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## **PROLOGUE**

It's nearing the end of 2001. Now, going back to the survey document has a feeling of *deja vu*. Since 1994, Keystone has established its base in Kotagiri, in the Nilgiris, working with indigenous people, all honey hunters and beekeepers. Today, a network of over 200 honey gatherers are a part of this project - benefitting from training, assured markets, better prices and good quality.

Beekeeping is now being practised in 15 villages of the Nilgiris. This is a programme to develop appropriate technology and train local people to preserve this eco-friendly income generating activity, as an integrated part of their home-gardens and agricultural fields.

However, still a lot remains to be done and we hope at Keystone, that the objectives can be achieved steadily. We hope that the findings of the survey are useful to role players in the different hill regions of Tamil Nadu. We would be glad to assist enterprising organisations, who want to further work in this field.

We are grateful to the Collector of Nilgiris, Mrs. Supriya Sahu, I.A.S. and to the Hill Area Development Programme for recognising the utility of this work and providing support for its publication. We would also like to thank all who have participated in the publishing of this book.

Kotagiri  
Nilgiris

Keystone Team  
December, 2001

**Supriya Sahu, I.A.S.**  
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Tribals zealously guard their life style and ancient traditions and open their doors only with caution and wisdom. Traditional honeyhunting by tribals is one such ancient tradition, still surviving in today's world. Honeyhunting by tribals involves life threatening efforts and the folklore associated with the entire process leaves a deep impression. It is also true that most of us are not aware or have never heard of such skills. Over the centuries, honeyhunting has come to include a number of customs, traditions and folklore which have blended together to form a very unique tradition.

This book on honeyhunting by tribals in Tamil Nadu brings to the modern world, a mysterious and ancient activity, in its complete shape. A very high degree of commitment, dedication and determination on the part of Keystone Foundation to document this unique tribal cultural heritage is highly commendable. I am sure that there cannot be any other better and fitting tribute to the Year of the Mountains 2002 and to the thousands of years' old honeyhunting tradition of tribals.

A handwritten signature in black ink, appearing to be 'Supriya Sahu'.

(SUPRIYA SAHU)

Udhagamandalam  
10th December 2001

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## PREFACE

The survey on Beekeepers and Honeyhunters of Tamil Nadu was undertaken to :

1. Locate honeyhunting groups in Tamil Nadu, both tribal and non tribal populations.
2. Document existing marketing structures and trade practices for honey and bees wax.
3. Explore feasible areas with scope for setting up beekeeping operations and application of appropriate technologies.
4. Collect relevant secondary information.

Since the 1st of April 1994, the team trekked the mountains of Tamil Nadu for over six months and finally wrote this survey document. The survey which was titled as preliminary, soon became extensive, as the team felt that a second opportunity would not come soon. Apart from beekeeping and honeyhunting, an insight into lesser known tribals has emerged. This has thrown open a wide range of development issues linked to change - change in terms of traditions, economy and accessibility. Changes in the erstwhile thriving beekeeping industry of Tamil Nadu, now reduced, due to a number of factors into a low beekeeping zone, have also been documented.

Therefore, the survey, has been a window to a wide range of issues that the tribals and villagers face, some within their control while many, are externalities - changes in nature, development policies and mechanisms of implementation.

The target readership for this document is :

1. Tamil Nadu Forest Department
2. Khadi and Village Industries Board, Government of India
3. Khadi and Village Industries Commission, Government of India
4. Tribal Development Schemes of the Government of India
5. Non-Governmental Organisations
6. Planners
7. Donors associated with Tamil Nadu Hill regions

## EXECUTIVE SUMMARY

The survey on honeyhunters and beekeepers in Tamil Nadu began, based on a number of factors, the most important being an entry point to rural development and a key to better understanding of the utilisation of natural resources.

Keystone's past experience in apiculture has shown that a successful beekeeping project is much more than a bee box and the quantity of honey produced. The whole process of tribal organisation around that activity, the key parameters to sustain it, the vision of long term gains and identification are critical for a particular development to take place.

Beekeeping and honeyhunting, the former being a more recent technology, together, have far reaching implications on a tribal lifestyle. It is a subject that they are familiar with, in the context of their dependence on natural resources and their social customs.

Tamil Nadu is endowed with four indigenous bees, of which conventional beekeeping with Newton hives, is restricted to the Asian honeybee, *Apis cerana*. The non-domesticated Rock bee, *Apis dorsata*, harvested by honeyhunters, is the source of most of the honey available today.

Of the 15 hill ranges surveyed, the honeyhunters are located mainly in the Nilgiris, Palnis and the Sathyamangalam hills whereas the beekeepers are concentrated in Kanyakumari district and Javadhi hills. Honeyhunting is done mainly by 11 distinct tribal groups living in or on the fringe of forest areas. Beekeeping is mainly promoted by the Khadi and Village Industries Board among all villagers.

Honeyhunting as an activity is rich in traditional folklore and elaborate rituals. The array of indigenous methods of harvesting honey are intrinsic to specific tribal cultures and topography. The climbing gear diversity ranges from using bamboo pegs to ropes made of local forest vines.

Some of the main issues facing this traditional group of honeyhunters are :

- # The activity is gradually changing from a highly religious, traditional activity to a commercial one due to the large amounts of honey and bees wax being available in relatively fixed seasons, with income being an overriding factor. Several rituals, e.g. bee songs, elaborate prayer services, etc., have been made simple or dropped. This change has brought about a conflict between development and traditions.
- # The use of fertilizers, pesticides and insecticides have destroyed large numbers of natural colonies.
- # Deforestation and landuse changes have reduced the numbers and diversity of plant species, for foraging.
- # Declaration of protected areas and restrictions on their activities have reduced their interest towards forests.
- # Exploitation by middlemen who give them a low return not commensurate with the effort, time, skill and dangers faced.
- # There have been almost no changes in technology in the honeyhunting practices considering the fact that it is such an age old tradition. Few improvisations have taken place to make the activity more efficient yet no development to make their activity safer, has taken place.

The beekeeping industry has had a setback primarily due to the outbreak of the Thai Sac Brood Virus (TSBV), in Tamil Nadu since 1991. This has had a severe impact on the beekeepers' principal source of income. According to the survey, about 2.5 lakh bee colonies have been lost till date, due to the disease in Kanyakumari district, alone. Today, only the Nilgiris is free from this disease.

Introduction of *Apis mellifera*, an exotic bee, though immune to the TSBV, needs to be examined from an overall perspective of local ecology and

rural beekeeping. The monoculture pollination pattern, introduction of unknown and harmful diseases and resource intensiveness of *Apis mellifera* beekeeping is undesirable because it effects the local biodiversity and leaves out options to involve the poor and less educated.

The beekeepers are facing the brunt of an ecological change, similar to honeyhunters, in terms of destruction of bee habitat, high pesticide application and a greater interest in developing cash crops. Regions where beekeeping was once thriving (e.g. Javadhis and Kollis), due to extended nectar and pollen seasons, have today become sterile.

Apart from the above natural causes, aspects of beekeeping technology, management and training need to be evaluated and made responsive to local needs and conditions. Intervention areas need to be focused on :

1. Simple, affordable and interactive beekeeping technology.
2. Flexible, management, monitoring and follow-up systems.
3. Need-based beekeeping programmes.
4. Attractive pricing policies.
5. Site selection criteria.

One of the crucial issues facing both honeyhunters and beekeepers is the price differential between the returns to them and the prevailing market value, which ranges from 3-6 times. In several areas, bees wax as a valuable product is wasted by honeyhunters.

Given the background of the tribals and situation of honeyhunters and beekeepers in this part of the country, the last chapter of this document provides ideas and insights into innovative ways of apiculture development. It emphasises on the marketing aspect and the initiation of new systems to optimally utilize honey and allied products.

## ACKNOWLEDGEMENTS FOR THE SURVEY

The survey has generated apart from information and data, a string of names of people who have helped. Some have helped financially to keep up the momentum of this unique tour, some through information sharing and some by hospitality. The idea of this survey was conceived long back, but finally materialised over supper, one evening at Dhaka. The part funding for this, is gratefully acknowledged to the Swallows in Sweden. Mogens Jensen, Apiculture Advisor, has been a constant source of support and we are happy to have been rescued by a number of friends and our families, during crisis periods. Some of them are Dr. C.L. Gupta and Shipra Gupta, M. L. Roy & Sumitra Roy, Rev. K. M. John & Dorcas John, Hemlata Nath, K. M. Jacob, Somnath Sen, Ranjan B. Verma and Ajit Chaudhari.

On the official side, the Keystone Survey Team is grateful to the Tamil Nadu Forest Department for giving us permission to visit several Wildlife areas and Reserved Forest zones. We are obliged to the Tamil Nadu Khadi & Village Industries Board for their unstinted cooperation in taking us to the beekeepers in remote areas. We do hope that some portion of this survey will help them in the near future.

If not for the YMCA at Coonoor and Prem & Rev. Devaraj, a lot of interesting people and contacts would have been missed out. It is good to see a network that works. In the Nilgiris, Rev. Philip Mulley of Kotagiri, has shared his insights and experiences with us. We are happy to have met him. Anita, Krishna, Ramdass, Anu and KTS at ACCORD in Gudalur were accommodative - in terms of shelter, food and information. At Talavadi in the Sathyamangalam hills, if not for MYRADA and its vast rural establishment, we would have not been able to see the beautiful yet threatened hills. Janardhan and his energetic team fuelled our inspiration and the survey rolled on.

We wish to thank Mr. Antony Muthu, who inspite of his classes at the Rural Training Centre at YMCA Marthandam, took us around and introduced us to many beekeepers. Thanks to him, we have a better idea of the disease and the introduction of exotic bees in South India. The tribal guides who have trudged leach infested paths, heard us out and from whom we have learnt a lot about life, are Mahendran at Pilurmattam, Kandaswamy at Mulli, Vandari Rangaswamy at Doomanur, Sabarimuthu in the Anamalais and Srinivasan in the Kalrayans. During the last part of the survey, we have enjoyed the quiet company of Swamiji, without whom we would not have been able to cover such large distance in a short time.

If not for the hills and its people, this survey would not have been contemplated. This is probably the first time, that a group has gone around enquiring about their honeyhunting methods, ropes, ladders, bee songs - it has created a sense of curiosity and hope. We hope we can live upto some of their expectations.

Keystone Team

Pondicherry  
October 1994



## CHAPTER - I

### THE HILLS AND THEIR PEOPLE - A STATE OVERVIEW

Tamil Nadu is situated at the southern end of the Indian Peninsula, with a total area of 1,30,058 square kilometres and a population of 5,56,38,318 (1991 Census). The uplands and hills of Tamil Nadu are a rich and diverse bio-region supporting an array of flora and fauna, and many indigenous, rare and endangered species. The Tamil Nadu Hills and the South Sahyadri region cover an area of 74,254 square kilometres. The Western Ghats form the outer boundary in the west, along the Kerala border, with 2 prominent gaps - Palghat and Shencottah. The North and North Eastern region is an upland with scattered hill ranges and extensions of the Eastern Ghats. These meet the Western Ghats in the Nilgiris district. The South Sahyadris, extending out of the Western Ghats, are low dry hills, now mostly degraded though patches of it, supporting a rich animal population, are conserved as sanctuaries of tropical rain forests. (Refer Map 1)

#### THE MAJOR HILL COMPLEXES

The major hill ranges have been classified into three major complexes on the basis of major watersheds and gaps in the mountain chains.

The **First Region** is an important region in the Western Ghats and a merging point of the Eastern and Western Ghats. It covers the extended hill ranges from Karnataka and comprises the Nilgiris, the Coimbatore Forested Hills and the Sathyamangalam Hills. The major rivers in this region are the Moyar and Bhavani.

The **Second Region** starts with the Anamalais after the Palghat Gap, followed by a contiguous chain of the Palnis, Varshunad, Andipatti and the Saduragiri Hills. This area is the catchment of two important rivers - Amaravathi and the Vaigai. The Shencottah Gap separates the

Mahendragiri Hills, which form a part of this region and have the same physiography. Only the Sirumalais, a small hill area, stand out as an isolated hill range, towards the East of the region.

The **Third Region** covers the North Eastern hills between the Palar and Cauvery rivers - the Pachamalais, Kollis, Shevaroyis, Javadhi, Kalrayans, Yelagiri, Chitteris, etc. This hill complex is an off-shoot of the Eastern Ghats and has a distinct vegetation typical to the region. This area is diverse in medicinal plants and herbs (*pers. comm.* Fr. K.M. Mathew). These hills are not very high (maximum elevation: 2000 metres) and are characterized by large flat plateaus on top of the mountains, which are suitable for agriculture.

#### 1.1 REGION 1 : ZONE OF DIVERSITY

This whole area forms part of the Nilgiris Biosphere Reserve, which was formed in 1986 to protect its biodiversity and retain an important corridor for the movement of elephants.

#### THE NILGIRIS

The Nilgiris hill tracts, lying in the North-western part of Tamil Nadu, largely comprise semi-tropical and deciduous forest types (Refer Map 2). This excludes the Ootacamund plateau which is characterised by commercial plantations of tea and eucalyptus. The hills comprise the following 5 sub divisions:

**1. The Gudalur Plateau :** The average elevation of this plateau ranges between 1200-1300 metres. Towards the Ootacamund plateau, the region has severely steep slopes. The forest type is dry deciduous and tropical semi-evergreen with a large number of tea estates and some eucalyptus and cinchona plantations. This region has a large urban area. Most people in the rural areas are engaged as tea plantation workers.

**2. Mudumalai Forested Hills :** The hills lie in the northern part of the district and border Karnataka state. This region has been declared a wildlife sanctuary, mainly for elephants. The forest type is tropical evergreen, the main trees being teak and oak. The altitude varies between 900-1200 metres. This area has few villages inhabited by tribals (the Kurumbas, Paniyas and Irulas), who are engaged by the Forest Department for work and also collect Non Timber Forest Produce (NTFP) from buffer zone areas.

**3. Sigur Forested Hills :** This is the meeting point of the Eastern and Western Ghats. The altitude ranges between 665-1700 metres. The southern parts of this region have steep slopes. The deciduous forests found in this region, have a large number of timber species including sandalwood, ebony, red cedar, etc. These species and a vast number of NTPF make the region highly exploited and ecologically sensitive. This area also has settlements of Kurumbas, Irulas, Kattunaickens and Paniyas who are involved in estates, Forest Department (FD) work and NTFP collection.

**4. Ootacamund Plateau :** The average altitude varies between 2100-2200 metres. The area largely comprises tea plantations, forest plantations of eucalyptus and cinchona, horticulture farms and vegetable farms. This area has the maximum tourist influx and is also the largest region in the district. Economically, this region is well developed but the extensive tea plantations and the commercial forest activity have denuded the region considerably, making it fragile and prone to landslides. The people in the area comprise the Badagas, an agricultural community and many outsiders, who have settled here. Tea is the major lucrative business, along with other ancillary activities.

**5. Kunda Forested Hills :** The whole of this region is a basin and has several reservoirs, including the Bhavani and the Pykara. The altitude varies between 2100 metres and 2600 metres and is characterised by oak,

pine, eucalyptus and cinchona plantations. This region has a low population density.

### **The Land Use, Flora and Fauna**

The region conserves important plant species and has several flowering plants restricted to this area alone, like *Calcanthus*, *Jerdonia*, *Octotropis*, etc. Comprising largely tropical moist deciduous forests, the main tree species are *tectona grandis*, *santalum album*, red cedar, rosewood, *Pterocarpus marsupium*, *Mangifera indica*, Camphor, *Cedrella toona*, *Anogeissus latifolia*, *Pongamia pinnata*, *Manilkara laxendra*, *Albizia lebek*, *Terminalia arjuna*, *Syzigium cumini*, *Dendrocalamus strictus*, etc.

The region is full of plantation crops like tea, coffee, banana, arecanut and coconut. In small and medium land holdings, dry millets like ragi (finger millet), maize and paddy are cultivated. Common trees in agricultural tracts are moringa, silk cotton and jack fruit. Spices like ginger, cardamom, pepper and turmeric are also found here.

Forming part of the Malabar Rain Forests, this area has more than 100 species of mammals, 550 species of birds and 30 species of amphibians and reptiles. The main animals are elephant, along with bison, sambar, spotted deer, tiger, panther, etc. Other parts of this reserve are the habitat of two endangered species - the Nilgiri tahr and lion-tailed macaque.

### **The People**

There are four main tribes in the Nilgiris (Refer Map 3) - Todas, Kotas, Kurumbas and the Irulas. Other tribes found in the region are the Paniyas and the Kattunaickens. The other dominant community are the Badagas.

**Badagas**, are the most numerous and from being basically herdsmen and tillers for several centuries, are now part of the mainstream economy. Honey and wax were gathered by them in the 1800s but now this practice has been lost.

The **Todas** are a nomadic pastoral tribe of the Nilgiris, practising dairying for their livelihood. Now, few Todas herd buffaloes, mainly due to the reduction in grazing land and “...seek to participate vigorously in the dynamics of modern era.”

The **Kotas**, according to Thurston, “.. are the only one of all the hill tribes who practice the industrial arts, and are therefore essential for the existence of the other classes.... They work in gold & silver, are carpenters & blacksmiths, tanners & rope makers, umbrella makers, potters and musicians .... and at the same time cultivators.” Today, few people are still artisans and most have acquired land and practice agriculture.

The tribes important for this study are the hunter gatherers, who have a high dependence on the forest for their livelihood and still live in remote villages, deep in the jungle. They are listed as follows -

**Kurumbas** : This tribe has been, essentially, hunter gatherers, and are now found in the lower belt of Gudalur, Kotagiri and Kil-Kotagiri areas (altitudes ranging between 900-1500 metres). “They dug up roots ('gasu') for food and collect jungle produce, honey, resin and gallnuts which they barter with low country traders and they are clever in catching game in nets, and dispose off the flesh in surprisingly short time.”

There are several divisions of the Kurumbas, according to their skills e.g. the 'yanai' (elephant) Kurumbas are experts in trapping elephants and are excellent mahouts. “There are many sub-divisions amongst the Kurumbas. Even in the Nilgiris, seven groups are identified. They collect honey, myrobalans, dye barks (and exchange it for a pittance), etc. In small gardens, they cultivate bananas, mangoes, jack, maize, yams, chillies and millets...” They also grow ragi (*Eleusine corocana*) and plantains. Now, they are starting to work in coffee plantations and live in small scattered settlements. They also collect NTFPs under the control of the FD, for

commercial purposes, and have rights to collect all other produce for their use.

The Kattunaickens are the other people living in the Gudalur area. According to research findings, the Jenu (honey) Kurumbas are called Naickens - Jenu Koyyo Shola Nayakars (honey cutting lords of the woods). Traditionally, the Naickens are credited with supremacy over the forest and supernatural powers. Even the Kurumbas are said to hold them in as much awe, as the other tribes hold the Kurumbas.

**Irulas** : Also a hunter gatherer community, the Irulas of the Nilgiris and the Coimbatore hills are perhaps one of the most ingenious communities. The Irulas of Chengleput, North and South Arcot districts have no linguistic and cultural connections with the former. They work as tea/coffee plantation workers, are good cattle rearers and agriculturists. The Irulas still collect forest produce and are now being encouraged by the Tamil Nadu FD to form cooperatives. Irulas are especially known as suppliers of honey collected from hives of *Apis dorsata* and *Apis cerana*.

Besides, they collect myrobalams (*Terminalia chebula*), vembadam bark (*Ventilago madraspatana*), avaram bark (*Cassia auriculata*), deer horns, tamarind, gums, soapnuts and shikakai (*Acacia conchena*). Traditionally, all Irulas have a small plot of land on which they cultivate ragi, samai (*Panicum miliare*), tennai (*Setaria italica*), tovarai (*Cajanus indicus*), maize and plantains. They also grow lime, oranges, jackfruit, etc. This practice still continues. They also retain some of their old traditions but view these activities more practically now, leaving behind some of their old superstitions, strict rituals and beliefs.

The **Paniyas** are few in numbers and found near Mudumalai. The origin of this tribe is supposed to be from Africa, as they were captured and brought to the Malabar coast as slaves for coffee plantations. Till date, they can be seen living in a row of houses inside the estates and are strongly affiliated to a landlord. Earlier, these people were employed to carry out

by the Forest Department to cultivate and/or work as forest and agricultural labourers. They collect NTFP and still hunt small game and honey, which is of economic importance to the whole village.

In these hills, the tribal settlements falling within the Reserve Forest boundary are called 'forest settlements' and enjoy special rights. As a compensation for the restrictions imposed on them to collect NTFPs, they have all been allotted land for agriculture and are cultivating millets, groundnuts, banana and paddy in irrigated areas. In some areas, they have adapted to agriculture and have small pumps to get water to the land. In other areas, lack of water and the menace from elephants who destroy standing crops, have forced the tribals to leave their land fallow.

### THE SATHYAMANGALAM HILLS

The hills, extending from the eastern portion of the Nilgiris to Bargur, lie in the northern portion of Periyar district, covering the taluks of Sathyamangalam and Bhavani (Refer Map 1). This region is a part of the Eastern Ghats, with some high peaks reaching 1600-1700 meters and an average elevation of 600-700 meters. The southern slopes form the catchment for the River Bhavani which feeds the reservoir. In the north, Palar River separates it from Karnataka. It has ridges in the western part, separated by a deep gash valley of the Moyar from the Nilgiris and a plateau on the eastern side, through which a road connects the area to Kollegal.

#### Flora and Fauna

The forests are tropical moist deciduous (Refer Map 2) - teak, bamboo, sandalwood and rosewood being the major species. Sandalwood is the major species in the Moyar valley. The habitat is ideal for elephants and bisons, amongst other animals. The rich diversity of both flora and fauna has also attracted poachers and smugglers to the area, in recent years. As the area falls under the Nilgiri Biosphere Reserve, it is ecologically sensitive and subject to severe restrictions on collection of forest produce.

robbery (especially of coffee beans) and murders. They are hunter gatherers, collecting mainly roots and pot herbs or are seen fishing in the Moyar river.

### THE COIMBATORE FORESTED HILLS

This region lies in the North-western corner of the Coimbatore district, as a narrow tract, occupying a small area (Refer Map 1). This is a continuation of the Western Ghats, and as a ridge, separates the Ootacamund plateau from the Coimbatore plateau. The elevation ranges between 300 metres and 1900 metres in an area of approximately 800 square kilometres. The annual rainfall in this area is only between 70-80 cms, as it lies in the rain shadow area. This area also forms the catchments for the Bhavani and the Noyil rivers.

#### Flora and Fauna

The forests in these hills are moist deciduous and rich in commercial species (Refer Map 2). rosewood, teak, 'pilla maradu', 'vengai' and 'karu vaghai' are important trees in this forest belt. Timber, sandalwood, poles, firewood, bamboo and canes are harvested from this area while gallnut, soapnut, shikakai (*Acacia concinna*), avaram, konnai bark, honey and bees wax, deer and sambar horns are also collected. The forests are rich in wildlife and form an important zone for elephants.

#### People

There is low population density in this region. The main population consists of Irulas (refer Nilgiris for details) with an estimated population of 30,000 (Refer Map 3).

The **Mudughas** are an endogamous community but marriages with the Kurumbas have been prevalent since long. They are spread in the Cardamom hills, Anamalais, Nilgiris and the hills adjoining Kerala. The Mudughars have been dispossessed of their lands by settlers. Access to the forest is restricted by the forest authorities. They have been given land

## DISCUSSION

This region falling in the Nilgiri Biosphere Reserve is an important area to be conserved for its rich diversity of flora, fauna and indigenous people. The Western Ghats are ecologically sensitive for many important species, especially the endangered Asian elephant. Some important observations are:

- \* The Forest Department has full control over this area, with restrictions on collecting NTFPs in sensitive areas or banning the collection of species which have been overexploited.
- \* The tribal economy which earlier depended on hunting, forest collection and pastoralism has now changed to subsistence farming and growing some commercial crops.
- \* Most tribals are not adept in agriculture leaving their land fallow or cultivating marginal lands. In most areas, cultivation is not profitable.
- \* The earlier links between the tribals and the forest are replaced by a commercial value attached to their produce.
- \* Crop destruction by elephants is a major problem for the farmers and most forest settlements cannot carry out agriculture, though land has been provided to them by the Forest Department.
- \* There has been a change in landuse from forests to plantation crops by both Forest Department and private owners. Extensive tea, coffee, eucalyptus, teak have reduced the natural 'shola' considerably, taking away the right of control from the local people to the FD and private owners.

## People

The two tribal communities living in the area are the Irulas and the Sholagars (Refer Map 3). The Irulas and Sholagars have close links with the forest, though now, most of them own land. They are also the major collectors of honey and bees wax. The Sholagars are a tribe living in the forests, depending largely on the forest for their food and income. NTFP collection is their major occupation, growing patches of ragi which they supplement with small game for their food. Now, with restriction on forest collection these people are engaged as contract labour in plantations of eucalyptus, wattle, sugarcane, coffee, etc. They leave their houses for long periods to work in other districts and states.

The major communities are agriculturists - Lingayats and Gounders, while the tribals are a small population. The area has low rainfall and hence, crops of millet, gram, castor, beans, maize and sesame are grown. In recent years, mulberry, tapioca and sunflower are being promoted among farmers. The area has a marked influence of Karnataka, as the language, customs and markets are from that state.

**TABLE I - POPULATION OF TRIBALS (REGION 1)**

TRIBES	POPULATION
Sholagars	4,827
Paniyas	6,393
Mudughas (mainly in Kerala)	11,213
Kattunaickens	26,383
Irulas (state total)	1,05,757
Kurumbas	4,354
<i>Source: Census of India, 1981</i>	

The Malaimalasaras are also hunter gatherers, practising some agriculture. Ragi, tapioca, banana, avarai (*Dolichos lablab*), tonda (*Ricinus communis*) are grown. They collect NTFPs and are hired for firewood and timber cutting. They live in lower elevations in small bamboo huts. Honey for these tribals is an important ingredient in their diet as well as for 'pooja' of their deities.

These tribals are employed by the Forest Department to help maintain the forests. They are employed in the elephant camp, forest plantations, making fire lines and other such activities. The Malasars still practice agriculture in small patches and also work in tea estates of Valparai as daily wage workers. After the area was declared a Wildlife Sanctuary, no NTFP collection is allowed - though honeyhunting is still practised in the traditional way.

## PALNI HILLS

The Palni Hills fall primarily in Dindigul Anna district. The Palni Hills are an eastward off-shoot of the Western Ghats with a maximum length (East-West) of 65 kilometres and a maximum width (North-South) of 40 kilometres and an area of 2068 square kilometres. The Palnis also form an important catchment of the Cauvery and Vaigai basins (Refer Map 1).

The elevation ranges from 300 metres to 2500 metres, thus constituting a diverse range of biome-types (Refer Map 2). The principal vegetation types may be categorised as follows:

- Tropical Montane Forest : 1800 - 2500 m
- Semi evergreen & Moist deciduous Forest : 900 - 1800 m
- Dry Deciduous Forest : 300 - 900 m
- Scrub forests : Below 300 m

The Palni Hills encompasses a diverse range of natural and man-made habitats. The temperatures range, on an average, from 20 to 30 degrees centigrade in summer and 8 to 20 degrees in winter, and even goes down

## 1.2 REGION 2 : PROTECTION vs DEGRADATION

### ANAMALAIS

The Anamalai Hills lie on the eastern slope of the Western Ghats, falling mainly in the districts of Coimbatore and Dindigul (Refer Map 1). Covering a large area, it houses several biomes; from patches of tropical rain forests along the Top Slip-Kumatty-Arliyar route to patches of grassland & shola vegetation in the Talanji plateau to dry deciduous areas (Refer Map 2). This diversity offers a significant ecological opportunity for habitat utilization by several species.

The Anamalais are one of the principal habitat areas of the elephant and the lion tailed macaque. Due to the richness of species, an area of 958 square kilometres was declared as the Indira Gandhi Wildlife Sanctuary (IGWLS). The Sanctuary covers the forest ranges of Pollachi, Udumalpet, Valparai, Ulandy and Amravathi. There are five main reservoirs within this sanctuary - Amravathi, Aliyar, Thirumurthy, Sholayar and Kadamparai.

Though the sanctuary is large, there are some areas which are not contiguous and fall under private tea estates or revenue land. The road network inside is restricted though there are several approach roads to the hills from different points in the plains.

Within the sanctuary boundary there are 46 tribal hamlets, which were here prior to the declaration of the sanctuary. The tribal groups consists of the Paliyans (discussed later), Kadars and Malaimalasaras (Refer Map 3).

The Kadars are a hunter gatherer community with little knowledge of cultivation. Their huts are made of bamboo and teak leaves and have a lack of permanence. They collect NTFPs like "...wax, honey, cardamom, myrabolams, ginger, turmeric, dammer, deer horns...". Collection of honey and bees wax is of special importance for them, as a ritual to be undertaken in the particular season.

Presently, coffee plantations cover most of the area. Jack and ficus are main shade trees. Jack is not grown economically but mainly used by workers for personal consumption. Big trees of camphor, *cedrella toona* and silk cotton are maintained in the hills for shade. In the higher elevations, i.e. >1200 m, the belt is rich in horticultural fruits like orange, pomegranate, guava, papaya, banana and pineapple. In the lower elevations, lime plantations have been introduced. There has been a shift towards silver oak in the last 20 years and it is widely grown on coffee plantations as it has a straight trunk and pepper can be grown on it. The estates are owned either by Chettiars, residing in the villages or by Nadars, who stay in the plains.

## People

This is also the tribal belt consisting of populations of both the Paliyans and Pulaiyars, indigenous tribes of the region (Refer Map 3).

Of importance to honeyhunting are the **Paliyans**, an ancient hunter gatherer community and also one of the most backward tribals. Traditionally, they do not practice agriculture but live entirely on the forest by collecting nuts, roots, gums and resin, honey and edible leaves. They put in a minimum of effort for survival. They are a nomadic tribe, spread over the Palnis, Varshunad, Saduragiri and Sirumalais. They are major honeyhunters, honey forming an essential diet item.

Now, the tribals are employed as agriculture and plantation labour. They also collect NTFPs like soapnut, shikakai, gooseberry, honey and bees wax, stone and tree moss, etc., for FD contractors and have started growing small patches of ginger and turmeric in some areas. In the Sirumalais, they are still a group who stay in remote, inaccessible areas and are shy of mixing with other communities. In Rajapalayam area, some tribals are still nomadic, with little to no assets, working as agricultural labour. Programmes of the Government for these tribals have not proved to be very effective and any assets given to them are usually sold.

to below freezing point in the Upper Palnis. They receive an average annual rainfall of approximately 1455 mm, of which about half is received during the North-East monsoon.

The Palnis are important, both for their flora and fauna, having many endangered plant species and wildlife rich pockets of bison, sambar, barking deer, leopard, panther, grizzled giant squirrel and elephants (Kudraiyar region).

## Habitation and Land Use

**The Upper Hills :** These ranges have small patches of ‘shola’ montane forests in the valleys but are largely planted with commercial species of eucalyptus, wattle and pine on erstwhile grasslands. Large scale logging takes place for timber and pulpwood in this region. The villages are inhabited by Kunnnavans and Mannadiars, primarily agrarian communities who terrace the slopes to cultivate potato, vegetables, onion and garlic, profitably. Typically, the fields are surrounded by commercial plantations and congested, unhygienic villages. People either work on fields or for the FD logging operations.

**Kodaikanal and its surroundings :** Kodaikanal is the main urban settlement and a place of tourist attraction. The surrounding hills have cultivation of vegetables, and fruit orchards of pear, plum, apples and cherries. This area has people residing from all parts of the country and owning small farmlands. This is also the area where Father Newton first hived the famous Newton Box with bees, in a small village called Shembaganur.

**The middle hills/coffee belt :** Cardamom plantations thrived in this belt till the 1940s, when ‘cardamom mosaic’, a virus destroyed all plantations. Coffee and banana plantations came up with the bananas doing very well though they were more labour intensive than coffee. The ‘bunchitop’ virus was the main cause for the banana plantations being wiped out by 1975.

The Sirumalais have the highest mountains with a maximum height of 1485 metres and wide plateaus. The natural vegetation of the hills is dry deciduous but is now chequered by coffee and other plantation crops leaving little area in its natural form (Refer Map 2). The coffee plantations have mixed vegetation, with guava, citrus, etc. For shade, silver oak is planted along with other big trees. The large plantations are owned by absentee landlords, who employ most of the villagers.

The hills are also home to the Paliyan tribals (Refer Map 3). Initially, before the estates came to the hills, the tribals had a territorial division of the hills into two resource areas for two Paliyan groups. This distinction is still maintained for the purpose of work, NTFP collection and general territoriality.

Nearly, 20 families of Paliyans still live deep in the forest and do not associate with the plantation workers. These areas are called Vattakadu and Kulathukadu. Very seldom do they take up work for minor forest produce collection for forest contractors. According to one of the tribals, they survive on cooked leaves, roots and grow ragi. They do not make houses, staying under rocks and trees. These tribals are nomadic with very uncertain movements. Honey, bee brood and tubers form an important part of their diet. They can survive on very little food, staying hungry for upto 10 days!

### **MAHENDRA GIRI HILLS**

These hills are a part of the Western Ghats complex, lying in the district of Tirunelveli, around the areas of Shencottah and Ambasamudram (Refer Map 1). The area has a number of escarpments and waterfalls, with semi-evergreen vegetation, teak, sal, blackwood and rosewood being the major species. Plantations of cashew, tamarind and bamboo are also found. The Mundunthurai Tiger Reserve lies in what is known as the Agastya-malai ranges. The vegetation consists of typical low evergreen tree species (Refer Map 2).

### **ANDIPATTI, VARSHUNAD AND SADURAGIRI HILLS**

The Andipatti, Varshunad & Saduragiri hills are the lower ranges of the Western Ghat mountain chain. These hills are found in the districts of Madurai, Dindigul and Kamarajar (Refer Map 1). They have a high population pressure from the farming communities of Thevars (agriculture landlords), who occupy the foothills. The elevation of these hills is not more than 900-1200 metres and are extremely degraded. Only patches in Srivilliputhur, which is home to the grizzled giant squirrel (*Ratufa macroura*), have been better protected due to the establishment of the sanctuary. The vegetation in other areas consists of low scrub jungle, with dominance of *Prosopis* spp. Some patches of the Varshunad Hills have fairly thick deciduous forests (Refer Map 2). The temperatures in this area are significantly high and the entire agriculture in this area is rainfed.

Paliyan tribals are dominant in this area (Refer Map 3). They reside in little hamlets in the foothills, sometimes close to other communities. The social relation between these tribals and Thevars (agriculture landlords) is not equal and instances of exploitation on the tribals have been noticed. In spite of the low, degraded tree cover and vegetation, the Paliyans still practice honeyhunting during the season. According to them, they commence their honey gathering after the rains, when the honey flow starts.

On the whole, this area has some of the poorest Paliyan tribes. Many of them, due to economic reasons, have broken off from their traditional hamlets to join the mainstream but their non-acceptance by others and their intrinsic behaviour of nomadism has not improved their lives very much.

### **SIRUMALAIS**

The Sirumalais are a small isolated hill range, situated in Dindigul district with an area of 1500 square kilometres (Refer Map 1). This region comprises many isolated hills - Alagarmalai, Korandamalai, Semmalai, etc.



In the other areas of Palnis, Varshunad, etc. the main issues relate to:

- \* Change in landuse and deforestation by felling of big trees,
- \* Use of chemical fertilisers and pesticides,
- \* Degradation at lower elevations.

### 1.3 REGION 3: HILLS OF AGRI-BUSINESS

#### PACHAMALAIS, KOLLIS, KALRAYANS, YELAGIRIS, CHITTERIS, SHEVAROYS AND JAVADHI HILLS

These hills are a complex of scattered hills, called the Tamil Nadu Hills. The hills are an extension of the Eastern Ghats and consist of a number of hill ranges in the districts of Salem, Trichy, Viluppuram, Tiruvannamalai, North Arcot and Dharmapuri (Refer Map 1). The region has semi-deciduous to scrub forests, found on the hill slopes (Refer Map 2). It is an area where sandalwood grows naturally, besides other dominant species like teak and bamboo. Indigenous species like *Pterocarpus* spp., *Terminalia* spp. and *Albizia* spp. are also found in this region.

The hills are characterised by steep slopes and plateaus on the top, where agriculture can be done without terracing. The average elevation in this region is 700-900 metres with high peaks going upto 1200-1700 metres. Rainfall is low - 70-100 cms per annum. Except for higher elevations which support coffee and fruit crops like citrus and pineapple, this is a region of scrubland, poor pastures and rainfed agriculture. In this area, agriculture is a major activity. Dry crops of millets, tapioca and pulses are grown.

This hill complex is inhabited by the Malayali tribals (Refer Map 3). They are not an ancient hill tribe but have migrated from the plains. Legend says that once upon a time there were three brothers in the plains who set out on a journey through the forest. When they did not return on schedule, their wives thought that they were killed by wild animals. In their grief, the wives committed suicide. When the brothers returned, they realised

As an area for bees, the region offers a variety of habitats, both, undisturbed forest tracts and cultivable areas near the settlements.

The Kani tribe is found in this area (Refer Map 3). They are traditional hunter gatherers, practising slash and burn agriculture. Now, this migratory cultivation has stopped and they have been allotted land by the FD, where they cultivate cereals, pulses and tapioca. Before the area was declared a Wildlife Sanctuary, the FD contractors also used to employ them to collect forest produce. They have been practising honeyhunting since a longtime, though now, after the declaration of this area as a Tiger Reserve, this traditional activity has reduced. Honey remains an important item in their lives, both, as part of the diet as well as in social customs.

TABLE II - POPULATION OF TRIBALS (REGION 2)

TRIBES	POPULATION
Paliyans	3,452
Kanis	3,698
Kadars	1,503
Malaimalasars	239
<i>Source: Census of India, 1981</i>	

### DISCUSSION

This region is a mixture of protected areas and areas of extreme degradation. The issues faced by some of the tribals in the Anamalais and Mundunthurai are:

- \* Lack of income sources, as NTFP collection has been banned.
- \* Cultivation is practised only by few tribals, only for subsistence.
- \* They are dependent on FD for any wage labour.
- \* Plantations have reduced the diversity of the area.

## CHAPTER II

### INTRODUCTION TO HONEYHUNTING & BEEKEEPING

Throughout history and in all regions, beekeeping has been a specialized occupation of certain communities or families, remaining an enigma to the rest of the population. This stands true even today. Today, modern beekeeping is based on a scientific knowledge of the structure, life history, habits and habitats of honey bees and it began with the invention of the artificial hive in 1789. Traditional methods involve primitive honey hunting or making suitable nesting areas from local materials. Traditional honeyhunters are highly skilled and their activity has evolved over a long period to suit local resources and local bees.

#### 2.1 THE HONEY BEES

Each area has its own distinctive style of honeyhunting and beekeeping to suit different bees, each of which has its own characteristics. The different species of honey bees found in India (indigenous and exotic) are:

##### **The Rock Bee (*Apis dorsata Fabricius*)**

It gets its name from its habit of nesting beneath overhanging rocks. It is also known as the Giant Bee and is a tropical species found throughout South-East Asia and the Indian sub-continent. Rock paintings from Singanpur, India, which are more than 2400 years old, show honeyhunters collecting honey from a nest of *Apis dorsata*. This bee is till today the source of a substantial part of the honey used in South-East Asia.

*Apis dorsata* is the largest, known, social bee. It builds a single comb nest, from bees wax, attached to a high branch in trees, under a rock overhang and sometimes under the ceilings of large buildings. Nesting places, built in the open but protected from rain and direct sun during summer and with abundant sources of nectar and pollen in surrounding areas, are preferred. Aggregations of up to 100 colonies in one tree are found in good areas.

what damage their delay had caused. Later, they remarried women from a lower caste of pig rearers and each left in a different direction towards the hills of Pachamalais, Kollis and Shevaroy. Even today, these tribals rear pigs and sacrifice them on important occasions.

Being agriculturists, they have easily adapted to agriculture in the hills. The people are involved in trade with the people from the plains as the hills are well connected by roads. Some are working in the service sector. Their relationship with the forests are low, which are often cut down to accommodate coffee and other crops. Rearing bees with these people has proven successful in the past. They also hunt wild colonies and collect honey for trade. A negligible number are involved in collecting any NTFP.

**TABLE III - POPULATION OF TRIBALS (REGION 3)**

TRIBES	POPULATION
Malayalis	2,09,039
<i>Source : Census of India, 1981</i>	

#### DISCUSSION

- \* The striking feature in this area is the high extent of commercialisation and agri-trade vis-a-vis other tribal areas in the state.
- \* This has led to degradation and land use change which significantly replaced forest cover.
- \* Tribals are mainly occupied with agriculture, making beekeeping more important in these hills, than honeyhunting.
- \* The tribals of this area benefit from a number of Government programmes.

plant resins are used on the branch supporting the comb, to protect the colony from ants.

Honey is stored in the upper part of the comb while pollen, brood and drone cells are stored below. Honey usually sells at better prices than honey from *Apis cerana* and *Apis dorsata*, due to reputed medicinal properties. The annual yield from a colony is about 1-3 kgs. Honey can easily be harvested, without destroying the colony by applying a little smoke. Unfortunately, honeyhunters often collect the whole comb. If disturbed, the bees desert the comb, but often return within a short time. It is a valuable pollinator with a foraging range of up to 500 metres.

### **Dammer Bees (*Trigona spp. and Melipona spp.*)**

They are the smallest among the honey-yielding bees. They are often called stingless bees because they do not sting but bite. Their nests are built in trunks of trees, logs, wall crevices or under the roofs of dwellings. In Tamil Nadu, there is a tradition for keeping Dammer Bees in bamboo hives. The bees are easily hived and seldom abscond their nest.

Dammer bees gather propolis (plant resins) and use it together with wax, to construct their nest. In the nest, there is a group of separate cells for brood rearing and another group of larger “sacs” for storage of pollen and honey. The dark and bitter honey is valued for its medicinal properties. Information on honey yields range from 20 grams to 1 kg per colony per year. They are probably valuable pollinators but information is not available.

### **The Western Honeybee (*Apis mellifera Line*)**

This species is not indigenous to the Indian sub-continent. It is one of the most widely distributed animal species and highly popular in the West. *Apis mellifera* exhibits a high level of adaptability to very different environments. It is easy to keep in man-made hives.

The upper part of the comb can store anywhere between 2 to 40 kgs of honey. Pollen and brood are stored in the lower part. Worker bees cover the comb as a curtain for protection and to maintain optimum temperature. A strong colony can have 60,000 to 1,00,000 worker bees.

*Apis dorsata* colonies are known to be vigorous, vicious and swift to attack intruders. Colonies migrate over large distances to areas with abundant nectar flow, in different seasons. Attempts to domesticate *Apis dorsata* have failed. These bees are valuable pollinators with a foraging range of several kilometres.

### **The Asian Honey Bee (*Apis cerana Fabricius*)**

Being indigenous from Afghanistan to Japan and China, *Apis cerana* exhibits a number of races and sub-races, which differ widely in productivity, behaviour and body size.

Feral (wild) colonies nest in cavities of trees, rocks, stone walls and other dark enclosed places, building several parallel combs. Honey for rearing of brood is stored in the upper part of central combs while pollen and brood are stored below. Surplus honey is stored in the outer combs.

*Apis cerana* often absconds (leaves) the nest in case of severe disturbance or lack of food. Their temper is gentle to moderately aggressive, with a distinct positive correlation between colony size and aggressiveness.

Beekeeping with *Apis cerana* in simple hives, has been practised in India for at least 2000 years. In Tamil Nadu, some honeyhunters only hunt *Apis cerana* honey. It is a valuable pollinator with a foraging range of 800 metres.

### **The Little Honey Bee (*Apis florea Fabricius*)**

The small single comb nests of *Apis florea* is often found in dense, shrub vegetation, in cavities of trees and rocks or under roofs of palm leaves. Workers form a multi-layered protective blanket covering the comb. Sticky

- # provides a source of income
- # requires no land investment
- # requires a low initial capital investment for hives & basic equipment
- # is eco-friendly and helps to protect the ecological balance
- # gives other gains in terms of:
  - honey
  - bees wax
  - more natural colonies
  - pollination
  - allied products for many industries

and, is on the whole, an ecologically sound sustainable development.

The major end products of honeyhunting/beekeeping are honey and bees wax. Removing honey through traditional methods gives a much higher yield of bees wax.

**TABLE IV**  
**TRADITIONAL & CONTEMPORARY USES OF**  
**HONEY & BEES WAX**

HONEY	BEES WAX
<ul style="list-style-type: none"> <li>* as a special diet for new born children, pregnant women and old people</li> <li>* during traditional festivals and ceremonies</li> <li>* as a medicine</li> </ul>	<ul style="list-style-type: none"> <li>* manufacture of candles</li> <li>* as a base to prepare creams, lotions, pomades, lipsticks and ointments from natural items</li> <li>* sealing material (e.g. honey containers)</li> <li>* pharmaceuticals</li> <li>* polishes, castings, dental equipment and some confectionaries</li> <li>* cobblers and carpenters</li> <li>* plant grafting</li> </ul>

It is economically, the most important of all honey bees, as a honey and bees wax producer, although yields are often exaggerated. Other hive products of minor economic importance like pollen, propolis (plant resins), royal jelly and bee venom are all used for medicinal purposes or as a diet supplement. The use of *Apis mellifera* for planned and systematic pollination of agricultural and horticultural crops is a very important economic factor.

When introduced in areas where *Apis cerana* is indigenous, *Apis mellifera* is very vulnerable to certain diseases, especially the Varroa mite, which does not seriously affect *Apis cerana*. Besides, favourable temperature/elevation/food availability, beekeeping with *Apis mellifera* in India is heavily dependent on the use of pesticides in the beehives to control the varroa mite. Residues of most pesticides are accumulated in honey and bees wax. With the introduction of *Apis mellifera* into India, serious diseases, such as the European Foul Brood, were imported, and caused havoc among the local *Apis cerana* population.

## 2.2 VALUE OF BEES

For millions of years, a major role played by the bees in ecosystems has been pollination. This means better yields in agricultural and horticultural crops, i.e. more food produced in the same area.

The effect of sufficient pollination on natural vegetation is even more important. It is a way to secure floral diversity which make ecosystems less vulnerable. More vegetation increases the carrying capacity of the area and allows associated life forms to evolve.

Beekeeping is a way of involving people, to give an opportunity to earn income from an activity that promotes environmental well-being.

The multiple gains of beekeeping are that, it:

- # increases floral diversity
- # increases crop production

Honeyhunting is a means or a set of activities to raid the bee combs though, (especially in the case of *Apis dorsata*) it may often, result in the destruction of the colony. The activity is dangerous when it involves harvesting an AD colony. Ropes, forest vines, ladders and pegs are used to reach inaccessible areas, usually under rock cliffs or in high trees to harvest combs of honey.

It is much simpler and safer when harvesting combs of other bees. The AD colonies are major sources of honey and bees wax. The honeyhunters smoke the bees, cut the combs, squeeze the honey and melt the combs for bees wax.

### **Importance of Honeyhunting**

Honey as a natural product, apart from the uses given above, and as an income generating option, has been associated closely with tribal culture and practices. The practice of honeyhunting with their traditional bee songs, ascetic practices prior to the hunting day, is an eye opener. The activity is intrinsic to their lifestyle. The income earned, production levels and better technology is a secondary matter for most of them.

Honeyhunting is a lucrative activity due to the large quantities of honey available at one time. On an average, a full grown AD colony can yield 10-15 kgs of honey in these areas. Today, because the beekeeping situation is at a low due to the disease spread, the bulk of the honey is available from the rock bee colonies. In other words, the rock bee honey is critical to the honey/beekeeping cottage industry.

The honeyhunters who are unorganized, face a variety of hazards in their work, yet get low returns. Though the price of honey in the urban market ranges from Rs.75/- kg to Rs.120/- kg, the price paid to the honeyhunters varies from Rs.11/- kg to Rs.38/- kg. In some areas, where there is a demand for honey from tourists or private people, the honeyhunters have a chance to get higher returns.

## **2.3 HONEY HUNTING**

### **Legend & Perspective**

Since time immemorial, honeyhunting is an activity that has been associated with the tribals in India. Folklore, superstitions and legends surround this activity and make this traditional activity a unique and in some cases, a dangerous effort to harvest honey. Even though, thousands of years have passed since this activity was probably first invented and performed, till today, remnants of the strict traditions, reverence and associated rituals are followed in many parts of South India.

#### **Case Study 1**

##### **The Peechi-Keni Folklore**

*There is a folklore about a lady called Peechi, who lived about 5 generations back, during the time when women also did honeyhunting and climbed down steep cliffs. One such high cliff with many colonies was a challenge by the menfolk to Peechi - climb down from the rope and harvest the colonies. She took up the challenge and successfully harvested the colonies. While she was climbing up, the men, due to jealousy, cut the rope on top and she fell into the deep abyss (keni) and died. Till today, her spirit is supposed to be haunting the place and nobody harvests honey from these cliffs. Since then, they worship this lady and seek pardon for the act of jealousy and to protect them while hunting honey.*

*The folklore shows that during that period, women were strong and independently took up activities, which are now, so called dominated by men. The deserted combs melt to wax and flow down the cliff which looks like a white washed rock.*

*Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994*

## Honeyhunting Techniques

There are a number of techniques used by honeyhunters to harvest honey. Nearly ten different techniques to harvest AD honey alone, were found to be used by tribals with adaptations and improvisations, depending on the type of local material available, heights of nesting and skill.

1. The rope & stick method mainly used for high rocks
2. The bamboo peg system used in high trees
3. Only rope for colonies located on trees
4. Rope ladder system
5. Cane looping system
6. Bamboo step ladder method
7. Conventional coir rope
8. Rope with platform
9. Basket rope ladder with bamboo steps
10. Forest vine only
11. Bamboo pole system

In each area, the forest vine is made depending on the habitat & flora available. According to several groups of hunters, the forest vine is till today, preferred over conventional ropes which are made out of coconut fibre or steel. The above mentioned techniques will be dealt in detail, later.

## Main Issues Facing Honeyhunters Today

Some of the main issues facing this traditional group are:

- # The activity has become commercial with income being an overriding factor
- # The use of fertilizers, pesticides and insecticides have destroyed large numbers of natural colonies
- # Deforestation and landuse changes have reduced the numbers and diversity of plant species, for foraging

- # Declaration of protected areas and restrictions on their activities have reduced their interest towards forests
- # Influence of the outside world where the economy is cash oriented
- # Exploitation by middlemen which gives them a low return which is not commensurate with the effort, time, skill and dangers faced.
- # No development to make their activity safer

## 2.4 BEEKEEPING

### Legend & Perspective

Beekeeping is probably as ancient an activity as the rock paintings depicting honeyhunting. Beekeeping is the creation of a system through which conditions are made favourable for the bees to stay, grow and multiply e.g. in Africa, hollow tree trunks and in the Himalayas, a house wall, are used as appropriate places for beekeeping. Some other ways of traditional

beekeeping include placing a mud-pot inside a hay-stack or regular holes under trees/rocks. Today, in India, it is the popular Newton Hive made out of a set wooden chambers and frames. Ironically, today in India, beekeeping is almost identified only with the Newton Hive, which compared to other technologies, is fairly recent.

There are different types of bee hives. Those commonly used are Langstroth (for *Apis*

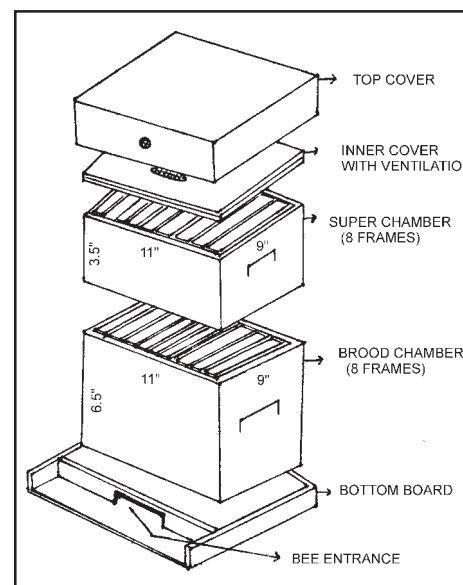


Figure -1 : NEWTON BOX

*mellifera*) and Newton (for *Apis cerana*) models. The artificial hive is a miniature house designed for keeping bee colonies (see Figure 1).

In its simplest form, it consists of a rectangular wooden box, open both at the top and at the bottom. It has a small opening on the lower side of the front board which serves as an entrance. A few movable frames are fitted into the box to support combs. The lower side of the box rests on a broad wooden board which serves as the floor and as an alighting place. The top is covered with a movable roof.

Some other accessories are required to complete the equipment. A queen gate is placed over the entrance of the hive, soon after a colony is hived, so that the queen is imprisoned during the period of the establishment of the colonies and only allows the passage of workers. The smoker is used to generate a cloud of smoke to subdue bees, when a thorough examination of the hive is required. The extractor is used for the extraction of honey from combs, without damaging the wax structure. The frames with honey combs are put into the extractor which empties the honey by centrifugal force.

A careful study of the traditional ways of beekeeping shows that the location of the bees was given a priority over management & manipulation. This was significant because the bees could be in their preferred habitat. No colonisation of wild colonies and transplantation was involved. Each of these areas, would get filled up during the swarming season.

### **Drawbacks in the Conventional System**

The conventional hive developed by Father Newton in Kodaikanal during the 1890s is still used, without much modification. Though beekeeping in Newton hives has been propagated throughout the country with considerable success, yet, there are serious drawbacks in the system.

*“Please do not give us bee boxes, we do not want them. They are more of a burden than a help. When we want honey, we know where to get it and*

*how to get it. We do not understand this apparatus, it is too complicated. If we receive the boxes from you, then someone or the other will come after a long time and give us directions about do's and dont's”* - a Sholagar at Kadambur village, Satyamangalam Hills, on hearing about beekeeping (from Field notes, 23rd August 1994)

The drawbacks can be categorised as under:

**a) Technology Appropriateness :** The appropriateness of a technology depends on, for whom has the technology been designed. There are essentially four types of beekeepers:

- i) Part-time beekeepers, who keep some hives in their gardens, as a hobby
- ii) Large beekeepers, who understand the economic value of such an activity. They keep large number of hives and hire people for their maintenance
- iii) Small land holding beekeepers, who understand the principle of beekeeping and can make a decent side income
- iv) Tribal beekeepers who are more used to honeyhunting and not to keeping bees inside wooden boxes placed on stands

Our target is the fourth group and thus the technology has to be relevant to their attitude and way of beekeeping. Appropriateness in beekeeping technology has to encompass different dimensions like resources available, skill found, social systems and traditions and dominant perceptions about this activity. Beekeeping in this country has always been related to the two-box, brooder and super syndrome. Thus, any process of training and demonstration has a bias towards the Newton style.

**b) Management :** Management is one of the deciding factors between a successful or unsuccessful beekeeping programme. Too often, among the many would-be beekeepers being trained, only a few succeed because they grasp the hive management aspect. Understanding the Newton Hive

management method fully, requires a certain knowledge of bee biology and hive manipulation. Management, if it is complicated, will evoke little interest in rural people, who are not used to thinking about longterm interests.

**c) Acceptability :** Beekeeping is an interactive process which combines both natural and human systems in an optimal manner, so as to mutually benefit both. Being a non-intrusive activity as far as resource use goes, one needs to bear in mind the following parameters in the context of rural development & acceptability:

- \* Affordability - not much of a factor in TN, because most bee boxes are distributed free
- \* Replicability
- \* Interactiveness - between technology & people
- \* Simple to understand/manipulate

### ***Apis mellifera* and Related Issues**

Since 1880, considerable interest has been taken to import *Apis mellifera* into India. For almost 100 years, all attempts have failed, despite consignments of bees from England, Italy, Lebanon, USA, Australia and USSR.

During the 1970s, a fairly large number of colonies were successfully established in the Himalayan region. Since the 1980s, a thriving beekeeping industry, based on *Apis mellifera*, has developed in the region. Bee colonies are now being supplied to other areas of India, to promote beekeeping with the exotic western bees.

Even though much attention in India is focused on the short term economic gains from *Apis mellifera* beekeeping, a number of other perspectives should be seriously considered before widespread introduction is attempted:

### **Ecological Perspective :**

- \* In case *Apis mellifera*, despite an unfavourable environment, proves itself superior to *Apis cerana*, the endemic bee may become extinct and a valuable gene reserve needed in the future will be lost. Transfer of diseases, unknown and harmful to the endemic bee could escalate the loss of genetic reserves.
- \* The pollination pattern of *Apis mellifera* is different from that of *Apis cerana*. A massive introduction of *Apis mellifera* could cause a decline in floral diversity. Surveillance tools to determine whether this actually happens has yet to be developed.

### **Socio-economical Perspective :**

- \* Beekeeping with *Apis mellifera* is resource intensive. A high level of technical knowledge and capital investment is needed to utilize the potentials. In the context of rural development, this is highly undesirable, because it leaves out options to involve the poor and less educated.
- \* With the introduction of *Apis mellifera* into new areas, serious diseases, unknown and harmful to the endemic bees, can be imported and cause heavy economic losses among already established local beekeepers, dependent on *Apis cerana*.
- \* Health considerations : Beekeeping with *Apis mellifera* in India is heavily dependent on use of pesticides in the beehives to control the Varroa mite. Residues of most pesticides are accumulated in honey and beeswax, and could cause a health risk, in a long term perspective.



## CHAPTER III

### WHY THE SURVEY

The apiculture survey in Tamil Nadu began, based on a number of factors, the most important being - an entry point to rural development and a key to better utilisation of natural resources.

Keystone's past experience in apiculture has shown that a beekeeping project is much more than a bee box and the quantity of honey produced. The whole process of tribal organisation around that activity, the key parameters to sustain it - the vision of longterm gains and identification are critical for a participatory development to take place.

Beekeeping and honeyhunting, the former being a more recent technology compared to the latter, together, have far reaching implications on a tribal's lifestyle. It is a subject that he is familiar with, in the context of his dependence on natural resources and his social customs.

Thus, their inclination to participate in a beekeeping programme is high, rather than on broad development issues, which are important, but may not be effective as a starting point.

#### 3.1 AN INNOVATIVE LOOK AT DEVELOPMENT

Some of the other reasons why the survey was undertaken are, to:

- # Document & understand the lifestyle of these lesser known, unorganised and informal group of traditional people in a changing environment,
- # Explore honeyhunting as a tradition which throws open a window on tribal customs, living conditions, attitudes and use of natural resources,
- # Identify appropriate interventions in technology, marketing and allied development areas,

- # Study the changes that affect this community today and take steps, so as to create effective options,
- # Map the extent of the Thai Sac Brood Virus disease through a feed back from primary users,
- # Create a momentum and a path for a future set of activities on eco-development aspects.

#### 3.2 A PRIORITY AREA

The field offered by honeyhunting & beekeeping in its totality, encompasses two basic elements which are Keystone's thrust areas:

- \* Environment & Ecology of Natural resources
- \* Development & Empowerment issues of primary users

Through this approach an idea, a plan of action would emerge, giving a thrust to new information locked in traditions and practices. These patterns would be the nuts & bolts for design and implementation of an eco-development strategy.

## CHAPTER IV

### CLOSER LOOK AT TRIBAL HONEYHUNTING PRACTICES

Honeyhunting in Tamil Nadu is carried out in various ways, the variation caused by the type of tribe and the topography of the area. A range of different techniques, traditions, beliefs and superstitions exist among tribals in the hills. Some groups of hunter gatherer communities are engaged in this activity as part of their norms and customs, while others look upon it as an economic activity. However, for all, honeyhunting is an essential part of life, made interesting by its sheer thrill and risks. (Refer Map 4)

**Table V : Honeyhunters - Population and Distribution**

Sl. No.	Name of Hill Area	District	No. of HH*
<b>Region -1</b>			
1	Nilgiris	Nilgiris	248
2	Coimbatore Hills	Coimbatore	121
3	Sathyamangalam	Periyar	84
<b>Region -2</b>			
4	Anamalais	Coimbatore	38
5	Palnis	Dindigul Anna	90
6	Andipatti	Madurai	8
7	Saduragiri	Kamarajar	91
8	Mehendragiri	Tirunelveli	24
9	Sirumugai	Dindigul Anna	5

Sl. No.	Name of Hill Area	District	No. of HH*
<b>Region -3</b>			
10	Pachamalais	Trichy & Salem	248
11	Kollis	Salem	121
12	Yelagiris	North Arcot	84
13	Javadhis	Tiruvanamalai	38
14	Chitteries	Dharmapuri	90
15	Shevaroyes	Salem	8
16	Kalrayans	Salem & Viluppuram	91
<b>Total Number of Honeyhunters</b>			<b>802</b>
<i>Source : Keystone Honeyhunters &amp; Beekeepers Survey - Tamil Nadu, 1994</i>			

\* Numbers have been derived from the information given by the honeyhunters interviewed

#### 4.1 REGION 1

This is an area with a high concentration of honeyhunters and endowed with a diverse tribal population and a rich biodiversity. A typical story of honeyhunting is as described by the Kurumbas in the Nilgiris, but it is one which is valid for most of the tribals in the state. The differences in technique and skill will be reflected in the analysis to follow. Unless specified, the analysis largely deals with AD honeyhunting. The analysis of honeyhunting in the state has been dealt with, tribe wise, and includes:

- \* tools and techniques used by each tribe
- \* distances travelled during honeyhunting, heights scaled, quantities harvested and the seasons for honeyhunting
- \* beliefs, superstitions and traditions which are wrapped around this activity

The analysis attempts to holistically discuss the issues facing the honeyhunters today and should enable the reader to understand the honeyhunter's hardware in terms of technology and the software in terms of traditions and customs.

### **The Story of Traditional Honeyhunting**

*Kurumbas hunt for honey in the season from mid April onwards to mid July, when the family (both husband & wife) goes to look for hives. Once located, they put a mark - an indication to the other hunters that it is reserved by them. Nobody takes honey from already identified and thus marked hives, which are identified through 'Mantras' or chants.*

*A date is set for harvesting the honey. Twelve days before, the honeyhunter goes on fast - praying & bathing regularly. He contacts his brother-in-law and another trusted person and goes for hunting the comb. The wife or any other woman should not be seen while going for honey hunting. On the day of harvesting the hunter does not eat anything, least of all, anything non-vegetarian. He does not talk but is all the time chanting mantras and invoking God to keep him safe. While he climbs the ladder, he sings 'bee songs' in praise of the bees.*

*The brother-in-law holds the rope on top of the cliff when the man swings on the rope ladder, made of vines i.e. creepers from the forest. This ladder is prepared during the day time and the honey*

*is harvested in the evening (dusk). The main equipments used are a forest vine rope ladder, knife, smoking by leaves and bamboo baskets and sticks to collect the comb. They cut the brood part first and it falls off; only the brood with the young comb is eaten. The rest of the comb is collected in tins and squeezed out by hand in the village. It is sometimes filtered through cloth. The first honey is tasted by the priest of the village. The rest is shared between all villagers and partly sold to known people.*

Note : The brother-in-law occupies a vital role as the maximum trust is placed in him to guard the ladder of the honeyhunter. This is based on the reason that if any harm befalls the hunters, his sister will become a widow. This factor is very common and important in many tribals' practices.

### **NILGIRIS**

#### **Case Study 2**

Area : Banagudisholai, Nilgiris  
Honeyhunter : Sivarajan (Kurumba tribal)

*"The honeyhunting activity requires a lot of concentration. The vine on which I hang is like my mother/Lord. As we climb down we sing praises of the vine and remember God constantly. Only those combs are harvested which have less brood. The young brood which we collect is mixed with honey as a paste and eaten later. We also collect bees wax and use it for making candles for the village and for lighting the torches when returning from honey hunting."*

Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994

**TABLE VI - TOOLS AND TECHNIQUES (Nilgiris)**

TRIBE	DESCRIPTION
Kurumbas	Rope ladders are made from the fibre of the bark of Karasamaram ( <i>Hardwickia binata</i> ) or 'Manali kodi'; bamboo sticks may be used as steps for the ladder; the other tools are coir rope, aruval (curved knife), tins, bamboo baskets and long split bamboo sticks with a sharpened end; smoker is mainly the protective gear used; some tribals apply honey or plant extract (suti kodi) to treat stings from AD.
Irulas	The rope ladders are made out of the fibre of Panamaram ( <i>Oroxylum indicum</i> ) and Karasamaram ( <i>Hardwickia binata</i> ); the rest of the tools are the same as for Kurumbas; smoker is used so that the bees leave the comb.
Kattunaickens	They make a platform or attach a bamboo basket at the end of the rope from which they hang; the basket is also made of forest vines and is large enough to accommodate the honeyhunter with his tools; Karasamaram ( <i>Hardwickia binata</i> ) is the most common fibre used to make ropes/baskets.
Source : Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994	

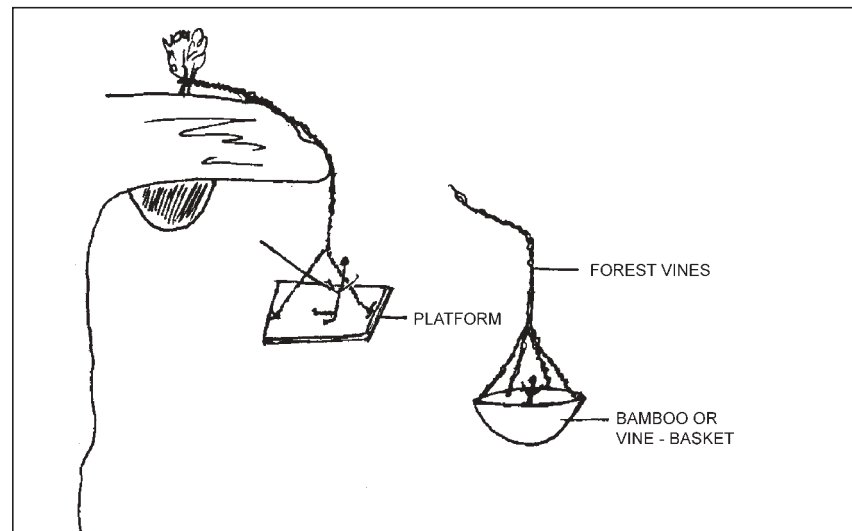


Figure 2 : Techniques of Kattunaickens

**TABLE VII - INDICES OF PRACTICE & TIME (Nilgiris)**

Tribe	Distances Travelled for Honey-hunting	Seasons for Honey-hunting	Qty. (Max kgs. p.a.)	Heights of Extracted Colonies
Kurumbas	max 12 kms	April - Aug Oct - Nov	800	max 500 ft
Irulas	max 10 kms	April - July Oct - Nov	900	max 150 ft
Kattu-naickens	max 10 kms	Feb - July Dec - Jan	160	max 120 ft
Source : Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994				

**TABLE VIII - BELIEFS, SUPERSTITIONS & TRADITIONS (Nilgiris)**

TRIBE	DESCRIPTION
Kurumbas	A simple pooja (prayer) is done before honeyhunting season; the brother-in-law factor exists; pieces from the first harvested comb are offered in 3 directions; marking of colonies with tobacco is done to prevent other people from harvesting; they believe that some cliffs are 'god's cliffs' from where no honey is harvested; they also pray at the graves of their ancestors prior to hunting
Irulas	Marking of colonies with tobacco is done to prevent other people from harvesting; spirits exist on some rocks from which no honey can be extracted; a simple prayer is done at the honey rock before the harvesting season
Kattunaickens	They have a prayer using items like coconut, incense, etc.; they do not cut the colonies with an iron knife as they believe that the bees will not make their combs in that place again; in some cases, the village priest decides who will go hunting, when and where

*Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994*

**COIMBATORE HILLS**

Thurston's description of honeyhunting by an Irula: "The collection of honey is a dangerous occupation. A man, with a torch in his hand, and a number of tubes suspended from his shoulders, descends by means of ropes or creepers to the vicinity of the comb. The sight of the torch drives away the bees, and he proceeds to fill the bamboos with comb, and then ascends to the top of the rock."

**TABLE IX - TOOLS AND TECHNIQUES (Coimbatore)**

TRIBE	DESCRIPTION
Irulas	Conventional bamboo poles are used to climb trees for reaching honey combs; climbing of big trees is done by tying sticks to the tree trunk; forest vines are used for hunting on rocks; for protection from stings, leaves of 'Raja tulasi' or Unjal maram ( <i>Albizzia amara</i> ) is used as paste; the smoker is made from herbs which calm the bees
Mudughas	Cane loops are used to climb down honey cliffs; steel / metal alloy vessels are taken instead of tins for collecting honey; the rest of the tools are the common coir rope, knife and bamboo stick.

*Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994*

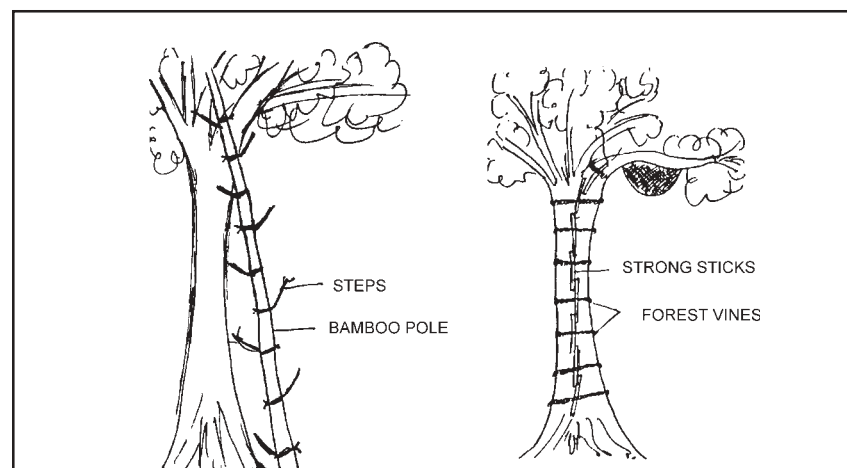


Figure 3 : Techniques of Irulas

**TABLE X - INDICES OF PRACTICE & TIME (Coimbatore)**

Tribe	Distances Travelled for Honey-hunting	Seasons for Honey-hunting	Qty. (Max kgs. p.a.)	Heights of Extracted Colonies
Irulas	upto 8 kms (2 days stay in forest)	May - July	1000	max 120 ft
Mudughas	upto 10 kms (with 3 - 7 days stay in forest)	May - July, Nov	140	max 150 ft

*Source : Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994*

**TABLE XI - BELIEFS, SUPERSTITIONS & TRADITIONS (Coimbatore)**

TRIBE	DESCRIPTION
Irulas	Prior to honeyhunting, do not eat meat or bathe with soap; they take their brother-in-law to hold the rope; they believe that no woman of the house should be in her menstrual cycle when they leave for honeyhunting; some of them do not see/touch women before they go to harvest colonies; they pray on the honey-rock.
Mudughas	Worship in the forest at the beginning of the season

*Source : Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994*

**SATHYAMANGALAM HILLS**

**TABLE XII - TOOLS AND TECHNIQUES (Sathy Hills)**

TRIBE	DESCRIPTION
Sholagars	Variations between Karasamaram fibre ( <i>Hardwickia binata</i> ) rope, coir rope, bamboo poles and bamboo ladders are used to scale heights; some Sholagars use smokers with herbs to calm bees.

*Source : Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994*

**TABLE XIII - INDICES OF PRACTICE & TIME (Sathy Hills)**

Tribe	Distances Travelled for Honey-hunting	Seasons for Honey-hunting	Qty. (Max kgs. p. a.)	Heights of Extracted Colonies
Sholagars	max 12 kms	April - June Oct - Nov	upto 800	max 200 ft

*Source : Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994*

**TABLE XIV - BELIEFS, SUPERSTITIONS & TRADITIONS  
(Sathy Hills)**

TRIBE	DESCRIPTION
Sholagars	They mark the hives they locate with tobacco and chant mantras; do not eat meat before hunting; the first comb harvested is offered to their tribal god and also thrown in 3 directions as an offering; some tribals know bee songs which are sung while harvesting; they also take their brother-in-law to guard the rope on which they hang, to collect combs.
<p><i>Source: Keystone Honeyhunters &amp; Beekeepers Survey - Tamil Nadu, 1994</i></p>	

Small populations of Irulas also stay in Sathy hills, but their honeyhunting characteristics are the same as those in the Nilgiris and Coimbatore.

#### **SUMMARY - REGION 1**

1. Kurumba tribals scale the highest heights to harvest *Apis dorsata* colonies - upto 500 ft.
2. The seasons for this activity are from 15th May to 15th August.
3. Kurumbas have kept their traditions and follow it strictly while honeyhunting.
4. Superstitions still play a very important role in the Kurumbas' and Irulas' methods of honey collection.
5. Irulas, being more numerous, harvest more honey, though the Kurumbas can scale higher and inaccessible cliffs for harvesting colonies.
6. Tools and devices largely depend on the availability of resources in the area (e.g. cane in Coimbatore hills).

7. *Apis cerana* hunting is also carried on by all the tribals between May and November.
8. The Sholagars hunt large quantities (unspecified) as they are taken on contract for the job.

#### **4.2 REGION 2**

##### **ANAMALAIS, PALNIS, ANDIPATTI, VARSHUNAD, SADURAGIRI, MAHENDRA GIRI & SIRUMALAIS**

This region has a dominant population of Paliyan tribals who have minor variations in their mode of honeyhunting. They will be dealt with together, though they occupy Palnis, Sirumalais, Saduragiri, Andipatti, and Varshunad hills. Other tribals are Kadas and Malaimalasars of Anamalais and Kanis of Mahendra Giri hills. Amongst these, the Kadars and Malaimalasars have similar practices being in the same bio-geographical region and are analyzed together.

A description by Thurston of honeyhunting by the Kanis: "The Kanikars wander all over the hills in search of honey, and a resident in Travancore writes that "I have seen a high rugged rock, only accessible on one side, the other side being a sheer precipice of several hundred feet, and in its deep crevices scores of bees' nests. Some of them have been there for generations, and the Kanikars perform periodically most daring feats in endeavouring to secure at least a portion of the honey. On this precipice I have seen overhanging and fluttering in the breeze a rattan rope, made in rings and strongly linked together, the whole forming a rope ladder several hundred feet long, and securely fastened to a tree at the top of the precipice. Only a short time ago these people made one of their usual raids on 'honey rock'. One of the tribe descended the rope ladder for a considerable distance, with a basket fastened to his back to receive the honey, and carrying with torch-wood with which to smoke the bees out of the nests. Having arrived at his goal two hundred feet from the ground below, he ignited the torch, and, after the usual smoking process which

took some little time to perform, the bees made hurried exit from the nests, and the Kanikars began the work of destruction, and with every movement the man and the ladder swayed to and fro, as if the whole thing would collapse at any moment. However, all was safe, and, after securing as much honey as he could conveniently carry, he began the return journey. Hand and foot he went up ring after ring until he reached the top in safety, performing the ascent with an air of nonchalant ease, which would done credit to any steeple jack.” The honey is brought for sale in hollow bamboo joints”.

### Case Study 3

Area : Andipatti Hills, Thaniparai, Watrap

Name : Sinnakaruppiyah - a young Paliyan

*“We have come down from the mountains and were settled by the Forest department, in these foothills. Prior to this, our life in the hills was hard.*

*We go for honeyhunting, if the cliff is big and as many as 10 people will form a team. In these forests, there are 4 different types of vine. After assessing the location of the Rock bee colonies, we decide which vine is to be used. The preparation from the vine to a proper rope for climbing will take a full day. There are only few people in this village who can climb up to the colony. Some of them will go half-way and help in passing the tools and other items to the honeyhunter. The brood that will be cut away in the beginning, will be roasted later and eaten with honey. This is a delicious dish for us.*

*Despite regular honeyhunting, the bees will settle in the same location every year. We, the younger generation, do not know bee songs. During the harvest, we will offer the first honey comb in four directions.*

*We have just been settled here about 6 months back. Our hopes and attitudes have changed. Our interest in the forest is reducing and now, the city life, the bus rides, and the cinema appeal more to us. Yet, if we are supplied with modern equipment such as helmets, steel/nylon ropes, lighting gear, we will think of starting honeyhunting again.”*

*Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994*

**TABLE XV - TOOLS AND TECHNIQUES (Region 2)**

TRIBE	DESCRIPTION
Kadars and Malaimalasaras	To reach colonies, bamboo pegs are used, both, for rocks and trees; bamboo poles are used for support and smokers to smoke away bees.
Paliyans	Karunga kodi and palkodi are the most common forest vines used to make ropes and ladders; in the Saduragiri hills, there are a number of other forest vines known to the tribals (e.g. Odan, Marudhan, Kallam, Thappai, etc.); the other tools are common - tin, coir rope, knife (aruval); besides using a smoker to smoke away the bees, they sometimes use the plant extract of “malaihanghi” on the body to prevent stings.
Kanis	They use forest vines for making ropes; besides using a smoker, they sometimes chew coriander and aniseed to blow at the bees.

*Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994*



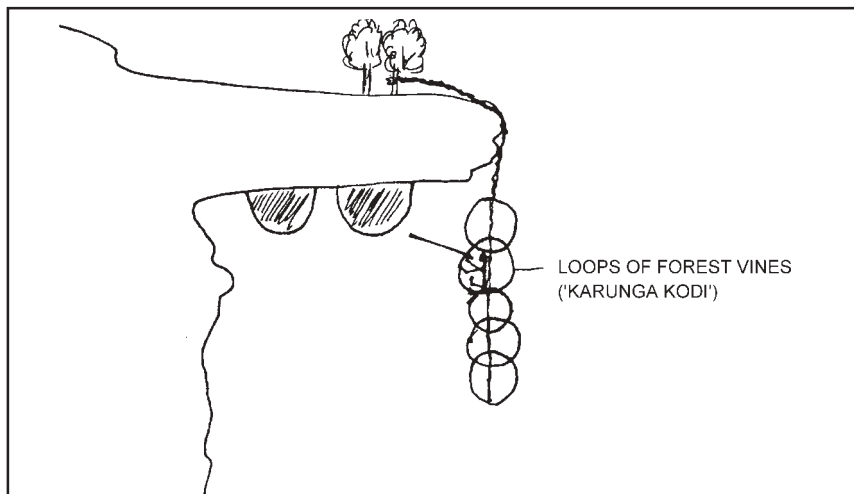


Figure 4 : Techniques of Paliyans & Kanis

**TABLE XVI - INDICES OF PRACTICE AND TIME**  
(Region 2)

Tribe	Distances Travelled for Honey-hunting	Seasons for Honey-hunting	Qty. (Max kgs. p.a.)	Heights of Extracted Colonies
Kadars & Malaimalasaras	max 10 kms	April - June Nov	2000	max 80 ft
Paliyans	max 15 kms	April - Aug Jan - Feb	max 3000	max 300 ft
Kanis	max 10 - 40 kms	Apr - Sept Feb	800	max 200 ft

Source : Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994

**TABLE XVII - BELIEFS, SUPERSTITIONS & TRADITIONS**  
(Region 2)

TRIBE	DESCRIPTION
Kadars and Malaimalasaras	The tribals say a simple prayer before honeyhunting; there is no association with women during this period; if any woman is in her menstrual cycle they do not hunt; no meat is eaten before going for honeyhunting.
Paliyans	Goat milk is sprinkled on the rock and a goat sacrificed in the beginning of the season; they do no hunt on cliffs if any honeyhunter has died there earlier; women usually do not accompany - however, in some cases, women sing bee songs and go with the honeyhunters; the Paliyans in the Yellumalai (Saduragiri) hills pray to Peechi Keni before hunting; they also throw the first honey combs in 3 directions and pray with 7 stones and 7 leaves.
Kanis	A prayer is done before honeyhunting; meat eating is not allowed; no honeyhunting is done where people have died earlier; an over confident attitude to harvesting is not considered good i.e. a certain humility is necessary.

Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994

The details of the honeyhunting activity can be best seen in the following case study.

#### **Case Study 4**

Village : Varagaraparai, Palni Hills

Name : T. Mani

*There are 2-3 main honeyhunters in this area, who are strong and calm people. A total of 15 persons accompany them for honeyhunting and stay in the forest for 7-10 days. They only take tins, rope, matchbox and knife and provisions to eat for their stay in the forest.*

*On locating the colonies, the system of rope will be designed - whether it will be a rope ladder or a rope with a basket or just a rope. The smoker is also prepared on site. Before climbing, the main honeyhunter will eat a bitter root (name not disclosed), which will prevent the bees from stinging. Moving from colony to colony, on the same rock, is possible by pushing against the rocks. Once the comb is cut, he will tug at the rope for it to be pulled up.*

*They still believe that the night before going for honeyhunting a spirit comes and informs them about when and where to hunt and which are the God cliffs where honeyhunting should not be done. They do not see women before going and follow a strict set of norms regarding bathing and praying.*

*According to them, there are less colonies now in the forests, with less honey. A good colony should have 5 kgs. in 1 cu. ft. of comb. In a year, they can earn upto Rs. 6000/- in a good season after spending on coir rope and a battery torch.*

*Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994*

#### **SUMMARY - REGION 2**

1. The Paliyans are skilled honeyhunters, both, at tree and rock colonies and in some areas collect large amounts of honey on contract.
2. Some traditions of the activity are being replaced by contemporary substitutes e.g. forest vine with coir rope, traditional torches with battery torches.
3. In the two Wildlife reserves, honeyhunting is illegal. So the activity, though still going on, has considerably reduced.
4. Colonies from trees are hunted by almost all families i.e. a large number of honeyhunters are found here who traditionally hunt AD colonies.
5. The Paliyans are strict in their beliefs and superstitions and follow them rigorously.

#### **4.3 REGION 3**

##### **PACHAMALAIS, KOLLIS, KALRAYANS, JAVADHI HILLS, YELAGIRIS, CHITTERIS AND THE SHEVAROYS**

This area is inhabited by the Malayali tribals. They are primarily agriculturists and honeyhunting is not a major activity. However, in the Shevaroy, Kollis and Pachamalais - a significant amount of honeyhunting is done. Other hills also have honeyhunters but there has been a focus on beekeeping in these hills, with most people collecting AC and AD colonies from low trees.

### Case Study 5

Area : Perumparapu, Pachamalais

Honeyhunter : Thangarasu, Perumal

*“In our area, the honeybees arrive in large numbers during the flowering of sesame plants. In these hills, each village has a particular rock and no villager can go and take honey from another village’s rock. Since our ancestors, our village has 3 rocks in its custody. No one is allowed in the village to hunt these colonies, individually. During the honeyhunting season, the whole village (30 families) participates. From each family, one member (menfolk) will be deputed on the day of honeyhunting. They hunt all night under starlight. If a honeyhunter is stung too badly, he has another replacement ready. Experienced, old hunters will sit on the rock to guide the honeyhunters. A ‘pooja’ will be performed and a goat or a chicken is sacrificed on the honey cliff once a year. The expenses of this pooja is borne by the village. The system of honeyhunting is with bamboo ladders. Sometimes, if the colony is very high, ten full grown bamboo stalks (6-7m each), will be joined together. Five ropes will come down the rock to the honeyhunter.*

Rope 1 : for support of the bamboo

Rope 2 : is around the chest of the honeyhunter

Rope 3 : for the honey tin

Rope 4 : for the smoker

Rope 5 : is for the large spade

*We wear a shirt and a veil made out of a lungi, as protective gear. The night before, the main hunters will observe complete abstinence by not sleeping on a mat, not take a bath and no association with women who are in their menstrual cycle. The money earned from this activity will go towards the village common fund - which may be utilised to build a temple or fund a festival.”*

Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994

**TABLE XVIII - TOOLS & TECHNIQUES (Region 3)**

TRIBE	DESCRIPTION
Malayali	Coir rope with sticks is used to make a ladder for climbing on rocks; forest vines like ‘Notchi kodi’, mal kodi, ‘Assamaram’, ‘Venbara kodi’ and ‘Vemmi’ are sometimes used instead of coir; bamboo ladders and bamboo poles are usually used for honeyhunting; while hunting, these tribals wear clothes to cover the body and face and use a smoker with herbs/‘thumbai’ leaves; deer/goat skin is cleaned and stitched as a bag to collect honey combs, as a substitute for the basket.

Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994

**TABLE XIX - INDICES OF PRACTICE & TIME (Region 3)**

Tribe	Distances Travelled for Honey-hunting	Seasons for Honey-hunting	Qty. (Max kgs. p.a.)	Heights of Extracted Colonies
Pachamalais	max 3 kms	March - May Dec - Feb	230	max 250 ft
Kollis	max 5 kms	April - July Sept - Oct	300	max 150 ft
Shevaroyis	max 12 - 15 kms	May - June Sept - Oct	660	max 500 ft
Chitteris	max 2 kms	April - June	250	max 100 ft
Javadhi	max 12 kms	April - June		max 60 ft
Yelagiri	max 10 kms	Jan - April Aug - Sept	600	max 150 ft

Source : Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994

**TABLE XX - BELIEFS, SUPERSTITIONS AND TRADITIONS  
(Region 3)**

TRIBE	DESCRIPTION
Malayali	They abstain from seeing women when they go to hunt; no woman in the family should be in her menstrual cycle; they do not use any cosmetics, sleep on mats, eat meat and are absolutely clean before going to hunt bees; while the activity is going on - they call on 'god' for help; in most hills a chicken, goat or pig is sacrificed when major honeyhunting has to be done; they pray at their ancestors' graves and also conduct an ordinary 'pooja' at the honey rock; an offering in 3 directions is made by throwing pieces of the first comb harvested.
<i>Source: Keystone Honeyhunters &amp; Beekeepers Survey - Tamil Nadu, 1994</i>	

### SUMMARY - REGION 3

1. Honeyhunting is practised by few people who have maintained this tradition. Though customs and traditions are followed, it is mainly an economic activity done on a contract basis for the FD.
2. Hunting colonies from trees is more prevalent than from rocks.
3. *Apis dorsata* colonies are found in large numbers in this area - this honey is mixed with *Apis cerana* honey from beekeeping and sold.
4. April-June are the important harvesting months with some honey being collected in September-October.

### 4.4 CRITICAL FACTORS IN HONEYHUNTING

There are some critical factors/parameters involved in this activity, which determine to a large extent, the skill, the state of local resources and the dependency of tribals on them. Studying a few such parameters is necessary to understand the changing face of environment in the hills, including the tribal culture and traditions.

#### Tools and techniques - Diversity of rope/forest vine

Most tribals have some tools which are common across the hill ranges - coir rope, bamboo basket, aruval (iron knife), bamboo stick, tins. In the Chitteris and parts of Shevaroyis, people use deer/goat skin which is cleaned and stitched into a bag for collecting honey combs. However, one of the most diverse tools which have emerged is the type of rope/pegs/forest vines used by different tribals in different hill ranges.

**TABLE XXI - CLIMBING GEAR DIVERSITY (REGION 1)**

Tribals / Hill Range	Nilgiris	Coimbatore Hills	Sathyamangalam
Kurumbas	Rope Ladder (RL), Karasamaram, Manalikodi, bamboo step ladder with rope at the bottom		
Irulas	RL, Banamaram, Karasamaram	Karuvelam, forest vine, conventional bamboo sticks	

Kattunaickens	Rope with platform, basket RL with bamboo steps		
Mudughas		Cane loops	
Sholagars			Karasamaram, Coir rope, Bamboo ladder and poles
<i>Source: Keystone Honeyhunters &amp; Beekeepers Survey - Tamil Nadu, 1994</i>			

**TABLE XXII - CLIMBING GEAR DIVERSITY (REGION 2)**

Tribals / Hill Range	Ana-malais	Palnis	Andipatti, Saduragiri	Siru-malais	Mahendra Giris
Kadars & Malai-malasars	Bamboo pegs & poles				
Paliyans		Karunga, Palkodi, step & stick system, coir rope	Karunga, Pulian, Odan, Marudhan Kollam, Yambang, Poddai, Thappai, Vellai, Tharui, Palkodi, coir rope	Coir rope, Karunga	
Kanis					Forest vine loops
<i>Source: Keystone Honeyhunters &amp; Beekeepers Survey - Tamil Nadu, 1994</i>					

**TABLE XXIII - CLIMBING GEAR DIVERSITY (REGION 3)**

Tribals / Hill Range	Pachamalais	Kollis	Shevaroyas	Chitteries	Javadhi & Yelagiri
Malayali	Coir, Notchi kodi, bamboo ladder	Bamboo ladder coir rope, pegs	Coir rope, bamboo ladder	Asa maram Venbama kodi, forest vines	Mal kodi, Vemmi kodi, coir rope, bamboo ladder
<i>Source: Keystone Honeyhunters &amp; Beekeepers Survey - Tamil Nadu, 1994</i>					

From the tables, it is evident that the Paliyans use the largest number of forest vines. However, in practice, the availability of most of the vines are rare and 'Karunga kodi' and 'Palkodi' are more prevalent. Some areas in the Saduragiri hills are more diverse. In some cases, coir rope is replacing forest vines, where people find that it is as strong affordable.

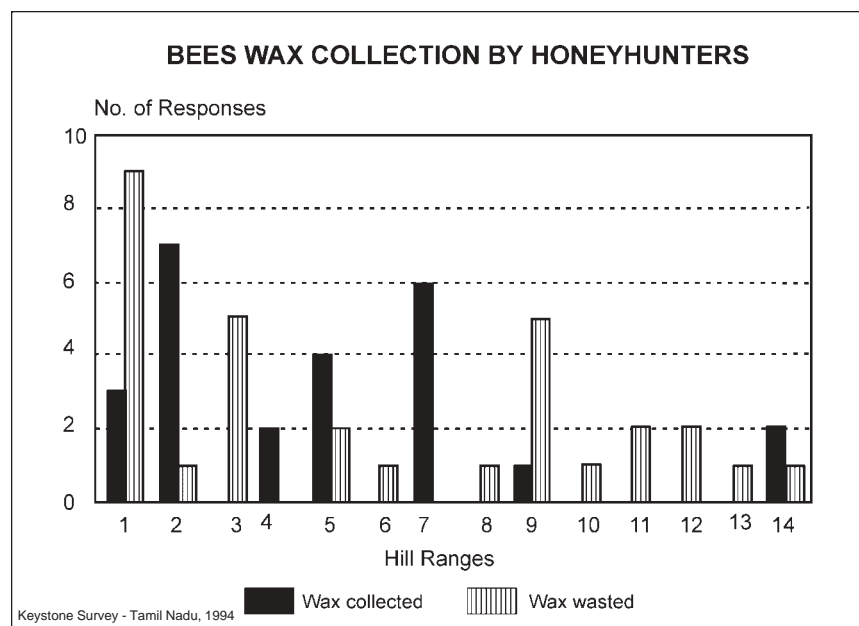
Tribals who maintain their traditional practice of using forest vines are the Kurumbas and Irulas of Nilgiris and the Kanis of Mundunthurai and the Mudughas in Coimbatore hills. They use traditional methods because the trees/vines are still available in the forest in abundance and the tribals regard this method as a conventional practice, to which they must adhere. The bamboo peg use is seen only in the Anamalais and is a specialised climbing technique in those hills.

The other important aspect emerging from the tables is the sustainability of these species in the forest. It will be necessary to conserve, for the future, these tree species and other related resources so that the tradition of honeyhunting can be maintained.

## Collection of wax from brood

An important part of honeyhunting is the collection of wax from the honey comb. Though, in most cases, the wax is collected from the honey part of the comb, the wax from the brood part is sometimes thrown away/wasted. However, this is the portion from where the maximum quantity of wax can be obtained. In most cases, the tribals consume the young brood along with the wax. Throughout the hill ranges, the following responses were received:

Graph 1



It can be observed that in the Nilgiris, Sathyamangalam, Sirumalais, Mahendragiris, Pachamalais, Kollis, Shevaroyis, Chitteris and Javadhi hill ranges wax is wasted as it has no local market and the tribals have no knowledge of its uses.

## Seasonality of Honeyhunting

TABLE XXIV - SEASONALITY OF HONEYHUNTING

Hill Ranges / Months	Dec - Jan	Jan - Feb	Feb - Mar	Mar - Apr	Apr - May	May - June	June - July	July - Aug	Aug - Sep	Sep - Oct	Oct - Nov	Nov - Dec
	Margali	Thai	Masi	Panguni	Chitrai	Vaigasi	Ani	Adi	Avani	Protasi	Aipasi	Kartigai
Nilgiris	**			**	**	**	**	**		**	**	**
Coimbatore					**	**	**				**	
Sathy	**	**	**	**	**	**				**	**	
Annamalais												
Palnis					**	**	**	**				
Sirumalais						**	**					
Andi-Saduragiri	**	**			**	**	**	**				**
Mahendragiri		**	**		**		**	**	**			
Pachamalai	**	**	**		**							
Kollis				**	**	**	**		**	**		
Shevaroyis					**	**			**	**		
Chitteris				**	**	**						
Javadhi				**	**	**						
Yelagiri	**	**		**				**				

The longest season is in the Nilgiris, followed by the adjacent Sathyamangalam hills and then by Mahendra Giris. A period of nine months of honeyhunting in the Nilgiris indicates good floral/vegetative conditions of the hills as well as that it is a regular occupation of the tribals. There is a variation of the season from place to place, within the Nilgiris, depending on altitude and rainfall.

### Bees and the Environment

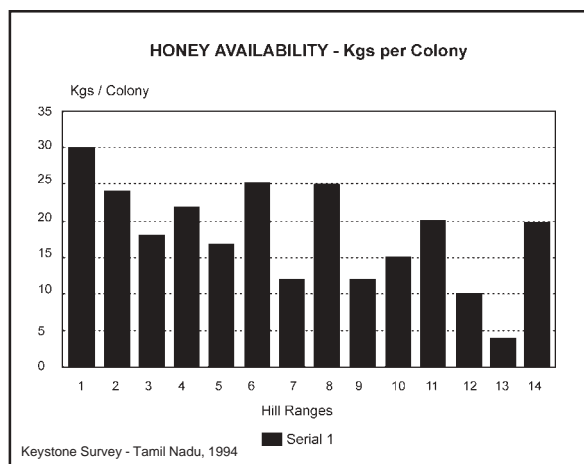
Changes in the flora and fauna affect the population and presence of bees. Large, strong colonies are found in areas of high floral availability throughout the year, i.e. with a high diversity in vegetation. In bees, this is reflected by :

- a) amounts of honey (kgs per colony)
- b) fluctuations in location of colonies as well as quantities harvested

The quantum of honey available per colony depends on a number of factors, some important ones being:

- \* floral/pollen availability
- \* micro-climate

**Graph - 2**

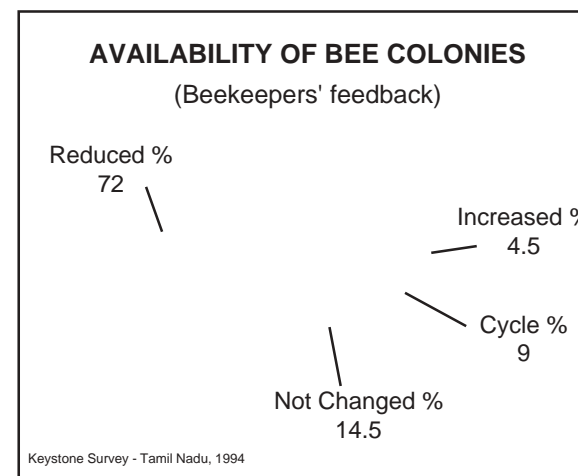


Graph 2 shows a maximum of 30 kgs/colony in the Nilgiris compared to a low of 5 kgs/colony in Javadhi hills.

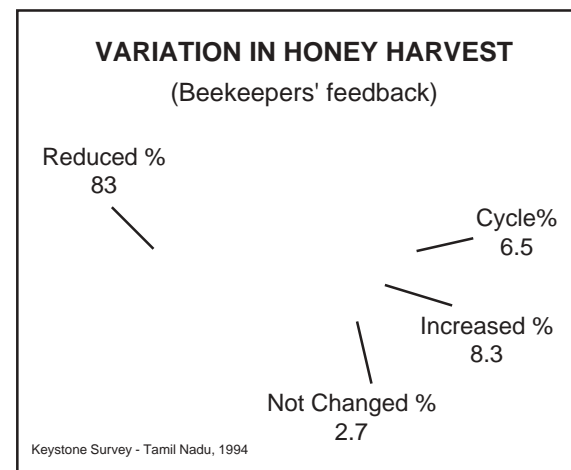
Areas which have good forest cover are conducive to *Apis dorsata* nests. In the lower portion of the state, there is a distinct reduction in size and their storage capacity.

An overall response survey to see the present status of AD colonies vis-a-vis the past :

**Graph - 3**



**Graph - 4**



To carefully understand the parameters which affect the bee habitat and hence, the bee ecology, the team looked specifically at variations in bee nesting areas (Refer Graphs 3 & 4). An assessment from the honeyhunters evoked answers that the colony presence has:

- reduced in numbers/difficult to locate
- increased
- remained constant
- become cyclic (i.e. one year there is high sighting and low in the next year)

These four responses from the honeyhunters show a direct index of the health of the bee habitat. According to the responses, the reductions might be due to a landuse change (Kolli Hills), intensive agriculture using pesticides or that the bees have found a better habitat to migrate to.

Some of the reasons the tribals have given, for a decline in the health and number of bee colonies, are as follows:

**TABLE XXV - IMPACTS ON BEES**

Hill Ranges / Reasons	Deforestation	Migration	Burning	Pesticides	Rain	Others
Nilgiris	*	*	*			
Coimbatore	*	*	*			
Sathyamangalam	*		*	*		lantana growth
Anamalais	*		*			
Palnis	*	*	*	*		
Sirumalais	*	*				
Andipatti & Saduragiri	*	*	*		*	encroachments
Mahendragiri						
Pachamalais	*	*			*	
Kollis	*	*				cropping pattern change
Shevaroys		*		*		
Chitteris	*	*				
Javadhi	*	*			*	
Yelagiris	*	*	*			
<i>Source: Keystone Honeyhunters &amp; Beekeepers Survey - Tamil Nadu, 1994</i>						



From the above table, it is evident that deforestation in all hill areas has destroyed the bee habitat and impacted natural colony sighting e.g. Except for the lower escarpments, in the Nilgiris, where the forests are still protected, the top original shola-grassland eco-system have been converted to tea or eucalyptus plantations.

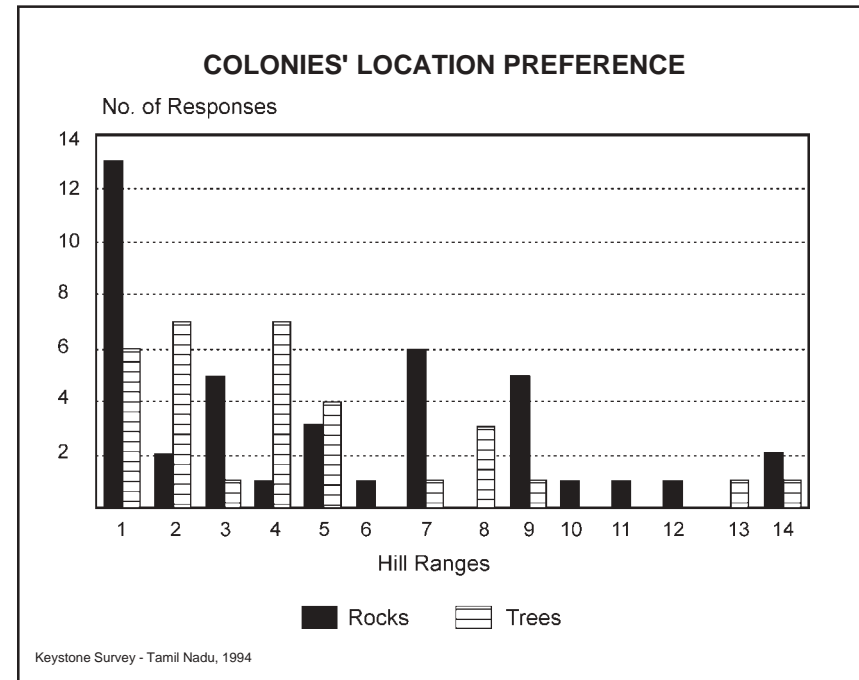
Migration is the next common feature mentioned by the honeyhunters. Out of the 14 hill ranges surveyed, only two areas are mentioned where migration is not a significant factor of change affecting bee ecology. Whether this migration is a swarming behaviour or an externally induced absconding syndrome has been difficult to estimate.

As per our field observations, *Apis dorsata* bees have returned to the same old combs built the previous year and have started comb building just adjacent to the old comb. In some cases, it has been observed (Yelagiri Hills) that old combs have been used as structural supports while building new ones.

Burning and pesticide application is a common phenomena in Regions I and II. Slash and burn type of farming and a new shoot of grass for the cattle are primary reasons for setting fire to forests and scrubland areas. Many such areas are being denuded very fast, leading to massive soil erosion, run-off and loss of nutrients. This in turn affects natural bee colonies which are found there.

Causes such as excessive rain, lantana growth and cropping patterns, though mentioned in only four hill areas are significant factors of bee displacement. Region I, which is an extensive cash crop region of tapioca, pineapple and potato is a true example of complete change of traditional crops to a monetised crop in the last 5-8 years. Traditional crops sustained a low yet efficient beekeeping system going throughout the year. Each family just for their home consumption, had a couple of hives to tap this resource.

Graph - 5



The colony location preference throws light on the physics of location of AD. Though trees and rocks are found in specific and sometime in the same area. It has been seen that there are some areas where:

- # the bees prefer to rest in riparian areas
- # in high rocks
- # in relatively accessible trees

It was found that bees at high altitude hill areas, preferred to cling to inaccessible and remote rocks inspite of good floral availability and tree architecture in other areas. Yet, in the plains or in lower regions, where the external disturbance by a honeyhunter is higher the bees are found in relatively low lying, easily accessible places. A lot more time series data and spatial analysis is required to understand this behaviour.

## 4.5 MAIN ISSUES FACING HONEYHUNTERS

Traditional honeyhunting today is faced with many changes not only in the way the activity is undertaken but is also governed by several external factors - changes in land use, economic opportunity, government schemes, FD rules are all now affecting to a large extent, the honeyhunter.

The issues facing this traditional group can be divided into:

- # Socio-cultural
- # Socio-economical
- # Ecological
- # Technical
- # Marketing

### Socio-cultural

In today's era of commercialisation, better communications and interaction, the factor of remoteness has somewhat gone. In earlier times, the same tribals used to be very ritualistic in their practice of honeyhunting, and the aspect of income was not under consideration. Today, due to an increase of rationalisation, the number of honeyhunters and their culture have decreased to a certain extent. Several rituals, e.g. the bee songs, have been dropped by some tribals. Elaborate prayer ceremonies and allied customs, have been made simple.

This change has brought about a conflict between development vs traditions and introduced new things in honeyhunting e.g. in the Palnis, the change from forest vine to coir rope and a local torch to a battery operated torch.

Interpretations of culture attached to this activity were very strong, e.g. any violent movement of the rope would be interpreted as the honey rock god's refusal to give permission to hunt. In these areas, they would not go for honeyhunting, stating that an evil fate would befall anyone who did it.

On the other hand, leaving colonies in the area ensured a good population and conducive ecological conditions for a swarm to return to the same area every year.

### Socio-economical

The socio-economic fabric of the honeyhunters community is under threat. No longer, like in the early days, are they isolated, landlocked or leading a hunter-gatherer lifestyle. Today, their culture is influenced by mainstream economy. The loss in tradition, beliefs and customs are also making the activity more commercial e.g. in the Shevaroy hills, one honeyhunter gets a contract for the whole hills and harvests this commercially.

The control of natural resources is not entirely in their hands. Earlier, each village used to own a honey cliff (some of them still practice this) but today, many honeyhunting areas are under the Forest Department's jurisdiction. In protected areas, even this does not exist. The tribals have no land (e.g. Anamalais) and the tribals are totally dependent on FD. They have no access to resource collection for sale except for self-consumption which is difficult, as the external economy is monetary. This has made some live on the fringe of forest areas so that they can work in the towns and cities of the plains. They travel long distances for work (e.g. Anamalais to Valparai i.e. 10-12 kms per day).

The lifestyle of these communities was always in synchrony with nature. Each flowering or fruiting season determined their diet, movement and scope for bartering. Now, due to a permanent place, their home range is fixed, thus reducing their avenues for livelihood. They have changed from hunter gatherers to agriculturists but met with partial success.

The advent of the monetary economy has changed crucial factors and norms. The Kurumbas, after being resettled from a high cliff, to an area adjacent to a tea estate, are gradually adjusting as tea plantation labourers, as it brings an assured income. This change from a forest based economy to a wage oriented economy, has partitioned their skills and social customs

between a traditional activity which brought food to the house and a plantation worker who brings currency to the house.

Honeyhunting is gradually changing from a highly religious, traditional activity to a professional activity due to the large amounts of honey and bees wax availability in relatively fixed seasons.

### **Marketing**

Even after taking the risks to harvest the honey, the remuneration received by the tribals is very less. There is no organized marketing set-up and the contractors and traders exploit the situation. Sometimes the honey is sold to locals or tourists and they receive a better price.

### **Technology**

There have been almost no changes in technology in the honeyhunting practice. The methods and practices adopted by their ancestors are still followed but with minor modifications. Few improvisations have been recorded like fixing a battery torchlight on their head has made the operation much easier at night. Some hunters, prefer the use of conventional rope made out of coconut fibre or iron cables to the traditional forest vine. However, on the whole, it has made very little progress considering the fact that it is such an age-old tradition.

On the issue of technology, the need for upgradation, appropriateness and efficiency cannot be underestimated. Given the new scenario of an emerging change in outlook for the honeyhunters, an intervention in the field of technology and its marketing has to be a priority.

### **Ecological Issues**

Ecological changes in bee habitat, less forested areas and intensive cultivation practices, have reduced the potential for honeyhunters. The advent of cash crops is a critical factor contributing to this change. Tribals have always grown food and allied crops where the availability of nectar &

pollen was guaranteed. Now, large tracts have been converted into monoculture growth areas which has vastly reduced the bee foraging capacity. e.g. in the Pachamalais, a shift has occurred in recent years from millets to tapioca, reducing nectar sources drastically.

The tribals feel that one of the reasons for lack of colonies is also due to deforestation, including cutting of big trees. In many of the hill ranges, forests are now replaced by plantations - either agricultural or forest. Areas which were known to be bee-rich, are today, sterile.

The Nilgiris are a good example where tea and coffee plantations have replaced natural forest. In a coffee plantation, trees are usually left for shade but tea plantations have only silver oak. These plantations have also promoted the use of chemical fertilizers and pesticides, which are killing the bees. This reduction of habitat for the *Apis dorsata* has negatively affected the colony strength and their numbers. Parts of Coonoor, Kotagiri and Gudalur are distinct examples of this change.

## CHAPTER V

### BEEKEEPING

Organized beekeeping in India started during the 1930s. Farmers and other villagers were encouraged to take up this activity. The overall direction and efforts at a central level are recommended by the Khadi and Village Industries Commission (KVIC). Beekeeping as an industry is promoted by the Khadi and Village Industries Board (KVIB), in each state.

#### 5.1 INSTITUTIONS INVOLVED IN BEEKEEPING

##### Khadi and Village Industries Commission (KVIC)

The KVIC identifies/recognises the need for certain activities, institutes which would help in alleviating the conditions of the rural people.

##### Khadi and Village Industries Board (KVIB)

The KVIB initiates a number of programmes to enable villagers to become self-reliant and earn an income. Their beekeeping programme follows a fixed procedure and promotes Newton Hive beekeeping. It provides a marketing support to purchase honey and bees wax.

##### Central Bee Research & Training Institute (CBRTI)

Apart from the KVIC and the KVIB, a third organisation, the Central Bee Research & Training Institute (CBRTI), "initiated an unique comprehensive and integrated bee research programme in Mahabaleshwar, Maharashtra in 1952... Although the beekeeping industry was initiated in the early 1930s, the beekeeping programme with moveable bee boxes had been showing indifferent progress. Since the people involved in the industry were mostly from rural, tribal and forest populations, they could not understand the technology and were content to use traditional unhygienic and uneconomical methods. This situation called for a thorough understanding of the bees, bee plants, condition of the people and the total

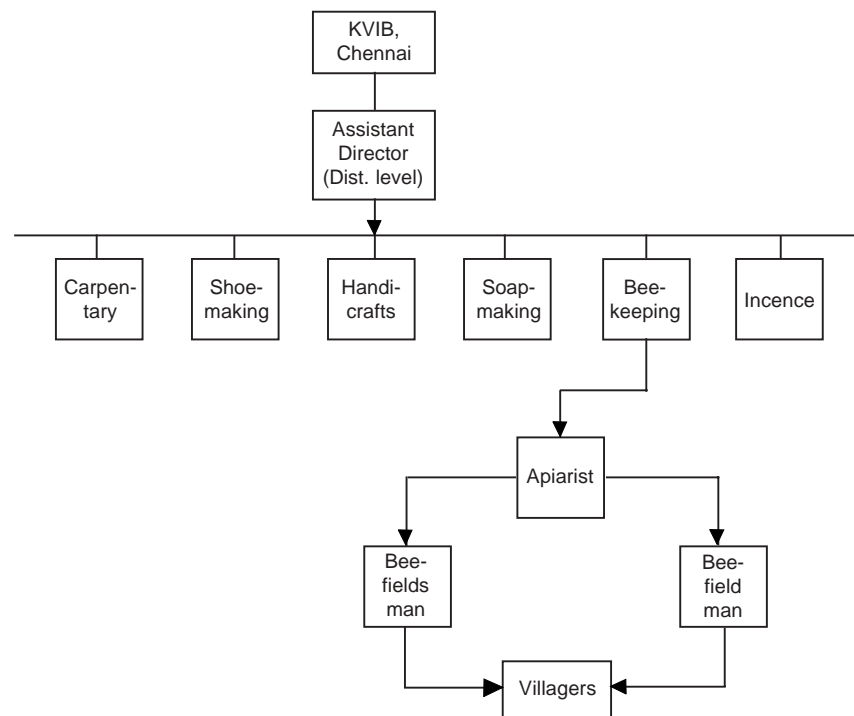
ecosystem in each beekeeping region. .... Thus the KVIC recognised the importance of a strong research base on these lines for improving the beekeeping industry in the country and established the CBRTI in 1962". (Information Booklet of the CBRTI, Pune).

Apart from other apiculture research undertaken by CBRTI, it has been entrusted to field test the capacity of *Apis mellifera* in South India. The institute has a field station in Tamil Nadu where it provides training on *Apis mellifera* beekeeping.

#### 5.2 A BEEKEEPING PROGRAMME - KVIB

Flow chart of the beekeeping programme with other village industries

##### KVIB Beekeeping Programme



## Formation of a Beekeepers' Cooperative Society

Any area where a beekeeping programme is implemented by the KVIB, the villagers/beneficiaries are encouraged to form a Cooperative Society, e.g.

- # Marthandam Beekeepers' Cooperative Society, Kanyakumari district
- # Solacerri Beekeepers' Cooperative Society, Rajapalayam
- # Yercaud Beekeepers' Cooperative Society, Shevaroy Hills, etc.

Through these different Cooperative Societies, the KVIB imparts training, provides marketing support and gives technical guidance. The society is not necessarily formed by the intentions of the villagers themselves. Since 1986-87, each of these societies has a Special Officer appointed by the State Government's Cooperative Department to oversee administrative and financial matters.

## Technical & Management Support

Aspects of training, bee boxes and equipment distribution are undertaken by the KVIB, through the society. The bee-fieldman and apiarist of the KVIB are supposed to make regular visits to the society members and monitor and aid their beekeeping progress.

## Decision-making

The decision making in the society is entirely in the hands of the Special Officer. In most Societies surveyed in the state, the KVIB seems to be overseeing the operations of the Cooperative Society - thus leaving many beekeepers without any sense of direction or a stake in future planning.

Most villagers view the Beekeepers' Cooperative Society as an extension arm of the KVIB, though legally, they are meant to be independent

entities. The KVIB also appoints the president, secretary and treasurer of the society. In several cases, the staff of KVIB are holding additional charge as office bearers in the Society.

## 5.3 STATUS OF BEEKEEPING IN TAMIL NADU

The beekeeping survey in the hill ranges of Tamil Nadu, covered both, small and large scale beekeepers. Their distribution can be seen in Map 4. Totally, the team could not meet many beekeepers. In traditionally good beekeeping areas such as the Javadhi & Kolli Hills, very few today, are practising this activity primarily due to:

- \* loss of a large number of colonies due to the disease
- \* a greater interest in developing cash crops

Thus, in several areas, beehives were found empty and persons met, were 'yester year' beekeepers. Beekeepers met during the survey, were only those who still had bees in their boxes.

## Practice and Equipment

The ISI-Newton hive is used for beekeeping. The following tables provide information on the status of equipment, the knowledge of manipulation of bee colonies and the honey processing methods. These, to a certain extent, will indicate the level of beekeeping and the prominent trends.

TABLE XXVI - BEEKEEPING HARDWARE

TYPE OF HIVE USED	USER PERCENTAGE
Newton - ISI	96 %
Dual system *	4 %

*Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994*

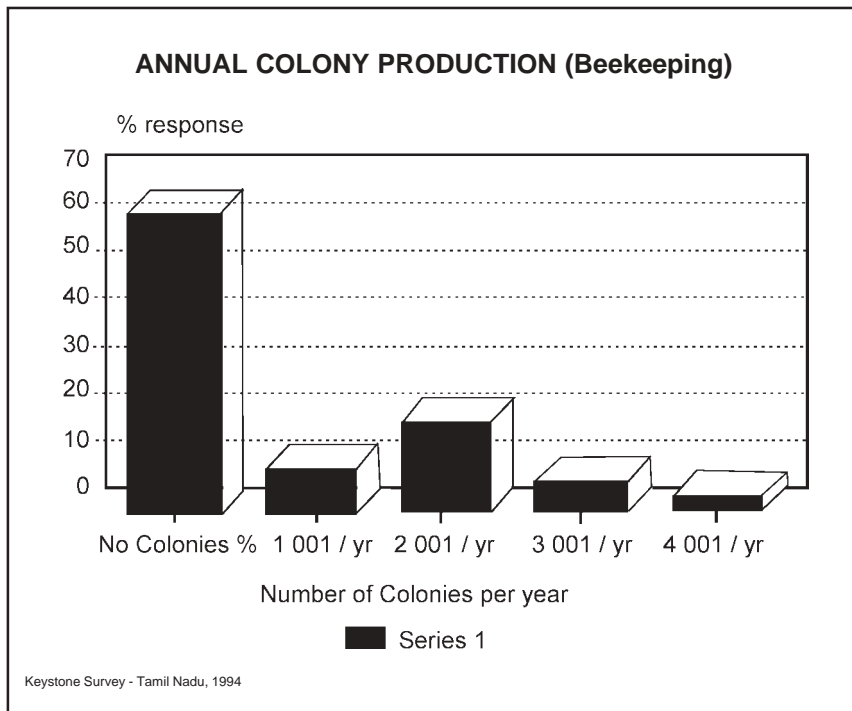
\* A combination of Marthandam & ISI-Newton type of hives

**TABLE XXVII - PROTECTIVE GEAR**

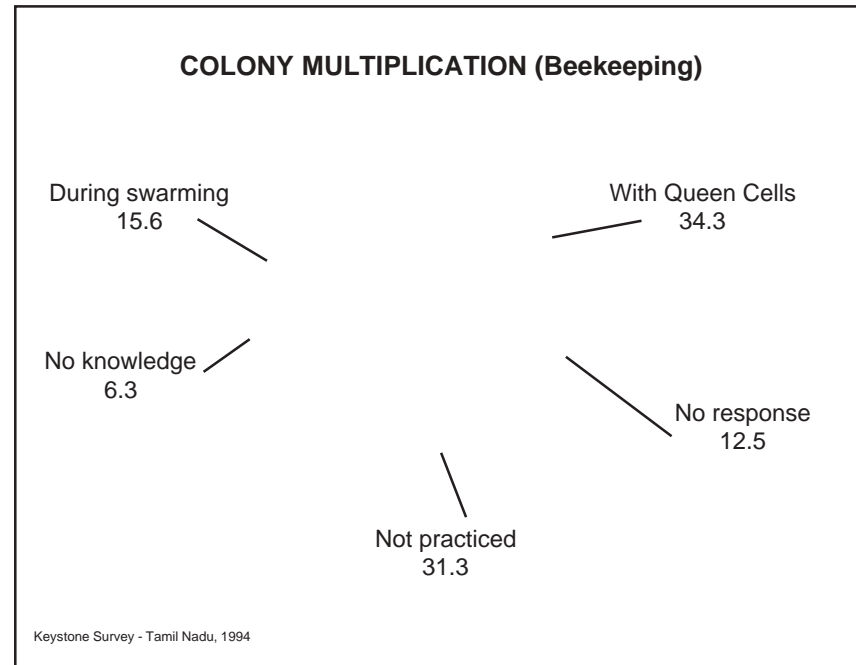
TYPE OF PROTECTIVE GEAR	% RESPONSE
Complete Dress	3.2 %
Gloves & cloth around head	3.2 %
Smoker only	22.5 %
Veil & Smoker	9.6 %
Nothing	74.0 %

*Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994*

**Graph - 6**



**Graph - 7**



**TABLE XXVIII - HONEY PROCESSING METHODS**

PROCESSING TECHNIQUES	% RESPONSE
Direct heat - water bath	6.25 %
Direct heating	3.12 %
None	90.00 %

*Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994*

It can be concluded after a close look at the above information, that beekeeping as practised today, is still rudimentary and unscientific. Their approach to beekeeping is one of indifference. Important management techniques like colony multiplication & colony production show an overall negative response which is usually, due to lack of time devoted to the activity or no knowledge and skills. However, these are not the only reasons for the decline in beekeeping today. The following two case studies underline a typical situation - the viewpoints of a farmer who looks at his own benefits and a bee-fieldsman who talks about the area and its changes.

### Case Study 6

Place : Village Nagalur, Shevaroy Hills

Beekeeper : Velayan, an old experienced beekeeper

*"I bought a beehive for Rs.6/- in 1960. Then beekeeping was profitable and enjoyable. I used to live close to the forests and used to harvest, on an average, 6 kgs/hive/year, but today it is a different story. There are no bees here anymore. With great difficulty, I harvest 1.5 kgs/hive/year. During 1992, seven hives yielded only 10 kgs. Today, 25 boxes are lying empty and the area has become sterile due to less flowering and high pesticide spraying in the nearby coffee estates. Maybe, since the pigs have been introduced to this place, the bees have reduced!"*

Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994

### Case Study 7

Place : Kolli Hills

Name : Mr Ramasamy, Bee-fieldsman, KVIB

*"During the 1960s, I started beekeeping when I got a box for Rs.9/- through the IRDP scheme. After training, I got five boxes free of cost, which was when I took up beekeeping seriously. People at that time, were very keen to carry on this activity. Even a one-armed person took it up and became a good beekeeper. Varied reasons for failure of beekeeping today, include:*

- \* *change in cultivation practices: earlier, crops like mustard and coriander were grown but now they have been replaced by cash crops*
- \* *the bitter nectar of tapioca (cash crop), weakens the bee*
- \* *a local climate change*
- \* *deforestation during the 1960s and introduction of exotic species - eucalyptus, silver oak, bamboo*
- \* *TSBV struck during September, 1993*
- \* *the Bee nursery that started during 1985, imported lot of colonies from the plains, some of whom were probably diseased*
- \* *during local bee migration, when the bee goes to lower altitudes and foothills, there is large scale death due to an exposure to pesticides*
- \* *there is a problem of mites*
- \* *soil is being removed as aluminium contents are found and consequently large trees hence are also being removed*
- \* *a bear menace."*

Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994

Besides, the general environmental and development factors cited above, the two main influencing factors of this industry have been the management system and performance of Co-operative Societies and the disease scenario

### **Co-operative Societies - Status & Performance**

Prior to 1986-87, the co-operative movement in Tamil Nadu was strong with grassroot representation. In many areas, depending on the raw material and skill available, co-operatives financed by loans from banks cropped up. Some failed but some succeeded very well. One such successful co-operative is the Marthandam Beekeepers Co-operative Society, with over 2000 beekeepers, today. Today, very few cooperatives are left, which function, in the true sense. They exist mainly on the support and directives from the Government.

The main features of some of the Co-operative Societies we visited, are as follows:

#### **Jamunamarthur Beekeepers Cooperative Cottage Industrial Society:**

It is the second largest society in Tamil Nadu. It has 1387 members and they produced 51,895 kgs in 1992. Production level hit a low of 11,380 kgs, in the present year, with 15,510 hives. Beekeepers have lost a substantial number of colonies due to the virus outbreak. Even here, large scale deforestation (spp. *Santalum album*) has taken place, which has affected beekeeping. There is a healthy competition in beekeeping, the role players being the Government, NGOs and private parties.

#### **Solacheri Beekeepers Cottage Industry Society, Rajapalayam:**

It has 402 permanent members who have different types of modified Newton Hives. Their beekeeping is mainly dependent on agriculture crops. In 1991, they harvested 2000 kgs, but then in 1993, it reduced to 200 kgs. They have lost hundreds of colonies due to the disease, but gradually the situation seems to be improving.

Once the honey is procured and sold, the profit accumulates proportionately, as share capital of each member.

### **Disease Scenario**

The Thai Sac Brood Virus (TSBV), a virus which attacks colonies at the larval stage, which originated from Thailand, struck Tamil Nadu in 1991. Intensive migratory beekeeping in Kanniyakumari district has contributed largely to the spread of this disease to other areas of the state. According to the tribals, some boxes with bees were brought from the plains, by the KVIB staff. Due to this virus, the natural colonies of *Apis cerana* have significantly reduced in the forests.

Some tribals, during their honeyhunting of rock bees, have also noticed the symptoms of TSBV in *Apis dorsata*. The occurrence of a disease in *Apis dorsata* is a cause for concern. Though the symptoms identified are similar to those for *Apis cerana*, samples of brood combs need to be collected during the season and the disease needs to be identified. (See Appendix 2 for details on identifying TSBV)

Map 5 shows the area where disease has struck in the state. It is obvious that there are very few disease free areas. The disease control mechanism for the present situation should be:

- \* mark out the active period elapsed of the disease, i.e. the age of the virus, in the areas where the disease has struck.
- \* a complete quarantine to be enforced on the movement of new colonies from place to place.
- \* an awareness generation campaign with the beekeepers about symptoms and the isolation of affected colonies.
- \* an area like the Nilgiris, which is as yet free from the disease, should be used to possibly generate new strains of bee population.



- \* at Marthandam, the beekeepers are still producing a little bit of honey from partially disease affected colonies. Assistance and monitoring to be provided so that disease resistant colonies may be reared in the future.

Reports from Himachal Pradesh show, that the TSBV has a cycle of approximately five years. As yet, no treatment is available to address this disease.

### Case Study 8 : Impact of TSBV disease in the Palni Hills

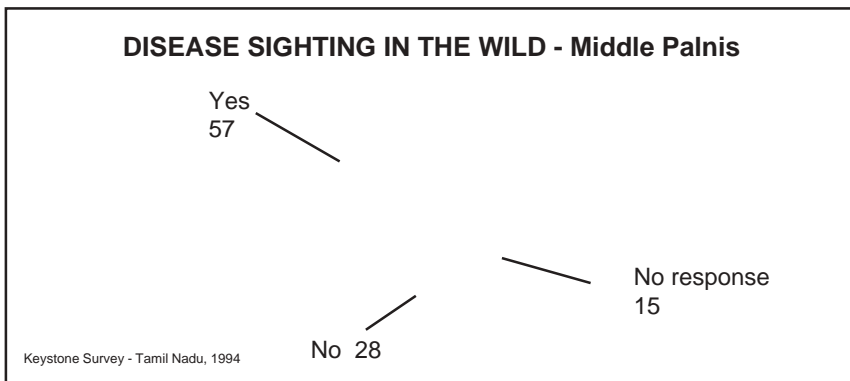
The survey on disease monitoring was undertaken with beekeepers, to:

- \* gauge the present situation of the disease in a given geographical area
- \* assess the impact on beekeepers
- \* observe the impact on natural colony availability in a disease affected area

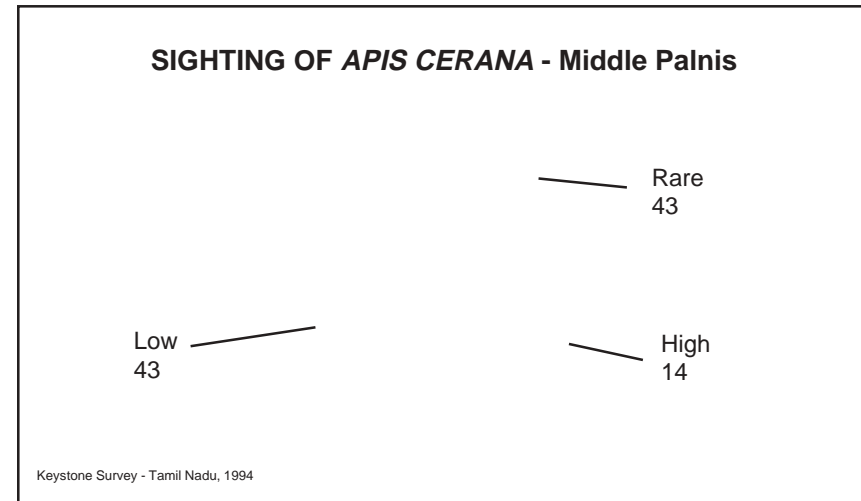
See graphs 8 - 10

Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994

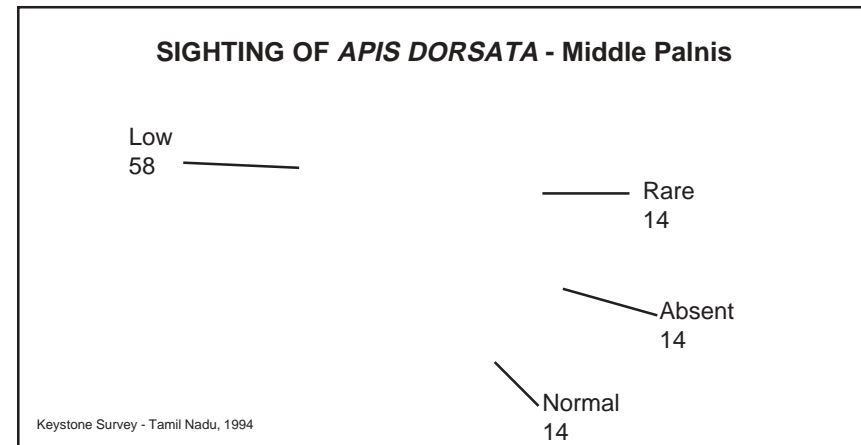
Graph - 8



Graph - 9



Graph - 10



Case Study 9 discusses the attack of the Thai Sac Brood Virus in Marthandam, Kanyakumari district, one of the largest honey producing areas in the state. where the disease struck and spread to other areas due to migratory beekeeping.

## CASE STUDY 9

### The Rise and Fall of Marthandam Beekeepers - A Story of the Largest Beekeepers Co-operative Society in India

*Beekeeping in Kanyakumari district was introduced through YMCA, Marthandam. The Marthandam Beekeepers Co-operative Society (MBCS) was formed in 1937 to serve the beekeepers' interests by selling honey in bottles. It became independent in 1945 and provided equipment and mainly technical guidance on bottling, sealing and selling honey.*

*According to the beekeepers, the disease first struck Madikerri (Karnataka) and Nilamboor (north Kerala), from where it could have been transmitted to Kanyakumari by migratory beekeepers. In January '91, it slowly started affecting the colonies but the beekeepers became aware of it only by June-July. Sekarapillai, a beekeeper, met Jan Olsson at Bolucheri, who called it the black spot disease and took a sample to Denmark.*

*Officials and scientists from Central Bee Research and Training Institute, Pune (CBRTI) started addressing the problem only in August '91. They identified it as the European Fowl Brood Virus (EFBV) and administered Terramycin and Streptomycin with sugar syrup because the EFB also attacks at the larval stage. Some colonies showed partial recovery. The Pune team carried back a diseased comb for analysis. It was confirmed in Denmark as TSBV. Experts from Coimbatore Agriculture University also came and collected samples but no further assistance was forthcoming.*

*Local beekeepers were treating with herbal plants, neem, turmeric, etc. in the hope of finding a remedy. Requeening was also tried but it was effective only for a short period.*

*According to information from KVIB, YMCA and MBCS, about 2.5 lakh of bee colonies were lost due to TSBV, of which 2 lakh colonies belonged to migratory beekeepers. Among the association members, about 60% had 150-600 hives, 20% had over 600 hives and the remaining 20% had 5-40 hives. The beekeepers were given loan by various financial institutions of which Rs.2.53 lakhs is still outstanding. The rubber board has given a grant of Rs.2.95 lakhs and a loan of Rs.1.51 lakhs which is unpaid due to TSBV.*

*Most of the migrated boxes were not brought back home due to financial considerations. Those who could afford to rent a place and keep the hives in Kerala, did so, whereas others abandoned the hives on fields and roadside. The small farmers and beekeepers stored the hives in their premises and started with the remaining bees who had escaped the attack.*

*It seems, Kanyakumari beekeepers have been responsible for spreading TSBV from Kerala to Kanyakumari, Tirunelveli and Madurai districts, which were free of disease.*

*According to the beekeepers, in the last three years, nearly 40-50% of the diseased colonies have recovered. Their (mainly, medium sized beekeepers) thrust during this period has been on multiplying colonies. From a single colony, a maximum of 20 colonies have been multiplied. Some have multiplied and increased their number of colonies upto 150 nos. Some large beekeepers have changed their business to different fields such as agriculture, salaried jobs, or have gone abroad. Some beekeepers have committed suicide, unable to repay large loans. They are watching, waiting and hoping for the best in a year or two.*

*At the moment, very few diseased larvae are found in the hives - maximum 5-6 no.s, mainly in the capping stage. Beekeepers have extracted 7-10 kgs of honey in 1994 from the same hives.*

- \* Beekeepers in this area have improvised the ISI-Newton hive, thus making it easy to transport and catalyse the production of honey.
- \* An area where the beekeepers have faced a number of problems, both from the disease end, and the Govt's initiative to introduce AM.

#### 5.4 BEEKEEPING PROGRAMMES - AN ANALYSIS

KVIB is the main role player in spreading information and technical know-how about beekeeping. To fulfil their objectives they have a large infrastructure and thereby, reach people in remote areas.

The beekeeping programme of the KVIB has a number of advantages:

- \* The largest network of beekeepers and supervisory staff, providing technical guidance, setting up beekeeping cooperatives and giving a buy-back guarantee of honey and bees wax.
- \* A system of inspection, monitoring and follow-up, though fixed but may lack flexibility sometimes.
- \* A uniform price to all beekeepers across the state, and schemes offered to the tribals.
- \* A system of training new beekeepers.

The beekeeping programmes in the state have faced mixed results. Areas such as the Javadhi Hills where the beekeeping programme succeeded was primarily due to the following reasons:

- # interest of the villagers
- # proper training and follow-up
- # vision of significant gains by the user
- # extended nectar & pollen season

These parameters have given rise to a relatively strong cottage industry, where the drive for better beekeeping in terms of management, technology and production has arisen from the villagers themselves. Yet, there are other areas where the beekeeping efforts have not been so successful.

*In August-September 1992, experts from Pune came to YMCA, Marthandam to meet the beekeepers. They convinced the beekeepers to experiment with Apis mellifera. However, Apis mellifera has not been able to succeed due to the following reasons:*

1. *It costs more for colony and boxes*
2. *It consumes 10-25 kgs of sugar but the yield was not even equivalent to this*
3. *It grows well during the rainy season (November-December), when floral availability is less but feeding is high*
4. *There is very poor activity in the hot season (February-March) which is the main honey season (mainly from rubber) and local migration period*
5. *Predator problems - bee eating parrots, wasps, etc.*
6. *Queen's egg laying capacity is reduced after some time*
7. *Apis cerana collects every thing available including rubber nectar but mellifera mainly works on flowers*
8. *Heavy investments have not yielded proportionately*

*Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994*

The policy of bringing in *Apis mellifera*, to Marthandam, provides a number of lessons:

- \* It is one of the areas where the disease has done maximum damage.
- \* It is one of the areas where the *Apis mellifera* beekeeping has been initiated and not proved to be successful, due to reasons cited in the case study.

fixed at an administrative level. Besides there are several biological parameters which need to be taken into account. This forces the bee-field man to report in positive terms and fulfil his quota by mixing *Apis dorsata* honey.

# **Follow-up** : This is probably the most common point of failure as far as beekeeping is concerned. The distribution of hives and equipment and training has not helped the programme to succeed. The follow-up is the crucial part. The beekeepers have to be guided until they are confident and interested enough to carry on the activity on their own.

# **Selection** : The process of identifying prospective beekeepers generally depends on the scheme to be implemented. The exercise for preliminary identification is done by the Bee-fieldman. The selection process does not yield the desired results as:

- \* the trainees selected fulfil target trainee number requirements and not their interest levels.
- \* Training for women is rare. During the entire survey we met not more than 5 women beekeepers. If the programmes' target group is women, the women are only a means to get bee boxes.

# **Training** : In very few cases, the training imparted has been thorough and complete. Most newly trained beekeepers have several doubts during their early phase which are not tackled and they generally give up in frustration. If they are honeyhunters, they practice some honeyhunting techniques on beekeeping, creating a situation of low production and mass absconding.

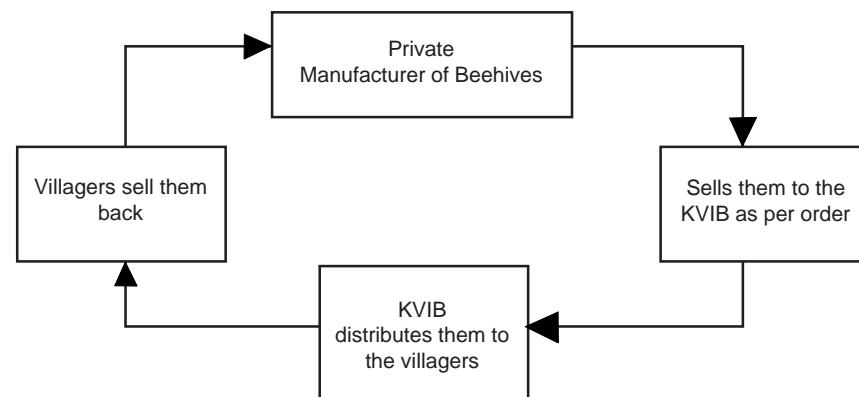
Today, the principal sources of training for beekeepers are:

The principal reasons for failure which emerged from discussions with beekeepers are elaborated below.

# **Approach** : The programme gives importance to honey production ignoring other products of beekeeping, which would bring in additional income e.g. bees wax, pollen, pollination potential.

# **Need Based** : The beekeeping programme has not been need based. Factors for a successful entry are not identified and addressed. The activity is often introduced among farmers/tribals who share no interest and neither devote time to build it up. Now, it is a common sight to see more stacked up hives than working ones. The flow of beehives is not proportionate to the increase in the number of beekeepers. Thus this industry is somewhat saturated. The decline in the interest is also due to the advent of the viral disease. An example of the fate of some hives is given below:

**INVISIBLE HIVES**



# **Target Syndrome** : A target based approach is result oriented, but in a beekeeping programme it can sometimes prove inadequate. Each district has a target of honey to be procured/produced, bee boxes to be distributed, colonies to be multiplied, trainees to be trained. This target is generally

# **Training for Bee-fieldmen** : A bee-fieldsman is not necessarily well trained, often not being able to handle hives/colonies. Thus, the villagers find that their problems are unable to be dealt with, by these fieldmen.

# **Deputation** : In several areas, according to villagers and officials of the KVIB, the beekeeping project suffers every year due to the fact that all staff are summoned by the office for “Khadi Sales”, a period when most of the staff are deputed to sell all KVIB products. This period often coincides with the swarming season. Thus, newly trained beekeepers who need guidance during colony capturing or for monitoring the colonies, are left with no assistance.

# **Distribution** : The beekeeping equipment is distributed free of cost. With no personal stake, the interest levels are low and any production is seen as a bonus.

## 5.5 ISSUES

There are a number of issues which emerge which need to be addressed, ranging from policy level changes to a number of operational procedures.

### Technology

If beekeeping is to be targeted at the rural poor, then a much simpler technology, which is affordable (and not on subsidy/free), and interactive, needs to be designed.

Beekeeping as practised through a Newton hive is for a certain socio-economic group and need not be the sole method of teaching. According to the tribals, beekeeping is a complicated activity and they can satisfy their need of honey by harvesting from the wild. One needs to look at this practice and upgrade the techniques instead of attempting a completely new style of beekeeping which is far removed from their traditional understanding of bees.

**TABLE XXIX - TRAINING SOURCES**

TRAINING SOURCE	% RESPONSE
1. KVIB	82.0 %
2. NGO	11.0 %
3. Self-taught	3.5 %
4. Family Tradition	3.5 %

*Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994*

**TABLE XXX - PERIODS OF TRAINING**

PERIODS OF TRAINING	% RESPONSE
6 months	7.1 %
3 months	14.4 %
40 days	7.1 %
1 month	10.7 %
18 days	3.5 %
10 days	14.4 %
1 week	10.7 %
2 days	7.1 %
1 day	3.5 %
Self-taught	3.5 %
Family tradition	3.5 %
Observation cum training	14.4 %

*Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994*

## CHAPTER VI

### HONEY & BEES WAX MARKETING - A CLOSED BUSINESS

Production of honey and bees wax is mainly from hunting *Apis dorsata* colonies. Collection of wild *Apis cerana* though high, is usually kept for self consumption. Some areas in the state produce large quantities of hive honey - Kanyakumari and Javadhi Hills. Besides the above, the Kollis, Shevaroy's and Nilgiris also produce significant quantities from beekeeping. Average annual yields from honeyhunting are given in Map 6, which also can help determine the areas where marketing channels need to be studied in detail.

Today, the market for honey is highly disorganized and fragmented, thus providing some individuals a chance to capitalize on the situation. The rules for collection of honey also differ from area to area. In some areas, like wildlife sanctuaries, collection is strictly prohibited, though tribals living within the area are allowed to collect as much honey as required, only for their consumption.

In all these channels, it is the contractor who earns the largest share while the primary producer is paid a pittance.

Some of the present channels for honeyhunters are:

# *Apis dorsata* honey collected in reserved forest areas is prohibited unless the Forest Department (FD) gives permission. The honey is collected by the FD at 10-11/- kg and sent to Madurai for processing and sold through their outlets.

# In areas where collection is allowed, sale of honey can be through two channels. One, where the honey is sold to local contractors or if the villages are close to the road, to final consumers who usually are tourists. The other method is that the contract is given to the

Also, the measurements need to be specified. Hives distributed in some areas vary in scientific measurements. This leads to bur combs, high swarming tendencies and problems in management.

#### Management

Hive management as practised today and imparted to beginners, creates a disturbance to the growing colony. No fixed management method can be applied across the state. Each region, depending on the floral habitat, behaviour of bees and a number of other factors will be amenable to a certain kind of hive management. In other words, the system of management must allow some amount of flexibility, so that the beekeeper at each stage, understands how he can keep the bees in a good micro-environment in an external habitat.

#### Schemes

Beekeeping programmes are being undertaken by a number of agencies. The KVIB and the FD are the main promoters of beekeeping schemes. Other projects and schemes, like the ILO scheme and the World Bank eco-development project, and programmes by NGOs and many others have a beekeeping component. Each agency/project has dumped a number of hives, mostly free of cost in the villages or extension offices.

When distributed through any programme, the boxes are accepted. Their use is an issue to be tackled later. During the survey it has been a common site to see beehives being put to diverse uses:

- \* brood chamber being used as a sitting stool in a village tea shop
- \* both brood and super serve as wall cupboards
- \* bee hives are sold in the village 'shandy' by tribals to other prospective beekeepers (people mainly from the plains).

#### Returns

Selling prices for honey are low for beekeepers and honeyhunters. The market price is between Rs.75/- and Rs.120/- kg whereas the beekeepers get not more than the standard Rs.38/-kg.

This flow chart illustrates the following points:

1. Potential estimate of honey from regions is generally an over estimate.
2. The deficit balance honey is supplied by beekeepers from the states of in Punjab & Himachal Pradesh, where the problem of over production and low price exists.
3. The deficit is also replenished from *Apis dorsata* collection by honeyhunters. The Rock bee honey is a key factor in keeping the honey trade together.

The purchase price is standard for all honey as both kinds of honey are mixed. The co-operative society purchases the honey at 38/- (1994 purchase price) and either sells it through its own outlets under its own brand name or sells it to Khadi Kraft at 45/- kg with which it has an agreement. Khadi Kraft in turn sells it to its Chennai Office. If it is sold loose to other societies, it is sold at 62/- kg while it is sold for 70/- kg if it is sold in bottles.

In Marthandam, a different situation exists, where rubber honey is bought at Rs.50-52/- kg by local traders. Due to a shortage of AC honey, *Apis mellifera* honey is being procured from North India and being sold in the area for 37/- kg, to keep the market steady. A major portion of the honey collected is sent to pharmaceutical companies in Bombay.

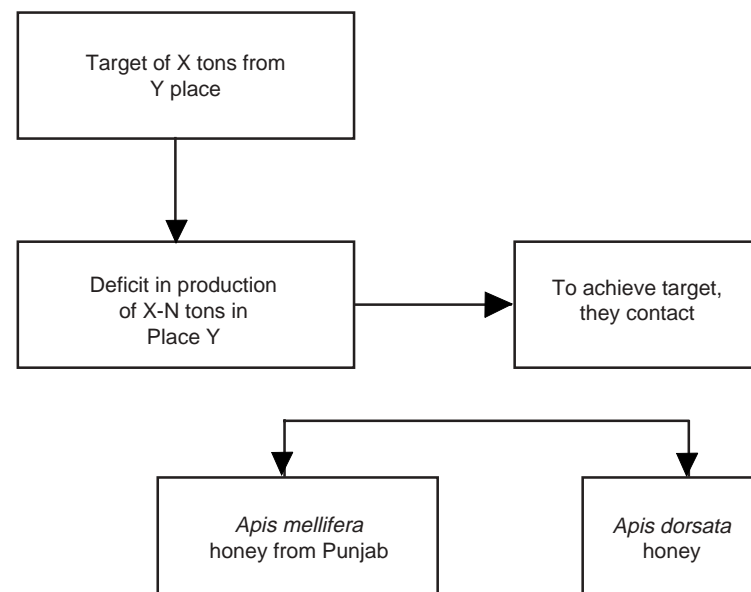
There are a number of private honey traders who have established cottage industries and are selling labelled honey packed in bottles.

Large scale Multi-Purpose Society (LAMPS) which then issues permits to the tribals for collection. The tribals are paid daily wages by Agents who are appointed for different areas.

Even though extraction of AD honey requires more skill, the returns to the tribals are meagre.

In comparison, the beekeepers earn a better price not only in local markets but also in the price paid to them by the Beekeeping Co-operative Society. In some areas, if they sell locally, they are paid Rs. 100/- kg. However, due to the decline in box honey production, the Beekeeping Co-operative Societies have started accepting AD honey also.

### 6.1 HONEY FLOW IN THE BEEKEEPING INDUSTRY



- # they are in contact with honey contractors/dealers directly
- # they are also part of a professional honeyhunter group who takes regular contract for all the colonies in a large hill area.

Details of one such group are given in the following case study:

### Case Study 11

#### **Sangli Thevar Honeyhunter group Pudukkottai, Chatrapatti, foothills of Palnis**

*We had heard from the Paliyans in the hills, that one Sangli Thevar is a professional honeyhunter. He has a team of Moopar honeyhunters (also known as Valayar - hunters of small slow game). He provides the equipment and all the necessary gear for this activity. He employs the Paliyan tribals during this activity. This family has been in business for the past 3 generations. They harvest - 250 tins/year ( 1 tin holds 25 kgs of honey) i.e. 6250 kgs/year. They also collect bees wax - 200-250 kgs/year. According to him, this year the honey season has not been good. He has already collected 75 tins. From his estimation, his group on an average, handles 4 to 5 tons in a year, though according to him the entire Palni Hills can fetch 15-20 tons/year. He purchases honey from the tribals at Rs. 275/tin, which is approximately Rs. 11/ kg.*

*Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994*

According to information disclosed by the tribals, the average turnover of honey in Tamil Nadu, is 18-20 tons, with a net average income of 1.5 lakhs/year. This figure is ofcourse a gross under estimate, given the fact that from the Palni Hills alone, 15-20 tons can be harvested. This again proves the fact that honey is still a very closed business.

### Case Study 10

#### **Honey trader at Madurai**

*This trader has been dealing in honey for the last 80 years. Apart from honey, he deals with all other kinds hill produce, including - stone/tree moss, nuts, herbs. He procures honey during June-July & October-November. During 1992, he collected from other small traders - 350 tins (1 tin holds 25 kgs). In 1993, the procurement was low - 80-100 tins. This year he expects only 65-70 tins. He sells the bulk honey at Rs.37/kg. He is not interested in hive honey or Apis mellifera honey, as his clients (Ayurvedic institutions) want only Rock bee honey. He does not collect any bees wax, nor pasteurises the honey. The demand from the Ayurvedic firm is very high and he cannot meet the demand. According to him, he does not need any new buyers.*

*If the main season (June-July), is good, he can supply 25 tins of honey every fortnight. His collection boundaries are in Madurai & Dindigul - Palnis, Sirumalais and Andipatti hills.*

*Source: Keystone Honeyhunters & Beekeepers Survey - Tamil Nadu, 1994*

## 6.2 THE HONEY QUANTUM

Map 6 shows the different slabs of honey harvested by honeyhunters throughout the state. The high areas with 150kgs/person/year are in Region I and parts of Region II (Palni Hills). Quantitatively, the Paliyans might be the highest harvesters of honey. This is not due to their skills but because :

- # they are spread over a large area
- # they move from region to region during the season, looking for better opportunities



## Honey Sale

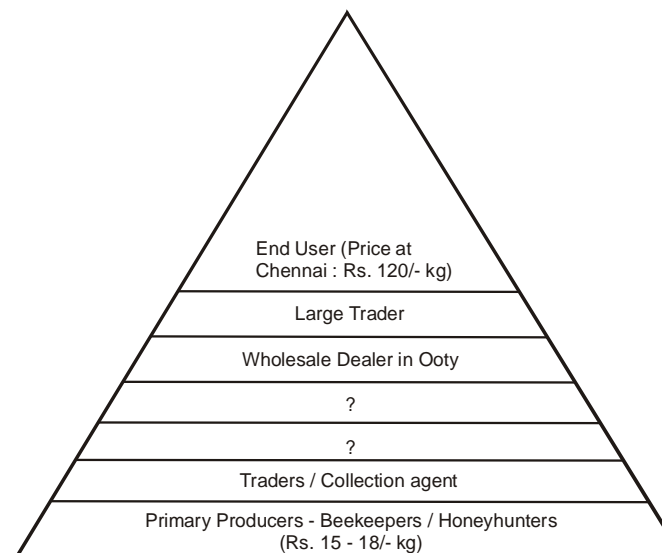
**TABLE XXXI - SALE OF HONEY**

HILL RANGES	SOLD TO	TYPE OF HONEY	PRICE RECEIVED BY TRIBALS
Chitteris	Visitors	AD	Rs.30-35/- bottle
	Society	AC	35/- kg
	Locals	AC	50/- kg
	Madras	AC	110/- kg
Anamalais	Traders	AD	20/- kg
Mundunthurai	FD	AD	10/- kg
	Traders	AD	25/- kg
	Locals	AC	80/- bottle
		AD	40/- bottle
Javadhi	Locals	AD	30-35/- bottle
	Society	AC/AD	38/- kg
	SFRD	AC	40/- kg
Yelagiri	Society	AD/AC	38/- kg
	Local market	AD/AC	50/- kg
	Visitors	AD/AC	80/- kg
Coimbatore	Society	AD	30/- kg
	Locals	AD	35-50/- bottle
Marthandam	Society	AC	38/- kg
	Locals	AC	52/- kg
		AM	37/- kg

## 6.3 PRICE DIFFERENTIAL IN HONEY AND BEES WAX TRADE

The survey has not been able to gather much information on the price and end use of honey and bees wax because of the unorganised nature of the market. Usually, these were trade secrets, which few traders were ready to part with. Any questions pertaining to the market were seen as a threat from a new rival. The diagram below, gives an idea about the number of levels that the honey goes through before reaching the consumer.

e.g. Masinagudi, Lower Nilgiris



According to information from tribals, their sale outlets and prices were as follows:

## Bees Wax Sale

The case of bees wax is even worse as in many areas it is not collected at all. Even in areas where it is collected the number of persons involved in the activity are very few. Information regarding its value is not available. The wax is just thrown away at the site of honey collection. Usually, if anyone specifically asks for wax, then the work is done on a contract basis. It is usually sold between Rs. 20-40/- kg. (Refer Map 6)

**TABLE XXXII - SALE OF BEES WAX**

HILL RANGE	SOLD TO	PRICE RECEIVED BY TRIBALS
Yelagiri	Society Private traders	Rs. 50/- kg 60/- kg
Coimbatore	Contractors	60/- kg
Sathyamangalam	Society Private traders	20/- kg
Andipatti	Contractors	30-45/- kg
Palnis	Contractors	10-30/- kg
Kollis	Society	50/- kg
Shevaroyis	Society	55/- kg
Nilgiris	Private traders	20-40/- kg
<i>Source: Keystone Honeyhunters &amp; Beekeepers Survey - Tamil Nadu, 1994</i>		

On the whole, information and knowhow as to how the honey and bees wax market operates, is under a veil. This is mainly because honey collection is banned in a lot of forest areas. Thus, there are some irregularities in collection, transportation and marketing. Once it is bottled and labelled, it is very difficult to prove the source of honey.

HILL RANGES	SOLD TO	TYPE OF HONEY	PRICE RECEIVED BY TRIBALS
Sathyamangalam	Shops	AC	Rs.25/- kg
	Tourists	AC	40/- kg
	FD	AD	20/- kg
	Pvt traders	AF	25/- kg
Andipatti	Locals/Traders/ Contractors	AD	40-50/- kg
Palnis	Private contractors	AD	30/- kg
		AC	40-50/- kg
Sirumalais	Contractors	AD	25/- litre
Shevaroyis	Private	AD	17.5 kg
Kollis	Society Private traders	AC	45/- kg
		AD	60-80/- kg
Pachamalais	LAMPS	AD	40/- litre
		AC	45/- litre
	Private traders Locals	AD	50/- litre
		AC	60/- kg
Nilgiris	LAMPS	AD	15-18/- litre
	UPASI	AC/AD	40/- bottle
	Locals	AD	30/- bottle
		AC	100/- kg
	Private traders	AD	20-30/- bottle
	Individuals	AD	60/- bottle
<i>Source: Keystone Honeyhunters &amp; Beekeepers Survey - Tamil Nadu, 1994</i>			

Given this transition from a total traditional to a more practical approach, the key areas of intervention where Keystone can play a role are :

**1. Set up a Honeyhunters' Network to :**

- i) exchange information between the tribal groups so as to benefit the whole community.
- ii) document changes in practices and social customs and predict over the next few years, the impact of this change on the activity.
- iii) survey the feasibility of better prices and marketing support to the honeyhunters' produce.
- iv) attempt to bring these honeyhunters under some insurance scheme, by which if there is an accident during this activity, the tribal can be compensated.
- v) study various other aspects of the honeyhunters' livelihood, to design & implement pilot scale development activities.
- v) find ways to initiate changes at the family level of the honeyhunter.

**2. Introduce Appropriate Technology in Honeyhunting gear so as to make it more efficient and safe :**

- i) Develop technology for tools such as a complete knocked down toolkit, which could be strapped to his body. This could have the knife, rope, sticks and other allied equipment. Other areas could be lighting system for easy operation - may be a miners' light or a system of pulleys and gears for movement of the vessel during extraction.
- ii) Develop technology for bees nesting areas, preserving brood part of combs, attraction planks under rock overhangs, monitor typical nesting areas, find locational criteria, etc.

## CHAPTER VII

### A LOOK INTO THE FUTURE : PLAN OF ACTION & RECOMMENDATIONS

#### 7.1 HONEYHUNTERS : CLIMBING THROUGH A PERIOD OF CHANGE

There has been a sea change in the past few years, in the life of the honeyhunter. The changes are primarily due to :

**Better Communication & Accessibility :** This has widened their choice of living. From hunter-gatherers they are today, tea labourers, contract workers and even workers at mills.

**Education & Exposure :** This has led to a degree of rationalisation as far as their traditions go. Strict principles are not followed everywhere; practical procedures to harvest honey are overshadowing the mystic and folklore behind the activity. e.g. in the Nilgiris, a rock was known as the god's rock - no one would hunt even if it had thousands of colonies. For generations, people were told about the Lord Muniyandi, who would fling the rope back if someone tried to descend to the rock bee colonies.

With time, the younger generation questioned certain aspects, until one day they solved the mystery of the swinging rope by tying the rope at bottom. Without the other end tied firmly, the rope used to swing and thereby folklore got credited to it.

#### Living with traditions and development

Today the situation has arisen where there is a conflict between development and tradition. Traditional ways did not emphasize solely on the quantum harvested or the income from this activity. The same attitude remains today, but the final issues of quantity, good sale price, number of colonies harvested, play a vital role.

- \* Advantage can be drawn from a Bangladesh experience in rural bee keeping to understand typical pitfalls and indicators of success.

An intermediate option needs to be devised to bridge the gap between wild honey collection and Newton beekeeping. This might then, induce acceptability, interest and participation.

Some of the specific areas where appropriate technology can play a role, are :

- \* control of disease, if possible
- \* stronger and large colonies to enhance the availability of natural colonies.

**2. Programme Management :** One of the primary findings is that the system of beekeeping is fixed and does not allow improvisation. The training imparted is also a strait jacket set of do's and dont's. The management system of targets and fixed procedures of beekeeping inspection and monitoring may have to change. No management methods can be uniform to the last detail in an area like TN, where the ecological changes are significant within hill ranges e.g. variation in flora, nectar and pollen availability and local techniques.

The manner in which beekeeping is carried on today has limitations for rural folk in terms of acceptability, complicated system, dependence on an external agency for technical guidance, etc. This needs to be made more participatory and easy. One of the ways to ensure better results may be through collaboration between the Government and Non-Governmental organisations. An NGO-KVIB collaboration can take up pilot scale areas for effective training and implementation. This could be part of an overall strategy to benefit KVIB staff in survey & appropriate technology methods, ways to identify proper beneficiaries, through a participatory approach in beekeeping.

### 3. Commence action-research project on the rock bee to understand :

- pollination mechanisms
  - factors influencing recolonisation in the same area year after year.
  - honeyhunting impact on the rock bee ecology : what are the harvesting levels which are sustainable. In other words what should be the trade off between a traditional ecologically safe activity compared to a commercial modern practice.
4. **Prepare an extensive documentation** package through audio-visual systems so as to share with other conservation and development groups the importance of these people and their activity.

#### 7.2 BEEKEEPERS : AGAINST ALL ODDS

Given the situation of beekeeping today and the reasons for its failure, the following is necessary :

**1. Appropriate technology** is a longterm solution for sustainable beekeeping, especially in rural / tribal areas. It is seen that technology appropriateness and improvisations are critical to a successful beekeeping programme. The beekeepers of Kanyakumari district, due to their migration practices and efficient handling have changed the design to suit new conditions. Such efforts need to be encouraged. A special pilot scale loan may be given in some areas, to innovative beekeepers to attempt and field test new technologies.

Appropriate technology needs emphasis because :

- \* There are very few independent organisations working on appropriate rural technology and delivery systems
- \* The beekeeping programme, as practised today has overlooked appropriate mechanism, whether it is technology or social / organisational aspects.

designed to further increase this price through better filtering, quality upgradation and packaging at the site of collection.

**2. Initiate appropriate systems :** To optimally utilize honey and allied products, the following measures can be taken :

- \* local people can be trained in processing, bottling and managing a honey processing centre
- \* bees wax can be refined, packaged and sold
- \* pollen can be collected and sold. If sold as pollen capsules, the returns can be much higher.
- \* colony multiplication can be taught. These colonies can be sold to locals or outsiders.
- \* pollination through bees can be introduced to increase crop production.

Some areas of collaboration can be :

- # Steps to control and isolate the virus disease
- # Marketing and value addition of bee products
- # Effective training packages improvised to suit different villagers in different regions.
- # Pilot scale experimentation on new technologies, appropriate beehives and allied equipment.

**3. Disease :** The viral disease has wiped out a lot of colonies and affected new beekeepers. Since a number of efforts have not yielded any results yet, some steps that should be taken are :

- \* a proper mapping of the diseased and disease free areas,
- \* a booklet describing the disease symptoms, steps to identify and damage control measures.

**4. Training :** The training procedure needs to be revamped. Training methods which are simple and relevant to the area and primary user need to be designed.

### 7.3 HIGHER VALUE FOR HONEY AND ALLIED PRODUCTS

Some other areas which are common to both honeyhunters and beekeepers and need to be addressed are :

**1. Marketing strategy :** Honeyhunters are faced with low returns because of an informal and unorganised sales channel. An organised marketing structure to co-ordinate sales and financial assistance in specific areas needs to be set up.

For beekeepers, KVIB is the main outlet. It has been gradually increasing its sale price and today, is offering Rs. 38 / Kg. New ways have to be

## APPENDIX I

### TREE SPECIES

Botanical Name	Common Name	Tamil Name
<i>Pongamia pinnata</i>	—	Poonga
<i>Strobilanthus spp.</i>	—	Kurunji
<i>Zanthoxylum rehesta</i>	Indian prickly ash	Murukki
<i>Shorea roxburghii</i>	Lac	Kungiliam
<i>Mangifera indica</i>	Mango	Manga
<i>Tamarindus indica</i>	Tamarind	Puli
<i>Albizzia lebbek</i>	—	Vaghai
<i>Butea monosperma</i>	Flame of the Forest	Palasu
<i>Ficus benghalensis</i>	Banyan	Ala
<i>Eucalyptus citriodora</i>	Eucalyptus	Eucalyptus
<i>Terminalia chebula</i>	Gallnut	Kadukai
<i>Acrocarpus fraxinifolius</i>	Shingle	Neelarai
<i>Salamalia malabarica</i>	Red silk cotton	Pula
<i>Eymbogon martinii</i>	—	Pillu
<i>Acolypha fruticosa</i>	—	Chinni
<i>Holoptelea integrifolia</i>	Indian elm	Ayamaram
<i>Phyllanthus embilica</i>	Gooseberry	Nellikai
<i>Dalbergia lanceolaria</i>	—	Vellangi

Botanical Name	Common Name	Tamil Name
<i>Cupressus torulosa</i>	Camphor	Sambrani
<i>Albizzia odoratissima</i>	Black Siris	Karuvagan
<i>Xantolis tomentosa</i>	—	Palai
<i>Hardwickia binata</i>	Anjan	Karasamaram
<i>Sapindus emarginata</i>	Soapnut	Poocham
<i>Arjuna terminalia</i>	Arjuna	Maruda
<i>Acacia spp.</i>	—	Seeghai
<i>Pterocarpus marsupium</i>	Kino tree	Vengai
<i>Syzygium cumini</i>	Indian cherry	Naval
<i>Tectona grandis</i>	Teak	Tek
<i>Elaeocarpus serratus</i>	Wild Olive	Kottamaram
<i>Cedrella toona</i>	Red Cedar	Toona
<i>Anogeissus latifolia</i>	Axle wood	Vekkali
<i>Terminalia ballerica</i>	Behra	Thandi
<i>Cyclea peltata</i>	—	Parichi
<i>Acacia pinnata</i>	—	Indu
<i>Dalbergia paniculata roxb</i>	—	Ari

## APPENDIX II

### IDENTIFYING THAI SAC BROOD VIRUS

The virus attacks at the larvae and the early pupal stage only.

- a) The disease affected lie on the cell wall with pointed tips towards the cap.
- b) The affected larvae perishes and forms a mucous like substance. With a match stick, the mucous substance can be pulled to 3-5 mm length.
- c) In the advanced stage it dries up and can be removed as scales.
- d) Two tiny black spots can be seen on the affected larvae.
- e) The affected brood gives a strong urine / ammonia odour.
- f) Affected larvae can be seen on the bottom board and outside.
- g) Pale yellow lines of mucous can be seen on the bottom board where the bees have dragged themselves.
- h) The colony has a restless and aggressive look when the top cover is removed.

Botanical Name	Common Name	Tamil Name
<i>Albizzia amara</i>	—	Unjal
<i>Gyrocarpus vacquinii</i>	—	Tanak
<i>Manihot glaziovii</i>	Ceara rubber	Para rubber
<i>Erythrina stricata</i>	Coral	Murunga
<i>Grevillea robusta</i>	Silver oak	Chavukku
<i>Chloroxylon swietenia</i>	East Indian satin wood	Porasu
<i>Artocarpus heterophyllus</i>	Jack	Pala
<i>Acacia rabica</i>	Babul	Karu vellam
<i>Erycibe paniculata</i>	—	Unan kodi
<i>Shorea tumbergia</i>	Resin-local incense	Thumbagam

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This is a pioneering study of traditional communities practicing honey hunting and bee-keeping in the hills of Tamil Nadu. The survey covered 15 hill ranges and 11 distinct type of indigenous communities over a period of one year. For the first time - families whose livelihood is seasonally dependent on sale of honey and bees wax and their close relationship to cultural and ritual practices have been documented in detail. Each of the areas have been visited by a young team with back-packs whose mission was to understand these remote, unknown communities and arrive at workable interventions and solutions for the future. This book will be of interest to professionals in the environment and development sector, the Government and students and researchers.

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The field research was carried out by the core team of Keystone Foundation in 1994. The survey led Keystone to base itself in Kotagiri - where it works with tribal communities in diverse development projects. Keystone Foundation is a registered trust working in the field of Natural Resources Management and Rural Development.

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