tools used in honey hunting and documents the honey hunting rituals, practices, and methods that are a crucial component of the indigenous knowledge. It also documents specialised information on nectar flow regimes of mountain floras and on bee migration. Previous reports have only been able to provide imprecise locations for bee cliffs, so that follow-up is very difficult. In this study, the precise position of bee cliffs was mapped with the aid of GPS (global positioning system) equipment, which will facilitate follow-up studies into nesting trends of bee populations and other phenomena related to their sustainability.

The authors have analysed the status and future prospects for *Apis laboriosa* and the associated honey hunting communities in Nepal. They address the many threats to this traditional system including the loss of interest among the sons of the increasingly aged honey hunters, population decline among the bees, and the problems caused by the new 'bee-tourism' business. They also

identify the new economic and biological opportunities and present specific recommendations for conserving this unique Himalayan way of life.

ICIMOD is grateful for the continued and valuable support of the Austrian Government for the Indigenous Bee Project, which is helping us to develop a strong system and network of farmers and development workers to counteract the many threats to the bees of the Himalayas. I hope that the study presented here will help decision-makers to appreciate the vital role played by indigenous honeybees and their hunters in the economy and sustainability of Himalayan communities, and encourage them to develop and adopt policies that will ensure their long-term survival.

J. Gabriel Campbell  
Director General

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# Acknowledgements

We offer our sincere gratitude to our colleagues in ICIMOD and the management team for the contributions they have made to helping us to complete this phase of the study on indigenous Himalayan honeybees. We also highly appreciate and acknowledge the financial support provided by the Government of Austria's Ministry of Foreign Affairs, and the assistance, continuous support, and encouragement provided by Austroprojekt, Austria.

We thank the members of the Annapurna Beekeeping and Environment Promotion Group (BEENPRO), Kaski, our implementation partner, and HMGN's Departments of Forest, and of Hydrology and Meteorology for providing us with information. We are also grateful to the suggestions and inputs provided by Pratim Roy of the Keystone Foundation, India, Nicola Bradbear of the UK organisation Bees for Development, and our project colleagues Shova Bhandari, Uma Partap, and Aniruddha Shukla.

We would like to acknowledge the suggestions provided by Dr J. Gabriel Campbell, Director General of ICIMOD, which were instrumental in leading us to choose and implement Appreciative Participatory Planning and Action as the method of engaging the community in our activities and of gathering information. This led to a strategic shift in the way the study was carried out and allowed us to transform our understanding into process-oriented action. We also thank Chandi Chapagai of Plan International, Nepal for his support in the training for APPA without which this work would not have been possible. We thank Prativa Chhetri of ICIMOD and Chandra Sing Gurung of BEENPRO for taking some of the photographs. We are also grateful for the support provided by the editorial team A. Beatrice Murray Shrestha, Stephen Keeling and Sushil Man Joshi, and thank Govinda Joshi of MENRIS Division for preparing the map.

Finally, we wish to acknowledge our appreciation to the honey hunters of Kaski. We would not have been able to carry out this study without the assistance and cooperation of Midge Gurung, Min Gurung, Dhan Bahadur Bhujel, Kar Sing Gurung, Gopi Chan Gurung, Ananda Paudel and the many others who assisted us.

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# Executive Summary

ICIMOD's 'Indigenous Honeybees Project', supported by the Austrian Government through Austroprojekt, is involved in a wide range of activities in support of the indigenous bees of the Himalayas, including studying these bees and providing sound scientific information about them. As a part of this, the project is studying the Himalayan cliff bee, *Apis laboriosa* Smith, and the honey hunter communities that are associated with it. *Apis laboriosa* Smith was only identified as a separate species in 1980, and little detailed information has been published on it. The continued existence of this bee is threatened both by changes in habitat and by human interference, and this in turn foreshadows a loss of indigenous culture and knowledge in the honey hunting communities. This publication summarises the present state of knowledge about *Apis laboriosa* and describes the result of a detailed survey of nesting sites and the honey hunter communities associated with them.

Twenty-six nesting sites in the high mountain areas of the district of Kaski in central Nepal were studied in detail (all the sites identified in the district at that time). The sites were accurately located and mapped using a global positioning system, floral surveys were carried out, and the honey hunters and local people were interviewed. The technique of Appreciative Participatory Planning and Action (APPA) was used to gain the confidence of the local people, and to find out about the techniques and traditions of honey hunting, and to build the capacity of the honey hunters to support bee conservation and profit more from sustainable bee exploitation. The study team looked at the relationship between *Apis laboriosa* and the honey hunting communities, and assessed the importance of honey hunting for their livelihoods. The floral diversity around the nesting areas was investigated and a record made of the traditional equipment and methods used in honey hunting.

The investigations showed that most of the sites had similar locations in terms of aspect, distance from rivers, and vegetation patterns. Most of the cliffs with nests were located in river valleys facing southwest or southeast and were near rivers. Overall, both the number of nesting sites and nests, and the honey hunting tradition, were on the decline. This is believed to be due to a number of factors including land use changes, changes in agricultural patterns, increased outside job opportunities, outside interventions, and government policies. The study further investigated the

relationship between the forests, people, and bees and information was collected on the role of honey hunters in village society. Overall it appeared that the cultural aspects of the honey hunting system were more important to the communities involved than the economic aspects.

This study is intended to further understanding of the traditional balanced relationship between mountain societies and bees in the central Himalayas. We hope that the information will help to protect *Apis laboriosa* and assist the honey hunters to maintain their traditions and increase the economic benefits they gain from honey hunting.

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# Abbreviations and Acronyms

4Ds	discovery, dream, design and destiny
APPA	appreciative participatory planning and action
CBS	Central Bureau of Statistics (HMGN)
GPS	global positioning system
HMGN	His Majesty's Government of Nepal
ICIMOD	International Centre for Integrated Mountain Development
NGO	non-government organisation
NRs	Nepali rupees, the approximate rate of exchange in 2002 was US\$ 1 = NRs 78
PDDP	Participatory District Development Programme
VDC	village development committee

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# Glossary

colony	a social community of several thousand worker bees usually containing a queen and a few drones
honeydew	a sugary secretion produced by plant sucking insects that is deposited on the living parts of a plant
nectar	sugary liquid secreted by a special gland (nectary) found on flowers, leaves, or stems
pollen	a granular mass of spores in the anther of a flower
pollination	the transfer of pollen grains from the anther to the stigma of the same or a different flower of the same or a different plant of the same species
weeds	(mostly exotic) plants with an undesirable and overwhelming rate of multiplication

## Gurung words

abakarbhū	deities present around the bee cliffs who watch over the honey hunting events
ayar bhayar	religious ceremony performed in remembrance of those in a village who have died
chhora	filter made from bamboo and used for filtering honey
chhyakal or khaal	lamb's skin used to line the collecting basket to prevent honey from leaking out
donga	wooden bowl used for collecting wax
ishar piba mhi	person who gives signals and instructions during honey hunting
koho chho	rope used to fasten honey hunters to their ladders
koili chho	rope with a hook attached, used to separate the brood portion from the honey portion and pull the honeycomb away from the cliff
kuiche	lead honey hunter who climbs/descends the cliffs and cuts the combs
kyar	bamboo stick used to balance the basket (korko, see below) whilst collecting honey
pechho chaiba	
piba mhi	person who controls the rope during honey hunting

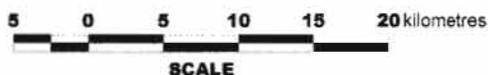
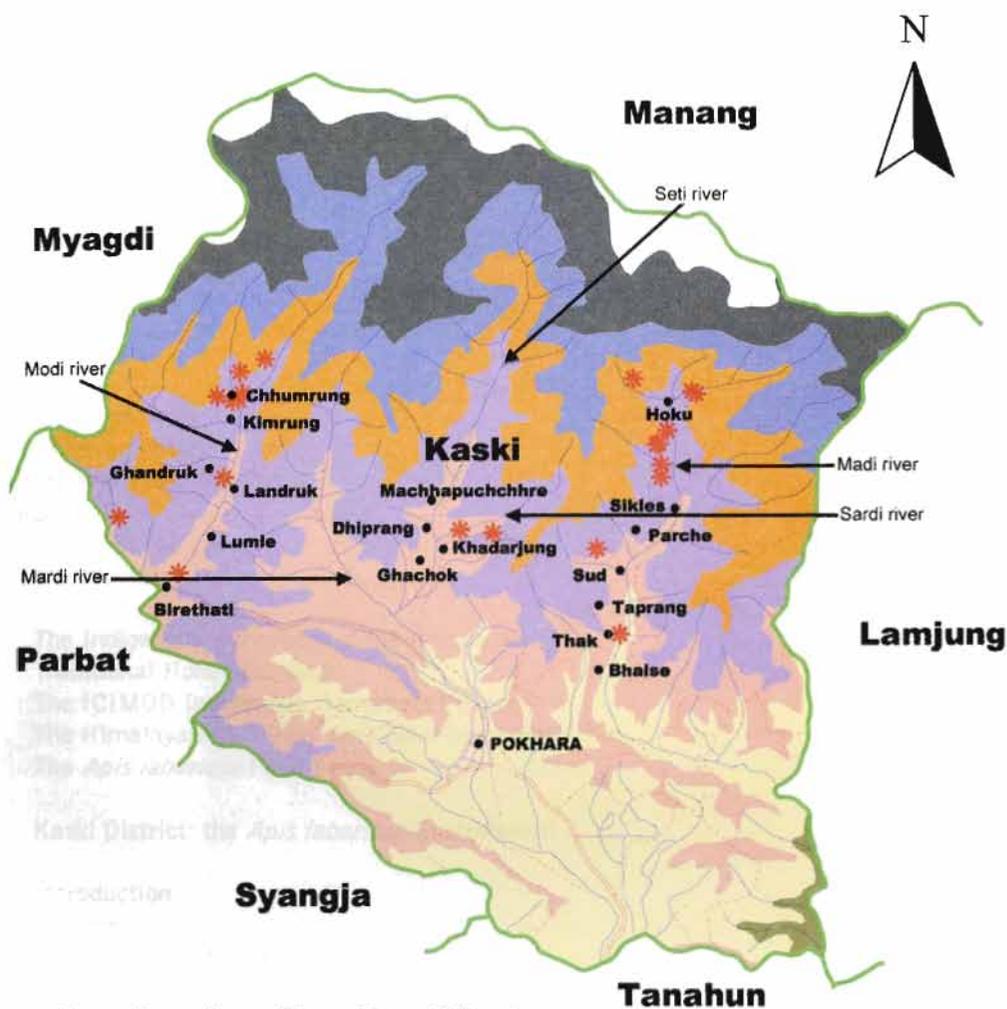
pechho	rope on which the basket (korko) is hung
prang	ladder made from mountain bamboo and used by the honey hunters to scale the cliffs
sato	bamboo stick with a notched end on which a hook can be fixed
saaton	bamboo stick used to guide the hook attached to the koili chho into the comb, also about 7m long
sharun	five-day period that occurs every month in the Nepalese Bikram Sambat calendar, it is fixed according to the position of the planets.
tango or ghochma	bamboo stick with a sickle or wooden plate fixed on the end, used to cut honeycombs
thane mane	the local gods who are believed to watch and direct local events
tuju	rope used to balance the ladder
uab	rope used to tie the ladder to a tree trunk at the top of the cliff
whibe	bamboo fibre rope which is used to direct the ladder

### Nepali words

korko or tokari	a bamboo basket for collecting honey
dabilo	wooden or iron plates fixed on to a bamboo stick and used to cut honeycombs
mukhiya	village chief
pattro	a (religious) lunar calendar covering the whole year with details of all the significant days (auspicious and inauspicious days for particular everyday and special actions and ceremonies), normally prepared by a priest
pujari	priest

Note: There is still no formal concensus on the spelling of place names, or the transliteration of Nepali or Gurung words. In the text we have chosen the spellings that most closely approximate the sound system.

# *Apis laboriosa* Nesting Sites and Associated Communities in Kaski District of Nepal



## LEGEND

- District Boundary
- River
- ROADS**
- Highway
- Metalled
- Earthen
- Main Trail

- Village Location with Nesting Sites
- \* Nesting Sites of *Apis laboriosa*

### ELEVATION ZONES

- Above 6000 m
- 4500 - 6000 m
- 3500 - 4500 m
- 2500 - 3500 m
- 1500 - 2500 m
- 1000 - 1500 m
- 500 - 1000 m

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# Chapter 1

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## Introduction

### **The Indigenous Honeybees of the Himalayas**

The Himalayas are rich in honeybee diversity having four indigenous species, *Apis cerana*, *Apis florea*, *Apis dorsata*, and *Apis laboriosa*, and one exotic species, the European honeybee *Apis mellifera*, which has been introduced for honey production. All of these bees are found in Nepal. *Apis cerana* is known as the Himalayan hive honeybee, it lives in the wild but can also be kept in hives and managed for honey production. *Apis dorsata*, *Apis laboriosa*, and *Apis florea* cannot be kept in hives but their honey is collected from the wild. *Apis laboriosa* builds its nests on cliff faces and is commonly called the Himalayan cliff bee, whereas *Apis dorsata* is the 'jungle' or forest bee.

Nepal's indigenous honeybees play an important role in maintaining biodiversity in mountain areas as they are the natural pollinators for a wide variety of indigenous plants, as well as themselves representing an integral part of the insect biodiversity in the region. At the same time they play an often unrecognised role in combating soil degradation by enhancing the replenishment cycle: more pollination, more seed, more plants, more biomass returned to the soil. They also have a special, although again often unrecognised, value for local farmers as pollinators of cultivated plants, and in terms of products like honey and wax have traditionally made a significant contribution to the livelihoods of remote mountain communities. However, notwithstanding their importance, there is still little concrete information available on these indigenous honeybees. Little is known about their population status, their relationship to honey hunting communities, their contribution to maintaining biodiversity, or emerging threats to their existence.

### **Traditional Honey Hunting**

Honey hunting is the general term given to the collection of honey from the wild after frightening off the bees, it has been practiced by different societies since time immemorial. Drawings and paintings made by the ancient Egyptians show honey being collected from wild bee colonies (Crane 1999); honey jars have been found amongst the artefacts of the oldest identified civilisation in Pakistan, the Mohanjodaro, who lived more than 4000 years ago; and cave paintings depicting honey hunting and dating back to 11,000 BC have been found in Madhya Pradesh in India (Suryanarayan 2002).

Honey hunting is still carried out in many parts of the HKH region. Honey hunters probably collect more than 50% of all the honey produced in the region: estimates in India indicate that 22,000 tonnes of wild honey are collected annually, twice the amount of honey produced in *Apis cerana* and *Apis mellifera* apiaries (Wakhle and Pal 2000). Traditional honey hunting is an important element of the lifestyle of a number of groups including Rajis in Nepal and India and Kurumbas in South India (Valli 1998 a,b; Keystone 1994). However, most of these hunters collect honey from forest bees; only a few people collect honey from the Himalayan cliff bee. Although *Apis laboriosa* is found in Nepal, Bhutan, India, and China, traditional honey hunting practices have so far only been recorded in Nepal and informally in India; in Bhutan people only collect the wax, from nests abandoned for the winter, not the honey (Ahmad and Roy 2000); the practices in India and China are less well known and will be studied during the next phase of the project.

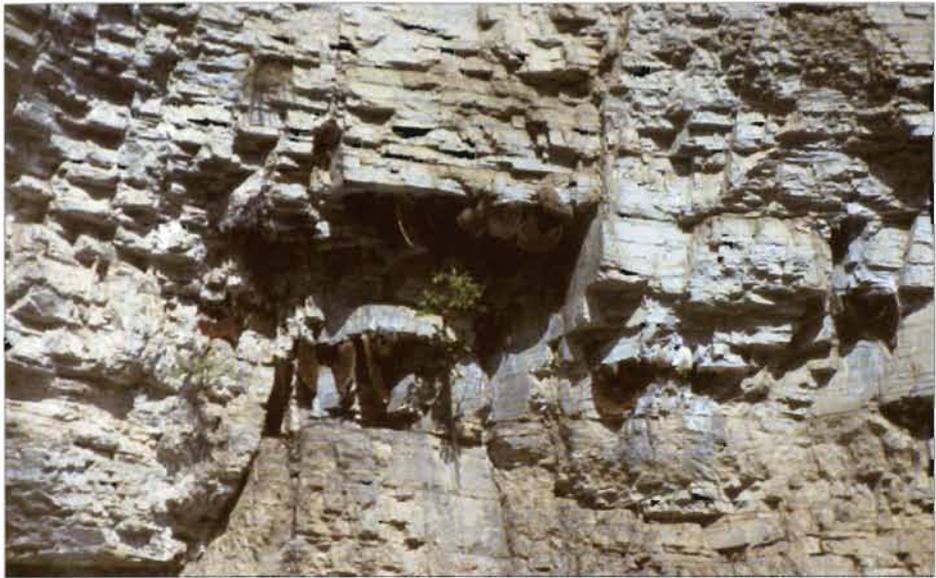
Honey hunting is a community activity and is an important part of the culture and livelihoods of many mountain communities. Ahmad and Roy (2000), Valli (1998), and Keystone (1994) have all pointed out the important spiritual significance, in addition to the economic role, for mountain communities. Nowadays, however, the social and cultural value of honey hunting is declining.

The traditional *Apis laboriosa* honey hunters are highly skilled; their technique has evolved over a long period to exploit these local resources in a sustainable way. But, these people tend to be from poor and marginalised communities. Although highly respected within their own communities, they are usually considered by those outside to be of very low standing. In countrywide comparative terms, they belong to the very poor. They face a variety of problems, a major one being their lack of empowerment in decision-making and dealing with outside society, which makes them vulnerable to exploitation. Thus they are unable, for example, to ensure that they receive a fair share of the consumer price for any honey that they wish to sell.

## **The ICIMOD Indigenous Honeybees Project**

The ICIMOD programme on 'Indigenous Honeybees of the Himalayas' was started in May 1991 to fill some of the gaps in knowledge about indigenous bees – originally with the support of USAID, and since July 1993 with the support of the Austrian Ministry of Foreign Affairs through Austroprojekt. The programme is using a holistic approach to promote apiculture development and support the conservation of indigenous species. It promotes both managed beekeeping using *Apis cerana* and the conservation of wild honeybees. Part of the programme involves studying indigenous honeybees and the relationships between them and the environment (flora and fauna) and communities.

The Project is in the process of building up a knowledge bank of information related to these bees. Studies have been initiated to provide more detailed information about their habitats, indigenous patterns of (sustainable) exploitation like honey hunting, changes that may be threatening their existence, and ways of including them in integrated development plans. This publication describes the first results of a study of *Apis laboriosa* Smith more commonly called simply *Apis laboriosa*, the Himalayan cliff bee.



*Listi Mai cliff next to the Nepal - China Highway: a large number of combs can be seen hanging under protruding rocks*



*Honey hunting group from Taprang village: the women may watch and share the honey but do not take part in the honey hunting itself*

## The Himalayan Cliff Bee: *Apis laboriosa* Smith

The Himalayan cliff bee *Apis laboriosa* Smith is the world's largest honeybee measuring up to 3 cm long. There is little concrete information available on the bee. For many years it was considered to be a type of *Apis dorsata*; only in 1980 was it identified and named as a separate species (Sakagami et al. 1980). The existing reports (some from times when it had still not been clearly identified) indicate the following. So far it has only been identified for certain in the mountainous areas of Nepal, Bhutan, India, and the western Chinese province of Yunnan (Summers 1990, Batra 1995, Ahmad and Roy 2000) at altitudes of between 1,200 and 3,500 masl (Underwood 1992). Recent unpublished observations suggest that it may also inhabit other parts of the Himalayas. Previous reports suggest that it mostly nests at altitudes between 2,500 and 3,200m and forages up to 4,100m (Roubik et. al. 1985, Valli and Summers 1988), and that, in general, it only builds brood nests under overhangs on vertical cliffs (Underwood 1986,1992, Roubik et al. 1985, Sakagami et al. 1980). In the cold season, minimal nests may be built for protective purposes in other places.

This bee's large size is a sign of its adaptation to the cold and low oxygen climates in which it lives, where there is a need for increased muscle mass among other characteristics (Summers 1990). The bee's foraging area is larger than that of most other honeybee species; it can fly up to a radius of three kilometres in thin air. It produces a large quantity of honey and beeswax making honeycombs up to 3m long and 1.5m high. As a result of its massive foraging, it plays a vital role in pollinating mountain crops and wild flora. *Apis laboriosa* live on cliff faces, except for the coldest months when they move to places that are more protected. From around early February to early December, the colonies are found more than 10 metres above the ground on the cliffs, with typically up to a 100 or more colonies, each of which builds a single nest, at one cliff site. Between late November and early December, at the start of the cold period, the colonies abandon the cliff sides and either move to protected locations beneath rocks, logs, or similar, or move to lower altitudes. The colonies tend to move to the same rock faces each year and these sites have become established for honey hunting. Ahmad and Roy (2000) have also reported the existence of *Apis laboriosa* bee nests two to three metres above ground in Bhutan, while Midge Gurung, a renowned honey hunter in Nepal, has observed the over-wintering of bee colonies in clusters without a comb on low rocks surrounded by grass.

### The nests

Each honeybee colony comprises a group of worker and drone bees with one queen, who live together to supply each other's needs and co-operate to raise the offspring. Each colony builds one nest consisting of a single large wax comb with a thick honey storage area at the top and thinner brood portion below. Pollen is stored in a band separating the honey storage from the brood comb. The honey portion is usually around 15 cm thick, depending upon the overall size of the comb and the nectar flow potential of the area. Workers and drone brood are placed in cells of the same size and are interspersed throughout the brood comb.

### *Apis Laboriosa* honey

Essentially there are three different types of *Apis laboriosa* honey. Spring honey collected at high altitudes – the so-called red honey, spring honey collected at mid and lower altitudes, and autumn honey from any site.



*Apis laboriosa* in a mustard field



Honeycomb ready for tasting

The red honey is valued for its special properties. It results from the collection of nectar from the white rhododendron (Ericaceae family), from *Aconitum* spp, and from *Entada scanders*, which only grow at altitudes of around 2000m and more. This honey has intoxicating and relaxing qualities, which, however, decrease with storage time. It is not consumed locally because of its high price and market value, honey hunters prefer to sell it for highly needed cash. Hive bees are not kept at these altitudes, and *Apis laboriosa* is the only bee species that collects this intoxicating nectar. The end-consumer price of red honey has increased considerably in recent times. The wholesale price of freshly harvested red honey is generally around 1000 to 1500 NRs per kg (US\$ 13 to 19), around five times the price of hive honey, although the honey hunters themselves generally receive considerably less per kilo than this. Large amounts of *Apis laboriosa* spring honey are exported from Nepal to Japan, Korea, and Hong Kong. The red honey is prized in Korea for its medicinal value and intoxicating qualities and fetches a premium price. Nowadays Korean companies buy up much of this honey in advance.

Spring honey from lower altitudes and autumn honey also command a good price, although less than red honey, as a result of the diverse nectar sources, strong flavour, and 'organic' qualities. The present (2002) wholesale price is around 200 - 500 NRs per kilo.

## **The *Apis laboriosa* Field Study**

Prior to the field studies on *Apis laboriosa* Smith, the project team together with Pratim Roy of the Keystone Foundation, India, developed a basic concept and guidelines on the type of information to be collected and the possible sources that could be used. The study focused on the location of *Apis laboriosa* nesting sites, and their relationship with the local communities' culture and livelihoods. It set out to explore the importance that the local communities attached to honey hunting and to discover how it fitted into their overall livelihoods. The study also aimed to increase our understanding of the relationships between forests, people, and honeybees.

The main objectives were:

- to investigate and document the status of *Apis laboriosa* nesting sites; and
- to locate honey-hunting communities and investigate their status, their level of dependence on honey hunting, and the challenges they face.

## **Preliminary survey**

A preliminary survey was carried out in the six Nepalese mountain districts of Dolakha, Sindhupalchowk, Kaski, Lamjung, Gorkha, and Rasuwa to discover whether and where there were active *Apis laboriosa* nesting sites and to help in the selection of the most appropriate area for detailed study. The study team consulted government officials, local NGOs, honey hunters, honey traders, and consumers to assess the situation of honeybees and honey hunters in each district, the accessibility of sites, the law and order situation, and the presence of a potential local partner institution. Kaski district was chosen as the most feasible district for carrying out an in-depth study.

The local focal point in Kaski was a local activist, Major Ram Prasad Gurung (a retired officer from the British Gurkhas) who was concerned about the conservation of wild bees and had an



*Honey hunter from Chhomrong village carrying a tango and saaton*

extended knowledge of bee cliffs and close links with the honey hunter communities. He was supported in his efforts to establish a formal group for advocacy and action related to bee conservation: the NGO 'BEENPRO'. This NGO then became ICIMOD's partner organisation for these studies.

As a first step, the ICIMOD team and BEENPRO held discussions with representatives of all the known honey hunting communities in Kaski district (many of whom are also members of BEENPRO) to identify all the known and exploited active nesting sites of *Apis laboriosa*. A total of 26 cliffs with active nests were identified. The honey hunters took team members to each of the cliffs so that they could assess the practical needs and make detailed arrangements for holding the survey.

### **Appreciative Participatory Planning and Action APPA**

Before working with the communities, members of the ICIMOD team were trained in using Appreciative Participatory Planning and Action (see Box). APPA is a tool used in local development planning and is considered to be a powerful way of helping communities and organisations to transform. The exercises involved working with the honey hunters to facilitate discussions through consideration of the 4Ds of discovery, dream, design, and destiny. A structured questionnaire was also developed that could be used within this approach.

### **The questionnaire**

The questionnaire focused both on the indigenous honeybees themselves, and on the cliff honey hunting system. The first part included information about the area, district, VDC, village, latitude and longitude, altitude, rainfall, ecology and vegetation, types of bees, bee habitat and nesting details, local migration of people, adjacent village farming activities, and schematic drawing of the habitat. The second part included the name of the area, name of the cliff, time taken to reach the cliff site from nearest settlement, name of nearest settlement, vegetation, floral analysis, height of the combs from the bottom of the cliff, distance to the water body, type of ethnic community involved, number of colonies found on the cliff, nesting season, out-migration season, annual honey yield, beeswax production per year, colour of bees, size of bees, shape of comb, and volumetric calculation of honey and brood storage. Further questions were related to cultural and anthropological information, honey hunting technology, and socioeconomic information.

### **The field survey**

In repeated visits to Kaski district over a one-year period (September 2000 to August 2001), the team carried out APPA exercises with a representative group of more than 20 honey hunters drawn from the different nesting areas. The team also visited each site to make physical measurements and for direct observations.

The latitude and longitude of the cliffs (map location) were recorded using a global positioning system instrument (GPS). The aspect of the cliffs, the distance from a water source, the number of nests per cliff (i.e. the number of bee colonies), and the distance above the ground were also recorded and a qualitative assessment made of the composition of the surrounding vegetation.



APPA with villagers

### Appreciative Participatory Planning & Action (APPA)

Appreciative Participatory Planning and Action, or APPA, is a highly participatory planning process that significantly extends the more traditional rural development tools such as Participatory Rural Appraisal. APPA was developed and pioneered by The Mountain Institute (TMI) as a community-action and learning tool, and has been applied successfully by a number of organisations, for example The Snow Leopard Trust. APPA combines concepts from Appreciative Inquiry (used in business leadership training) and Participatory Learning and Motivation, in a collective inquiry and planning process that fosters effective group action.

APPA operates on two simple complimentary premises.

**What you seek (in a community, organisation, or individual) is what you will find** – “if you look for problems, then you will find more problems,” or conversely, “if you look for successes, you will find more successes.”

**What you believe is what matters most** – “if you have faith in your vision or ideas for the future, and if these are believable, then you’ll be able to achieve success (substantial progress) without waiting for government or an outside donor to help take you there.”

APPA is practiced through an iterative (repeated) cycle known as the ‘Four Ds’.

**discovering** the community’s strengths, characteristics, and valued assets or resources

**dreaming**, or envisioning, what could be possible in the short and long term – if adequate and realistic resources were mobilised and the community acted in concert

**designing** a plan for guiding action towards future goals and objectives, emphasising what the community already knows and can do on its own without relying substantially on outside financial sources or technical know-how

**delivery** – by implementing the action plan, spurring participants to initiate community-improvement actions immediately rather than wait for some future time

The major characteristics of APPA that contribute to successful community planning and implementation are stakeholder participation, the community-based approach, and sustainability through community empowerment and capacity building. APPA has been applied to community-based conservation initiatives in Nepal’s Makalu-Barun Conservation Area, in Sikkim’s Khangchendzonga National Park, in Tibet’s Qomolangma Nature Preserve and India’s Hemis National Park. Supported by TMI, community organisations in India, Nepal, and China have used APPA to develop community plans that they are now implementing with their own resources. It has empowered communities to learn from their successes instead of focusing on their problems, mobilised individuals and groups toward concrete actions which they can start immediately, and initiated long-term change toward self-reliance. APPA is relatively quick and easy for villagers to learn and implement by themselves.

During the APPA exercises and other informal interviews, information was collected from local people on the productivity of different nests, nest predators, and the defensive behaviour of the *Apis laboriosa* populations. Special attention was paid to those sites where local people indicated that the *Apis laboriosa* population was declining due to non-ethical honey hunting practices like harvesting all the nests indiscriminately rather than leaving a number to facilitate replenishment, and/or to changes in agricultural practices.

Appreciative Participatory Planning and Action (APPA) exercises were also used to collect socioeconomic and technical information on honey hunting. This included the perceived status of honey hunting, the level of dependence of the hunters and communities on honey hunting and the challenges they face in a changed socioeconomic and ecological scenario; and information about honey hunting equipment and techniques, rituals, and other associated beliefs.

A detailed field exercise was carried out in Taprang village in Kaski district involving all the honey hunters from Taprang and nearby villages, twelve in all. The field exercise was intended both as a means of gathering information and as a capacity building exercise for the honey hunters that would raise their awareness of the situation and help them to develop and implement constructive approaches to conserving *Apis laboriosa* whilst increasing their own profit from honey hunting activities. The objectives of the exercise were first discussed and the APPA approach explained. The participants learned that APPA is a way of seeing and being in the world. It is a co-evolutionary search for the best in people, their communities and organisations, and the world around them. APPA builds self-confidence and pride, empowers people to take independent actions, and helps mobilise communities towards the achievement of their future vision. After this conceptual sharing, the field exercise was carried out following a simple 'discovery, dream, design and destiny', or 4Ds, planning and action cycle.

Following the initial APPA exercise, the questionnaire was used as a guide during interviews held with individuals and groups in the area over an extended period of time.

### **Community development**

The APPA field exercises constituted an iterative and interactive process. As well as generating information for the study, these exercises were designed to build the capacity of the honey hunters in the fields of conservation and apiculture. Essentially the process was one of empowerment, helping the honey hunters to discover how to mitigate the threats to the bee that is the basis of their tradition, how best to retain and maximise the benefits of honey hunting to their communities, and how to interact to their advantage with the 'outside world' (middle men, tour operators, government organisations, and similar). The aim was to engage the active involvement of the honey hunters in the protection of *Apis laboriosa*.

These efforts enabled us to develop a team of activists who are now involved in an organised campaign for the conservation of *Apis laboriosa* and are protecting the bee from external business interests.

# Chapter 2

## Kaski District: the *Apis laboriosa* Environment

### Introduction

Kaski district is located in western Nepal. It has an area of 2017 sq.km, with 43 village development committee subunits (VDCs), one sub-metropolitan city, and one municipality. The district headquarters is Pokhara – a popular tourist destination which lies in a large flat fertile valley. The northern part of the district slopes down from the Himalayan mountains of Machhapuchhre (6992m), Annapurna I (8090m), and Annapurna II (7937m).

### Climate

The climate varies from sub-tropical, through temperate and sub-alpine, to alpine according to altitude. The low altitude sub-tropical areas are warm for most of the year whilst the Himalayan mountains in the north have a harsh cold climate. Kaski's climate is strongly influenced by the Annapurna massif to the north. These high, steep mountains act as a barrier to the monsoon rain clouds that come from the Bay of Bengal; when the clouds meet the mountains they deposit large amounts of rain – Kaski has the highest rainfall of any district in Nepal. About 70% of the annual rainfall falls during the rainy season from July to September, at this time the temperature is warm and the sky remains overcast for much of the time. The period from October to November is dry and warm, December to February is cold, and March to June is dry and hot. The monthly meteorological data for three different years at Lumle Agriculture Research Station in western Kaski (1500m) are shown in the graphs.

### Socioeconomic Setting

The 1991 census recorded 326,330 people living in Kaski (CBS 1991): 76% Hindus, 13% Buddhists, and 11% from other religions. The ethnic groups in the district include Brahmins and Chhetris (41%), Gurungs (17%), and a lesser proportion of Magars, Tamangs, Kamis, and other groups (PDDP 1998). Most areas in Kaski have a mix of Brahmin, Chhetri, Gurung, and Dalit (occupational castes) communities. Apicultural communities (beekeepers and honey hunters) are usually not recorded as a separate group in official statistics. Honey hunters as a group are unique in that they include members from different castes and communities, although some of the specific tasks are restricted to particular castes. Older local people tend to have a great respect for beekeepers and honey hunters irrespective of their caste or ethnicity.

In Kaski, the villages located nearest to the *Apis laboriosa* nesting sites are mostly Gurung villages. These villages tend to have a strong community spirit. The people share agricultural work, natural resource management, and other social and religious activities. Gurung women tend to play an important role in household decision-making, unlike women from Brahmin and Chhetri communities.

Agriculture is the predominant activity in all of Kaski district. Paddy, maize, millet, and wheat are the major cereal crops. Livestock and poultry farming are also important and provide food, manure, and economic security. Industry, trade, commerce, and tourism are prominent economic activities in the more accessible areas. Many people are now migrating out of the more remote villages.

Kaski is a popular tourist destination. Thousands of tourists come to trek around the Annapurna Circuit and up to Annapurna Base Camp. However, notwithstanding the successful efforts of the Annapurna Conservation Area Programme (Bajracharya and Thapa 2000) the fact still remains that the overall benefit to local villages from tourism is small and resultant environmental degradation remains an issue. However, both the trekkers and the lodges they stay in provide a market for local products such as honey, vegetables, and meat.

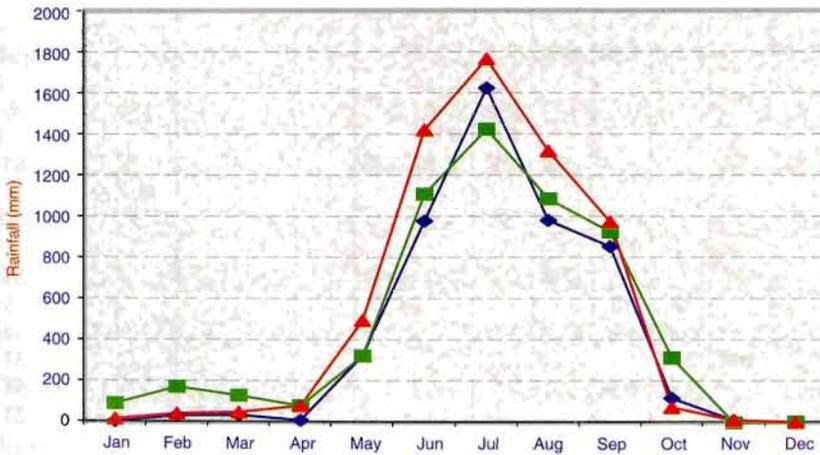
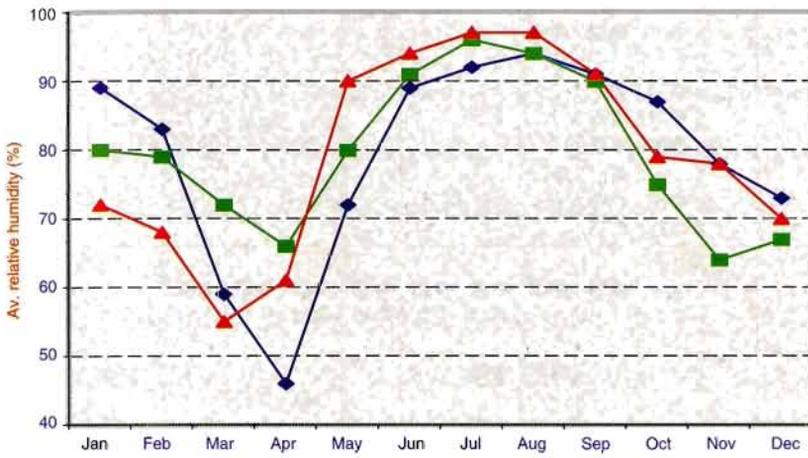
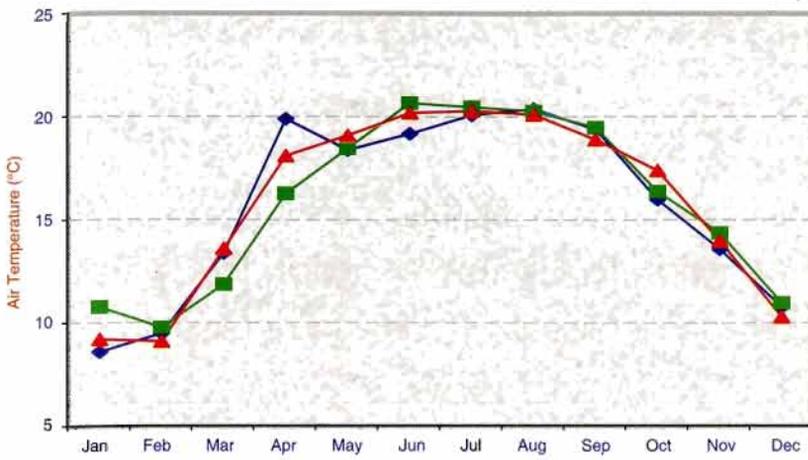
There are 75 districts in Nepal. Overall Kaski is seen as one of the most developed, but in reality this development is almost entirely confined to Pokhara and the close-by areas. The remoter parts of Kaski where the bee cliffs are found are as poor and underdeveloped as any of the other remote mountain areas of Nepal. In terms of agricultural indicators like the percentage of marginal and landless farmers, access to institutional credit, average number of livestock per farm, farm size, and percent irrigated area, Kaski is one of the poorest districts in Nepal (ICIMOD 1997).

## **Vegetation and Bee Floral Resources**

Kaski's large floral diversity ranges from sub-tropical to alpine species and provides year round forage to *Apis laboriosa* and other honeybee species. The main species that provide nectar and pollen to bees are listed in Table 2.1 together with a calendar showing when and to what extent they are productive and an indication of the climatic region in which they grow. The diversity means that within limited areas, at least, nectar is available for most of the year.

Kaski's sub tropical zone is found between 1000 and 1800 masl. *Schima wallichii* and *Castanopsis indica* forests are the main natural sub-tropical vegetation type, but have been much disturbed by human settlement. Other trees found in these forests include oak, birch, beech, maple, alder, and teak. Riverine forests, generally dominated by simal (*Bombax malbaricum*), grow along the banks of rivers and lakes with *Woodfordia fruticosa*, *Colebrokia oppositifolia*, and *Erythrina stricta* as common plant components.

Kaski's evergreen coniferous forests are found on slopes above 1800m and contain pine, fir, spruce, and larch trees. However, the main temperate zone forest at altitudes between 1800 - 4000 masl is dominated by *Rhododendron* species: the main plants are *Rhododendron arboreum*, *Rhododendron barbatum*, *Lyonia ovalifolia*, *Michelia kisopa*, *Quercus lamellosa*, *Acer sp.*, *Maesa chisia*, *Eriobotrya elliptica*, *Berberis spp*, *Myrsine semiserrata*, *Schima wallichii*, *Castanopsis indica*, and *Myrica*



◆ 1980      ■ 1990      ▲ 2000

Meteorological data for Lumle, Kaski

**Table 2.1: Bee Floral Calendar for Kaski District**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	zone
<b>Agricultural crops</b>													
<i>Allium cepa</i>				○□	○□		●□						ST-T
<i>Amaranthus paniculatus</i>					○□		●□						ST-T
<i>Brassica spp</i>	●■	●■									●■	●■	ST-T
<i>Coriandrum sativum</i>			○□	○□									ST-T
<i>Cucumis sativus</i>						●□	●□	●□	●□				ST-T
<i>Cucurbita maxima</i>					●□	●□							ST-T
<i>Cucurbita pepo</i>				●□	●□								ST-T
<i>Daucus carota</i>			○□	○□	○□								ST-T
<i>Fagopyrum esculentum</i>								●■	●■				ST-T
<i>Lagenaria siceraria</i>							○□	○□	○□				ST-T
<i>Raphnus sativus</i>		●■	●■										ST-T
<i>Zea mays</i>						●	●						ST-T
<b>Horticultural crops</b>													
<i>Carica papaya</i>					●■								ST
<i>Citrus spp.</i>			●■	●■									ST-T
<i>Juglans regia</i>			●										T
<i>Malus domestica</i>			●■	●■									T
<i>Musa paradisiaca</i>	○□	○□	○□	○□	○□	○□	○□	○□	○□	○□	○□	○□	ST
<i>Prunus armenica</i>		●■	●■										T
<i>Prunus domestica</i>		●■	●■										T
<i>Prunus persica</i>		●■	●■										ST-T
<i>Punica granatum</i>			●□	●□									ST-T
<i>Pyrus communis</i>		○□	○□										ST-T
<i>Pyrus pashia</i>		○□	○□										ST-T
<b>Ornamental plants</b>													
<i>Callistemon spp</i>			●■	●■	●■	●■	●■	●■	●■	●■			ST
<i>Campsis grandiflora</i>				●■	●■	●■	●■	●■					ST
<i>Euphorbia pulcherima</i>	○□	○□											ST
<i>Grevillea robusta</i>				●■	●■								ST
<i>Ocimum sanctum</i>								○□	○□				ST-T
<i>Rosa spp</i>				○□	○□								ST-T
<i>Tagetes spp</i>								○□	○□				ST-T
<b>Wild plants and trees</b>													
<i>Abies spectabilis</i>			●■	●■		○	○						T
<i>Acer spp</i>			●■	●■									T
<i>Aconitum spp</i>									○□				T
<i>Aconogonum molle</i>						○□	○□						T-A
<i>Aesculus indica</i>					●■	●■	●■						T
<i>Albizia spp</i>				●■	●■	●■	●■						ST-T
<i>Alnus nepalensis</i>											●		ST-T
<i>Arundinaria falcata</i>				○	○								T
<i>Bauhinia purpurea</i>			○□	○□									ST
<i>Berberis spp</i>			○□	○□	○□	○□							ST-T
<i>Bombax malbaricum</i>		■	■										ST
<i>Buddleia asiatica</i>		●■	●■										ST-T
<i>Butea monosperma</i>	●■	●■	●■										ST-T
<i>Caryopteris odorata</i>		●■	●■										ST-T
<i>Castanopsis indica</i>									○□	○□			ST-T
<i>Celtis australis</i>													T

- Major pollen source
- Medium pollen source
- Minor pollen source
- ◇ Honeydew
- Major nectar source
- Medium nectar source
- Minor nectar source
- ST sub-tropical
- T temperate
- A alpine

cont'd ...

**Table 2.1: Bee Floral Calendar for Kaski District (cont'd)**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	zone
Wild plants and trees (cont'd)													
<i>Colebrokia oppositifolia</i>	●■	●■	●■	●■	●■							●■	ST-T
<i>Coriaria nepalensis</i>		○□	○□	○□	○□								T
<i>Dendrocalamus strictus</i>			○	○									T
<i>Elaeagnus parvifolia</i>			●■	●■	●■	●■							T
<i>Englehardtia spicata</i>				●■									ST
<i>Ephedra gerardiana</i>					◇□	◇□							T-A
<i>Eriobotrya elliptica</i>		●■	●■										T
<i>Erythrina stricta</i>								○□	○□				T
<i>Eurya acuminata</i>	●■	●■	●■							●■	●■	●■	ST-T
<i>Ficus auriculata</i>					◇								ST-T
<i>Ficus bengalensis</i>				◇									ST-T
<i>Ficus nemoralis</i>				◇	◇								ST-T
<i>Ficus religiosa</i>				◇									ST-T
<i>Ficus semicordata</i>				◇									ST-T
<i>Fraxinus floribunda</i>				●■	●■								T
<i>Ilex dipyrena</i>				○□	○□								T-A
<i>Juniperus spp</i>				◇	◇								T-A
<i>Kapium insigne</i>						◇	◇						ST-T
<i>Leucocephalum canum</i>		●■	●■										ST-T
<i>Lindera pulcherima</i>										○□	○□		T
<i>Lyonia ovalifolia</i>		○□	○□	○□									ST-A
<i>Maesa chisia</i>			●■	●■	●■	●■	●■	●■					ST-T
<i>Michelia champaca</i>				○□	○□	○□	○□						T-A
<i>Michelia kisopa</i>									○□	○□	○□		T
<i>Myrsine semiserrata</i>	○□	○□	○□	○□	○□	○□	○□	○□	○□	○□			T
<i>Pinus roxburghii</i>		◇○	◇○	◇○									ST
<i>Prunus cerasoides</i>											●■		ST-T
<i>Quercus incana</i>				○	○	○	○						ST-T
<i>Quercus lamellosa</i>				○	○	○	○						T
<i>Quercus semicarpifolia</i>				○	○	○	○						T
<i>Rhododendronanthopogon</i>		○□	○□										T-A
<i>Rhododendron arboreum</i>		○□	○□										ST-A
<i>Rhododendron barbatum</i>		○□	○□										T-A
<i>Rhus javanica</i>								●■	●■				ST-T
<i>Rhus succedanea</i>					●■	●■							T
<i>Rubus spp</i>				○□	○□	○□							ST-T
<i>Salix caliculata</i>		○□	○□										ST-A
<i>Schima wallichii</i>					●■	●■							ST-T
<i>Symplocos racemosa</i>			○	○	○								T
<i>Taxus baccata</i>						◇	◇						
<i>Tsuga dumosa</i>						◇	◇						
<i>Viburnum erubescens</i>	○□	○□	○□	○□	○□								T
<i>Woodfordia fruticosa</i>			○□	○□									ST
<i>Zizyphus spp</i>			○□			○□	○□	○□	○□				ST-T
●	Major pollen source		■	Major nectar source						ST	sub-tropical		
○	Medium pollen source		□	Medium nectar source						T	temperate		
○	Minor pollen source		□	Minor nectar source						A	alpine		
◇	Honeydew												

*esculenta*. There is a pure *Rhododendron* forest between Sikles and Ghalegaun on a south-facing slope, and an extensive area of rhododendron forest between the Modi and Mardi rivers (see map at front). The area west of the Modi river and the Modi basin north of Ghandruk has been much disturbed by humans. In these areas the degraded forests at the lower elevations of the temperate zone mostly contain *Daphniphyllum himalayensis*, *Maesa chisia*, *Berberis spp.*, and *Rhododendron arboreum* with some *Quercus lamellosa* and *Myrsine semiserrata* in the upper reaches. The most common plants in these forests are *Daphne bholua*, *Cyathea spinulosa*, *Berberis aristata*, *Quercus semecarpifolia*, *Lyonia ovalifolia*, and *Lindera pulcherrima*, with *Reinwardtia indica*, *Galinsoga parvifolia*, *Drymeria cordata*, *Chilenthus grise*, *Viola canescens*, *Aconogonum molle*, *Berberis aristata*, *Plantago major*, *Artemisia indica*, *Dichrocephala integrifolia*, *Rubia manjith*, *Spiranthes sinensis* seen as common weeds (mostly exotic plants with an undesirable and overwhelming rate of multiplication).

The alpine region includes the base camp areas of Machhapuchhre, Annapurna, and Gangapurna. The most common plants in this area are *Juniperus recurva*, *Ephedra gerardiana*, *Rhododendron lepidotum*, *Rhododendron anthopogon*, *Delphinium roylei*, *Aquilegia nivalis*, *Corydalis juncea*, and *Salix caliculata*.

# Chapter 3

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## The Nesting Sites and Bee Behaviour

### Physical Aspects

All the cliffs in Kaski District identified by the honey hunters in preliminary talks as sites of bee colonies were included in the survey: a total of 26 cliffs. The survey showed 20 of these to have existing or recently vacated nests, and 6 remnants of nests that had not been occupied for a considerable time. During later stages of the survey and project a few additional cliffs were identified that had, or had previously had, bee colonies, but these were not included in the formal survey and will be studied in more detail at a later date. Some cliffs at higher altitude were also omitted from the survey because of the difficulty of gaining access to them. Cliff occupation is a 'living system', as conditions change bees migrate on a longer term basis to new sites, or return to old ones, so that the number of occupied cliffs changes over time.

The details of the 26 sites in the survey are summarised in Table 3.1, including the location, altitude, cliff aspect, distance from water, distance from the ground, number of nests per cliff, cliff ownership, and surrounding vegetation. The sites were surveyed at various times from September 2000 to August 2001.

Most of the nests were located on steep inaccessible cliffs that were almost devoid of vegetation. This might be because these sites are the best places to avoid the depredations of predators such as pine martens, black bears, and monkeys. There may also be an advantage in terms of having more exposure to direct sunlight.

All of the cliffs with nesting sites were located close to rivers. Most of the cliff nesting sites lay less than 200m from a major water source; only two were located more than 500m from water. A similar pattern was observed in informal observations in Bhutan. Informal observations in Kaski indicated that similar cliffs did exist away from water, but were never inhabited by bees. The study team observed bees licking water from glacier meltwater streams, and also saw worker bees frequently visiting hot water springs close to the Dalang nesting site near Khaderjung village. These and other observations indicate that *Apis laboriosa* has a strong need for water.

Eighteen of the 26 bee cliffs faced between southeast and southwest, 5 faced east and 2 west; only one site had a slightly northern (NW) aspect, and this one had no nests at the time the study was done. The generally southerly aspect of the cliff sites suggests a need for sunshine. There are various likely reasons for this, the warmth itself could be useful for the nests and may facilitate flying and reduce energy consumption. At the same time, a southeast or southwest aspect prolongs the photoperiod and thus the length of day for foraging.

The bees appeared not to be particularly disturbed by noise. The Lamakhet nesting site (site 14) is located right next to a busy footpath. Similarly there are well-known bee nesting sites at Kodari next to the busy China-Nepal highway, and along Bhutan's main highway.

The general vegetation type surrounding each of the sites is summarised in Table 3.1. The mountain areas where the bee is found are covered with a variety of vegetation including rhododendron dominated mixed forest, pockets of pristine dense forest, riverine forest, and newly planted alder dominated forests. The common factor is that they provide sufficient forage to enable the bees to survive in an essentially highly competitive environment, where survival of the fittest is the law governing ecosystem function. The presence of *Apis laboriosa* is itself an indicator of environmental health as the bee requires enormous supplies of nectar, water, and pollen to survive (Ahmad and Roy 2000).

The sites in the survey were all at around 2000m, except for those used for winter migration some of which were at altitudes as low as 1100m. This is considerably lower than the nesting site altitude of 2500 to 3100 masl for the Himalayas overall reported by Roubik et al. (1985) and Valli and Summers (1988).

Similarly positioned cliffs were observed that had no indication of bee nests. It seems likely that the composition of the rock also plays a role in the selection of nesting sites but this was not investigated in this survey. One honey hunter, for example, indicated that aggregation of salts on a cliff face had changed the colour and also made the cliffs inhospitable for the bees. These types of indications will be followed up in later studies.

## **Seasonal Migration**

General observations made during the survey indicated that the bees followed two distinctly different migration cycles depending on the valley in which they were located. One migration pattern was to nest during the winter on cliffs at lower altitude, and then migrate in the summer to different cliff nesting sites at higher altitude. Other bees remained at high altitude throughout the year, but left the cliff nesting site in winter for more protected areas at the base of the cliff, under fallen logs, at the base of overhanging trees, or similar. This appeared to be the preferred option when there was no appropriate nesting site further down the same valley and had various advantages compared to remaining high on the cliff face including, for example, that the bees use less energy to fly to water and are closer to any plants that are still producing forage – although these are rare (Table 1.3). In general, it seemed that bee colonies were very unwilling to cross a ridge divide to another valley. The details of these patterns are still unclear and will be studied in more detail in follow-up studies. Table 3.2 summarises some of the observed seasonal movements of bees within different valleys.

Table 3.1: The *Apis laboriosa* nesting sites in Kaski district

SN	Cliff name	Longitude/ latitude	Approx. altitude <sup>1</sup> (masl)	Cliff aspect	Distance above ground	Distance from water	No. of nests <sup>2</sup>	Ownership of cliff	Nearest settlement	Vegetation type and bee flora
1	Sodque Bhir	84°04' 359E 28°20' 161N	2000	SE	200m	200m	37 (o) 10 (e)	Owned collectively by ward 6 of Parche VDC	Malakuna village	Common plants: <i>Colebrookea oppositifolia</i> , <i>Alnus nepalensis</i> , <i>Plectranthus muth.</i> , <i>Kapum insignis</i> , <i>Bauhinia</i> spp, <i>Maesa chisia</i> , <i>Coriaria nepalensis</i> , <i>Lycia ovalifolia</i> , <i>Cedrela toona</i> , <i>Buddleia</i> spp, and <i>Schinus wallichii</i> ; rich ground vegetation dominated by <i>Eudalopis ovata</i> , <i>Eupatorium</i> , and <i>Saccharum</i> spp. Sparse distribution of <i>Zizyphus</i> spp, <i>Rubus</i> spp, <i>Berberis</i> spp, <i>Woodfordia fruticosa</i> , and <i>Artemisia</i> spp. area of riverine forest dominated by <i>Bombax malabaricum</i> about 500m from the cliff
2	Kamro Bhir	84°06' 912E 28°22' 776N	2000	SE	150m	200m	27 (o) 11 (e)	Owned collectively by ward 7 of Parche VDC	Sikles village	Rhododendron dominated dense forest composed of <i>Rhododendron arboreum</i> , <i>Arundinaria falcata</i> , <i>Cedrela toona</i> , <i>Ficus</i> spp, <i>Alnus nepalensis</i> , <i>Maesa chisia</i> , and <i>Lycia ovalifolia</i> ; ground vegetation dominated by many different grass species in association with <i>Fagopyrum</i> spp, <i>Primula</i> spp, and <i>Cyathea spinulosa</i>
3a	Chadque Kougra, Sisi Khemai Bhir (adjacent to 3b)	84°06' 928E 28°23' 227N	2000	SW	150m	300m	13 (o) 3 (e)	Owned collectively by ward 6 of Parche VDC	Sikles village	Dense virgin forest (little disturbed by humans) with <i>Elaeagnus</i> spp, <i>Leucosceptum</i> spp, <i>Colebrookea</i> spp, <i>Rhododendron</i> spp., <i>Cedrela toona</i> , <i>Ficus</i> spp, <i>Alnus nepalensis</i> , <i>Prunus cerasoides</i> , and <i>sias</i> (local name); ground vegetation dominated by <i>danne</i> grasses, <i>Urtica dioica</i> , <i>Girardinia diersifolia</i> , and <i>Cyathea spinulosa</i>
3b	Chadque Kougra, Sisi Khemai Bhir (adjacent to 3a)	84°06' 928E 28°23' 227N	2000	SW	150m	300m	4 (o) 2 (e)	Owned collectively by ward 6 of Parche VDC	Sikles village	Directly adjacent to 3a
4	Biura Pro. Biura Pro Keira	84°06' 687E 28°23' 927N	2000	E	90m	150m	17 (o) 1 (e)	Owned collectively by ward 7 of Parche VDC	Sikles village	<i>Alnus</i> dominated forest with a few <i>Aesculus indica</i> , <i>Ficus</i> spp, <i>Leucosceptum</i> sp, <i>Colebrookea</i> spp, <i>Buddleia</i> spp and <i>Rubus</i> spp; marshy ground vegetation dominated by <i>Fagopyrum</i> spp and <i>Polygonum hydropiper</i>
5	Thama Thera	84°07' 102E 28°24' 462N	2000	SW	70m	650m	2 (o) 6 (e)	Owned collectively by ward 5 of Parche VDC	Sikles village	<i>Alnus</i> dominated forest with a few trees of <i>Ficus</i> spp, <i>Maesa chisia</i> , <i>Buddleia</i> spp, and <i>Rubus</i> spp
6	Dhoya Quincha	84°07' 102E 28°24' 462N	2000	SW	60m	100m	4 (o) 3 (e)	Owned collectively by ward 5 of Parche VDC	Sikles village	<i>Alnus</i> dominated forest with a few trees of <i>Ficus</i> spp, <i>Maesa chisia</i> , <i>Buddleia</i> spp, and <i>Rubus</i> spp
7	Ligha Quira <sup>4</sup>	84°07' 258E 28°25' 656N	2000	SE	30m	60m	6 (e)	Owned collectively by ward 8 of Parche VDC	Sikles village	Mixed forest transitional between <i>Alnus</i> forest in the river valley and <i>Cedrus deodara</i> at the top of the hill, dominated by <i>Rhododendron</i> spp and <i>Aesculus indica</i>
8	Pi Quira	84°08' 251E 28°25' 800N	2000	E	60m	120m	8 (o) 32 (e)	Owned collectively by ward 6 of Parche VDC	Sikles village	Mixed (virgin) forest dominated by <i>Rhododendron</i> spp and <i>Aesculus indica</i> in association with <i>Alnus nepalensis</i> , <i>Ficus</i> spp, <i>Rubus</i> spp, and <i>Berberis</i> spp
9	Karstedhu <sup>4</sup>	84°08' 082E 28°25' 880N	2000	NE	30m	200m	5 (e)	Owned collectively by ward 6 of Parche VDC	Sikles village	Mixed (virgin) forest dominated by <i>Rhododendron</i> spp, <i>Aesculus indica</i> , and <i>Quercus</i> spp; in association with <i>Alnus nepalensis</i> , <i>Ficus</i> spp, and <i>Rubus</i> spp
10	Pi Quira <sup>4</sup>	84°08' 082E 28°25' 880N	2000	S	60m	120m	11 (e)	Owned collectively by ward 6 of Parche VDC	Sikles village	Mixed (virgin) forest dominated by <i>Rhododendron</i> spp and <i>Aesculus indica</i> in association with <i>Alnus nepalensis</i> , <i>Ficus</i> spp, <i>Rubus</i> spp, and <i>Berberis</i> spp
11	Kaula Shoi Koira <sup>4</sup>	84°08' 087E 28°25' 877N	2000	E	200m	500m	10 (e)	Owned collectively by Ward 5 of Parche VDC	Sikles village	Mixed forest dominated by <i>Rhododendron</i> spp and <i>Arundinaria falcata</i> in association with <i>Aesculus indica</i> , <i>Acer</i> spp, <i>Cinnamomum</i> spp, and <i>Berberis</i> spp; ground vegetation rich in <i>Ranunculaceae</i> (mostly <i>Anemone</i> ), <i>Fragaria</i> spp, <i>Primula</i> spp, and <i>Scimia fragrans</i>
12	Ple-ra Koira <sup>4</sup>	84°05' 699E 28°25' 280N	2000	E	50m	500m	nr	Owned collectively by Ward 6 of Parche VDC	Sikles village	Mixed forest dominated by <i>Rhododendron</i> spp and mountain bamboo ( <i>Arundinaria falcata</i> ) on the top of the cliff and by <i>Alnus nepalensis</i> and <i>Ficus</i> spp on the riverbank
13	Ghaya na Koira	84°06' 782E 28°23' 965N	2000	E	50m	1000m	1 (o) 6 (e)	Owned collectively by Ward 7 of Parche VDC	Sikles village	Mixed forest with <i>Rhododendron</i> spp, <i>Arundinaria falcata</i> , <i>Magnolia champaca</i> , <i>Michelia kisopa</i> , and <i>Cinnamomum</i> spp
14	Kangro Bhir, Taprang Bhir	84°05' 371E 28°17' 134N	1100	SE	10m	200m	8 (o) 6 (e)	Owned by Taprang village (kinship group)	Lamakhet	Moist and mossy hanging vegetation on the cliff, <i>Bombax</i> spp, <i>Woodfordia</i> spp, <i>Kapum insignis</i> , <i>Butea monosperma</i> , <i>Rhus succedanea</i> , <i>Rubus</i> spp, <i>Berberis</i> spp around the cliff; rice, maize, and wheat nearby

Table 3.1: The *Apis laboriosa* nesting sites in Kaski district (cont'd)

SN	Cliff name	Longitude/ latitude	Approx. altitude (masl)	Cliff aspect	Distance above ground	Distance from water	No. of nests	Ownership of cliff	Nearest settlement	Vegetation type and bee flora
15	Maha Bhir <sup>1</sup>	83°47' 477E 28°18' 948N	1900	NW	30m	500m	nr	Owned by Tornejung village of Lumle VDC	Tornejung	<i>Aglaia regia</i> , <i>Ficus</i> spp., <i>Pyrus pashia</i> , <i>Rubus</i> spp., <i>Berberis</i> spp., <i>Pyracantha crenulata</i> and other fruit trees
16	Sobrok <sup>2</sup>	83°49' 879E 28°25' 433N	1900	SW	30m	30 m	nr	Owned by ward 9 of Ghandruk VDC	Daulo and Telje	<i>Michelia kisoa</i> dominated forest with <i>Cinnamomum</i> spp., <i>Machilus</i> spp., <i>Quercus</i> spp., <i>Rhododendron</i> spp., <i>Arundinaria falcata</i> , <i>Maesa chisia</i> , <i>Rubus</i> spp., <i>Mahonia nepalensis</i> , <i>Erythrina stricta</i> , <i>Ficus auriculata</i> , and <i>Polygonum hydropiper</i>
17	Obio <sup>3</sup>	83°49' 879E 28°25' 433N	2200	SE	200m	200m	nr	Owned by ward 9 of Ghandruk VDC	Chhomrong	<i>Michelia kisoa</i> dominated forest with <i>Cinnamomum</i> spp., <i>Machilus</i> spp., <i>Quercus</i> spp., <i>Rhododendron</i> spp., <i>Arundinaria falcata</i> , <i>Maesa chisia</i> , <i>Rubus</i> spp., <i>Mahonia nepalensis</i> , <i>Erythrina stricta</i> , <i>Ficus auriculata</i> , and <i>Polygonum hydropiper</i>
18	Kuti Bhir <sup>4</sup>	83°49' 721E 28°25' 207N	2200	SE	30m	30m	16 (a)	Owned by Daulo villagers, Chhomrong	Daulo and Telje	<i>Michelia kisoa</i> dominated forest with <i>Cinnamomum</i> spp., <i>Machilus</i> spp., <i>Quercus</i> spp., <i>Rhododendron</i> spp., <i>Arundinaria falcata</i> , <i>Maesa chisia</i> , <i>Rubus</i> spp., <i>Mahonia nepalensis</i> , <i>Erythrina stricta</i> , <i>tusaro</i> , <i>Ficus auriculata</i> , and <i>Polygonum hydropiper</i>
19	Siasi Bhir, Chhomrong Bhir	83°49' 513E 28°25' 155N	2200	SW	50m	120m	8 (a) 2 (e)	Owned by Chhomrong village	Chhomrong	<i>Cinnamomum</i> and <i>Machilus</i> spp dominated forest with <i>Michelia</i> spp., <i>Aglaia</i> spp., <i>Quercus</i> spp., <i>Rhododendron</i> spp., <i>Buddleia</i> spp., <i>Plectranthes</i> spp., <i>Elaeagnus</i> spp., and <i>Arundinaria</i> spp
20	Chakneva, Chanedhar <sup>2</sup>	83°48' 884E 28°25' 300N	2200	SE	50m	200m	nr	Owned by Chhomrong village	Chhomrong	<i>Cinnamomum</i> and <i>Machilus</i> spp dominated forest with <i>Michelia</i> spp., <i>Aglaia</i> spp., <i>Quercus</i> spp., <i>Rhododendron</i> spp., <i>Buddleia</i> spp., <i>Plectranthes</i> spp., <i>Elaeagnus</i> spp., and <i>Arundinaria</i> spp
21	Khudi Bhir <sup>3</sup>	83°50' 780E 28°26' 861N	2200	SE	30m	300m	nr	Owned by ward 5 of Ghandruk VDC	Chhomrong	<i>Rhododendron</i> dominated temperate forest with <i>Machilus</i> spp., <i>Acer</i> spp., <i>Calcitrobia</i> spp., <i>Quercus</i> spp., <i>Rhododendron</i> spp., <i>Plectranthes</i> spp., <i>Elaeagnus</i> spp., and <i>Arundinaria</i> spp
22	Ruhinabel	83°49' 771E 28°25' 209N	1600	W	25m	150m	3 (a) 1 (e)	Owned by Landruk village	Chhomrong	<i>Quercus</i> dominated forest with <i>Elaeagnus</i> spp., <i>Michelia</i> spp., <i>Cinnamomum</i> spp., <i>Rhododendron</i> spp., <i>Aglaia</i> spp., <i>Buddleia</i> spp., <i>Anis nepalensis</i> , <i>Arundinaria</i> spp and <i>Machilus</i> spp
23	Kroja Bhir	83°49' 221E 28°22' 405N	1600	W	20m	20m	20 (a)	Owned by forest user's group, Landruk village	Landruk	Settlement area on one side with <i>Citrus</i> spp., <i>Musa paradisaica</i> , <i>Pyrus</i> spp., <i>Prunus</i> spp., <i>Rubus</i> spp., <i>Berberis</i> spp., and <i>Arundinaria</i> spp; mixed forest on the other side of the river with <i>Alnus</i> spp., <i>Plectranthes</i> spp., <i>Ficus</i> spp., <i>Quercus</i> spp., <i>Prunus cerasoides</i> , <i>Maesa chisia</i> , <i>Lyonia ovalifolia</i> , and <i>Michelia kisoa</i>
24	Tamu Khark	83°44' 026E 28°20' 362N	1500	S	30m	30m	12 (a)	Owned by forest user's group, Jilbarang	Jilbarang	<i>Prunus cerasoides</i> , <i>Rubus</i> spp., <i>Berberis</i> spp., and <i>Pyracantha crenulata</i>
25	Chimro Bhir	84°00' 166E 28°20' 641N	1100	SW	25m	150m	7 (a) 2 (e)	Owned by honey hunting group, Khaderjung village	Bhujung khola	Dense broadleaf forest disturbed by tree cutting; <i>Quercus</i> spp., <i>Machilus</i> spp., <i>Acer</i> spp., <i>Elaeagnus</i> spp., <i>Ficus</i> spp., <i>Rubus</i> spp. and <i>Berberis</i> spp; ground vegetation marshy with <i>Marchia conica</i> , <i>Chlorophytum</i> grass, and other ferns and mushrooms
26	Dalang	83°58' 801E 28°20' 729N	1100	SW	150m	200m	5 (a)	Owned by honey hunting group, Khaderjung village	Khaderjung	Dense forest of medium-sized trees and shrubs; <i>Quercus</i> spp., <i>Machilus</i> spp., <i>Acer</i> spp., <i>Elaeagnus</i> spp., <i>Rubus</i> spp., <i>Berberis</i> spp; rice, maize and vegetables nearby; fodder trees such as <i>Ficus</i> spp along field edges

<sup>1</sup>Approximate altitude calculated from the altitude recorded in the MASIF mapping system and the GPS location

<sup>2</sup>a = occupied; e = recently empty (migrated bees); nr = only old nest remnants

<sup>3</sup>Bees have left the site: active or very recently empty nests (migrated bees) not found at the time of study (shaded)

<sup>4</sup>No nests with bees at the time of study, seasonal migration likely

**Table 3.2: Arrival, Departure and Honey Hunting Time of *Apis laboriosa* Colonies in Kaski**

Nesting area	Approximate altitude	Cliff list number <sup>1</sup>	Approximate arrival time	Approximate departure time	Honey hunting time
Seti Valley					
Ghachowk <sup>2,3</sup>	1150m	None	September	January	December
Madi Valley					
Sikles and Parche Hoku	1980m 2000m	1, 2 3a, 3b, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14	February April	June October	May September
Lamakhet	1100m		February and October	May and December	April and November (twice in a year)
Modi Valley					
Ghandruk	1940m	15, 16,	February/ March	September/ October	September
Chhomrong	2170m	17, 18, 19, 20, 21,	February/ March	September/ October	September
Landruk	1565m	22, 23,	February/ March	September/ October	September
Sardi Valley					
Khaderjung <sup>3</sup>	1100m	25, 26	September	January	December
<sup>1</sup> Site 24 not included as an isolated nesting site <sup>2</sup> This winter nesting site was identified after the formal survey had been carried out and is not included in Table 3.1 <sup>3</sup> The summer nesting sites for these colonies have not yet been located					

## Predation

According to the honey hunters, and also the team's observations during the survey, the bees' main predators appear to be hornets, birds, bears, monkeys, squirrels, lizards – and human beings. Hornet nests were observed at *Apis laboriosa* nesting sites and on adjoining cliffs. The hornets were seen to attack *Apis laboriosa* both while they were in flight and while they were foraging. The *Apis laboriosa* bees were observed to spend much less continuous time feeding on a flower than other honeybee species – it was, for example, extremely difficult to photograph them feeding as their alighting time was so short. This suggests that they may be wary about being attacked.

A particular type of bird that we could not fully identify was seen to heavily predate *Apis laboriosa*. The bees' speed and manoeuvrability could not save them from these birds. This bird ate flying bees and also attacked nests. The bees reacted by raising their abdomens in concert in a group to create a series of 'bee waves', in a similar manner to the waves created by football crowds. The continuity and beauty of this bee wave was recognisable whenever bee nests were attacked. The study team also saw monkeys feeding on brood combs and abandoned honeycombs. Fallen bees and their brood are eaten by squirrels and lizards, and are taken away by ants. Bears are only able to predate relatively accessible *Apis laboriosa* nests.

## Declining Nest Numbers

Although it is difficult to obtain accurate information, there are clear indications that the number of colonies of *Apis laboriosa*, and presumably the total population, is on the decline. In 1986 Benjamin Underwood published a list of *Apis laboriosa* cliffs that he had identified in Kaski. During and after the 2001 survey we revisited the eight cliffs he had identified and looked for indications of bee nests. Four of the eight sites had no nests at all, one had only two colonies, compared with 76 in 1986, one had 16 sites where there had been 26, but all were empty, and only two had similar numbers of nests to those recorded earlier. The honey hunters identified three other cliffs that had contained large number of colonies earlier and were now devoid of nests, and a further four that only had abandoned nest remnants. These observations are summarised in Table 3.3. Similar observations were reported by local people and honey hunters in all the areas of Nepal investigated during the preliminary survey.

General observations around the cliffs that were now devoid of colonies indicated certain features that provide some clues about the reasons for the decline.

In some areas land degradation and soil erosion (intensified by land use change and the stripping away of forest and ground cover) had impacted heavily on the shape of cliffs. One cliff at Lamakhet had been partially destroyed as a result of faulty construction of a tourist trail. Deforestation also appeared to have affected water flows in some parts. Previously dry cliffs were exposed to storm water flows where forest cover had been removed and there was increased runoff. Bees never feel secure enough to nest on cliffs over which storm water flows occur.

**Table 3.3: Declining populations of *Apis laboriosa* on some cliff sites in Kaski**

Location of the cliff	Cliff list number	Cliff face	Altitude (masl)	Distance from the ground (m)	Number of Colonies	
					1986 <sup>1</sup>	2001 <sup>2</sup>
Tomejung, Lumle VDC 2	15	NW	1616 <sup>3</sup>	30	11	nc
Landruk, Lumle VDC 9	23	SW	1250 <sup>3</sup>	20-30	17	20 (o)
Kuli Chhomrong, Ghandruk VDC 9	18	S	1708 <sup>3</sup>	30	26	16 (e)
Obio Chhomrong, Ghandruk VDC 9	17	S	1647 <sup>3</sup>	60	14	nr/nc
Khuldi Chhomrong, Ghandruk VDC 5	21	SE	2226 <sup>3</sup>	20	10	nr/nc
Silasi Bhir Ghandruk VDC	19	SE	1860 <sup>3</sup>	150	15	8 (o) 2 (e)
Ghachowk Machhapuchre VDC <sup>4</sup>	-	E	1220 <sup>3</sup>	15-60	76	2 (o)
Ghachowk Machhapuchre VDC <sup>4</sup>	-	SW	1400 <sup>3</sup>	15-30	13	nr/nc
Sobrok, Pache-9, Daulu village	16	SW	1900 <sup>3</sup>	30	NA	nr/nc
Pla-ra Koira, Parche-6	12	S	2000 <sup>5</sup>	50	NA	nr/nc
Chaknevra/Chanedhar, Chhomrong	20	SE	2200 <sup>5</sup>	50	NA	nr/nc
Ligha Quira, Parche-8	7	SE	2000 <sup>5</sup>	30	NA	6 (e)
Karshidhu, Parche-6	9	NE	2000 <sup>5</sup>	30	NA	5 (e)
Pil Quira, Parche – 6	10	S	2000 <sup>5</sup>	60	NA	11 (e)
Kaula Shoi Koira, Parche-5	11	E	2000 <sup>5</sup>	200	NA	10 (e)

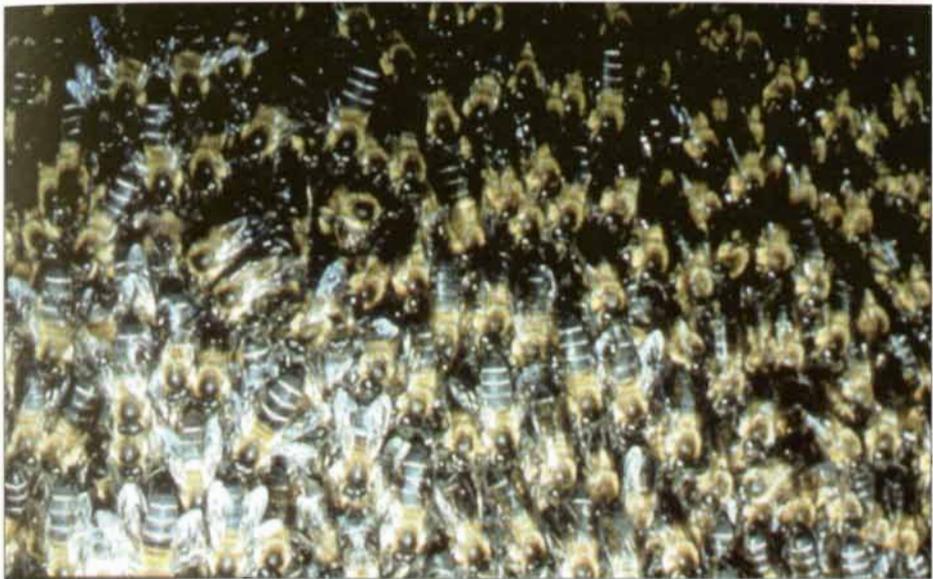
<sup>1</sup> cited from Underwood (1986)

<sup>2</sup> nr/nc - no indication of active colonies, in most cases old nest remnants visible; o – occupied nests; e - recently empty nests

<sup>3</sup> altitude as cited in Underwood (1986)

<sup>4</sup> nesting sites identified after the formal survey had been carried out, not included in Table 3.1

<sup>5</sup> calculated approximate altitude



*Mass of bees on the nest surface*



*Predators and prey: hornet nest (green oval) adjacent to *Apis laboriosa* nests (red oval)*

A more dramatic problem appeared to be an overall loss of forage opportunities. There were two main reasons for this. The first was that in many areas there had been marked changes in land use, with conversion of previously pristine areas to farmland, mainly for cultivation of rice and maize. It appeared that wherever possible people tried to transform every piece of pristine land they owned into rice fields. This inevitably results in a reduction in the supply of nectar and pollen. The second was the slow change in forest composition following the introduction of easily cultivable species like *Alnus* and *Ficus*. One example was seen at a cliff belonging to Ghachowk village, which according to the honey hunters had hosted as many as 120 colonies six years before and now had none (not included in Table 3.3). The area around this cliff used to be covered in mixed broadleaf forest with many *Ziziphus* plants and bushes which provided a major source of nectar and pollen for the bees. The forest has been completely cleared and the area is now planted with rice. The same trend was evident at Tomejung (site 15), and in other areas like Taprang where fewer nests were found. A number of honey hunters and other local people reported that there had been a decrease in the productivity of the major nesting sites, which might be explained at least partially by the loss of forage. It seems that although *Apis laboriosa* has a larger foraging radius than many insects, this is not sufficient to compensate for the massive loss of foraging opportunities.

These and other possibilities are discussed further in Chapter 6.

#### **Infrastructure vs. Bees**

Lamakhet cliff used to be a major attraction for those who liked to hunt honey and who enjoyed watching bees. Recently a tourist track was constructed and the cliff site was partially destroyed; the number of bee colonies decreased significantly as a result. Our observations suggest that it would have been possible to construct the track without physically disturbing the cliff site, but the local construction managers were not aware of the appropriate techniques, or of the damage they would cause and the broader implications. Now tourists find it easier to walk up and down the Annapurna circuit, but at what environmental cost?

# Chapter 4

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## Honey Hunting in Kaski

### Introduction

In Kaski, honey hunting is predominantly the preserve of Gurung villages. However, as in most of Nepal, the villages although dominated by one group are inhabited by people from a mix of caste and ethnic groups. Honey hunting is practised not only by Gurungs, but also by members of other groups. It represents a strong binding element among the diverse inhabitants of a village as the hunting and associated rituals are practised together. The size and height of the cliffs are seen by the hunters as being one of the major challenges in hunting. The sense of sharing and overcoming this challenge, and the communal sense of loss when a hunter loses his life on the cliff, further strengthen these bonds. The communal sense of challenge is shown by the way in which cliffs are designated; most are known by the name of honey hunters who have fallen from them, in recognition of their bravery and courage.

The honey hunters described the methods they used, the tools and equipment, and associated practices in detail during the APPA exercises and interviews. These descriptions and explanations are summarised in the following.

### Honey Hunting Tools and Equipment

The main equipment used by the honey hunters is listed in Table 4.1, some are shown in the figures. Most are made from locally available plant-based materials, particularly bamboo. Some honey hunters now use improved equipment, for example one hunter had started to use an iron sickle in place of a wooden cutter (tango), and where honey collection baskets used to be lined with lamb's skin they are now lined with plastic.

### Honey Hunting Techniques

Honey is generally harvested twice a year, during October/November (the Nepali month of Kartik) and March/April (the Nepali month of Chaitra) depending on the cliff (Table 3.2). The basic method of honey hunting is the same across Nepal. A fire is lit under the bee trees or cliffs to smoke out the bees from their combs and the combs are then cut down and collected. However, the socio-cultural and spiritual practices associated with honey hunting differ from community to community. The

following describes one example in detail: how the Gurungs of Taprang village in Kaski district hunt honey.

### **Honey hunting in Taprang village**

Each community has its own cliff or cliffs (Table 3.1) and will only harvest honey from another cliff if specifically requested to do so by the owning community. At some stage in the honey hunting season general agreement is reached that the time has come to harvest. If a group has more than one cliff, decisions on the order in which to harvest will be based on various factors including whether the cliff has active nests. An auspicious day is then selected by the priest (pujari).

Advance planning involving all group members and villagers is essential for successful honey hunting. *Apis laboriosa* honey is only collected in the daytime, mornings and evenings are considered to be the best time. Before a honey hunting event, the trail to the cliff site is either repaired or made, the equipment is checked and repaired, and the rope ladder is soaked in water.

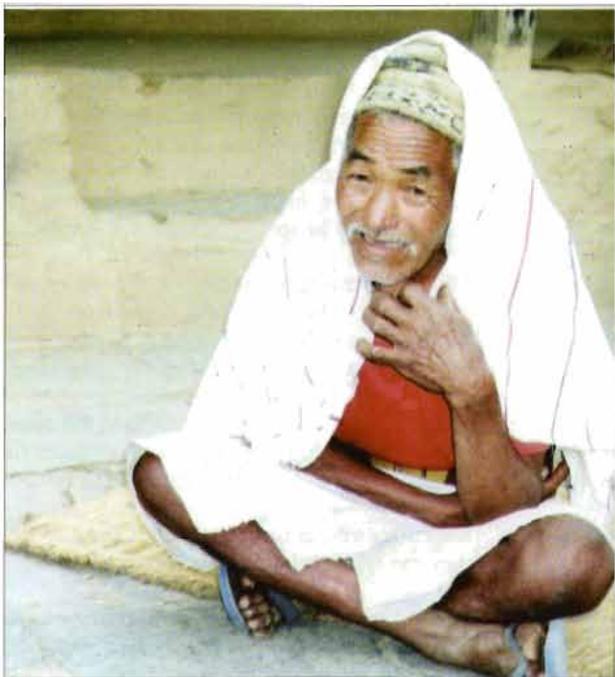
The six main tasks of smoking out, ladder pulling and guiding, signalling, collecting the honey from the cliff, gathering up the honey at the base of the cliff, and worship must all be properly carried out for a honey hunting event to be successful. There are also specific taboos associated with some of these steps. The honey hunters, about a dozen men in total, divide into specific groups to cover each of the tasks.

The honey hunters first gather the honey hunting equipment together – the ropes, ladders, poles, baskets, and bowls – and proceed to the bottom of the cliff.

They then perform a ceremony of worship to placate the cliff gods and ensure that the gods agree with the activity. They sacrifice a goat, sheep, or chicken and offer flowers, fruits, and grains of rice.

A fire of branches and foliage is lit to smoke out the bees. Smoking is crucial to disorient the worker bees and save the honey hunters from being stung. The fire is made with dry material for heat and covered with damp green leafy material to produce smoke. Foliage from *Machilus spp* (kathe kaulo) is considered to be the best material for producing smoke. *Maesa chisia* (bilaune) is not used because people believe that it may bring bad luck, leading to accidents or other problems at any time during the honey hunting event. In most cases smoke is created in a huge quantity at the base of the cliff below the targeted nest; the smoke from the fire rises up and disperses the bees upwards from the lower edges of their combs, leaving the brood and honey sections of the combs clearly visible. Where the cliff is very high, smoking bundles are sent up and down with ropes as per the instructions of the main honey hunter. Each bundle is attached with a strong stick and a rope to facilitate the up and down movement.

The rope ladder group is made up of about five people. The rope ladder (prang) is secured to a tree trunk near the top of the cliff, hung over the cliff, and then secured to another tree at the bottom. The lead honey hunter, or kuichhe, fastens himself to the rope ladder with a rope (koho chho) and



*Pujari from Taprang village*



*Honey hunters from Khanderjung village preparing the equipment*

**Table 4.1: Honey hunting equipment**

Local name	English translation	Description
prang	rope ladder	The prang is the ladder used to scale the cliffs. It is constructed from rope made from the cortex of the local malingo, ghunde, and/or tite bansh species of mountain bamboo. The ladders are generally around 70 metres long and made of 2 cm diameter rope. If the rope ladder is not long enough then a longer one is made to fit the height of the cliff. The rungs are made from a local wood called ku-kath, which is considered to be special because it is longer lasting than other wood.
uab	rope (to secure the ladder)	The uab is the rope used to tie the ladder to a tree trunk at the top of the cliff. The ropes are made from bamboo and are generally between 5 and 10 metres long, depending upon the distance between the tree trunk and the cliff edge.
pechho	rope (for hanging the basket)	The pechho is the rope used to hang the bamboo basket (korko) and is made from allo ( <i>Gerardinia palmate</i> ), babio ( <i>Eulaliopsis binata</i> ), and/or pat ( <i>Corchorus olitorius</i> ). It is usually between 50 and 70 metres long.
korko or tokari	bamboo basket	Korko are round bamboo baskets used to hold the collected honey; they can typically hold about 20 litres.
chhyakal or khaal	sheep skin	The chhyakal or khaal is a lamb's skin traditionally used to line the bottom of the korko to prevent the honey from leaking out; nowadays plastic sheets are used.
tango or ghochma	cutting stick	A tango or ghochma is a bamboo stick with a metal or wooden plate fixed on the end. It is used to dislodge and cut combs from the cliffs. The handle is usually about 7m long.
saaton	stick	A saaton is a bamboo stick used to guide the hook attached to the koili chho into the comb, also about 7m long.
koili chho	rope with hook	A koili chho is a rope made from locally available fibre with a hook on the end (koili means hook and chho means rope). These ropes are usually about 14 metres long and are used to separate the brood portion from the honey portion of nests and pull the honeycomb away from the cliff.
koho chho	a safety rope	A koho chho is a safety rope used by the honey hunter to fasten himself to his ladder. It is made from pat ( <i>Corchorus olitorius</i> ).
chhora	filter	Chhora are a kind of filter made from bamboo cortex; they are used to separate out and clean the wax and honey.
donga	bowl	A donga is a kind of wooden bowl used for collecting beeswax. Nowadays aluminium pots are mostly used instead.
tuju	rope	A tuju is a rope used to balance the ladder by connecting it to different points on the ground.
whibe	rope	A whibe is a rope made from bamboo fibre that is attached to the rope ladder and pulled by men on the ground to manipulate the ladder.
dabilo	knife	A dabilo is the wooden or iron plate that is fixed to end of the tango and is used to cut brood combs.



*Rope ladder (prang)*



*Rope used to secure the ladder (uab)*



*Bamboo basket (korko)*



*Cutting sticks (tango)*

descends. The kuichhe is the most important actor. He needs to have sufficient confidence and concentration to remain sitting safely on the rope ladder whilst operating the poles and shouting instructions to the rope controllers above. The kuiche works without any protective clothing. Their work demands great courage and total concentration.

Several rope controllers (pechho chaiba piba mhi) stay at the top of the cliff to make sure that the rope is secure and to raise or lower ropes to send down and collect items from the honey hunter. A signaller (ishar piba mhi) usually perches on an overhanging tree or anywhere where he can get a clear view of the proceedings. His job is to pass messages between the honey hunter and his assistants and to coordinate operations. He issues commands to the ladder pullers. The main ones are (in Gurung)

lower the ladder	ri ri
pull the ladder up	chhai chhai
lower the ladder slightly	ri
raise the ladder slightly	chhai

When the lead honey hunter has climbed down the rope ladder and is facing the nest, the bamboo collecting basket (korko) is lowered down to him on a rope (pechho). He then uses a long stick (kyar) to balance the collecting basket exactly under the comb. The basket is guided by a rope (whibe) which is held by people at the base of the cliff. Then the honey hunter separates the brood portion of the comb. He uses a bamboo stick (saaton) to push a wooden hook into the comb. The hook is first pushed through the end of the koili chho rope, so that the rope is firmly attached to the hook. The stick is used to guide the hook into the comb. The hook is pushed into the centre of the comb in the honey part just above the brood portion or in the brood portion itself. The kuiche then cuts the honeycomb with the tango or ghochma, a wooden or iron sickle fixed to the end of a bamboo stick. The basket is manoeuvred from the ground to catch the falling chunk of honeycomb. When the basket is full it is lowered to the ground, emptied, and sent up again. The lead hunter tries to leave some part of the brood portion on the cliff. This ensures immediate reclustering of bees at this site once the smoke has dissipated. Less experienced, and immature, hunters sometimes forget or are unable to do this.

The people responsible for gathering the honey stay at the bottom of the cliff. They cut the combs that are sent down and carefully put them into aluminium pots so that the honey does not become contaminated with any brood.

It usually takes two to three hours to harvest one colony. The number of colonies harvested from a single site varies greatly, for example in the study sample from as few as 2 to as many as 40 colonies.

In Taprang the harvested honey is shared out. All the community members who helped at the event receive one portion, while the main honey hunter and those people who pulled and guided the ladder get a double portion. All of those present at the event are permitted to eat as much honey as



*Attaching the rope ladder at the cliff top*



*Honey hunter in action - spearing the comb with the koili chho and separating the brood from honey portion*



*Cutting the comb with the tango while balancing the basket below*



*Lowering the cut comb in the basket*



*Processing the honeycomb*



*Celebrating the harvest*

they can on the spot. The main honey hunter is given the head of the sacrificed animal, and has the privilege of eating the first portion of the meat of the animal, which is cooked after the event. The hunters explained that in this village this is one way of expressing respect.

Other villages share out the honey in different ways. In Landruk village, for example, the hunters are paid around 1000 NRs per day, according to the amount of honey collected. (As a comparison, paid labour in these areas usually commands from less than 100 to around 200 NRs per day depending on the level of skill.)

## **Traditional Beliefs and Practices**

Although many of the beliefs and practices associated with honey hunting are similar across Nepal, the details differ. The local communities believe that it is crucial for them to follow the traditions – especially ritual worship — to maintain the sanctity of their cliffs and the favour of the gods. The traditional beliefs of the Kaski Gurungs are described in detail as an example to indicate the basic ideas.

The Kaski Gurungs worship their local gods before honey hunting. Thane mane – the local god – oversees all local events, the cliff god 'Abakarbhū' is specifically responsible for the honey hunting event. In general, the honey hunters make a blood sacrifice to both the gods at the start of the event by killing a goat, sheep, or chicken. At the same time they worship all dead members of the community. This worship is known as 'Ayar bhayar'. In some cases, milk is poured on the cliff before initiating honey hunting instead of animal blood. These activities are carried out by the local priest (pujari). He blesses and prays for the participants and oversees the sacrificial rituals. He performs three types of prayers (puja) using uncooked rice (accheta), pure water, incense, seven black soyabean seeds, yeast for making alcohol, locally brewed alcohol, unprocessed cotton pulled into threads (piuri), ginger (aduwa), leaf plates, and cow dung.

As for many events and many groups in Nepal, particular attention is paid to whether days are auspicious or inauspicious for honey hunting. In terms of the week, the Taprang Gurungs consider Tuesdays to be the most auspicious day, with Saturday also good. Wednesday is the most inauspicious day. In addition, honey hunting is forbidden by tradition on the eighth, twenty-third, twenty-sixth, and thirtieth days of the lunar cycle. Furthermore, certain parts of the lunar cycle are more favourable than others. The hunters prefer to gather honey 2-3 days before either a dark moon or a full moon; and they don't harvest honey during 'Sharun' times, a particular five-day period within each month in the Nepali Bikram Sambat calendar. To identify these days, the hunters must consult a lunar calendar known as the jotishi calendar (Sanskrit) or pattro (Nepali). These are prepared annually in Nepal by priest astrologers and are available on the open market. The calendar provides details of significant days in the lunar cycle including major Hindu (and Gurung) festivals and auspicious and inauspicious days for specific events like marriages, building a house, and so on.

Women are not allowed to watch honey hunting events in certain communities in Kaski, and where they are allowed they are expected to stay sitting some distance from the cliff site. It is believed

that the bees will become aggressive if women watch the proceedings. Men whose wives are menstruating or are more than six months pregnant are not allowed to join a honey hunting team.

The patterns are changing, however. In recent years several rituals have been dropped and elaborated prayer ceremonies have been simplified.

## Honey Productivity

Honey hunters and local informants estimated the amount of honey harvested from the 26 sites in the survey in the previous year (1999/00, the Nepali year runs from mid April to mid April). This information is summarised in Table 4.2 Each site was harvested only once during the year. Overall some 3000 kgs of honey was harvested, slightly less than 200 kgs per site on average, with a range from only 20 kgs (from 2 colonies) to nearly 700 kgs from (40 colonies) from a single cliff.

**Table 4.2: Estimated honey production from the nesting sites in Kaski district in the year 1999/2000**

	Cliff name	No. of nests identified in survey during 2000/01 <sup>1</sup>	Number of colonies and amount of honey harvested in the year 1999/2000	
			Number of colonies	Amount kgs
1	Sodque Bhir	37 (o) 10 (e)	20	250
2	Kamro Bhir	27 (o) 11 (e)	No harvest	
3a	Chadque Keujha Sini Themai Bhir	13 (o) 3 (e)	12	90
3b	Chadque Keujha Sini Themai Bhir	4 (o) 2 (e)	No harvest	
4	Biura Pro Koira	17 (o) 1 (e)	12	100
5	Thama Thera	2 (o) 6 (e)	10	70
6	Dhoya Quincha	4 (o) 3 (e)	2	20
7	Ligha Quira	6 (e)	10	60
8	Pli Quira	8 (o) 32 (e)	15	225
9	Karshidhu	5 (e)	6	50
10	Pil Quira	11 (e)	No harvest	
11	Kaula Shoi Koira	10 (e)	No harvest	
13	Ghaya na Koira	1 (o) 6 (e)	5	60
14	Kangro Bhir, Lamakhet	8 (o) 6 (e)	8	40
18	Kuli Bhir	16 (e)	36	450
19	Silasi Bhir	8 (o) 2 (e)	40	670
22	Rohinabei	3 (o) 1 (e)	4	40
23	Kroja Bhir	20 (o)	30	450
24	Tamukharka Mahabhir	12 (o)	18	380
25	Chimro Bhir	7 (o) 2 (e)	9	100
26	Dalang Bhir	5 (o)	No harvest	
	<b>Total</b>		<b>237</b>	<b>3055</b>

<sup>1</sup>Sites not mentioned had no active nests.

o – occupied nest, e – empty nest

## Chapter 5

# The Social and Economic Dimensions of Honey Hunting

The study team looked at the question of livelihoods and honey hunting among the people in the villages associated with the 26 sample sites.

### **Institutional Arrangements and Ownership**

Honey hunting is mostly governed by local traditions. According to these traditions, cliffs that host honeybee colonies usually belong to the local community (Table 3.1). In Kaski, individual families sometimes own the cliffs themselves, but the community either owns or has common property rights over them, and also owns the *Apis laboriosa* colonies and nests. In the past cliff ownership was sometimes transferred from one clan or community to another as a wedding dowry, but this practice is no longer common. In a few places community forestry user groups have also taken over cliff ownership and the right to harvest honey from these cliffs.

Since around 1990 the system of cliff ownership has been changing. The authority of the Forest Department and local government bodies has increased and in many parts of Nepal these bodies are slowly taking over control of the honeybee cliffs. This is one aspect of an ongoing process of formalisation and centralisation of control of resources that is taking place at all levels of government. The taking over of cliff ownership by government departments was observed in districts like Kavre, Nuwakot, and Sindhupalchowk during the preliminary survey. However, in Kaski the traditional arrangements still predominate for a number of reasons including the strength of the Gurung community and the remoteness of the area, which together have shielded traditional society from outside influences and slowed down the change towards modern lifestyles; the presence of the Annapurna Conservation Area Project which has helped raise people's awareness of their rights; and the lack of attempts by the local forest department leadership to take over control. However, as a result of poorly-defined, and in some cases missing, forest regulatory procedures, it is still possible that the Forest Department may some day take over the ownership of the cliffs in Kaski as it has in other districts of Nepal. Where the Forest Department has control of cliffs, the right to harvest honey is allotted to contractors. According to the Forest Act (HMG 2049), contractors pay a tax to the government of 10 rupees per kg of honey they harvest. Both the contractors and the government thus have a vested interest in maximising the amount of honey harvested – in contrast to the traditional practices.

## Profile of the Honey Hunters

There were 26 nesting sites in the Kaski survey and the honey hunters for these sites came from 12 villages. Almost all were over 50 years old. The great majority said that they had started as honey hunters when they were young, and had learned from their parents, grandparents, and other experienced honey hunters.

The honey hunters were mostly subsistence farmers practising agro-pastoralism. They grow wheat, barley, millet, maize, and sometimes rice on their small plots of land and keep livestock in high altitude forest areas, usually far from settlements. Family members live close to the livestock in temporary huts; the livestock is moved from place to place, depending upon the availability of fodder and the season. As well as honey and beeswax, the farmers collected non-timber forest products for food including vegetables (bamboo shoots, mushrooms, ferns, and yams) and fruit (raspberries, barberry, wild banana, and oleaster (*Elaeagnus angustifolia*)), and hunted wild animals and birds.

The honey hunters are proud of their work. Within the community, they are highly respected for having a mature, honest, fair, and courageous approach in their day-to-day life. The hunters all had strong traditional beliefs and respected nature and local traditions. They spend much of their time in remote wilderness areas looking after their livestock and have little contact with the outside world. They tend to be shy and straightforward in their ways. They have an intimate knowledge of local weather patterns and a wealth of knowledge about natural resource management. The communities prepared alcoholic drinks from millet and rice, and these also play an important part in their traditions.

## The Cash Economy

The part of Kaski where the honey hunters live is still not an area with a marked cash economy. Barter and self-production remain the major ways of maintaining livelihoods. Increasingly, however, other sources of income are becoming available and cash is used to purchase products like oil, soap, clothing, and salt that are not produced in the community. In former times honey was one of the major sources of cash income, however its importance is decreasing as less hazardous opportunities for earning develop. Temporary migration, working as porters or guides, forest development work, and others have become major sources of cash income. Remittances from abroad are also becoming increasingly important as a source of income in rural Nepal. During the survey we observed that at least one member of the family of all the honey hunters we interviewed was working abroad or at least out of the area, and this practice appears to be increasingly. Mountain tourism and the associated demand for services have also brought cash into the village economies. Even so, honey hunting has been and continues to be an important source of livelihood for some.

## Sales of bee products

Cash earnings from honey overall are relatively small. The estimated value of the honey harvested in the year 2000/01 by the ten communities in the survey who harvested is shown in Table 5.1. The



*Honey hunter from Sikles village looking after his goats*



*Sikles village, home of many honey hunters*

**Table 5.1: Estimated honey produced and possible cash earnings in 1999/2000**

Harvested cliff(s)	Name of the Community	Total honey harvested (kgs)	Number of nests	Estimated value @ 400Rs/kg (NRs)	Estimated cash equivalent return @ 50% of total harvest (NRs)
5, 6	Parche VDC - 5	90	12	36,000	18,000
1, 3a, 8, 9	Parche VDC - 6	615	53	246,000	123,000
4,13	Parche VDC - 7	160	17	64,000	32,000
7	Parche VDC - 8	60	10	24,000	12,000
14	Taprang village	40	8	16,000	8,000
18	Daulo village	450	36	180,000	90,000
19	Chhomrong	670	40	268,000	134,000
22,23	Landruk village	490	34	196,000	98,000
24	Jilbarang	380	18	152,000	76,000
25	Khaderjung	100	9	40,000	20,000
<b>Total</b>		<b>3055</b>	<b>237</b>	<b>1,222,000</b>	<b>611,000</b>

ten communities produced an estimated 3055 kgs of honey over the year. According to the honey hunters about half of the honey is usually consumed during the honey hunting event and some is consumed locally as a sweetener, medicine, and health food. This would have left some 1500 kgs available to be sold or bartered, an estimated cash equivalent return of about NRs. 600,000, from as little as NRs 8000 for one village to NRs 134,000 in another. If divided equally among a dozen honey hunters it might represent between NRs 700 and NRs 11,000 per person (family). This value should be compared with the poverty line in rural Nepal, which for some support purposes is calculated as an annual average per capita income of approximately NRs 4700. These are purely theoretical estimates, however. It was not possible to discover what the real cash (or barter) gain was per village.

Each kilogram of honey harvested also provides about 200 grams of wax. Wax is also sold and marketed through middlemen at the rate of NRs 100 - 200 per kilogram and is also traditionally used as lamp fuel and to treat infections and injuries. The total value of the harvested beeswax would have been around NRs 60,000 to 120,000, but it was not possible to ascertain what the actual income was.

Bee brood is another benefit although not a source of cash income. It is an important source of nutrition and is highly favoured by local communities as an alternative source of protein; it is considered a delicacy.

## Tourism

Himalayan honey hunting is starting to attract a considerable number of tourists. One tour operator reported that he had conducted seven honey-hunting events with the help of local honey hunters for the entertainment of tourists. These tourist groups pay between 1000 and 1500 US dollars per event (around NRs 80,000 to 120,000) to the village through the tour operator to experience and participate in a honey hunting event. In many cases tourists also have the opportunity to climb the cliff and be stung by the bees. Valli's books, articles, and film (including Valli and Summers 1988 a,b; Valli 1998 a,b) have fired western tourists with enthusiasm to see and feel this part of nature

in the wildest way. There is an immediate and relatively large cash benefit to the community, considerably larger than that provided by the honey alone. However the long-term costs may be high. The honey hunters reported, and we ourselves observed, that the populations of honeybees were considerably reduced in the areas where these events were conducted more frequently. Losing the bees means not only losing honey and honey hunting events as sources of income, it also means losing eco-services like pollination of wild plants and mountain crops, leading to a fall in productivity.

## **Overall Community Benefit**

The honey hunting communities did not regard the cash income from bee products as being the main gain of honey hunting; far more the community priority is on the associated social gatherings, interactions, and rituals. The local communities value honey hunting events as spiritual and social occasions. The events provide an opportunity to meet and chat with friends and relations from other villages. In the past, they were times when young boys and girls could get to know each other and develop relationships, and they gave young men the opportunity to demonstrate their bravery and daring. This used to be a common way of selecting partners; these days, however, young people have many other opportunities to meet.

## **The Dreams of the Honey Hunters: the Results of the First APPA Field Exercise**

Much of the information gathered during the APPA exercises has been presented above. However it is useful to gather together the specific results of the first APPA field exercise as a summary of the general attitudes, approaches, hopes and intended actions of the honey hunter group. The information is summarised under the four 'D' headings: Discovery, Dream, Design, Delivery.

Discovery – The honey hunters were asked questions that helped them understand the unique factors that made the high points possible in honey hunting. They were asked to share stories about exceptional accomplishments and life giving factors for their communities. Each individual honey hunter was asked to share the best moments, stories, and successes of the honey hunting system in his life. The major points identified were as follow.

- The hunters felt pride in the fact that the *Apis laboriosa* bees lived only in their part of the world. They thought that honey hunting events could/should be promoted for eco-tourism activities in the region because there was a large comparative advantage (uniqueness).
- Most honey hunters thought that the honey hunting system was an event strongly associated with social and cultural values as it brought people together for social gathering and entertainment. It was one of the strongest ways of organising people for collective benefit.
- Honey hunting is a source of cash income through selling of honey and wax. Beeswax can be processed to make different kinds of value-added products.
- Honey hunting skills, tools, equipment, and experiences are all locally developed.
- Honey hunting is a glue for social cohesiveness and unity.
- Honeybees are linked with biodiversity conservation and promotion of the environment.

Dream/Vision – After discovering the best moments, stories, and exceptional accomplishments, the honey hunters developed a future vision of what they would like to achieve and where they

wanted to be in 10 years time. This collective thinking and sharing of a 'future map' may be the most important resource for building the capacity of honey hunters and their communities.

- The group hoped to see five times more colonies in 10 years time than at present.
- They wanted all honey hunters and other community members to have strong unity and cooperation like bees.
- They wanted more skilful and trained honey hunters for honey harvesting, processing, wax processing, and making value added products.
- They dreamed of improvements in honey-hunting tools and equipment.
- They wished there would be a second generation of honey hunters to ensure continuity of the honey hunting system in the future.
- Their vision included improved forest management and forest coverage.

Design and Planning – This involved making an action plan to achieve the vision based on what the honey hunters could do for themselves. 'Designing' is a process of coming to consensus through sharing discoveries, ideas, hopes, and values. The honey hunters prepared a collective action plan for improving the honey hunting system. They made the following suggestions for implementation over time.

- Training on honey processing and packaging - Most honey hunters thought that skill enhancement in honey processing and packaging was vital for making honey-hunting more productive and sustainable in the long run.
- Training in wax processing
- Reducing the honey loss that occurs during hunting. Suggestions were given by the honey-hunters, including an exchange programme on experiences and skills.
- Awareness campaign for promoting honey-hunting as an eco-tourism activity, social gathering, and entertainment event.
- Exchange of experiences and skills in social mobilisation and networking

Destiny/Delivery – At the end of the field session, the participants made commitments to actions that would help towards achieving the vision and crystallising the meaning of the APPA process. The main commitments are summarised in the following. In practice these commitments were considerably extended and made more specific during the subsequent rounds of the process.

Capt Deu Bahadur Gurung (village group leader): I will try to continue honey hunting events as regularly as possible.

Mr Dhan Bahadur Khanal (main honey hunter): I will train the second generation honey hunters.

Mr Guman Gurung (pujari): I will hand over all the rituals and patterns related to the Puja process to the next pujari.

Mr. Sher Bahadur Gurung (signal indicator): I will continue my present duty with more co-operation and enthusiasm.

Mr Tul Bahadur Khanal (helper): I will continue my present duty of honey collection and control.

Mr. Medj Gurung (honey hunter from Sikles village): Even if the Taprang villagers are not interested in continuing honey hunting, I will not give up.

Mr. Ran Bahadur Gurung (helper): I will continue my present duty.

Mr. Dhan Bahadur Gurung (assistant village leader): I will try to bring new members into the group to increase sharing and understanding of the honey hunting system.

## Chapter 6

# Issues, Opportunities and Recommendations

### Major Issues

A number of major issues were identified during the course of the study. These are discussed below in more detail. Clearly many of the major issues are interlinked, but for the sake of simplicity, they are discussed under major headings.

#### Ownership

The transfer of ownership of bee cliffs from indigenous communities to government departments, in particular the Forest Department, has had a major negative impact on bee populations in many areas of Nepal. The indigenous groups have a long tradition of identification with and sustainable exploitation of the bees as a resource. The techniques they developed and the general practices of harvesting they used ensured that bee populations were maintained, in particular they were not aimed at maximising short-term gain, but only at harvesting and enjoying what was available without destroying the basis for hunting.

In contrast, where the Forest Department has control of cliffs, the right to harvest honey is allotted to contractors. Generally this is on a 'first come first served' basis, rarely does the allotment take into account factors like prior ownership, traditional honey hunting family, use of appropriate techniques that will protect the bees existence in the long-term and so on. The department's employees have little knowledge of the importance of the bees for ecosystem function, neither are they encouraged to care about this.

The contractual arrangements are generally weak, fuzzy, and exposed to corrupt practices. The whole approach encourages over-exploitation of the bees, and if the practice is not changed or better regulated must inevitably lead to a decline in the bee population. The government receives income based on the amount of honey harvested, and thus has a vested interest in the short-term in maximising the harvest. Clearly over-exploitation of the bees will lead to a long-term reduction in revenue flow, but few central or local government departments are able to think or act according to such long-term concepts. In the (prevalent) situation of corruption the local officials receive a gratuity in cash or kind for giving the contract, and this too the

contractor must cover from his profit. The higher the potential profit, the higher the gratuity that can be offered. Furthermore, the contractors hire local labourers to actually harvest the honey on the basis of harvest sharing arrangements, and this also encourages unethical hunting practices and production of honey of degraded quality. The contractors and their agents have hardly any awareness about the importance of biodiversity conservation and have only commercial motives for harvesting the honey. Generally they have a short-term approach; there is no gain to be made from using slower more skilled techniques that leave part of the brood comb on the cliff, or leaving some nests untouched, to ensure that the bees will be there another year – as there is no guarantee that a particular contractor will be allowed to harvest that cliff in another year.

The use of contractors has increased the value of wild honey as they are more efficient at marketing. But the contractors are replacing the traditional honey hunters so that the latter rarely benefit. One of the main reasons that traditional honey hunting is declining is the increasing hold that contractors have on harvesting cliff honey.

The impact of contractual arrangements can be estimated to some extent by comparing the situation in parts of Nepal where these are prevalent with that in Kaski. In Kaski, contractual arrangements through the Forest Department are uncommon. This may be attributed to the collective life style of the Gurung community, which does not allow external agents to intervene in their way of life. In the other districts where preliminary studies were carried out, we found that contracting out of nesting areas by local forest authorities was widespread – and the bee populations were falling as a result.

This phenomenal change in ownership from indigenous groups to central government has exposed bees to indiscriminate commercial exploitation and disturbed the centuries old local practice, which was economically viable and socially acceptable. It is also depriving the indigenous honey hunters of their livelihoods and cash income.

### **Loss of bee forage**

As mentioned in Chapter 3, the forage opportunities for bees are being reduced both as a result of clearing of formerly pristine areas to use as cropland, and because species that are not useful for the bees are being promoted for forest exploitation and regeneration. Present afforestation efforts seem mostly to be based on solutions that appear to be simple and effective, but in terms of ecosystem function do not replace the vegetation lost through felling. Areas planted with fast growing easily cultivated species like *Alnus* and *Ficus* provide the appearance of regeneration, but they do not provide the habitat necessary to maintain many native species of animals and insects. At the same time, locally established slow growing forest plants are deprived of the opportunity to multiply and prosper. The failure to use a holistic approach in forest and other land use planning is based to a great extent on a lack of knowledge of the intricate mechanisms involved in ecosystem functioning and the wider impact resulting from changes in species composition and land use.

The promotion of *Alnus* and *Ficus* species in the forests has not only reduced forage opportunities for the bees, it also appears to have had an impact on the texture, flavour, and composition of the honey (personal observation and comments of honey hunters).

### **Tourism and unethical hunting practices**

Irresponsible human predation is on the increase. According to the honey hunters, tourists with climbing gear have been seen visiting nesting areas and hunting the honey indiscriminately, destroying bee populations in the process. The extent of this activity cannot as yet be determined. In the areas covered by the ICIMOD project, honey hunters are now trying to protect their sites using 'social fencing' and the project is trying to raise awareness among outsiders of the impact of such activities.

The influx of tourists trekking the Annapurna circle route has also stimulated interest among tourists and tour operators for watching honey hunting events. Honey hunters are tempted to perform outside the normal season and cycle, and the tourists use modern climbing gear to accompany them, often damaging the cliff face and nesting sites in the process. Tourists, tour operators, and inexperienced hunters do not realise the importance of leaving a brood portion to ensure re-clustering of the disturbed bees. These activities further threaten bee survival, as does the slow drift of modern equipment into the hands of the honey hunters themselves, which also presents a temptation to take more nests than can be sustained. Local climbing gear always guaranteed reduced pressure on bee cliffs due to its insecure design and materials.

### **Decrease in the number of *Apis laboriosa* colonies: population decline**

There was clear evidence that the *Apis laboriosa* population in Kaski was declining, in terms of reduced nest numbers and abandoned sites. Circumstantial evidence collected during the preliminary survey indicated that the same is true across Nepal, and that the situation may be even worse in some areas.

A number of factors were identified that are likely to be contributing to the population decline, although the extent to which each is responsible cannot yet be ascertained. The problems include the following, already discussed above:

- overexploitation as a result of the changes in ownership and resultant contractor system with its emphasis on short-term commercial gain;
- overexploitation as a result of staging events for tourists;
- destructive and unethical practices including taking entire nests instead of leaving a brood portion and taking all nests on a cliff, associated with both the preceding points and often the result of ignorance and/or lack of a long-term perspective;
- loss of foraging possibilities due to loss of native forest and undergrowth species as a result of conversion of pristine areas to cropland, changes in cropping patterns, and afforestation with inappropriate species;
- loss of nesting sites as a result of soil erosion and landslides caused by loss of vegetation cover and (faulty) construction of roads and tracks; and a further problem not previously mentioned
- the effect of parasites introduced along with the non-native *Apis mellifera*.

The problem of bee parasites and bee diseases is one that effects all the indigenous bees, and has been studied in more detail for the Himalayan hive bee, *Apis cerana*. In many areas the European honeybee *Apis mellifera* has been introduced by development and government agencies in an attempt to increase honey production, and as a result of a failure to realise the importance of bees for pollination and their essential role in maintaining plant biodiversity and servicing the natural ecosystem. This introduction has led to the spread of new parasites and diseases among the indigenous bees, including among *Apis laboriosa*. For example, Allen et al (1990) reported the identification of *Melisococcus pluton*, a pathogenic agent of *Apis mellifera*, in *Apis laboriosa* colonies. This exotic parasite seriously affects *Apis laboriosa*, which has no natural resistance to it. The extent to which other infectious agents have had an impact is still unknown.

### **Lack of a new generation of traditional honey hunters**

We did not find a single young man among the cadre of honey hunters in Kaski, a strong indication that the profession in its traditional form is dying out with the present generation. All the honey hunters we interviewed had started in their youth, thus there must previously have been a much broader spectrum of ages in the group. Asked about this, villagers told us that young people are not interested in taking up the traditional honey hunting profession. A number of reasons were given.

- Young people now had different opportunities and preferred to take up paid work as porters, guides, and small service providers, for example. The most ambitious now dreamed of going to the oil rich Gulf States, and needed cash to pay the agents who could arrange jobs in these areas.
- Honey hunters earned little for their efforts, and young people laid a greater emphasis on cash income
- There was a risk to life and uncertainty in honey hunting that young people no longer accepted
- The productivity of the honey cliffs was declining, thus there were less opportunities for honey hunters
- The increase in literacy meant that young people tended to look outward and rely less on the values and traditions imparted by the village elders
- There had been a change in the definition of bravery: honey hunting was no longer seen as one of the best ways of impressing others with bravery

Although as a whole honey hunters are respected for their bravery, honesty, and skill, this respect is not translated into actual remuneration – and young people tend to be less interested in 'status without pay' than their forefathers. Clearly the failure of honey hunter's sons to follow in their father's footsteps is only one aspect of the massive changes taking place across Nepal as traditional ways are left behind and the younger generation looks to different values and role models. This change is naturally most marked in those areas that are most remote, and until very recently were still relatively untouched by outside society. Knowledge and skills that have been handed down from parent to child for centuries, are being lost within the space of a single generation. Previously, the communities that lived in the areas where there are honey cliffs were cemented together by their need to survive and their dependence on each other. Nowadays this is breaking down, with increased interaction with the outside world, better communication and infrastructure, job

opportunities, increased possibilities and need for cash income, and greater possibilities for migration. As people become self-sufficient, the spiritual and socio-cultural importance of honey hunting is declining and cash income is becoming the most important factor influencing ways of living.

If young honey hunters cannot be recruited, the traditional system will die out, bringing the danger of increased exploitation of the bee nests using modern methods by people with little understanding of the importance of the bees and no knowledge of or interest in sustainable methods of harvesting.

### **Economic and marketing issues**

The indigenous honey hunters and the communities who gather the honey are not benefiting from the increased market price of either the intoxicating red honey or of regular *Apis laboriosa* honey. This is due mainly to their lack of marketing knowledge and skills. They sell to middle men, and it is the middle men who profit from the increased prices. These communities are benefiting to some extent from honey hunting tourism, but this benefit could be offset by irreparable damage being done to the bee colonies. To be of real long-term benefit, honey hunting tourism needs to be regulated by empowering the stakeholders with knowledge and information.

### **Pollination and other eco-services**

Both the agrobiodiversity, and the natural floral biodiversity in the higher altitude areas of the Himalayas are dependent to an unmeasured but probably great extent on the presence of *Apis laboriosa*. In these areas, pollination and other eco-services are mainly provided by this bee species, which has evolved to work under conditions of low oxygen and low temperatures. It is the only bee that forages at these high altitudes, and it forages intensively. It seems likely that a reduction in the numbers of *Apis laboriosa* could have a marked effect on the maintenance of local flora, as well as on the pollination of cultivated plants. Loss of *Apis laboriosa* could nullify much of the effort made by HMG and other development players in the field of poverty alleviation, as most of the inhabitants still depend on forests and agriculture, and these depend on pollination. The precise impact on the eco-function of the biological system is difficult to ascertain, however. It is hoped that further studies will throw more light on the situation.

### **Opportunities/Needs**

*Apis laboriosa* has an important role to play in the Hindu Kush-Himalayas both in maintaining biodiversity and in maintaining livelihoods. The bee contributes to maintaining floral diversity by acting as an important pollinating agent for many native plants. It has a number of crucial roles in maintaining mountain livelihoods. It pollinates cultivated plants, and *Apis laboriosa* honey and other bee products are an economically valuable commodity. In Nepal, traditional honey hunting provides a potential means for promoting community-based eco-tourism. This could provide significant economic benefits for mountain communities and could play an important role in preserving honey-hunting traditions.

## Recommendations<sup>1</sup>

A series of recommendations were made at the end of the study period on the basis of the information obtained during the survey and the extended discussions with local honey hunters, activists, and others. Essentially the recommendations are concerned with ensuring the conservation of *Apis laboriosa*, and with helping the honey hunter communities to maintain and profit from their traditional practices. The reasons for some of the recommendations are elaborated after each point.

- *Develop a locational database and introduce collective monitoring by local communities and concerned agencies (like the Forest Department and VDCs)*

All conservation efforts require a clear base of data that allows success, failure, and need to be measured and monitored. In the case of *Apis laboriosa*, this means knowing where the bees are located, how many colonies are present on individual cliff sites, and noting changes over time. GIS mapping of the honey cliffs is recommended as an effective and easily visualised way of recording the status of bee populations, and of relocating them in studies of trend over time. Monitoring by the locally concerned parties will help raise awareness and support the feeling of ownership which is a necessary prerequisite to positive action.

- *Raise awareness of the importance of conserving *Apis laboriosa* and of actions that threaten the bee population, and build the capacity of honey hunters and government departments to conserve the bee and encourage conservation-based sustainable harvesting*

Local communities are aware of how 'wrong' actions, like overharvesting, can have a negative effect on bee populations because of their centuries old mutually beneficial relationship. They also have a traditional concern to maintain the balance of nature, although often unaware of the precise reasons and implications, for example that bees are responsible for pollination. As traditions become less valued, and centuries old practices lost, there is a danger that even local communities will cease to conserve the local resources. Furthermore, outsiders, including government departments have little understanding of the intricate balances between mountain flora and fauna, and the major impacts on mountain biodiversity that well-intentioned but uninformed 'development' activities can have. They have no knowledge of the importance of *Apis laboriosa*, seeing the bee simply as a producer of a high valued honey, and thus as a source of income. To initiate the conservation process, efforts are needed to educate government and non-government institutions so that they could understand the voice of the community, and to increase the knowledge of local communities so that they can base their conservation approach not only on tradition, but also on a well-founded knowledge of impacts.

APPA is a promising tool to support this; the results of the field test of this approach in Taprang village were promising.

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<sup>1</sup>A recommendation on the conservation of *Apis laboriosa* was also made by the sixth AAA conference suggesting that "legislation regulating honey hunting coupled with participatory resource management introducing sustainable cropping from wild colonies needs to be undertaken" (AAA 2002).

- *Support and promote an advocacy campaign to ensure that local communities are given ownership and usage rights over their local honeybee cliffs*

The transfer of bee cliff ownership from local communities to the government Forest Department in many parts of Nepal has led to overexploitation of the bee and has weakened the institution of honey hunting at the village level. A similar situation was faced for forests, with widespread degradation where there was no feeling of ownership. The introduction of community forestry as a response – where management responsibility and usage rights are given to local communities – has been one of Nepal’s most successful development initiatives. The communities guard their forests and regulate the extraction of forest products. Provided with ownership and knowledge, communities are likely to do the same for their bees. However, this issue has so far failed to attract the attention of NGOs and conservationists. Advocacy campaigns need to be run to convince forestry policy makers to give local community user groups the same rights over honeybee cliffs that communities have over their forests.

- *Ban the use of modern climbing gear for honey hunting*

The use of climbing gear and sophisticated equipment by tourists and local people during honey hunting events can cause damage to the cliff face, enables honey hunting by people who have no knowledge of the correct approach to avoid irreparable damage to the bee population, and tempts even the experienced to harvest more than is sustainable in the desire for short-term gain. Use of climbing gear should be banned unless and until an effective way can be found of regulating the harvest, for example by only licensing those with proven knowledge and limiting the amounts harvested to a given proportion of nests on a cliff and insisting on the brood portion being left, and implementing an effective system of fines and punishment. Advocacy groups and conservationists, like BEENPRO, should involve local honey hunters, tour operators, and policy makers, in calling for a ban on modern climbing equipment.

- *Educate tour operators, conservation advocacy groups, and local communities about the role of *Apis laboriosa* and the potential harm that can result from uninformed and overenthusiastic activities by tourists; support the establishment of ‘green’ bee-based tourism*

‘Bee tourism’ is a potentially gentle method of helping communities profit from *Apis laboriosa*, and of maintaining the tradition of honey hunting. However, ignorance can lead tourists to destroy the resource that they have come to see, and to those organising them allowing this to happen. An education campaign is urgently needed to ensure that all those involved in giving tourists a honey-hunting experience are aware of the potential long-term impact of such activities. Support should be given to developing genuine ecotourism approaches to honey hunting. This will facilitate the continuity of local tradition and will benefit bee-based tourism at large.

- *Establish micro-enterprises to develop and add value to Apis laboriosa honey and wax, and develop and facilitate marketing links*

Honey hunters tend to depend on middlemen for sales, and have little knowledge of how to add value to and market honey and wax. In order to ensure that the larger part of the profit remains within the honey hunter communities, these need to be helped in setting up small businesses for processing and in developing marketing approaches. Building up the marketing skills of the honey hunting communities is an important part of the ICIMOD bee project initiative.

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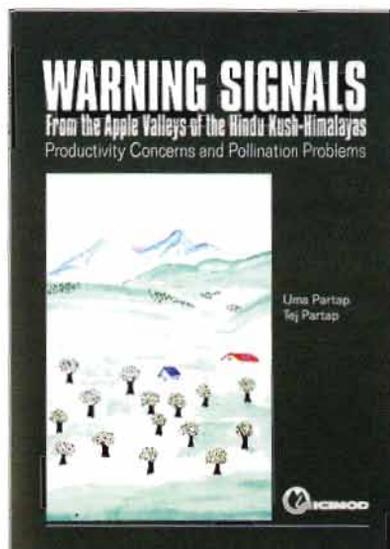
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See also ...

# Warning Signals from the Apple Valleys of the HKH

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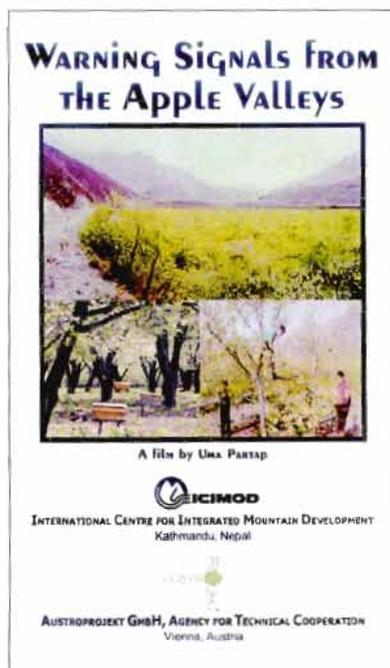
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*Apis dorsata*



*Apis cerana*



*Apis florea*



*Apis laboriosa*

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