Draft report

STUDY OF NON TIMBER FOREST PRODUCE

IN

KANARA CIRCLE, UTTARA KANNADA DISTRICT

KARNATAKA, INDIA

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1. BACKGROUND:

The Western Ghats, extending from the North-Western tip of Maharashtra to the southern-most tip of Kerala is known in the world over for its rich bio-diversity and the abundant variety of flora and fauna that flourish in this region. It has been classified as one of the twelve-mega ecological hotspots of the world. The Ghats runs through the state of Karnataka covering the districts of Uttara Kannada, Shimoga, Dakshina Kannada, Chikamagalur, Hassan, Mysore and Coorg. Uttara Kannada is a district with a forest cover of 80% although satellite imagery rates it at between 55 and 60%.

Uttara Kannada is the coastal district of Karnataka, bordered by Goa, the Arabian Sea, and the districts of Shimoga, Dharwad, Dakshina Kannada and Belgaum. It lies between 13` 55' and 15` 31' latitude and 74` 9' and 75` 10' E longitude. It lies in the northwestern corner of the state and is laced by a range of hills that rise almost steeply from the coastal strip to an average height of 500m, with some hills touching even the 800m mark and above. The annual precipitation is largely confined to the monsoon months of June to Sept. It ranges between 3500mm on coast, rising to 4500-5000mm on the crestline and decline to 1000mm on the eastern plateau.

The 1981 census numbers the population of Uttara Kannada district at 10,72,034,with the density lowest in Joida taluka and highest in Sirsi taluka. It clearly reflects that the population is unevenly distributed and clustered around areas where opportunities for livelihood are relatively greater. As such, the district of Uttara Kannada has least density of population in the state, because a large area of land is classified as forests.

The district can be divided into four Eco-zones i.e. **the coast, the crest line of the Western Ghats, the highland area and the eastern plateau.** The type of forest cover varies with the Eco zone. The crest line is predominated by thick moist evergreen forests, High land area by semi evergreen, eastern plateau by moist deciduous and dry deciduous forest, and the coast by scrub forest. The species of plants that exist in these areas also differ. While the major species in the evergreen belt are Uppage (*Garcinia gummi-gatta*),

Clove (*Cinnamon spp)*, Wild Pepper (*Piper nigrum)*, Mushrooms, the moist deciduous and semi-evergreen areas are rich in Vatekayi (*Artocarpus lacoocha)*, Murugulu (*Garcinia* indica) etc., the deciduous in Shigekai (*Acasia concina)*, Harda (*Terminilia chebula)* etc.

With respect to demography too, the district has distinct characteristics. The major inhabitants are the Havyaks; a ~~n unusual~~ farming community growing mainly arecanut, Gouda Saraswat Brahmins are mainly traders, Namadharis, Kharevokkaligas, Marathas, Halakki Vokkaligas, Patgars are communities mainly dependent on wage earning and collecting forest produces. Siddis, Kunbis live in closest proximity to forests and depend ~~on it for their liv ing~~. Medars are the ~~traditional community of craft persons whose existence artisans who~~ depend on ~~bamboo raw materials~~ from the forests. Goulis are pastoralists.

~~Irrespective of~~ ~~though there is enormous~~ the socio economic differences ~~among~~ ~~between~~ the communities, ~~they all have close~~ ~~one factor that runs common between them all is the~~ relationship ~~they have~~ with ~~their~~ environment predominated by the forests. This relationship is direct for most of the communities that live in close proximity to the forests, who depend on wide range of products for their livelihood, both ~~in their subsistence and commerce needs in terms of earning a living as well as consuming them in various forms~~. These communities collect wood, fruits, berries, fodder, seed, flowers, leaves, etc. from / forests.

The government ~~has~~ framed rules for the management of protected forests and in these forests~~.~~ ~~There are~~ nineteen ~~kinds of~~ trees ~~species~~ and four forest products have ~~been are~~ reserved ~~by for~~ the Government (Kanara Gazetteer, 1883). Forest management since 1860's~~,~~ ~~has~~ has been geared towards the production of commercial timber ~~and revenu~~ generation ~~of revenue~~. To keep ~~pace up~~ with ~~the~~ growing demands of the colonisers and latter of Indian elite, the customary rights and privileges of forest dwellers and neighbouring agricultural communities were increasingly ~~curtailed~~ ~~reduced and denied~~. ~~In As a~~ consequence, the local communities became gradually alienated from the forests and at times became party to the destruction of forests. The first legislation was the Forest

Act of 1865, which empowered the government to declare any forest as government property. In 1927, the last amendment to the forest act was made which substantiated and reinforced the provisions of the earlier objectives. (Marriette Correa, 1997). In 1867 restrictions were imposed on the amount of *betta land* that owners of areca gardens could possess (Kanara Gazetteer 19...). In 1924 Kanara Privileges Act was passed which gave some of the concessions to areca growers (i.e) to use forest resources owing to certain conditions.) — what conditions??

With the implementation of forest laws, the freedom ...that people have to collect these products h...as been restricted to a very large extent, asbecause the government it is perceived by the government that these people are responsible for the large-scale destruction of the forests. This situation did not alter significantly even after independence because the same policies on forest continued. Even the draft bill of Indian forest act 1980 concentrated on the commercialisation of forests and blamed the forest dwellers for the destruction of the forests.

The g...overnment has faced resistance from all quarters and attempts were have been made to regain reduce the lack of control over the forest that people experienced as a result of these laws. Over the years, the f...orest d...epartment has introduced tendering systemfor of collection rights forwith regards to some products, which arehave come to be economically important to the people. What goes to the state exchequer today, from the forests of Uttara Kannada forests alone, contributes every year about Rs. 90 crores from timber and Rs. 20 crores from other products to state exchequer. These economically important other products were previously called 'Minor Forest Produce' (MFP). A number of studies over the period course of time have revealed that they are not minor in financial terms or usage by people any sense of the word if their use by the local people is considered. They have a great importan...ce in the food security, livelihood and generating employment of... the local people. Non-Timber Forest Produce (**NTFP**), as they are now called are to be seen in relevan...ce to the lives of the people using them rather than their share in the revenue earned by ... the government. To attain achieve sustainable development and retaining maintain ecolog...ical balance, the what needs at the hour to be looked into is, the dependency of the people livelihood at this juncture, dependence on

NTFP, ~~(in relation to the past),~~ and ~~the~~ ~~what kind of~~ changes ~~are taking place~~ in ~~the~~ resource base ~~itself,~~ due to the extraction of ~~such~~ forest products.

1.2 ~~LITERATURE~~ REVIEW ~~OF LITERATURE~~:

~~Over the years, the importance given to NTFP and its uses has been gradually increasing, owing to the large number of studies done by individuals and organisations in the country as well as abroad. All around there has been a growing interest in bio-diversity and environmental functions provided by the tropical forests. A second factor has been the growth in awareness that use or sale of NTFP forms important part of livelihood systems of very large numbers of people, outside and inside tropical forests. There has also been heightened commercial demand for many non-timber outputs of tropical forests and a realisation that it is likely that there are other species and products of significant industrial value in diverse forests.~~ ~~Ever increasing need of forest products and the growing awareness among people to use organic or products manufactured with least pollution has made the NTFP sector a lucrative business. Thus marketing of NTFPs and extracting them also increased over time. Thus it is essential to understand the market needs of these products, the ways and means of collection of these products. Here were review some of studies undertaken in Western Ghats, which main are the collection intensity, market price and collection practices.~~

Janapara Vijnana-Tantra Jnana Samsthe (J–V–S) Dharwad ~~has done undertook~~ an important ~~study piece of work~~ on NTFP in Uttara Kannada. The ~~area of~~ study (1997) ~~was~~ ~~constituted in~~ Yellapur and Haliyal talukas ~~both of~~ which lie ~~in the~~ north of the district. The forest type in the study area is mainly moist deciduous and dry deciduous, with some patches of semi-evergreen in one village (Harigadde). The study area does not represent the communities or Eco zones of the district. The crest-line of Western Ghats, which is rich in NTFP, is not within the study area. The wet and semi-evergreen forests in the crest-line of Western Ghats is the major place for NTFP species, for example Uppage (*Garcinia gummi-gatta)*, which is an important NTFP in the district, is not available in any

of the study sites. The fieldwork including the survey of households for socio-economic information was carried out from the end of January 1996 till May 1996. However, with this short time period of study, it is not possible to have a clear picture of NTFP issues in the district. ~~(Add few sentences about their results than describing the study area). This report doesn't give any vegetation data. It only focuses on socio-economic aspects of NTFP study villages and collection pattern. Most importantly, the economic valuation of various NTFPs and the dependency of village community on NTFPs. This study indicates that different classes of land holding community depend equally on forests in contrast to the general belief that landless and marginal farmers depend mostly on forests for NTFPs and cash economy.~~

Another important study was ~~done~~ conducted by the Institute of Social Studies Trust (ISST), Bangalore. This study (1987) concentrates on collection of Uppage in Sirsi and Siddapur talukas. The case study focuses on the nature of participation of different groups, especially of village women in this trade and on the requirements of each of these groups. The detailed report gives information about the collection, processing, and marketing methods of Uppage in this region. It however does not cover other NTFP species.

A study about Minor Forest Products (NTFP), in Sirsi and Honnavar division, was ~~done~~ conducted by Eco Consultants, Bangalore. This study lists the NTFPs available is these two divisions, under the category of food, wild fruits, medicinal herbs, oil/nuts, cane, bamboo, fibre etc. However, the list is not complete, as the study is restricted only to two forest divisions in the District. The information on NTFP is collected from secondary sources. Importance in being given to commercial NTFPs of, not ~~consumption~~ to NTFPs used for subsistence.

The study by P.B. Karunalkar, about collection of Harda – a case study, in Jagalbet Range, focuses on benefits of marketing of Harda through V.F.C.(Village Forest Committee) over the present system of giving contract to highest bidder. This study concludes that, the

right of collection of Harda through V.F.C. has been beneficial to the villager and there is need for extending the collection rights to other NTFP. (-Karunakar. P.B 1996)

A study by Institute of Social and Economic Changes (ISEC), Bangalore indicate that there appears no difference among different financial rights with respect to collection strategy such as timing of harvest, intensity of collection and extent of collection. In an extensive study by Centre for Ecological Sciences (CES) on density of various NTFP species and the yield studies indicate that NTFP species are their density are decreasing over time.

There are some other studies (Site Specific Plans for NTFP management), done by Karnataka Forest Department, Kanara circle. However, these studies do not bring out a clear picture of NTFP available in entire Uttara Kannada District.

1.3 OBJECTIVES OF THE PROJECT

A study on the relationship between forest products, especially Non-Timber Forest Products and the communities that use these products seems to be of a great importance ~~when seen~~ from both **(1) the ecological** ~~point of view, and (2) the~~ **socio-cultural** point of view. Studies that have been conducted since the second half of these centuries have revealed frightening trends in the depletion of forest cover primarily due to the unbridled harvesting of timber for commercial purposes. Also the characteristic of timber is such that it cannot be regenerated at the rate at which it is used. So, one has to look to other types and species of flora to be able to sustain a healthy forest cover. NTFP can perform this important function, as their rate of regeneration is not as low as that of timber.

Another reason that makes understanding of NTFP issues very important is the place it occupies in the lives of the people. There are likely to be a whole range of species, which are used in a number of households for cooking food, for cleaning and decorating, for prevention and treatment of illnesses, for making articles, etc. These may then be used at home or may also be used in barter or market ~~sale~~. Whatever the case may be, it is

definitely seen that the benefits obtained from NTFP are important in both ecological and socio-economic point of view.

The primary objective of the project is to gain a holistic insight into the **dependency of the communities** living in and around forests on the large range of forest products other than timber. As stated by J.E.Michael Arnold and Manuel Ruiz Perez, "in different situations NTFP contribute to household self-sufficiency, food security, income generation, accumulation of savings and risk minimisation. NTFP-based activities can be important in filling seasonal and other ~~or~~ income gaps, can provide buffer in times of emergency or hardship, be an activity of last resort, or can present an opportunity for improving household income and security".

NTFP have been classified into four types based on their uses: **Commercial, Non-edible, Edible** (these two could also be categorised together as **Consumption**) and **Medicinal**. [K.C.Malhotra, T.S.Vasulu, and Debal Deb, 1991]. Most studies have focussed a great deal on commercial NTFP rather than those that were traditionally used by the people, and which later became important from the economic point of view. This study seeks to look into, not just those products that have become economically valuable but those innumerable others that are used in households on a day to day basis. The study will try to document the NTFP of **sustenance needs.**

The study also attempts to understand the **cultural relevance** of NTFP in the lives of forest dwelling communities. NTFP have been studied so far from an economic point of view, with regards to their marketability, and their use in the present or future, in income generation. But what about those species that are used in agriculture, food, festivals, indigenous medicine, etc.? When we consider only some types of NTFP as important while trying to study the relationship between people and forests, are we not belittling the importance of the cultural requirements and traditional sentiments of the people? The aim of this study would, therefore be to understand these issues as well.

The second broad objective of the study is to understand the changes that the resource base itself has undergone as a result of use by the communities. The study of these changes throws light on the changes in use-pattern of ~~the~~ NTFPs also ~~they help in understanding of the~~ present dynamics of commercialisation of some species on one hand

and partial or complete neglect of the others. Ecological factors associated with the use of forests need to be addressed if forests are to be considered a reliable and sustainable source of income to the forest-dependent communities. If this resource is depleted due to over-exploitation, destructive harvesting or poor management, it is only a matter of time before this resource will cease to exist. The impact of NTFP harvesting might not seem dramatic when compared to the effects of selective logging or forest clearing activities, in fact, an area exploited for fruits, flowers or seeds may not look disturbed at all. However these extractive practices do have a gradual and irreparable impact on the composition and regeneration rate of the forest. (Murali, et al, 1995)

The inter relation between social use and ecological impact is a complex issue in case of NTFP. NTFP are important to forest dwelling communities for their commercial value, subsistence value, and cultural valves. At the same time extraction of these NTFP affects the sustainability of NTFP base itself and also the other forest ecosystem components like wild animals. Hence, it is necessary to link between these to aspects of study.

One of our assumptions from our observation and field experience is that the major reason for *extraction pressure* on NTFP is the problem of *property rights*. Hence, study tried to observe the extraction pressure of NTFP, in reserve forests and its comparison in relation to the land with private ownership.

Specifically our objectives are:

1) Listing of NTFP available in study clusters with details about the local names, botanical names, traditional uses, seasonality, etc.
2) Documentation of uses, processing methods and other information about the NTFP of sustenance needs.
3) To study dependency on NTFP of different forest dwelling communities (contribution of NTFP towards the total household income)
4) To study average number of time spent by men, women, and children in collection of NTFP.
5) To study impact of tenure on harvesting systems.
6) To study Regeneration status of NTFP species threatened with high extraction pressure.

Besides these, study tried to document the harvesting methods, marketing channels, collection practices, traditional use, and other information about the NTFP of sustenance needs.

1.4 RESEARCH METHODOLOGY:

1.4.1. Records: Secondary data was obtained from the forest dept. and other sources regarding out turn (product, quantity, revenue) of NTFP available in the Kanara circle and Karnataka, total geographical area, forest area, forest type, agricultural area, total population of the village, caste composition, land holding and general information.

1.4.2 Interviews: Interview schedules were used to collect information from various sources about VFCs and their role in deciding NTFP collection and marketing.

1.4.3 Questionnaire: Six questionnaires were developed for collecting data.

Socio – Economic Details: Pre-planned questionnaires were used to obtain information about the socio-economic status of the families. Socio-economic data of all families residing in the hamlets of study clusters were collected. Based on this data general caste composition, income sources were analysed.

NTFP; types and availability: Using this questionnaire, information about availability, NTFP collected by each family in a year, seasons were collected.

Weekly information: Thirty families of highly depended on forest and ten families of higher income groups were visited regularly, i.e., once in a week. Information was collected about NTFP collected in the previous week, time spent in collection, members involved in collection (men, women and children), distance covered, if marketed price and income etc.

as participants only. The study intends to use this method of data collection, mainly because the research assistants belong to the same group of people as the respondents and have just as much to offer in terms of information as the rest of them.

1.4.6 Participatory Observation: The research methods used in collecting primary data for the study are of a participatory nature. This is mainly because we are well aware of the fact that the attempt is to study the relevance of NTFP in the lives of certain communities and see it from their angle. The views and opinions of local informants regarding the issues surrounding NTFP are paramount and should be understood. A participatory approach also ensures that the diversity of views and all aspects of the issue are looked into. Participatory observation involves the research assistants to observe the collectors on field during the process of collection of NTFP. Through this method information regarding harvesting methods, man-hours spent in the activity, problems associated with collection, specific roles of women, children and men may be obtained.

PRA TOOLS:

A few tools of participatory appraisal that we have used in field are listed below. This is not an exhaustive list by any means but is to be used as a directive while collecting data in the field. These are modified suitably to the specific needs of the fields

1) Inflow-outflow chart: Using this method, we can get information about the availability {inflow} of NTFP in the study area and the use {outflow} of the same. The method helps to find out the various ways and extent of processing that the consumptional and commercial NTFP undergo before being used by the collector or the external consumer.

2) Ranking and scoring: This is used to get information about the how local resources are valued and managed. The information generated by the wealth ranking is also helpful in selection of informants in such a way as to offset the bias the inherent in different prospective. Matrix ranking can be used to investigate the various values, which a group attaches to particular resources. It can reveal both the use and non-use values and their relative importance. Matrix ranking involves asking the group of informants about the

Edible NTFP: A separate questionnaire is used to collect information on edible NTFP that are used in houses. Five families representing major communities of the clusters were selected for this purpose in each cluster. Food taken in a day (once in a week) was recorded from all such families. Data was analysed for items purchased from market, grown at home garden and collected from forest (uncultivated or NTFP)

VFC information: Information about the VFCs and NTFP issues like, NTFPs that are marketed by the VFCs, benefits given to villagers, equivalent income that a villager can get, if he sold the same to open market or contractor, opinions of villages about VFCs etc, were collected using this questionnaire.

Marketing channel: A questionnaire was used for collecting marketing data. Some of the middlemen, local traders were interviewed.

Except weekly data all information were collected once in a study period.

1.4.4 Comparative analysis: The study uses the comparative analysis method to bring out the clear differences between the extent and type of NTFP used by various communities and how their socio-economic and cultural realities influence the availability and use of NTFP. A sample of thirty families is chosen in each cluster. These families are studied in detail about the types of NTFP collected by them during different seasons, the quantity consumed by the household and sold for cash. Also the information about the NTFP having importance in *sustenance needs* are collected. The data is collected along with information about their socio-economic situation and standard of living. This data is compared with the data collected about the general socio-economic status of the community. The attempt is to arrive at a correlation between economic condition and use of NTFP.

1.4.5 Focus Group Discussions (FGD): These are yet another participatory method to obtain the different views about one issue at hand. FGDs as they are called, are popular in their use because it brings out the ideas of the participants as they are. In other methods the participants are questioned in different forms and the responses are recorded. Here there are very few questions asked. Most of the information that are obtained are the responses to each other's views. All individuals present participate on the same plane, i.e.

useful qualities of various items. The items being discussed and criteria for judging them can be put into the matrix or table and the informant can rank the item according to the criteria.

3) Resource mapping and transact walk: *This method helped in listing out the various species of NTFP that grow in the area. Transact walk can help in collecting information about the status of NTFP in different time frame. Further discussions on this could also provide answers to issues like why some species have gained importance while some of them are no longer used or depletion of some species.*

4) Venn diagram: The method may be used to demonstrate clearly the NTFP with multi-purposes uses i.e., to say it helps to list out those NTFP which come under more than one category be it commercial, consumption or medicinal. Thus the limitation of rigid classification may be overcome to some extent. Venn diagram is also used for documenting views of forest dwellers about quantity wise and income wise importance of NTFP.

5) Forest penetration map: This method may be used for collecting information about the distance to be covered in different seasons and the time spent for collecting different NTFP.

6) Seasonality map: This method may be used for collecting information about the availability and quantity of NTFP in different seasons.

Ecological Study:

In recent times, NTFP are becoming more popular because of their commercial value, availability, and comparatively easy method of collection. High prices and tenural problems promote forest dwellers to harvest these NTFP destructively in most of the cases. For example, Dhoop (*Canarium strictum*), Ramapatre (*Myristica malabarica*) etc. are on the verge of extinction. The high price due to increased demand may lead to the extinction of Uppage (*Garcinia gummi-gattaa*) species, if the pressure of extraction continues. Hence, impact of disturbance by people (harvest, fuel wood collection, and

grazing) on regeneration, species diversity, and composition and population structure was studied using Line transact method and Direct observation at the time of

rth at Breast Height) of trees, height of tree (approximately), canopies covering, etc was considered. Observation was made for collection of fuel wood, litter collection, lopping, grazing, fire, etc. In addition, the number of cut, broken and dead stems, was recorded. In case of cane, number of shoots, length, support for climbing, cuttings was considered. Our assumptions are:

1) There exists more harvesting pressure on forest (exists adjacent to village)
2) Lopping, harvesting of unripe fruits results in variation of yields in future.
3) In case of Cane, cutting of surrounding trees effects the growth rate.

Since the method is very time-consuming and cumbersome if done for every/most species, we have selected certain types of NTFP for which transacts can be done. Our attempt was to consider a representative of each type of NTFP. Five NTFP species (Uppage (Garcinia gummi-gatta), Murugalu (Garcinia indica), Cane (Calamus spp), Ramapatre (Myristica malabarica) and Seegekai (Acacia concinna)) having high extraction pressure were selected and was studied in detail from ecology, collection, processing, marketing and end products,

1.4.2.2 Direct observation at the time of harvesting:-The direct observation was carried out at the time of harvesting of some selected NTFP. Data about GBH of tree, yield of tree, quantity collected from tree, method of harvesting etc. was collected for the trees, identified at reserved forest as well as the land with private ownership and also at heavily harvested area and lightly harvested area. Harvesting pressure and impact of property rights was observed. This study was done for five major NTFP, which are facing heavy harvesting pressure. They are Uppage (*Garcinia gummi-gatta*), Murugalu (*Garcinia indica*), Cane (*Calamus spp*), Ramapatre (*Myristica sp*) and Shigekai (*Acacia concinna*).

1.4.3 THE CLUSTER APPROACH:

The study used the cluster approach to obtain data from the different Eco-zones. This approach was decided upon mainly to retain the diversity of the various species of NTFP and the different communities that we attempt to study. The cluster approach gives enough space to include most of the communities that are spread across the region and provides a chance of studying the variations in usage of NTFP. This would not have been possible in a village approach, as most of them comprise of only a few communities that might be relatively similar in their social, cultural and economic aspects.

1.4.4. TIME FRAME OF THE STUDY:

The study was spread over a period of two years. During the study observations ~~was~~ were made about the quantity of the different species of NTFP available, the quantity harvested by the families, the market prices of the various products, the incomes earned by the families, and a whole range of other relevant data was collected. The period was decided upon as two years keeping the following points in mind,

Seasonal availability of NTFP changes from time to time. The most obvious example for this is the drastic reduction in the availability of Uppage after a year of good crop. The availability follows a strict cycle of peaking every alternate year. This phenomenon has its implications on the incomes earned by the people and the substitutions they have to make in place of that product. Even the **tendering rights** ~~as~~ are designed by the forest dept keeping this in mind, for e.g. the tendering rights for Uppage and other NTFP are granted for a period of two years. Therefore a time period of two years ~~will hopefully provide space to observe and~~ understand the variations in use as well as market fluctuations

The study dealt with the use of NTFP by the local people in their daily lives. Information from the people about these uses does not come easily especially because there is a tendency to consider them as not '*so important*'. This may be because NTFP are used in small but crucial quantities. Also the study aims to obtain as much information as possible

on the **consumption uses** of NTFP along with the commercial ones. The latter are relatively easier to quantify based on market and end product values. But to assign quantifiable values to the long list of NTFP used at home in relatively small amounts is a challenge that will need a lot of observation, interviewing and understanding, which will obviously be a time-consuming process.

1.4.5 SELECTION OF RESEARCH ASSISTANTS

The study was conducted based on data obtained from five cluster villages that cover the different Eco-zones. A group of five research assistants was selected in order to collect this required data. These research assistants are individuals who belong to the respective clusters, well aware of the social, cultural, religious, economic and other societal dynamics of the area. They have a basic understanding of the issues regarding NTFP as they have grown up in the same environs and have seen and heard of the changes that have taken place over the years regarding the dependency of their families on NTFP. They have also assimilated the views and opinions their people have about the changes in forest laws, its impact on their lives (irrespective of its degree) and the subsequent adjustments and changes that people have made in their own lives. Another reason for choosing research assistants from the same areas was also to ensure obtaining of authentic and true data. It was foreseen from the experiences of previous researchers that individuals often think that the information obtained from them was used against them or that it was divulged to the Forest department, which will put them into trouble unnecessarily. So they were hesitant and sometimes refuse to answer questions or participate in discussions. It is expected that this problem will not arise when it is their own people asking them questions and the research assistants was in a better position to explain to them the needs and objectives of the study and also answer their queries about the study itself.

Two of the assistants were workers of local NGOs who have been in the process of looking into and propagating the cause of NTFP collectors/users. These individuals are well-versed with the issues surrounding NTFP and are also knowledgeable about the attempts that are being made at various fronts to help the collector groups strengthen

themselves and increase their bargaining capacity. They were also involved in the initial processes if their NGOs collected information about NTFP in their work areas. The study looks forward to their knowledge and experience and hopes to develop as good an understanding of the issue as possible.

Another purposeful intention of the study was to select women assistants as far as possible to facilitate an understanding of the gender perspective of the issues of NTFP. Since the study considers that cosumptional and subsistence NTFP are as important, if not more, as commercial NTFP; it was felt that the women would feel more at ease speaking to women researchers. However, practical difficulties such as long and odd hours of data collection, requiring travelling through forests and between villages made it difficult to find an all-women team. The study now comprises of two women assistants out of the five.

1.4.6 SELECTION OF CLUSTERS

Uttara Kannada District has some unique features. It is the only District in Karnataka, which has four Eco- zones, and Geographical zones viz. Coastal belt and foothills, Crestline, hilly region and eastern plains. Availability of NTFP varies with these zones. For e.g., availability of NTFP is highest in crestline and minimum near coastal belt. We have selected three clusters in crestline of Western Ghats and one each in foothills and plains. The three clusters in crestline are selected because of specific reasons like tribal settlements, hunting of wild species and tenurial systems.

The following could be stated as the main criteria for the formation of clusters for the purpose of the study.

1) The number of communities living in that cluster: The study seeks to understand the use and importance of NTFP in the lives of a cross-section of communities in Uttara Kannada, and also the different ways in which they are used, which is, very often, culture-specific.

2) The Eco-zones: Clusters belonging to different Eco-zones show variation in the type of forest and the availability of NTFP. Type of forest changes from evergreen to dry deciduous from Bandala to Malgi cluster and hence the type of NTFP species also. For e.g. Uppage is the major commercial NTFP in Bandala cluster, which is not at all available

at Malgi cluster. Even most of the consumption NTFP that are used in one cluster is not available in another cluster.

3) Availability of data regarding the area: The clusters chosen comprise of areas, which have been only minimally exposed to research studies in the previous years. A conscious attempt has been made to avoid repetition of data collected or areas studied by other researchers. This way we hope that this study will add on to the knowledge base regarding the forests of Uttara Kannada and its relationship with the people.

4) Intervention by NGOs: Clusters chosen include areas where NGOs have been working (not necessarily with issues of NTFP) as well as those areas which have not been exposed to intervention by 'external' groups.

5) Specific characteristics of some areas were also taken into consideration while forming clusters. For e.g. the Anshi cluster there exists the system of tenurial security i.e. every NTFP collecting family has rights over specific collection areas and no other family can collect NTFP from that area. The special characteristic of Magod cluster is the hunting of small animals by the communities living there for the purpose of their own consumption needs.

We have selected five clusters of villages in District, considering both ecological and sociological aspects as mentioned earlier.

The clusters are,

1) *Achave* | = studied SE1
2) *Anshi* |
3) *Bandala*
4) *Magod*

5) *Malgi*

1.4.7 SELECTION OF FAMILIES FOR SOCIO-ECONOMIC STUDY

One of the methodologies that the study used is to conduct an socio-economic survey of thirty families and study the data in relation to the general socio-economic conditions. The criteria for the selection of the families were:

1) A clear representation of the various communities residing in Uttara Kannada.

2) Involvement in the collection and use of specific NTFP for specific purposes. There are some NTFP, which are collected by only certain communities for some specific purposes. For e.g. Uppage seeds by Brahmins for extraction of oil, Arishina andi by Kharevokaligas, and mushrooms by most of the non-Brahmin communities.

3) Families whose share of income from NTFP sale is considerably high (at least 40%) in their total income.

Besides ten more families of higher income group were also included in regular study to have the comparative analysis. In addition, households headed by women or families where the major onus of earning an income is one the woman due to a range of factors were also selected wherever such families are there.

2.0 SOCIO –ECONOMIC STUDY

2.1 Description of Study Clusters

2.1.1 **ACHAVE CLUSTER**:

General situation: Achave a remote area is situated at the foothills of Western Ghats. It is about 50 Kms. from Ankola, Taluka place, and about 45 Kms, from Sirsi. Area is surrounded by greenish hills of wet evergreen forest.

Communities residing in this area are Kharevokkaligas, Goudas, Acharis, Haslars (Scheduled Caste.), Naiks, and Havyaks. Major crops growing in this area are paddy, arecanut, coconut, and some spices.

Two villages Kuntagani and Manigadde are selected for our regular study. The village Kuntagani situated ~~from about~~ 35 kilometres from Ankola, one of the taluka head quarters of Uttara Kannada District. The village is situated in the foothills of crestline of Western Ghats. The village is surrounded by thick forests of evergreen forests on the East with a height of about 600 meters.

Another study village in Achave cluster is Manigadde, which is situated in between the Ghats. Or in other words, the village is situated in midst of Western Ghats. The village is surrounded by hills almost in three sides with a height of about 600 meters from the Mean Sea Level. Kuntagani has higher population compared to the Manigadde. The area is covered by mainly Evergreen and semi evergreen type of forests.

Area in acres	Manigadde	Kuntagani
Total Geographical area	3388.36	5823.25
Forest area	3337.00	5261.19
Areca	3.00	46.20
Paddy	32.00	357.00

Population	Manigadde	Kuntagani

Male	41	389
Female	93	931
Total	134	1320

2.1.2 Description of communities:

Naiks: Nadavar Naiks: these communities were migrated from Ankola region to this village. Agriculture is the main occupation. Other sources of income include agriculture labour and NTFP collection.

Kharevokkaligas, are traditionally depended on forest products for livelihood. They manufacture handicrafts and articles from cane. Now they are cultivating paddy.

Shetty: Agriculture is the main occupation. They grow paddy and areca in small patches of land. There are only two families in the village.

Achari: They are traditionally carpenters. They have small patches of agriculture land in which they grow paddy.

Haller: (Scheduled Caste). They have very small patches of land. Collection of NTFP, wage earning are the major occupation.

Havyaks: they are highest ranked people in the caste system having agriculture, (mainly growing areca and spices) is the main occupation. Some of the members are in service, outside.

2.1.3 Literacy level:

	Kuntagani	Manigadde
Male	54%	42.56%
Female	38.56%	36.85%
Total literacy	46.28%	39.7%
Above 10th Std.	12.34%	5.92%

Schools: one Lower Primary School and Anganavadi are at Kuntagani. High school is about 15 kilometre (Hillur) and college is in Ankola.

Forest and fauna: Achave area is surrounded by Evergreen forest. Towards west, there are some areas under teak plantation.

2.2 Anshi

2.2.1 Description of village and region:

Anshi is situated at the northernmost part of Uttara Kannada District. It forms part of Joida taluka, the most thinly populated taluka in the district. The Kali River separates Joida from the rest of the district. This area is covered mainly by evergreen forests.

The two villages selected for the study viz. Barade and Anshi.

Area in acres	Aanshi	Barade
Total Geographical area	4589.25	5248.65
Forest area (Approx.)	4000.00	5000.00
Agriculture area	589.25	248.65

	Aanshi	Barade
Population	160	89
Male	88	41
Female	72	48

2.2.2 Description of communities: the village comprises different communities that inhabit the area. These include Kunbis, Desai, Madival and Devali. Like in other regions there are a few families belonging to the upper cases.

Desai are the upper caste family with mainly having the agriculture as the major income source. They are slightly better off than the Kunbis, another communities predominantly living in the region. Devali and Madivals are migrated communities from the coastal region. They ~~are having~~ other sources like small shop, Hotel etc. There is only two and one family each of these communities respectively.

2.2.3 Literacy level:

	Aanshi	Barade

Male	32%	42%
Female	24%	28%
Total	28%	35%
10th std. And above	12%	4%

Kunbis are the major weaker section communities residing in the region. They have little area of land to cultivate. As the rainfall is high about 200 inches (i.e. 5000 mms. of average rainfall), of the land is less fertile. Also, only paddy along with some food grains is grown here. Employment opportunity is less. They migrate to Goa or to Dandeli in search of work. They prefer to go to Goa in lean season, i.e. December, January, and February, as there is comparatively high wage per day.

2.3 BANDALA

2.3.1 Description of village and region: Bandala lies to the south of Sirsi, about 30 kms from this taluka headquarter and is situated on the edge of crestline of Western Ghats surrounded by thick evergreen forests. It is a region of highly undulating hills, dropping rather steeply from hills to 600 m to 860 m, down wards, which resulted in a number of waterfalls due to the rivers flowing in the region.

Area in acres	Badagi	Mulgund
Total Geographical area	1689.12	2095.18
Forest area	1387.00	1829.8
Agriculture area	302.12	141.31

Particulars	Badagi	Mulgund
Population	256	327
Male	111	169
Female	145	158

The villages in the cluster were carefully selected to include a representation of the different communities residing in the area. Some of the hamlets selected are Badagi, Sannagadde and Bekkmane. The major communities residing in this area are

Kharevokkaligas, which form 74% of the total sample. Compared to the other clusters, Brahmins form a significant minority in the Bandala sample representing 15% of the total population. Scheduled Caste/Scheduled Tribes, Marathis, and others are including Muslims, form about 5%, 3% and 3% respectively.

2.3.2 Description of communities:

Marathi- they have small agriculture land in which they are growing mainly food crops. Agriculture labouring, NTFP Collection, & value addition to collection, Value addition to certain NTFPs are the other occupations for them.

Kharevokkaligas are traditionally depended on forest products for livelihood. They manufacture handicrafts and articles from cane. Now they are cultivating paddy.

2.3.3 Literacy level:

Particulars	Badagi	Mulgund
Total literacy level	49%	35%
Male	56%	42%
Female	44%	28%
Above 10th std.	26%	16%

School: Higher primary school: 2 kilometres from the village.

Secondary Education: About 8 Kilometres

Higher Education: Sirsi, 26 kilometres

Forest and fauna: Of 1387 acres of forestland, there is about 1,000 acres of undisturbed forest in the village. Forest area is mainly of evergreen type.

2.4. MAGOD

2.4.1 Description of village and r

llage	

Geographical area	5491.33
Agricultural area	216.34
Forest land	5129.32

	Magod village
Population	611
Male	318
Female	293

Villagers in the study hamlets of Magod cluster belong to different classes broadly along caste lines. [Sample HH.s - Basis - Caste]

Some of the families of the neighbouring villages are also selected for the study to include the collectors of all types of NTFP available and belong to different caste composition.

2.4.2 Description of communities:

The main community residing in this area is the Siddis known to be of African descent, but settled in India for centuries and living in close proximity to the forests. Other communities are the Naiks and Havyaks. Apart from these, there are also some families of Patgars, Madivals and Marathis.

Havyaks: As in other clusters they are ~~having~~ have areca plantations and have good income sources.

2.4.3 Literacy level:

	Percentage
Male literacy	53%
Female literacy	46%
Total literacy	49.2%
Above 10^{th} std	25%

2.5 MALGI CLUSTER

2.5.1 Description of village and region:

Malgi is situated about 30 kms from Sirsi on the Sirsi-Hubli road, North East of Sirsi. Most of the region is on the plains, covered with dry deciduous forests although there are a few patches of moist deciduous forest. Situated on the border of the district and exposed to various pressures, the forests are highly disturbed and degraded.

Three villages around Malgi have been selected for the study. One is Kurli, situated at about five kms. from Malgi towards the South-West primarily inhabited by the Namadharis and Voddars. Togaralli, about 7 kms from Malgi, has also been selected. Like Kurli, this village is surrounded by moist deciduous forest. The main communities in this village are the Muslims, Naiks and Aryaru. The third village selected is Bankanala cross, situated at about 12 kms on the South East of Malgi, near Dasankoppa. Lambanis is the main community residing in this area.

The selection of the villages covers the entire range of communities in the Malgi area and also ensures that most of the NTFP available in that area are in these villages. This will ensure that the nature of dependence on NTFP by the local communities in the sample can be generalised to an extent to other villages in the same geographical area.

Area in acres	Kurli	Bankanal
Total Geographical area	680.00	1800.00
Forest area	430.00	1025.00
Net area sown	250.00	620.00

Particulars	Kurli	Bankanal
Population	328	532
Male	169	282
Female	159	250

2.5.2 Description of communities:

Namadharis; they are the communities residing in the village, with small patches of agricultural land. They are living in the western side of the village. Also, they go for wage earning. Collection of NTFP is another major source of income.

Voddars: these communities are popular as workers of stone work. They have very little land. They go to the Malnad(hilly) region for wage earning in lean season. They are also engaged in the collection of NTFP.

Lambanis: communities who can be identified by the colorful dress stitched with buttons. Because of little employment opportunities they are also going for wage earning to Malnad region

Havyaks: they were migrated from Malnad region by purchasing land from the localities. As explained in other clusters they are mainly areca growers. They have considerable amount of arecanut plantations in Togaralli village. However, other side of the cluster is not suitable for the areca plantation.

Muslims: they are residing in all villages. They have no agriculture land. Trading is the main occupation along with collection of NTFP.

2.5.3 Literacy level:

	Togarlli & Kurli	Bankanal cross
Male literacy %	42.51%	39.32%
Female literacy %	38.34%	34.26%
Total literacy %	40.43%	36.79%
Above 10th std.	18.45%	12.56%

2.1.2 SOCIO-ECONOMIC SITUATION RELATED TO NTFP IN STUDY CLUSTERS

The analysis is based on the Socio- economic questionnaire completed in various clusters. In each cluster, all families residing in the hamlets of study clusters were selected for the study. Socio-economic details were collected using a questionnaire. The data was collected once in beginning of the study period. The first section contains a general discussion on caste, class composition, land holding and income earned from various sources in the hamlet of families comprising the study clusters.

The second section shows the analysis of annual family income and is compared to total income from the NTFP and other sources. However, it should be noted that all NTFP

income is calculated considering only commercial NTFPs. An attempt is also made to analyse the wealth index in comparison to income categories of families.

The third section analyses the household income of families from NTFP. This is also reveals the dependency factor of groups in comparison to wage and agricultural income.

ACHAVE CLUSTER

Section I

In all 55 families are there in selected hamlets from Achave cluster. All the communities residing in the area were included in the sample. In this area, there is not much cultivable land due to the extensive forest cover. Therefore, agricultural activities contribute only 21% of the total income of the families in the sample population. Paddy is the main crop grown in the region. Most of the families, irrespective of caste or class earn some amount of income from paddy. In the entire sample, only 12 families out of the 55 did not earn any income from paddy cultivation. However, the area under cultivation is not very large and most of the families have small to medium size land holdings. While 9 families have land holdings of 10 gunte to 30 gunte) the rest of the land-owning families possess approximately half, one or two acres each. Give the same unit for easy comparison

The most important income source of the villagers in Achave cluster is wage earning, which accounts for 44 % of the total income of the villagers. Despite this, there were 11 families out of the total sample of 55 where none of the members were wage earners.

While wage earning contributes to 44% of the total income of the sample studied, the income earned from the collection and marketing of NTFP is 19%, not far behind that earned from paddy cultivation i.e. 21%. As in all evergreen forests, the range of NTFP available is tremendous.

Every family in the study cluster depends on NTFP for their income to some degree. The income that different families earn from NTFP range from Rs.500 annually to Rs.6,000. Most families earn somewhere between Rs. 1000 - 3000 per annum from NTFP collection and marketing. This cuts across all caste and class groups though the upper castes depend on NTFP to a lesser extent as will be seen later.

Eight percent of the total income of the villagers studied in the Achave cluster is from arecanut cultivation and other sources like growing coconut and some spices. Very few

families earn income from other sources. Only 5 families out of the total sample of 55 earned an income from sources other than paddy or arecanut cultivation. NTFP sources and wage earning. The proportion of this income to the total income of these 5 families was quite substantial. Though four out of these five families grew paddy and one also grew arecanut, their income from other sources was much higher - usually more than thrice earned from paddy cultivation. However, these families depended to quite an extent on NTFP though the proportion of their NTFP income to income from other sources was still low.

Section II

In the previous section, the different income sources that the villagers in Achave depend upon were discussed. In this section we can see that irrespective of the source, this cluster has the lowest income ranges in the entire study. Majority of the villagers viz. 68% have an annual income of less than Rs.10,000. Of these, 9% earn less than Rs. 5,000 per annum. The remaining 9 families (about 32%) earn an income of between Rs. 10,000 - Rs.25,000 a year. While one family earns more than Rs. 25,000 annually, no family in the sample earns more than Rs.50,000 per annum.

The Wealth Index, which gives an idea about the standard of living of the villagers, shows that all the families in the sample score less than 1 on the scale. This shows that the entire samples irrespective of caste are either poor or lower middle class.

Section III

An analysis of the dependence of the communities on NTFP in proportion to the income they earn from other sources substantiates the findings in the other clusters. Thus, though agricultural income and NTFP income form almost equal parts of the total income of the villagers i.e. 21% and 19 % respectively, it can be seen that as agricultural income increases, the percentage of NTFP income to agricultural income decreases. Therefore, for those who earn less than Rs.10,000 per annum from agriculture, they earn 23% of their income from NTFP collection and sale. Whereas those on the upper income scale depend

on NTFP to a much lesser extent. It should be noted that contrary to the trend those who have no income from agricultural sources earn 21 % of their income from NTFP. This is 2 % less than those who earn an income (below Rs. 10,000) from NTFP. This could be attributed to the fact that those who earn small amounts of income from agriculture have very small land holdings and are highly dependent on NTFP.

The same trend can be observed when analysing the data on income from wages v/s NTFP income. Families earning an annual income of below Rs.5000 earned 26% of the NTFP income v/s their wages, whereas those in the income range of more than Rs.10,000 per annum depended on merely 11 % of NTFP income in proportion to their total income from wages.

Table- 2 Achave cluster

Total family Income	No. of houses
Below 10000	37
10000-25000	17
Above 25000	1

Wage earning v/s NTFP income	
No wage	25%
Below 5000	26%
5000 to 10000	21%
10000 to Above	11%

Total Income v/s NTFP	
Below 10000	23%
10000 to 25000	20%
25000 to 50000	2%
50000 to 10000	0
One lakh and above	0

Agriculture income v/s NTFP	
Nil	21%
Below 10000	23%
25000 to 50000	12%
50000 to 10000	0%
One lakh and above	0%

The analysis of the data on total income v/s NTFP income corroborates the findings in other clusters. The only family in the Achave cluster, which earns more than Rs. 25,000 per annum, depends to a very small degree on NTFP i.e. NTFP collection and sale forms only 2% of the total income of this family. On the other hand, for families earning a total income of Rs.10,000 and below and between Rs.10,000- 25,000 the proportion of NTFP income to total income was 23% and 20% respectively.

MAGOD CLUSTER:

In the hamlets selected in the Magod cluster a total number of 52 families were included in the sample. Siddis form 75% of the total sample followed by Havyaks (13%) and Naiks (10%). Other communities are in a minority, merely 2% of the total population. The hamlets that were studied during this period and from which data were collected include Adikekodlu, Kere kumbri, Emme honda, Kumanakallu, Battakere, Chandaguli, Durbekodlu, Hasinmane, Vartekodlu, Galijeddi, Kedigejeddi, Nandolli, Goulipal, Kulimagod, Melina taarimane and Kottagudde.

As the area is hilly there is not much scope for agricultural activities compared to the plains and the foothills of the Western Ghats. However, the Bedti River and the climatic condition as well as the survival needs of the communities in that region ensure that a certain amount of land is covered under agriculture. The main crop grown in the region is paddy, rice being the staple food of the people. Apart from this, arecanut is also grown mainly by the Havyaks and the Naiks as they are the communities with the most land and they can afford the initial investments that are needed for arecanut cultivation. The total income from arecanut earned by the families in the study sample was Rs. 1,86,600 of which the average earning by a Havyak family per annum was Rs.17,000, whereas for Naiks and Siddis these figures were Rs.7,000 and Rs. 857 respectively.

Paddy, on the other hand, is grown by some of the land owning Siddis, however few these may be. Income earned by the Siddis in the study sample was an average of Rs. 1537 per family per annum, compared to Rs. 5,500 and Rs. 7,257 for the Naiks and Havyaks respectively. This shows that though the Siddis depend far less than the Naiks and Havyaks on all forms of cultivation ~~the difference in~~ paddy cultivation are ~~not as marked as they are for areca~~ between the three communities.

Overall, less than half, viz. 21 families in the sample population own land ranging from smallholdings by the Siddis to large tracts by the Havyaks. In all, income from agriculture contributes 27% of the total income from different sources obtained by the villagers in ~~Magod cluster~~.

A more important source of income than agriculture to the villagers is wage earning. This contributes 38% of the total income generated annually ~~by the sample studied~~. The data on wage earning corroborates other studies done in this field revealing an inverse correlation

between land owning and wage earning. The more the land a person has, the less the reliance on earning an income through wage labour. In this sample, it is therefore clear that the communities which have not much land viz. the Siddis are more dependent on wage earning as compared to the Havyaks and Naiks. The amount of dependence of the Siddis on wage earning as compared to the other communities can be seen from the following data. Rs.8,773 is the average income from wage earning per family for Siddis whereas this is Rs.7567 for the Hayaks and Naiks. Of the total income earned by the Siddis i.e. Rs. 6,86,900, wage earning forms 48%. For the Havyaks and Naiks on the other hand, wage earning forms 19 and 31% of their total income respectively. Therefore, we can see that Siddis are far more dependent on wage earning for their total income than the other two communities, the dependence being the lowest among the Havyaks.

While income from wage earning and agriculture consists of 38% and 27% of the total income obtained by the villagers in the sample, income generated from the collection of NTFP is not far behind. It accounts for 23% of the total income, a substantial amount, natural in a region so rich in biodiversity. NTFP available here is used both for commercial purposes and for subsistence. The NTFP species available in this region include 1) Cane, 2) Honey, 3) Uppage, 4) Murugalu, 5)Vatekayi, 6)Dalchinni, 7)Rampatre, 8)Sheegekai, 9)Jummanakai, 10)Wild peper, 11)Kalale (Bamboo shoot), 12)Koolballi, 13)Kodasina beru, 14)Chakrani beru, 15) Dhoop , 16)Itle ele, 17)Gandhasoor , 18)Atlakai, 19)Alalekai.

Apart from this, 12% of the income of the villagers is from other sources like coconut cultivation and small entrepreneurship in the area.

Section II.

Villagers in the study hamlets of Magod cluster belong to different classes broadly along caste lines. Like in most inhabited parts of the world, a very small percentage, viz. 6% belong to the upper class. These families earn an income of between Rs. 50,000 - 1,00,000 annually. Of these three families in the sample, two are Havyaks and one Naik. Much of the income is obtained from arecanut cultivation. The next income group consists

of those in the Rs.25,000 - 50,000 range. These form 27% of the total population. Most of these are from the Havyak and Naik communities. (Fig -1,b)

Majority of the villagers in the Magod sample, viz. 48% belongs to the lower middle and lower class. They get an annual income of between Rs. 10,000 - 25,000. Typically, there are no Havyaks or Naiks in this category or the next, which consists of those earning an income of less than Rs. 10,000 annually. This category comprises 19% of the population.

Section III

It is clear from the previous two sections how income is distributed along caste and class lines in the community, the different sources from which income is generated and the standard of living of the different groups. To an extent, therefore, the socio-economic profile of the villagers in Magod cluster in terms of their land holding, income, occupations and lifestyles has been discussed. In this section, we will focus on the dependency of villagers on NTFP.

While it was traditionally believed that only the poorer sections of the rural communities were engaged in NTFP collection, it is increasingly being recognised that NTFP collection and use form an important part of the lives of upper castes and classes as well. In Magod cluster, it was observed that even the wealthiest families in the study sample i.e. those earning an income of between Rs. 50,000 - 1,00,000 depended on NTFP for at least 11% of their total income.

However, it is evident that as the income of a family increases, the proportion of NTFP income to this total income decreases. For the lowest income group, i.e. those earning less than Rs. 5,000 a year, the largest portion of their income viz. 72% was from NTFP collection and sale. This could be attributed to the low income available from NTFP collection as compared to other sources like agriculture and wage earning. Unfortunately, for groups without access to these sources of income, NTFP income, despite its relatively meagre income generating potential, becomes the only viable option to earn some cash.

Table 1: Percentage of NTFP income with respect other income sources in Magod cluster

Agriculture income	% of NTFP income
Nil	47%
0 to 5	30%
5 to 10	28%
10 to 25	14%
25 to 50	16%
50 to 1lakh	5%
1lakh and above	0%

Total income	% of NTFP income
Below 5	72%
5 to 10	47%
10 to 25	27%
25 to 50	21%
50 to 1 lakh	11%
above one lakh	0%

Wage earning	% of NTFP income
land holders	16%
no land	100%
below 1000	79%
1000 to 5000	44%
5000 to 10000	24%
10000 and above	21%

An analysis of the dependency of villagers on NTFP income v/s agricultural income reveals similar trends. The greater the land holding and the greater the income generated from agriculture, the less is the proportion of NTFP income to the total income from agriculture. As the table above shows, families without any agricultural land and no income from agriculture get about 47% of their income from NTFP. For those earning less than Rs.5,000 annually on agriculture, NTFP collection and sale contributes 30% of their income. On the other hand, only 5% of the income of those earning between Rs.50,000-1,00,000 is from NTFP sources.

Finally, the trend repeats itself when data on wage earning and NTFP is analysed. As we move from those with no land to those with an income of less than Rs.1000 per annum on wages we find the dependency on NTFP relatively high, i.e. 100% and 79% respectively. Higher the dependence on wages, less the contribution of NTFP to the total wages earned. NTFP income contributes to 24% and 21% of those earning wages of between Rs.5,000- 10,000 and Rs.10,000 and above respectively.

From the above analysis it becomes obvious that though all communities and occupational groups get some amount of income from NTFP, the range of income is very widely dispersed. The dependency of the poorest groups on NTFP income is much higher than for other groups either with land holdings or wage earning potential. In Magod

cluster, it is the Siddis that are most dependent on NTFP. Close observation and secondary data sources reveal that the greater the dependence of a community on NTFP, the more symbiotic the relationship of that group with the forests.

MALGI CLUSTER:

Section I

Malgi is situated about 40 kms on the Sirsi-Hubli road, North East of Sirsi. Most of the region is on the plains, covered with dry deciduous forests although there are a few patches of moist deciduous forest. Situated on the border of the district and exposed to various pressures, the forests are highly disturbed and degraded.

Three villages around Malgi have been selected for the study. One is Kurli, situated at about 5 kms, from Malgi towards the south-west primarily inhabited by the Namadharis and Voddars. Togaralli, which is about 7 kms, from Malgi, has also been selected. Like Kurli, this village is surrounded by moist deciduous forest. The main communities in this village are the Muslims, Naiks and Aryaru. The third village selected is Bankunala cross, situated at about 12 kms, on the South East of Malgi, near Dasankoppa. Lambanis is the main community residing in this area.

The selection of the villages covers the entire range of communities in the Malgi area and also ensures that most of the NTFP available in that area are in these villages. This will ensure that the nature of dependence on NTFP by the local communities in the sample can be generalised to an extent to other villages in the same geographical area. In all 62 families were selected for the sample.

Section II

An analysis of income sources of the villagers studied in Malgi cluster show that agriculture dominates over all other sources, with more than 60% of the income coming from agriculture.

Of the entire sample, 20 families did not earn any income form paddy cultivation. This constitutes more than 30% of the sample, a high figure considering the fact that

agriculture is the main income-generating source in the area. Further, we can see that the main source of agricultural income is paddy and areca accounts for a relatively smaller amount. This is easily explained by the dry deciduous (with some moist deciduous patches) nature of the forest. This is again the factor, which explains the relatively low wage earning, as Forest Department work is likely to be lower in such situations.

Eight families, i.e. approximately 12% of the sample population are engaged in areca cultivation. All these families are also dependent on paddy cultivation as a source of income. The income earned from paddy ranges between Rs.1, 000- 20,000 per annum whereas that from areca is distributed between the Rs.2000- 13,000-income range per year. The area under areca cultivation is very small, never exceeding more than 2 acres whereas for paddy some families own up to 5 acres of land. The smallest landholdings for both paddy and areca are half acres.

Wage earning contributes to 20% of the income of the sample population in Malgi. 31% of families did not earn any income from wages. The families who did depend on wage earning as one of their income sources earned in the range of Rs.1,000 - 10,000 per annum. Only one family earned Rs. 16,000 annually from wages. This family, which has a total of 7 members, 5 of which are capable of working, does not own any land and does not earn income from any other source apart from wage earning.

While wage earning accounts for 20%, the share of NTFP is very low at just 6% of the total income of the villagers. This is understandable given that this cluster is situated in the plains, with the forest cover being relatively sparse and the variety and amount of NTFP available being limited. Also, the commercial value of NTFP available in this area is comparatively less than the NTFP in other clusters. The NTFP in this region include species like, 1) Wild pepper 2) Booralu 3) Jambe vodu 4) Hunagala 5) Guddegeru 6) Haludhoopa 7) Dalchinni 8) Sheegekai 9) Tarekai 10) Ganapekai 11) Koulikai 12) Nerale 13) Amla 14) Saagawani 15) Patri kai 16) Karibevu 17) Singatekai 18) Appemidi 19) Hippehoovu 20) DindaluAntu 21) Mushrooms, 22) Kalale 23) Vayuvilanga 24) Tamari leaves, and, 25) Muttala leaves.

Unlike in the other clusters where practically all the families irrespective of caste or class depended on NTFP for at least some portion of their income, in Malgi given the

scarce forest resources, many families did not earn any income from NTFP. 24 families out of the sample i.e. almost 39% of the population did not earn any income from NTFP. This seems to cut across caste lines. Finally, income from other sources accounts for 13% of the total income of the villagers, in this cluster.

The distribution of the villagers along different income groups shows that about 41% of the families earn less than Rs.10,000 per annum while the remainder earn more than this. Only 12% of the families have an income of over Rs.25,000 per year, which shows a pyramidal structure of wealth distribution in the cluster. This means that this is one of the poorer clusters. This is obvious given the extent of forest degradation in that area and the inadequate sources of alternative employment.

Section III

Let us try to take a look at the role played by NTFP in the household economy of the village. Data on NTFP and its contribution to total income as well as its relation to land holding, agricultural income and wage earning was analysed. The results were the same as in the other clusters. For those earning below Rs.10,000, NTFP income contributed to 16% of their total income whereas it accounts for only 1% of the total income of those earning between Rs.25,000 - 50,000.

Table- 3 Malgi cluster; Share of NTFP income in overall income with respect to different parameters

Income from Agriculture	
No land	17%
Below10000	14%
10000 TO 25000	2%
Above 25000	0%

Total Income	
Below 10000	16%
10000 to 25000	7%
25000 to 50000	1%
50000 and above	0%

Income from Wage Earning	
Land holder no wage earners	3%
No land holders, no wage earners	21%
Below 1000	14%
1000 to 5000	2%
5000 to 10000	3%

No land area	15%
0 to 1	15%
1 to 2	9%
2 to4	9%

10000 and above	0%

4 and above	2%

NTFP income contributed to about 2% of the total income of those owning more than 4 acre of land whereas this contribution steadily increased as the size of land holdings decreased. Therefore, that owning less than 1-acre depended on NTFP for 15% of their income.

The same trend continues when data on agricultural income v/s NTFP income is analysed. The landless families rely on NTFP income to 17% of their total income whereas NTFP income consists of only 2% of the income of those earning between Rs.10,000 - 25,000 per annum.

Families earning wages of between Rs.5,000 - 10,000 depend on NTFP for 3% of their total income. This dependence increases as income from wages decreases. Those without any income from wages or land rely on NTFP collection and sale for 21% of their total income.

From all this we can see that a clear inverse relationship exists between NTFP income and income from agriculture as well as total income. The relationship is not so clear in the case of wage earning, but one can clearly infer that NTFP income is higher the lower the other sources of income. There is also an inverse (though less marked) relationship between NTFP income and land holding. This reiterates the general conclusion found elsewhere that poorer groups are more dependent on NTFP as a source of income.

BANDALA CLUSTER

~~Section I~~

Bandala lies to the south of Sirsi, about 30 kms from this district headquarter and is situated on the edge of crestline of Western Ghats surrounded by thick evergreen forests. It is a region of highly undulating hills, dropping rather steeply from hills to 600 m to 860 m, down wards, which resulted in a number of waterfalls due to the rivers flowing in the region. The area is surrounded by thick forest of evergreen type.

The villages in the cluster were carefully selected to include a representation of the different communities residing in the area. Some of the hamlets selected are Badagi, Sannagadde and Bekkmane. The major communities residing in this area are Kare Vokkaligas which form 74% of the total sample. Compared to the other clusters, Brahmins form a significant minority in the Bandala sample representing 15% of the total population. Scheduled Caste/Scheduled Tribe, Marathis, and others are including Muslims, form about 5%, 3% and 3% respectively. In all, 65 families were included in the sample.

The percentage of income from various sources is quite different from that of other clusters. With the higher percentage of Brahmins in the area and the cast tracts under areca plantations, income from areca accounts for 62% of the total income in this cluster. This is followed by NTFP collection, which is 13%, the only cluster in which this is the second highest source of income. Paddy cultivation forms a close third accounting for 12% of the total income.

As much of the land in this area is used for areca cultivation, not much is left for paddy. Also, areca requires intensive input both in terms of human and financial resources, leaving very little time and energy for other forms of cultivation. Moreover, while the climate and soil are highly suitable for areca, the profits from areca are much higher than that of paddy. Lastly, while areca is traditionally grown by the Havyaks in Uttara Kannada and to some extent by other upper castes, in this area most of the families earned an income from areca cultivation. Only 8 families in the entire sample i.e. 12 % did not earn any income from areca.

NTFP income is lower in proportion to the total income compared to most other clusters. However, this is the only cluster in which NTFP income contributes more to the total income than paddy cultivation. One of the reasons for this is the large area of undisturbed forest in that region. Out of 1387 acres of forestland, there is about 1,000 acres of undisturbed forest in the village. Also, the range of NTFP species is very wide. This evergreen forest supports species like 1] Uppage, 2] Murugalu, 3] Vatekayi, 4] Suragi, 5] Ramapatre 6] Alalekai 7] Antwalakai 8] Honey 9] Kalale 10] Mushrooms, 11]

Cane 12] Ichalu 13] Baine 14] Bareballi, 15] Dadasalu 16] Dhoop [Maddi and Saludhoop].

The range of income earned from NTFP marketing was Rs. 1,000-12,000 per annum. The only family earning more than Rs.10,000 on NTFP did not engage in either paddy or areca cultivation. Apart from NTFP, wage earning was the only other source of income. Wage earning opportunities are limited in this region due largely to its geographical location. Also, the opportunities to search for wage earning beyond this region are restricted as travelling time and the location of the region on the Ghats makes it relatively inaccessible to other areas where potential for wage earning exists. More importantly, income from areca reaps in far more profit than that of wages, which is why those who do have opportunities to travel beyond the village prefer not to do so in favour of areca cultivation. 28 families, i.e. 43% of the sample did not earn any income from wages. Therefore, income from wages contributes only 9% of the total income, much lower than the contribution to total income from this source than in other clusters. Other sources contribute a mere 4% of the total income of the households in the Bandala sample.

~~Section II~~

This is probably one of the wealthiest clusters, much of the income sources from areca. More than 10% of the families belong to the upper middle class with 5% earning more than Rs. 1 lakh per annum and 8% between Rs. 50,000-1lakh. 31% of the families belong to the middle to lower class with an income of between Rs. 25,000-50,000 per annum. As in all clusters, the majority belongs to the poorer sections of the village, i.e. 50% earn an annual income of between Rs. 10,000-25,000. And typically, a small percentage, i.e. 6% is really poor with an income of less than rs. 10,000 p.a.

The data collected using the wealth index shows the same trend as can be seen from the pie chart below. While the income reflects a certain class, the standard of living may be at a slight variance from this. Therefore, even those earning a higher income (which places them in a certain class category) do not necessarily have all the amenities and possessions to place them in the same class in the wealth ranking score. Therefore, the modernisation

index reveals that the highest class in the cluster and 29% of the sample belong to this group. The majority, i.e. 56% is from the lower middle class and the remaining 15% are poor. (Fig-8)

In most rural societies, income disparities are seen to be wider than differences in living standards. This is partly because income is more precise and easier to calculate and partly because amenities that rural households acquire and collect are limited due to the lack of basic infrastructure facilities in these areas as well as due to some socio-cultural factors.

Section III

The analysis of data regarding contribution of NTFP to the total income of villagers does not reveal anything new. The higher the income of a family, the less the dependence on NTFP. Those with an income of more than Rs. 1lakh p.a. depended on NTFP for only 2% of their total income. As income levels go down, the dependence on NTFP rises showing a 25% and 31% contribution of NTFP income to the total income of families within the Rs. 10,000-25,000 and below Rs. 10,000 income range respectively.

The same is true of the standard of living. The poorest sections rely on NTFP income for 24% of their total income whereas NTFP contributes only 10% of the income of the middle classes.

1.1.1 Table – 4, Bandala cluster

Income	No.of Families
0-10000	4
10000-25000	33
25000-50000	20
50000-100000	5
100000 and above	3

Total income v/s NTFP income	
Total income	% NTFP income
Below 10000	31%
10000 to 25000	25%
25000 to 50000	14%
50000 to 100000	7%
Above one lakh	2%

Caste	% of NTFP income
Havyaks	3%
Kare vokkals	15%
Marathis	22%

Agricultural income v/s NTFP income	
Agriculture income	% of NTFP income
No land	48%
Below 10000	27%

SC/ST	37%
Others	22%

10000 to 25000	19%
25000 to 50000	10%
50000 to one lakh	5%
Above one lakh	1%

Wage earning and % of NTFP income	
No wage earners	14%
Below 5000	21%
5000 to 10000	32%
10000 and above	31%

Wealth Ranking of families in Bandala cluster			
Wealth Ranking	Income class	No. of Families	% of NTFP income
0 to .5	Poor	10	24%
0.5 to 1	Lower middle class	36	14%
1 to 2	Middle class	19	10%
2 to 3	Upper middle class or rich	0	0%
		65	

It was observed that the upper castes were also the better off sections of the village both in terms of income and standard of living. Therefore, the dependence on NTFP was also higher among the lower castes in the village as compared to the upper castes. From the table below, it becomes obvious that while the Brahmins relied on NTFP for 3% of the income, the collection and sale of NTFP formed a significant portion of the income of the Kare Vokkaligas, the Marathis and the SC/ST communities, viz. 15%, 22% and 37% respectively. NTFP sources contributed 2% of the total income earned by other communities.

This was the only cluster where it was found that one family did not rely on NTFP at all as a source of income. This family obtained all its income from other sources including paddy and areca cultivation, wages earning and other sources. In a later report, through other forms of data collection we will record the nature of this family's dependence on NTFP for subsistence use or for cultural and medicinal purposes.

Families with no agricultural land relied heavily on forest products. 48% of NTFP income contributed to the total income of those without any land. This dependence steadily

dropped as income from agriculture rose. Therefore, for those earning Rs. 50,000-1 lakh and above Rs. 1 lakh, NTFP sources contributed a mere 5% and 1% respectively.

Contrary to the findings of the other clusters and data from other studies, the data from Bandala cluster on wage earning versus NTFP shows a distinct correlation between the two. In the other clusters, it was clear that the higher the wages earned by families, the less the degree of dependence on NTFP. However, in this region those who did not earn any income through wages relied on NTFP for only 14% of their total income as against those who earned between Rs. 5000-10,000 and above Rs. 10,000. The contribution of NTFP to the total income of these latter 2 groups was 32% and 31% respectively.

ANSHI CLUSTER

Section I

Anshi is situated at the northernmost part of Uttara Kannada District. It forms part of Joida taluka, the most thinly populated taluka in the district. The Kalinadi River separates Joida from the rest of the district. This area is covered mainly by evergreen forests.

The ~~three~~ Two villages selected for the study viz. Barade, Anshi, ~~and Karagal~~ comprise the different communities that inhabit the area. These include Kunbis, Desai, Madival and Devali Like in other regions there are a few families belonging to the upper cases. The total sample consisted of 49 families.

The major income source of the villagers in this cluster is paddy cultivation followed closely by wage earning. All apart from one family in the sample are engaged in paddy cultivation. The land holdings are, however, quite small, ranging from half a acre to 8 acre. Six families in the sample owned 4-6 acres and another 6 owned 7-8 acres. The rest of the families i.e. 35 owned 1/2- 3 acres. The range of income earned by the families was from Rs. 1600-13,000 p.a., most families being located towards the middle of this range.

While most of the families who earn an income from agriculture depend on paddy cultivation, a few grow other crops as well. However, this does not add substantially to

the overall income from agriculture. The only family with no land depends on wage earning and NTFP collection and sale for their income. (Fig-9)

Wage earning contributes about 34% of the total income of the villagers in the Anshi sample. This is quite high considering the fact that opportunities for wage earning are limited in this cluster. It was noted that many people go to the neighbouring areas for employment including the adjoining states of Goa and Maharashtra where the wages available are also higher.

Still, not all families depended on wage earning for even a part of their income. The distribution range in terms of income through wage earning is much wider than that from paddy cultivation. Thus, families earned wages ranging from Rs.1200-24,000. Also, a sizeable proportion of the sample did not earn any wages, i.e. 19 out of the 49 families, almost 39% of the population.

Moreover, there does not appear to be any correlation between wages earned and dependence on paddy cultivation. This seems contrary to general trends wherein the more people are dependent on agriculture, the less they rely on wages. The situation in this region is probably different because of the fact that wage-earning opportunities are not available near their homes. This means that the members of the family capable of working have to migrate to the neighbouring states in search of work. Those who are left behind are engaged in paddy cultivation, which in any case does not need too many hands considering the small size of holdings.

The third source of income in order of priority is NTFP collection and sale. This accounts for 23% of the total income of the families in the study sample. Like in the other clusters, there is not a single family, which does not depend on NTFP for at least a part of their income. The NTFP available in this area include honey, Wild pepper, Shigekai, Vatekayi, Ramapatre, Dalchinni, Soapnut, Murugalu, Suragi, Uppage,Cane, Naaru, Sapol, Char char konde, Mushrooms,Vartegende, etc. The income that an individual family gets from these resources ranges from Rs.1000-15, 000, a very wide range contingent largely on the type of NTFP collected and marketed. What is peculiar to this cluster is the system of tenurial security.

Finally, a mere 6% of the total income of the sample population is obtained from other sources. In fact, only 4 families earned any such income.

Section II

Despite the inadequate opportunities for livelihood in the Anshi cluster, the villagers are wealthier than those in the Achave cluster, where wage-earning potential is higher. This is probably due to the nearness of Joida to the neighbouring states. Goa in particular depends on labour from Karnataka to a large extent, as labour in Goa is more expensive.

In this cluster, 8% of the population belongs to the upper income group, i.e. they earn between Rs. 50,000-1lakh per annum. About 15% belong to the slightly lower income group, i.e. Rs. 25,000-50,000. As in all the clusters, the vast majority of the population sample belongs to the lower classes. Here, 54% fall in the Rs. 10,000-25,000 pa. range. A sizeable proportion of the sample are very poor in this area, i.e. 23% earn an income of less than Rs. 10,000 per year. It was observed that most of those in the upper income ranges earned their income from all the sources mentioned above, i.e. paddy cultivation, NTFP collection and wage earning. Those in the lower income groups are only 1 or 2 of the sources for their livelihood. (Fig –10)

Section III

Information regarding the dependence on NTFP and its relation to other sources of income was analysed. The conclusions of the analysis in other clusters were further substantiated here. As the total income of a family rises, the dependence on NTFP decreases. For those with an income of less than Rs. 5000 p.a. NTFP income contributed to as much as 50% of their total income. The reliance on NTFP decreased as one went up the income scale so that NTFP contributed to 29% of the total income of those earning between Rs.20, 000-50,000 p.a.

Table - 5 Anshi cluster

Total income of family (Rs)	% of NTFP income
Below 5,000	50%
5,000 to 10,000	45%
10,000 to 25,000	41%
20,000 to 50,000	29%

50,000 and above	0

Income from Agriculture	% of NTFP income
Below 5000	45%
5,000 to 10000	39%
10000 TO 25000	31%
25000 and above	35%

Land area v/s % of NTFP income

Land area in Acres	% of NTFP income
No land	54%
0 to 1	45%
1 to 2	47%
2 to 3	43%
3 to 5	31%
5 and above	34%

Income from Wage earning	% of NTFP income
No wage earners	48%
Below 5000	35%
5,000 to 10000	35%
Above 10,000	35%

The same applies when an analysis is made of the agricultural income versus the percentage of the NTFP income. For the only family with no land, the dependence on NTFP was very high, amounting to as much as 83%. Whereas the dependence on NTFP showed a small decline from 40% to 37% for those in the medium income ranges, i.e. from below Rs. 10,000 to Rs.10, 000-25,000. This shows that there was a relative uniformity in NTFP dependence across the income scales as compared to agricultural income. This is probably attributable to the fact that the income from agriculture across families is not widely dispersed and given the limited opportunities for livelihood, all families are relatively dependent on NTFP as compared to other clusters.

The same is true for wage earning versus percentage of NTFP income. Here again the data, though it does not contradict the other clusters, shows a very mild inverse correlation between wage earning and income from NTFP. Here again, for all those who do not depend on wages at all for their income, the dependence on NTFP sources is quite high, i.e. 48% of their income, whereas the dependence on NTFP remained at a consistent 35% for those in the other income ranges from wage earning. This seems surprising as the income earned from wages is widely distributed across the income spectrum.

Finally, when analysing data on land holdings and percentage of NTFP income a clear trend was observed. This is despite the fact that the actual size of land holdings and the range of land are small, i.e. from 1/2 to 8 acre. Families having no land depended heavily on the collection and marketing of forest products, i.e. 67%. As the size of land holdings increases, the dependence on NTFP drops. However, there is a small rise in dependence on NTFP for those owning more than 5 acres of land. Therefore, those owning 3-5 acres depended on NTFP for 25% of their income whereas NTFP accounted for 38% of the income of those owning more than 5 acres.

OVERVIEW

Section 1

The data related to household incomes and income from NTFP brings us to some interesting conclusions. In general, we can say that income from NTFP is an important component for nearly all the families in the five clusters covered under the study. The data also confirms the findings in other similar studies, that collection and marketing of NTFP contributes a greater proportion to the income of poorer forest-dwelling communities, i.e. the extent of dependency varies inversely with socio-economic status.

Of the five clusters studied, variations in sources of income can be explained by a number of factors - the type of forest and agricultural land in the area, the geographical location of the area, suitability of land for different types of agricultural produce and distribution pattern of land holdings. Achave cluster is situated at the foothills of the Western Ghats, with Malgi being in the plain area. The other three clusters are situated in the hills on or bordering the crestline of the Western Ghats. Malgi has dry deciduous forests with some

patches of evergreen forests; the other four clusters lie in the midst of moist deciduous to evergreen forests, though the quality and density of these varies widely with considerable effects on the earning sources and patterns.

The communities inhabiting the clusters cover the entire spectrum of castes and socio-economic groups. There is a clear correlation between caste, socio-economic status and nature of income sources. The higher castes like Havyaks and Naiks generally possess more agricultural land, especially the more valuable areca plantations. Sheduled Castes and backward castes are often landless with consequently greater degree of reliance on wage earning and /or NTFP collection and marketing. Between these two extremes the various other groups rely in a more mixed fashion upon various sources of income, depending on the particular situation each household may find itself in.

Agriculture is the primary income source in all the clusters, except in Achave cluster (21%) due to the thick forest cover and the consequent shortage of cultivable land. In Anshi cluster, income from agriculture is only slightly higher than income from wages for a variety of factors explained in the analysis of Anshi cluster. In Magod cluster again, income from agriculture is less than income from wage earning, largely due to the paucity of cultivable land.

In the other two clusters, earning from agriculture is substantially higher than income from other sources accounting for more than 50% of income. Of the income from agriculture it can be seen that this generally goes to better off families as these own relatively higher quantities of land. In a few cases, the income from wage earning for better off families is high, probably because of regular, well paid employment of a family member. The poorer families often have no agricultural income possessing no land.

Within the category of agricultural income, income from paddy is the main source except for Bandala cluster where areca is by far the dominant source (62%). Again areca is almost always cultivated by the upper caste, better off families. Paddy is grown by all communities except for the landless poor.

Wage earning is the second most important source of income. Again the proportion of income coming from wages varies from cluster to cluster as within each cluster. Generally, there is an inverse relationship between income from agriculture and income from wages.

This is partly because lack of sufficient income from agriculture causes persons to seek wage work as an alternative source of income. There is no such direct cause effect relationship between high availability of wage labour and consequent underdevelopment of agriculture, as a source of income. One would have supposed otherwise that in a situation like Anshi where relatively higher paid wage work is available in the neighbouring states of Goa and Maharashtra, individuals would have tended to forego opportunities in agriculture, which does not appear to be the case.

However it is learnt that employment opportunities in the neighbouring states is higher during the months of April-may. This period is the main season of harvesting most of the commercial NTFP. These people earn more than the wage earning from collecting and marketing these commercial NTFP. It is learnt from the villagers that they have stopped migrating for wage earning in recent years, as there was an increase in prices of NTFP like rampatre, dalchinni, Uppage, honey, and wate. Of these dalchinni and uppage were introduced to villagers recently by external marketing agents.

Wage earning ranges from a high of 44% in Achave cluster to a low of just 9% in Bandala cluster. In Achave and Magod, wage earning is the highest source of income. In Anshi, wage earning is only slightly lower than earning from agriculture. In Malgi and Bandala, wages account for a small portion of total income. Looking for reasons we find that possibilities for agriculture are high in Malgi and Bandala (the latter is dominated by areca plantations giving high yields). In Achave and Magod, scope for agriculture is very low. Anshi falls almost exactly between these two extremes. In general we can say that wage work is a less preferred option to agricultural work (on ones own fields) and it is only in the absence of the latter due to any reason (landlessness, high forest cover, etc) that households opt for the former. It would be simplistic to assume a perfect inverse relationship between high quantity of agricultural income in a cluster and overall poverty in an area, but there does exist some degree of relationship. Of course, these being forest areas, loss of income from agriculture due to high forest cover, is compensated to some extent by the availability of NTFP.

It is interesting to note that in all clusters, labourers with income in the range of five to ten thousand rupees earn more from collecting and marketing NTFP. This can be analysed by

calculating the number of wage earning days using the average wage per day in the region. Families earning more than ten thousands are almost committed labourers for landholders; they have a permanent employment opportunities with them. However, families earning five to ten thousand rupees have employment opportunities as agriculture labourers for only about three to six months in a year.

This situation is clear in the case of Achave, where the proportion of income earned from NTFP is 19%, not far behind that earned from cultivation. The range of NTFP available here is very wide. In Magod, income from NTFP is 23%, with nearly all families including upper class ones, showing a fairly high degree of dependence on NTFP. In Anshi as well, NTFP accounts for 23% of total income. Again one finds that all families depend on NTFP, though the generalisation that the dependence of poorer groups is higher does hold true. The proportion of income from NTFP in Bandala and Malgi is low at just 13% and 6% respectively. This is because of the poor quality of forests in Malgi and low commercial value of NTFP available in this area. Why the proportion should be low in Bandala needs further investigation, one reason very likely being that given the highly labour intensive nature of areca cultivation, little time is left over for NTFP collection.

However, in Bandala, areca is the major source of income. It is obvious that income earned by areca is more than paddy or any other sources. The percentage of NTFP income in total income is lees compared to other clusters, even though average income earned by collecting NTFP is almost comparable with other clusters.

Table - 5 title ಕೊಡಿ?

Cluster	Agricultural Income	NTFP income	Wage income	Families with income below Rs. 10,000	Major income group
Ahave	37%	11%	52%	67%	Below Rs.10,000 (67%)
Magod	27%	22%	39%	19%	Rs.10,000 –25,000(48%)
Anshi	37%	23%	34%	23%	Rs.10,000 –25,000(54%)
Bandala	75%	13%	8%	6%	Rs.10,000 –25,000(50%)
Malgi	61%	6%	20%	41%	Rs.10,000 –25,000(47%)

Section II

We see that the data indicates some congruence with the diagram given above, though this is far from perfect with Malgi being one of the poorer clusters. But otherwise the situation is as indicated. Achave is the poorest cluster and Bandala is quite clearly the wealthiest, with the others falling somewhere in between. One sees that disparities in income are also related to the overall poverty levels, i.e. the more prosperous a cluster, the higher the disparity of income distribution. For example, in Achave there is not a single family earning more than Rs.25, 000 per year, whereas in Bandala there are some families with income of Rs.1, 00,000 and above range. The poorer clusters are more dependent on NTFP. The situation is similar for other factors like agricultural income and forest cover.

Section III

The generalisations, which became clear as to the relationships between NTFP income, socio-economic status and agricultural incomes, are reflected below. Across the entire cluster, we see that the poorer families are more dependent on NTFP income, i.e. a greater proportion of their income comes from NTFP. The importance is all the greater for these groups as the absence of NTFP income could result in pushing these already marginalised families below the subsistence levels. The reasons for this high dependence are many. Lack of agricultural land is an important one. It has also been hypothesised earlier, that as the returns from collection and marketing of NTFP are meagre (in relation to the time expended), it is families on the margins of poverty which will resort to them to a greater extent. The high extent of this dependence is evident if one takes some specific cases, e.g. in the case of Anshi cluster, NTFP income is as high as 50% of the total for families of income levels of less than Rs.5,000 per annum. This situation is not much affected by the overall nature of the cluster - even in a relatively better off cluster like Bandala, the dependency of the poor on NTFP is very high. One can also see that dependence on NTFP is strongly related to the availability of NTFP, an obvious fact. For example, in Malgi where the range of available NTFP as well as their quantity is lowest, the dependency on NTFP is the least.

As to relationships between agricultural income and NTFP income, a clear inverse relationship may be seen to exist. This is true of all clusters and applies to each of the clusters as well as to the individual groups and families within each of the clusters. The type of forest does not seem to effect this overmuch - Malgi has poor forest cover, whereas Bandala has good forest cover, but proportions of agricultural income are high in both and contribution of NTFP to total income is low. One could venture as far as to say that collection and marketing of NTFP is not a preferred income earning option - it is only resorted to in the absence of other suitable sources.

The relationship between NTFP dependence and wage income is less straightforward. In Anshi where wage incomes are reasonably high, there continues to be a high dependency on NTFP and interestingly, this is true across the socio-economic scale. Most of the clusters do show an inverse relationship between wage income and NTFP income, but this was contradicted in the case of Bandala where a direct relationship was observed.

3.0 NTFPS: AVAILABILITY, COLLECTION AND TYPE OF USES.

Collection: In different clusters of Uttara Kannada district 140 NTFPs are collected by people regularly. In these, seven NTFPs are used for fuel wood, fodder and manure. They include green grass, dry grasses, fuelwood, humus soil of the forest etc. Other 133 items are used for different purposes. Single NTFP is used for variety of uses. However, considering the major uses, following grouping can be made.

62 NTFP are collected for mainly edible purposes regularly in study clusters. 50 NTFPs are collected for Non-edible purposes. 12 are collected for medicinal purposes. (However, it should be noted that even though more number of species is collected for medicinal purposes most of the traditional healers (as well as villagers) do not agree to reveal the name of the plant. Hence, in most of the cases it is recorded by the data collectors as "' medicinal plants'. These 12 names are common names used ~~by layman in the village~~ regularly)

37 NTFPs are recorded as collected for commercial purposes. Out of these only four items are entirely sold outside. In case of the rest of the NTFPs a portion is consumed by the household. In case 14 NTFPs, quantity sold was lesser compared to the consumed quantity. In case of other 20 NTFPs sold quantity was higher than the consumed quantity. Varieties of NTFPs are collected by villagers. Highest number of NTFPs is collected by Kunbis of Anshi cluster (66) followed by Kharevokkaligas of Bandala (64) and Siddis of Magod (52). Lower numbers of NTFPs are collected by non-agricultural families in each cluster having income from regular job.

Higher numbers of NTFPs are collected in Eco-zones situated on the crestline of the Western Ghats., Anshi, Magod and Bandala ~~are situated on the crestline of the Western Ghats~~. It is observed that in each of these clusters on an average 70 (72-75) NTFPs are collected by people. Whereas on the other edge of Western Ghats the NTFPs collected is on an average 47 (46 & 47). Achave and Magod ~~are~~ situated in foothills and plains region respectively. In Achave even though the forest type is evergreen type, lesser number of NTFPs are collected.

Commercialisation of NTFPs: Higher numbers of NTFPs in Malgi are commercialised compared to other clusters. In other clusters, percentage of commercialised NTFPs is less than around the quarter the number of total NTFP collected. However, in Malgi, more than half the numbers of NTFPs collected are sold outside.

Forest type being the deciduous type, and low income per unit of NTFP available, might be reasons for this. Besides poor economic condition of villagers is also one of the major reasons.

Table 3.1

Clusters	Total no of NTFP collected	Commercial NTFPs
Achave	48	11 (22.9%)
Anshi	72	18 (25.00%)
Bandala	75	14 (18.66%)
Magod	75	19 (25.33%)
Malgi	47	26 (55.31%)

Further, if we look ecological region wise, it is the crest line, which has higher number of NTFP resources. Number of NTFP are collected for commercial purpose is less in foothills region and higher in plains.

Table 3.2

Region	NTFP collected	Commercialisation
Foothills	48	12 (22.9%)
Crest line	75	19(25.33)
Plains	47	26(55.31%)

Thus, there is great difference in availability of NTFPs in each Eco zones.

Further, we shall discuss about the collection by different communities in each cluster.

Table – 3.3

	Achave	Anshi	Bandala	Magod	Malgi
Non-edible	13	25	26	26	9
Commercial	11	18	14	19	26
Edible	21	17	35	28	21
Other uses	4	12	3	4	3

Above table shows number of NTFPs collected in each cluster. The following table 3.4 to 3.8 shows the number of NTFPs collected by different communities in each cluster.

Table – 3.4 No. of NTFP collected in different clusters
Cluster: ACHAVE

	Type of Use			
Caste	Commercial	Edible	Non-edible	Grand Total
Haller	8	1	9	18
Havyak	6	18	5	29
Kharevokkaliga	9	5	10	24
Naik	2	na	4	6
Nayak	3	na	3	6
Patgar	2	1	4	7
Shetty	na	na	4	4
Siddi	1	na	7	8

Table- 3.5
Cluster:ANSHI

	Type of Use				
Caste	Commercial	Edible	Medicine	Non-edible	Grand Total
Desai	8	6	1	5	20
Devali	na	1	na	7	8
Kunbi	18	16	10	22	66
Others	na	4	na	na	4

Table 3.6
Cluster:BANDALA

	Type of Use				
Caste	Commercial	Edible	Medicine	Non-edible	Grand Total
Havyak	2	26	na	12	36
Kharevokkaliga	17	25	1	21	64
Marathi	10	11	1	11	33
Sc	7	3	na	3	13

Table 3.7 No. of NTFP used in different clusters
Cluster:MAGOD

	Type of Use				
Caste	Commercial	Edible	Medicine	Non-edible	Grand Total
Havyak	12	27	na	7	46
Naik	12	6	na	10	28
Others	na	na	na	3	..
Siddi	17	15	2	18	52

Table 3.8 Cluster:MALGI

	Type of Use			
Caste	Commercial	Edible	Non-edible	Grand Total
Lambani	6	5	4	15
Muslim	8	8	4	20
Naik	22	12	4	38
Patil	9	4	3	16
Voddar	11	2	1	14

In Achave cluster Hallers, Havyaks, and Kharevokkaligas are the major collectors. Maximum commercial and non-edible NTFPs are collected by Kharevokkaligas. Maximum numbers of edible NTFPs are collected by Havyaks. In Anshi cluster, Kunbis are major collector of NTFPs. They collect about 66 NTFPs in a year including 22 non-edible, 16

edible, 18 commercial NTFPs are collected by them. Desais are the second major communities collecting NTFPs. They collect 20 NTFPs. In Bandala cluster Kharevokkaligas (64 NTFP), Havyaks (36 NTFP) and Marathis(33 NTFP) are major collectors. Maximum commercial and non-edible NTFPs are collected by Kharevokkaligas (17 and 21). Maximum edible NTFPs are collected by Havyaks (26). In Magod cluster, Siddis are major collectors, collecting 52 NTFPs including 17 commercial, 18 non-edible NTFPs. Next major collectors Havyaks collect 46 NTFPs in a year including 27 edible NTFPs. Naiks are the another major NTFP collectors. In case of Malgi cluster, Naiks are major collector. They collect 38 NTFPs. Other collectors are Lambanis, Muslims and Patil.

In all the clusters, Kunbis are collecting more NTFPs (66), followed by Kharevokkaligas (64), Siddis (52), Havyaks (46) and Naiks (38). Havyaks collect higher number of edible NTFPs and non-Brahmins collect more non edible NTFPs. Maximum collection of non edible NTFPs are found in Anshi followed by Bandala, Magod, Achave and Malgi clusters. More numbers of edible NTFPs are collected by Havyaks of Bandala cluster.

3.1 Commercial NTFPs:

38 NTFPs are recorded as collected for commercial purpose in all the clusters. Out of these five are recorded less than two times in the period of two years. These are not the frequently collected NTFPs for commercial purpose. Out of these only Vatekayi, Honey, Harda, Dalchinni, Seegekayi are collected in all the clusters for commercial purpose. Uppage, Rampatre, Kokum, Cane are collected in clusters other than Magi. Minimum of 11 NTFPs are collected in Achave cluster and maximum of 26 NTFPs are collected in Malgi cluster for commercial purpose. In Anshi, Bandala and Magod 18, 15 and 20 NTFPs are collected for commercial purpose respectively.

Multiple use of NTFP: out of 38 NTFPs collected for commercial purpose, only 4 are completely sold outside. They are Uppage, Dalchinni, Gulmavu and Tarikayi. Others are partially used in the house. 14 NTFPs collected for commercial purpose are sold lesser quantity than consumed quantity. In case of the other 20 NTFPs, sold quantity is greater

than the consumed quantity. This indicates that most of the NTFPs are important as they are consumed besides being a commercial commodity.

3.2 EDIBLE NTFP:

NTFP in daily food of Forest dependent communities:

Foods from forest are nutritionally important and are traditionally used as supplements to the staple diet. These add diversity, flavour, vitamins and minerals to characteristically grain dominated diets. (Forests, trees and food, FAO, 1992)

A study was conducted to understand the extent of use of these forest products in daily use by villagers in study clusters.

Objectives:

1. To assess the diversity of NTFPs in daily food
2. To assess the contribution of NTFPs in daily food (quantity wise)
3. To study the seasonality of edible NTFPs

Methodology:

Five families in each cluster were selected representing major caste and also income group. Detailed information about the daily diet of a day in a week was recorded. The ingredients were classified as products purchased from market, grown in home garden, and collected from forest (NTFP).

In all 25 families were studied in details from all clusters for one year.

Results:

Diversity of Edible NTFPs: These edible NTFPs can be sub-classified as below.

1. Leafy vegetables
2. Edible oil
3. Tubers
4. Items used for making health drinks
5. Mushrooms
6. Pickling items
7. Spices

8. Specialized items like stems, powders extracted from wild sources.
9. Wild animals
10. Wild Fruits
11. Wine (-nira, toddy, sap)

Leafy Vegetables: these are mainly used for making additives or side dishes in daily food menu. About 26 items of this kind are recorded from all the clusters. Maximum numbers are used by Havyaks in Bandala cluster, followed by Kharevokkaligas in Achave cluster. Most of these items grow near the houses and hence need little time to collect and processes.

Edible oil: Seeds of some of the NTFP are collected for extracting oil. These seeds are dried, fried and crushed. Then it is boiled with water for hours. Later it is left for cooling to separate oil. Seeds of Uppage (*Garcinia gummi-gatta*), Kokum (*Garcinia indica*), and Arishina andi *(Garcinia Morella*) are used for this purpose. Oil from Uppage is extracted in Bandala and Achave clusters by Havyak communities and by Kharevokaligas. Arishina andi is collected and extracted by only Kharevokaligas of Bandala and Achave clusters. However, in Anshi cluster even though Uppage is available in large quantity oil is not extracted from the seeds. In Magod Uppage is available in small quantity and oil is not extracted from the seeds. In Malgi cluster these trees are not at all found at all.

Kokum is collected in all the clusters. Oil extracted from seeds of this plant is used for mainly medicinal purpose. Hence, a small quantity is extracted in almost each house. It is not used for edible or commercial purposes.

Oil from Uppage, Arishina andi and are used for frying as in other edible oils.

Tubers: Pirshi, Visuli Bhaji, Kudde Bhaji, Kadu kene gadde, Nore gadde, are some of the NTFPs collected for edible purposes. These are manly used by Kunbis of Anshi clusters. These are also preserved for future use when they are available.

Spices: Rampatre, Karibevu, Dalchinni bark, Dalchinni leaves etc are some of the spices collected for edible purpose. All these are collected for commercial purpose also. A small quantity is kept for household consumption use by collectors. Rampatre, Dalchinni are mainly collected in Bandala, Achave, Anshi, and Magod cluster. Karibevu is collected for

household consumption by almost all families in all clusters. However, it is collected for commercial purpose also, in Malgi cluster.

Preservation of Edible NTFP for long-term uses: Some of the NTFPs are preserved for use in off-seasons; rainy seasons, or when no other vegetables are available. Mango, Appemidi (a special type or tender raw mango with more sore and oil content?), Jackfruit, some of tubers etc are preserved for later use. Mango and Jackfruit are preserved in concentrated salt water, in air tightened jars. Kalale, (tender bamboo shoots) are in some cases, dried and mixed with salt for long term preservation. Tubers of Kesu, Pirshi, and some others are also preserved for later use.

Wild fruits: These are collected mainly by children. Some fruits like Bilimullannu, Guddegeru are sold by some of the villagers in Malgi cluster. However, in other clusters marketing of these items was not observed even though they are available in plenty.

Items used for making health drinks: Variety of roots, leaves ~~is~~ are used for making health drinks. These are believed to have medicinal value. Sogade beru *(Hemidesmus indicus)*, Ekanayaka, are some of the examples for this.

Mushrooms (Anabe, Alabu): These are used by mainly non-Brahmins for edible purpose. There are more than 20 edible mushrooms in tropical forests of Western Ghats in Karnataka, but name differs from place to place. A large number of mushrooms appear during monsoon in tropical forests. They appear particularly in places, which are rich in humus. There are many poisonous mushrooms also. Some of the edible mushrooms collected by villagers are,

- Mara anabe (*Pleurotus Osteratus*) A single mushroom makes it appearance on the tree during monsoon. Size is quite big. It is available in lesser quantity.
- Bhogi anabe or Haigana anabe (Pav anabe, hagad anabe): Found on the ground under Bhogi (Haiga) trees (Hopea wightiana). This variety of anabe is found in excess quantity, sometimes 2 to 3 cane baskets (15 to 20 kgs) in one place. It is observed by the forest dependent communities ~~certain variety of mushrooms like Haiga~~ that anabe grows only under some plants and specific condition. Thus, degradation of forest may indirectly affect these mushrooms also.

- Halla anabu- A row of mushrooms is found in the forest during monsoon sometimes for a kilometer long.
- Hullu anabu- (*Entoloma macrocarpum*) grows on the side of the paddy field and on white ant hills. It is delicious.
- Heggalu Anabe or Sidilu Anabe- It is a large kind of edible mushroom. People believe that this mushroom grows when it ~~is thundering in the sky~~ there is thunder.
- Kallu anabe:- It looks like a small ball. Rarely found in the forest. Then where?
- Koole anabe:- Looks like a cricket ball. Outer cover of the cap like portion is very thick ~~in size~~, and this outer cover has to be removed while cooking.
- Gobbara Anabu:- Grows on the heap of manure or on rotten leaves.
- Akki anabu- another type of mushroom, available in the region.

Villagers of Malgi and Magod are marketing these mushrooms in small quantity. They sell them in the towns during market days. The price varies from Rs 25/kg to Rs 50/kilogram.

Pickling items: pickles are prepared and used regularly throughout the year by villagers of all families of study clusters. Some of the NTFPs used for making pickle are Aramadalu, Appemidi (Mango), Nelli, Jummanakayi, Kouli kayi. Amatekayi.

Specialized items like stems, powders extracted from wild sources:

Stems: Stems of some of the plants are used as vegetables.

Kalale: tender Bamboo shoots are locally called as Kalale. These are sliced and dipped in water for two to three days to separate the poisonous content. Later it is used as vegetable. Collection and use of these are found in all clusters.

Bennekundige, a small plant, ~~grows in wet evergreen forests of tropical forests~~ is used as vegetable. Stem along with leaves is used as leafy vegetable and rhizome is used for medicinal purpose. Collection of these is observed in only Banadala cluster.

Powders: Rhizomes of some of the plants like Kadarisina (*Curcuma zedoria*), Kacharagadde, etc are used for extraction of powder. These rhizomes are crushed, and mixed with water. Precipitated white material is extracted, dried to get the powder. This

powder, commonly known as ' Kove hittu' is used as health drink having medicinal value and also as food.

It is recorded in PRA that stems of Baine (*Caryota urens*), tale, and Kouli were also used for extracting the powder. This powder, as some of the villagers recall, was preserved for months, for edible purpose. Shiva Siddi, (75), from Magod cluster, recalls the days of using these powders as the only main food sources for about two months in a year.

However, it is rarely used by villagers now. During the study period only three items it is recorded from the cluster; twice in Magod cluster and once in Anshi cluster. They have used this as a supplementary food.

Water stored in the stems of trees like Kanagalu (*Dillenia indica*), Garagasa (Ficus asperrima), Atti (*Ficus glomerata*) are collected by making a small cut to the roots of the trees. This water is used for making some special dishes. This is observed once or twice in a year in Bandala cluster.

Wine: Wine is mainly extracted from trees of Palmaceae family like Baine, Tale and Eechalu. Baine kallu (wine) is extracted in Anshi, Magod and Achave clusters. When the tree flowers, bunches are cut and a pot is tied to collect the wine. It is usually extracted from a single tree for about fifteen days to month. About 15 to 20 liters of wine is extracted from a matured tree. Men do the collection.

Wild animals: Wild animals are collected for edible purpose by Kunbis, Siddis, Kharevokaligas, Naiks communities. It is recorded from all clusters except Malgi. However, maximum quantity is recorded from Magod, and Anshi followed by Achave and Bandala. ~~This wild animals recorded to have collected are listed in the table.~~ Maximum dependency is found in Magod, Anshi, Achave and Bandala by Siddis, Kunbis, Kharevokaligas respectively.

Some of wild animals, birds recorded to collected in the study clusters are listed below.

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Local name	English name	Scientific name

Kesa alilu	Giant squirrel	Hylopteus sp.
Handi	Wild boar	Sus scrofa
Baraka	Mouse deer	Tragulus meminna
Kadu kuri	Barking deer	Muntiacus muntjak
Mola	Hare	Lepus nigricollis
Kadave	Sambar	Cervus unicolor
Kabbekku	Toddy cat	Paradoxurus hermaphroditus
Punugu Bekku	Small Indian civet	Viverriacula indica
Mullakki	Indian Porcupine	Hystrix indica
Chippakki	Indian Pangolin	Manis crassicaudata
Ame	Turtle	
Uda	Lizard	
Kadu koli	Spur Fowl	
Dhoopada hakki	Emerald dove	
Fresh water fishes		
Crab		

Collection of wild animals is more linked with cultural aspects of their tradition. They have been collecting wild animals for years.

Item wise dependency on edible NTFPs:

Data of daily diet was analysed for item wise as well as quantity wise. Three categories viz., the product purchased from market, grown at home garden and collected from forest (NTFP) is done.

In Malgi cluster, most of items in daily food are purchased from market (46%). However, in other clusters, items purchased from market, grown at home garden and NTFPs are almost equal (around 30 to 35% each). In case of Bandala, Achave and Magod items from home garden are slightly greater than the other two categories. In Anshi, NTFP are major constituents in the daily diet (36%). It is observed that in most of the cases home garden plays a major role. Other categories are not far behind.

Not a >t diff bet malgi & Anshi

However, total items used in daily diet are higher in Havyaks (6.082) and lower in case of Kunbis (3.876).

Quantity wise dependency: All communities use rice as the main staple food. Out of 25 families studied intensively, 36% (9) of families grow paddy for their consumption, another 48%(12) families grow some portion of the paddy to meet their consumption. Only 16%(4) of families purchased entire quantity of paddy from market. However, other grains are mainly purchased from market.

In all clusters, quantity of items purchased from market is highest (46.78%), followed by grown at home garden (43.24%) and then the NTFPs.

Discussion: the use of NTFP for edible purpose is observed in all clusters ~~and almost by all communities~~. However, Havyaks are found to use more leafy vegetables. All communities use NTFPs as a side dish or adding diversity to food, not as the main food.

In regions of evergreen forests, number of NTFPs used for edible purpose is more compared to the ~~region~~ of plains.

Gender and edible NTFPs: Except wild animals all other edible NTFPs are mainly collected by women. Wild animals are collected by men. ~~Men collect wild animals by hunting~~. However, crabs, fresh water fishes are all collected by both men and women. I n some cases children are also go for ~~collecting these~~.

Leafy vegetables, tubers, mushrooms are mainly collected by women.

Processing is entirely done by women members of the family.

3.3 NON EDIBLE NTFPs:

The life of forest dwellers is woven with the forest in a complex way. Varieties of products are collected by them for regular use.

This study looked towards understanding this complex web of relation with non-edible NTFPs and their importance in their daily life. We also tried to calculate the indirect income from these products by equating with the equivalent commercial products of the market. Non edible NTFPs are major supplements to daily life of forest dependent communities. In other words, these non-edible and edible NTFPs are real indicators of traditional relation of forest dwellers with the forest.

Table 4.6 Direct and indirect income earned by different communities in Magod Cluster			
Caste	% Direct NTFP	% Indirect NTFP	Total % NTFP contribution
Havyak	1.58%	20.24%	21.82%
Naik	11.97%	19.80%	31.77%
Others	0.00%	1.21%	1.21%
Siddi	31.69%	17.59%	49.28%

Table 4.7 Direct and indirect income earned by different communities in Malgi Cluster			
Caste	% Direct NTFP	% Indirect NTFP	Total % NTFP Contribution
Lambani	6.33%	3.43%	9.76%
Muslim	20.93%	1.38%	22.31%
Naik	5.65%	2.76%	8.41%
Patil	6.28%	4.00%	10.27%
Voddar	23.23%	5.30%	28.53%

4.3 Employment opportunities by collecting NTFP:

The following table gives employment opportunities enjoyed by different communities in study clusters. This information is collected from the data collected weekly about NTFP collection.

Table 4.8

	Achave	Anshi	Bandala	Magod	Malgi
Desai		83.25			
Devali		64			
Haller	54.2				
Havyak	42		44	56.3	

Haller	15.61%	23.99%	39.59%
Havyak	14.84%	29.67%	44.51%
Kharevokkaliga	23.48%	22.22%	45.69%
Naik	18.98%	33.04%	52.02%
Nayak	13.71%	25.60%	39.31%
Others	16.74%	24.61%	41.35%
Patgar	1.60%	15.63%	17.23%
Shetty	0.00%	48.09%	48.09%
Siddi	14.22%	16.10%	30.32%

Table 4.3

Direct and indirect income earned by different communities in Anshi Cluster

Caste	%Direct NTFP	% Indirect NTFP	Total % NTFP contribution
Desai	29.73%	20.89%	50.62%
Devali	1.21%	16.84%	18.05%
Kunbi	38.66%	16.02%	54.68%
Others	0.00%	1.81%	1.81%

Table 4.4 Direct and indirect income earned by different communities in Bandala Cluster

Caste	% Direct NTFP	% Indirect NTFP	Total % NTFP contribution
Havyak	2.25%	21.59%	23.83%
Kharevokkaliga	37.15%	14.00%	51.15%
Marathi	16.05%	24.02%	40.08%
SC (Harijan)	22.64%	27.22%	49.86%

About 50 NTFPs are recorded as collected for non-edible purposes. Maximum of 26 NTFPs are collected in Anshi and Bandala clusters. 25 and 13 NTFPs are collected for non-edible purposes consumptive uses in Magod and Achave clusters respectively. Minimum of 8 NTFPs are collected in Malgi clusters. These are collected for use like fibre, handicrafts, agriculture implements, etc. 16 types of fibre are collected for regular uses. Five types of plants are used for making brooms. Other products include *thale (Palm species)* which is used for mulching of houses, and others used for fencing, handles for sickle, ploughs etc.

Different types of non-edible NTFPs are used in different clusters. Most of the NTFPs are region specific.

Non Edible NTFPs	
Cluster	Non- edible NTFPs
Achave	13
Anshi	26
Bandala	26
Magod	25
Malgi	8

In Malgi NTFP is mainly collected for commercial purpose. However, in other clusters along with the commercial value, they have a more complex relation with the social life. Degraded and deciduous type forests of Malgi supports hardly few varieties of non-edible NTFPs.

4.0 NTFP COLLECTORS

4.1 Economics of NTFP collection:

As part of the weekly data collection we got the data about the NTFPs collected for commercial and consumption purposes. Some of the NTFPs are marketed as well as small quantity kept for consumption use. Community wise average quantity collected in a day in each cluster was calculated. Also the average price they got for each NTFP is calculated. Thus average income per day by collecting the each NTFP is calculated. This is compared with the wage rate. Rs 50.00 are taken as the mean wage from all the clusters. Wage rate was in the range of Rs 40 to 65 in all these study clusters.

Out of 37 commercial NTFPs collected, only 16 are ***profitable*** or in other words the returns of income is more than Rs 50. Only 20 NTFPs bring income above Rs 25 a day. In Anshi, out of 18 NTFPs collected for commercial purpose 12 is profitable compared to the wage earning. In other words, income earned per day by collecting these NTFPs is more than Rs 50 per day. The following table 4.1 shows the details in all clusters.

Table 4.1

Cluster	Commercial NTFPs collected	Profitable NTFP
Anshi	18	12 (66.6%)
Achave	11	7 (63.63%)
Bandala	15	10 (66.6%)
Magod	20	11 (55%)
Malgi	26	7 (26.9%)

Maximum number, 26 NTFPs are collected for commercial purpose in Malgi cluster and minimum of 11 are collected in Achave cluster. In clusters other than Malgi most of the NTFPs marketed, returns income is more than Rs 50. However, in Malgi cluster only 26.9% of total commercial NTFPs collected returns income is more than the average wage income.

Out of 26 NTFPs collected in Malgi, in only 7 NTFPs profitable compared to wage earning. In other words, average income earned by collector per day is more than Rs 50, (Average wage earning/Day) for only seven NTFPs. All other NTFPs returns lesser income than Rs 50 /day.

Discussion:

In most of the cases income earned by marketing commercial NTFP is less than the average wage earning. The following are some of the reasons:

- Lack of employment opportunities and other sources of income in surrounding villages.
- Usually during the seasons more than one NTFP are available in the forest. So they collect more than one NTFP in a single trip to the forest.

- Most of non-profitable NTFPs are collected in spare time, while coming back from the usual fieldwork, grazing of cows, etc.
- Satisfaction of working independently might be one of the reasons.
- Involvement of NGOS likes *Vikasa*, which helped in promoting collection of NTFPs by arranging for markets.

In Anshi, Bandala, and Achave most of the NTFP collected for commercial purpose are profitable. All these clusters have evergreen to semi evergreen forests. Other employment opportunities are more in all other clusters as there are areca plantations. In Anshi, villagers go to neighboring Goa State in search of employment. Villagers preferred to go there as the wage per day is about Rs. 75 /day.

However, in case of Magod cluster, forest is mainly of moist deciduous type. Some of the high priced NTFP like Uppage is not available in the cluster in large quantity. (Only one collector collected Uppage by travelling more than eight kilometers)

In Malgi cluster even though 26 NTFP are collected for commercial purpose only 7 are beneficial compared to the wage earning. Dry deciduous type of forest is surrounded in the village. Tumri leaves, Vatekayi, Wild pepper and Dalchinni are the major beneficial NTFPs. Koulikayi, Tamarind and Honey is other three beneficial NTFPs. All other NTFPs are not beneficial either because of the low price or large distance to be covered to get sufficient quantity of products.

Conclusion:

Collection of commercial NTFP is not one of the preferred occupation in most of the cases. It is done as an inevitable source of income during lean season. Except few NTFPs, which are beneficial, compared other occupations, collection is done as an alternative source of income. In case of high priced NTFPs, there is tough competition among the collectors, which lead to unsustainable harvesting. Further, most researches conducted about the impact of harvesting commercial NTFP concluded that the harvesting is unsustainable for the ecosystem (Murali, et al, 1996, and Peters, 1995)

4.2 DIRECT AND INDIRECT INCOME FROM NTFP:

In order to understand the importance of NTFPs in daily life of the forest dependent communities we have calculated the direct and indirect income from NTFPs.

Direct income is the income earned by forest dweller by selling the NTFPs (or commercial NTFPs). ***Indirect income*** is calculated by substituting the equivalent market value, wherever possible.

In case of non-marketable NTFPs an approximate minimum value is calculated using the nearest/ similar product in the market. However, we are aware that a NTFP, which is traditionally used by the forest dweller cannot be replaced or equated by any of the commodity available in the market. Further, these NTFPs have a cultural relation with forest dwellers.

Hence, our main objective in calculating indirect value by equating with the similar product is to have a rough figure of how the non-marketed NTFPs are important to the forest dwelling communities.

Results: indirect income is found to be more prominent in most of the communities in study clusters. In all clusters other than Malgi, more number of communities earn indirect benefit more than the direct benefit. However, Kunbi, Desai, Kharevokkaliga, and Siddi communities are earning more direct income than the indirect income.

This shows that even though all communities get the benefit from NTFPs, there is a difference in getting direct and indirect benefits. Families having agricultural land are getting more indirect income than the direct income. Further in case of higher income families and higher caste families the difference is much distinct than that of lower categories.

In case of Malgi, where maximum numbers of NTFPs are harvested for commercial purpose, the total NTFPs' contribution to the family income is, however, lesser, compared to other clusters. Low commercial value of NTFPs available in the dry forests might be one of major reason for this.

Table 4.2 Direct and indirect income earned by different communities

Achave cluster

Caste	%Direct NTFP	% Indirect NTFP	Total % NTFP contribution

Kharevokkaliga	74.5		76		
Kunbi		83.48			
Lambani					61.5
Marathi			65.5	0	
Muslim					56
Naik	60		0		64.5
Nayak	34				
Others	38.3		0	7	
Patgar	31			0	
Patil					39.8
Sc			43		
Siddi	81			84.5	
Voddar					73.8

Siddis of Magod cluster spent higher number of days (84.5) in a year in collecting NTFPs. Kunbis (83.48), Desais (83.25), Kharevokkaligas (76) are the other major communities spending more time in collecting NTFPs. In case of Malgi, Naik, Lambani, Muslim and Voddar communities spent about 60 days in a year or in other words, two months of employment.

Thus, NTFPs are important for poor communities in giving employment to them.

5.0 Results of Participatory Rural Appraisal (PRA):

PRA techniques ~~are~~ were used to collect more information about NTFP issues in the village. In each clusters mainly following information was collected using the PRA techniques:

1. **History of collection**: information about the when and how commercialisation started in the village was collected using this method.

2. **Inflow and outflow** of NTFP resources: number of NTFPs available in the region, NTFPs collected, consumed for household needs and sold quantity are collected using this method.
3. **Trend of collection**: Changes in collection pattern like type of NTFPs collected, over the years was collected.
4. **Season of NTFP**: information about season of NTFP availability is collected using this method.

Methodology: PRA was done in all the study clusters. The day, time and place of PRA is previously fixed by consulting with villagers. In each PRA three to four persons from research team was attended. Care was taken to include all sections of the society including women and children members. After formal discussions about general issues, slowly, focus of the discussion was concentrated about the agriculture and forest products.

Later, PRA techniques were introduced to villagers. They were explained about the each game in PRA process. In case of huge groups, the group was divided with due representation of all sections.

A list of all NTFPs known by villagers is listed by discussing with the villagers. This list is used for collecting other information about (a) season of availability (b) sub classification/ major uses like edible, non-edible, medicinal, commercial, (c) variation in collection and availability.

Historical transect (or trend): Villagers were asked to recall the days before five years, ten years, twenty years and thirty years and before that respectively. List was asked to made for each of these different intervals (years). Along with this, details about the prices, collection practices, use patterns, etc are also discussed. These details are all marked by villagers themselves on papers.

Inflow and outflow of NTFP resources: the main intention of this process is to have the picture of inflow and outflow of NTFP resources to the study village. For this a big plain paper is given to villagers. The villagers are requested to draw a representation picture of

(1) The community was asked to list several species that were available during 5 years ago, 10 years ago, 20 year ago, and until the point they could remember. Apart from the list, the price that the products fetched at that, the market available was also discussed.

and forest over a piece of paper provided to them. Similarly the NTFP's that were collected from the nearby forests, were drawn using arrows.

the village and forest. ~~All NTFPs available in the forest and collected by villagers~~ were ~~asked to draw by arrow mark from forest to village.~~

~~Now,~~ A representative ~~figure~~ picture of market and consumptive use in house ~~are~~ were also drawn. Out of the products collected from forest, the products that are sold to market and consumed in houses were recorded, again by arrow marks. For all NTFPs quantity, availability, collection, prices, threats were asked and recorded by the PRA team.

Achave cluster:

PRA was conducted at one place each in the Kuntagani and Manigadde village on two different days. Evening time, free time for villagers was selected. About 25 villagers were participated including 9 women and 7 children.

History of NTFP collection:

History of the Kuntagani village of Achave cluster starts around 1950 ~~only~~. Neighbouring villages Angadibail, Nakmane, were recorded to have population during the last century itself (Gazetteer). The study village, Kuntagani was given as 'Umbli' (~~granted as~~ a gift) to Hebbar family by the Madangeri king. This ~~family~~ was the only family living in the village, and the population of the village was less than 50 at that time.

year of Gazetteer

After independence, population is gradually increased in the village. Many families started coming here as wage labourers and to do agriculture in leased land of Hebbars' farm. Hebbar family gave certain land to each of these labour families as lease. After the Land Reform Act ~~came~~ in 1979, these labourers became the landowners of the all these leased land. Along with them many outsiders from neighbouring villages like Hillur and other places have also migrated ~~here~~ by encroaching the forestland. (in which year)

A road was established in the village, which connects the village from other trading centres like Ankola and Madanageri. Through this road the village has got good contact with the outsiders. Ox-driven carts and a motor vehicle owned by an outsider started to transport goods to the village and to other trading centres.

Commercialisation of NTFP: After the establishment of road, market for the forest produces started. Almost at the same time ~~the government, i.e.,~~ KFD gave contract to harvest Canes, Dhoopa, Gulamavu, Rampatre, Dalchinni leaves and Honey. Vittal Raya,

a trader living in the Hillur, started purchasing some of the NTFP. Items made out of Canes, ~~like~~ such as butti (basket), were started getting market from the neighbouring villages for ~~using~~ use in agriculture purposes.

After some years, NTFP like such as Cane, Seege, Vaatehuli, ~~have~~ also found market. Wild pepper was abundant and sold to Vittal raya by villagers.

Uppage, Murugalu, Cane articles, Vatekai, Sheege, Antwal, etc ~~are the NTFP that have now become~~ became commercial NTFP's. As the road and communication to village started, villagers are exposed to the outside world of commercialisation. Some of the ~~dealers~~ Traders of NTFP started to come.

About thirty years back ~~this village was~~ not a single unit of forest product from this village was marketed outside. However, now hundreds of quintals of different NTFP are sold. The starting of bus to the village from Gokarn, Kumta, and Ankola has brought several changes in the village. It was around fifteen years back. The dependency on consumption NTFP has considerably lowered where as the harvesting of commercial NTFP has increased both in number of NTFP and in quantity harvested. Increased contact with other trading centres has lowered the dependency on consumption NTFP.

Villagers started to go for allopathic medicines even for small ailments and diseases. Dependency on traditional medicines using locally available plants, roots, has considerably decreased. The present trend is to go to the nursing home for childbirth, which was earlier restricted to the house under the care of village midwife, and herbal medicines.

Villagers started to purchase agriculture equipments, chemical fertilisers, chemical pesticides and cattle feed. Earlier, villagers were using several fibres for agricultural purposes like fencing, building houses etc. But today glazed iron wires with Ibex fencing, charged by batteries have replaced the fencing. plastic threads, replaced the local fibres for construction work.

Inflow and out flow of NTFP resources in Study clusters:

154 NTFPs ~~are recorded as collected~~ from the forest. However, only 49 NTFPs are collected regularly by villagers at present, The community collects and of these only 11 NTFPs are sold. Uppage rinds,

Dalchinni, are sold completely outside. Nine other commercial NTFPs are partially used in houses.

Agriculture is totally dependent on forest resources. Agriculture implements were prepared using ~~only the forest products~~ small timber collected from the forest. Farmers are using wooden ploughs usually made up of Halasu (Jackfruit), Hebbalsu, and Honne trees. Yoke is prepared by Shivane tree. Leveller is prepared by baine tree. And the rod is from *Karikumar* (name of the plant) to fix the leveller with the yoke.

Fencing poles are prepared by baine (palm), bamboo, and from some other trees. Fibres were made from more than 6 types of climbers and barks of certain trees. Cane is collected for making handicrafts, articles like baskets, (butti, kanaja, chabbe, manki, and many more) are sold for landholders, neighbouring villagers, etc. Prices of these products vary from Rs 25 to 200 depending on the sizes.

Manure: Farmers depend on forest for manure, as main source of organic input to agriculture land. Dry leaves, green leaves and rotten leaves in the streamside, forests, are collected in different seasons. Fodder is collected to feed the cattle; to cover the sides of the trenches in areca garden as well as to prepare compost/organic manure.

Cattle feed: Kanagalu, Bachchalaballi, Akkaballi, Urusanaballi, Atti leaves, Dadasalu, Honne leaves, and other fodder species are used to feed the cattle. Cattle are allowed to graze in the forest and *gomals (common grassland reserved for grazing)*. The cattle feed was never brought from the market.

Mats are prepared from the Vaate reeds and from bamboo to use in various agriculture purposes. Kukkarasana balli (a climber vine) is also used make mats. Baskets of various sizes are made mainly from canes and sometimes by locally available climbers to use it for various agriculture purposes like storing food grains, etc. Mats prepared by Ichalu are used for household purposes.

Bio pesticides: Mukkadaka, Paragi, Mundige, Lakki, Dalchinni leaves were used as bio pesticides to control several diseases and other food crops. Karada, a grass species grown in the gomals, was used to control the fungus attack to the areca nut fruits, during rainy season. The dry grass was tied to safeguard the bunch of arecanut from the heavy rain. Later, this was again covered by the hard leaves of arecanut prepared for the work.

However, these practices are replaced by chemicals. Around one or two decade back spraying of *copper sulphate* and calcium, which is termed as Bordeaux mixture, is being sprayed for the same.

Preserving food grains: Paddy is stored in bamboo mats or in "*moode*" (a container (?) artistically weave from paddy straw and canes). Lakki leaves are placed with the paddy to preserve it from the attack of pests. Rice and other food grains are stored with dalchinni leaves also.

Senabu and Plastic bags are replacing these practices.

Brooms: Tegasu (Dadasalu), Jiddi hullu, and Ichalu are used in preparing brooms.

Edible NTFPs: only few things are brought from market to use in food preparations. Major requirements of vegetables and food grains are obtained from agriculture and from the forest. 21 NTFPs are listed as used for edible purpose regularly.

Medicinal plants: villagers depend on the traditional medicines to cure almost all diseases. Almost everyone in of village found to know at least some plants as medicine for common diseases.

Following NTFPs are collected by villagers for commercial purpose. Approximate quantity and income details of NTFP marketed outside during 1997-98 at Achave cluster, as villagers told at PRA is given below. Non-commercial NTFPs are collected in small quantity and hence they are not given here.

Table - Title -

Product	Quantity	Income (Rs)
Uppage	12000 kgs	780000
Murugalu	2500 kgs	75000
Sheegekai	1500 kgs	11250
Vatehuli	100 kgs	3500
Ramaptre	150 kgs	16500
Cane	1000 nos	2500
Suragi	35 kgs	2450
Honey	65 kgs	3250
Antwal	400 kgs	3200
Dalchinni moggu	10 kgs	750
Dalchinni leaves	No villager collects	0
Hedahagala patre	250 kgs	20000

Changes in avaialability over the years and reasons for the same.:

The bark of Kachu (*Acacia catechu*) tree was boiled in water to extract Kachu. (A additive in *pan masala*.) A small-scale industry to extract kachu was present in the village about 10-year back. Due to extensive debarking of the tree and unscientific method of harvesting resulted in extinction of this species in this region. As a result ~~of over exploitation the Kachu trees,~~ this species can be hardly seen in the village. It is now an endangered species.

Collection of Uppage rind started about 15 years back. Before that villagers did not use the rind. However, as the price increased, more and more villagers started to collect uppage from the region. Nowadays even the villagers of neighbouring villages have also started to ~~come~~ collect it. They come in group of five to ten person and stay in the forest for a week. They harvest the fruits as much as possible without caring for the quality of product. In the process of collecting, they cut the trees and branches of trees and also unripe fruits. Earlier only Uppage seeds was used in households to extract oil. But nowadays rinds are collected as a commercial NTFP.

Seeds were use to extract fat that table Similar to ghee produce

About 15 years back cane, dalchinni leaves, dalchinni bark, halamadi, Dhoopa were given to contractors to extract the products. Contractors collected this destructively, and that resulted in reduction in number of species in the natural forest.

The KFD has given contract for logging in the surrounding forest of village about 15 year's back. Villagers opine that the contractors have collected not only the dead and fallen trees but also several living trees along with it. They established roads inside the forests to transport the timber. Also, in the process of cutting the dead trees, some other trees including NTFP species were damaged and destroyed. This has decreased the availability of NTFP.

Anshi

PRA was conducted at two places in this clusters viz., Barade and Anshi villages. About 30 villagers participated in Anshi and 22 in Barade respectively. Out of these 12 and 15

members were women respectively. This took about three and half hours each to complete.

History of NTFP collection: In the past, only Honey and the Vatekai were collected in large scale by the villagers. Wild pepper, Baine kallu (toddy from *Caryota urens)* are the some other products that were sold. This wine has a good market in the neighbouring Goa State.

Collection of these NTFP started about forty years back. Earlier to that collection was done only for consumption purpose. Tubers like Pirasi is used in household as a food substitute.

Collection of Uppage, Thikephal (Dalchinni) started recently. Agents from Kumta region came here and motivated villagers to collect Uppage and Dalchinni. Collection of Uppage was started about four years back in Anshi village and two years back in Barade village. Dalchinni was collected since five years.

Some of the other NTFPs collected, which are unique to the cluster, are described below. Most of the other products are same products used in mainly in Achave, Magod and Bandala cluster.

Pirasi: This tuber is available in the forests of this region. It is used in daily food as the vegetable. The villagers use Mushrooms of about eight types. Crabs, fish and wild animals also contribute in considerable amount to the local food. During the rainy season, crab is common food found in almost every house in the village. Wild animals like wild boar, mouse deer, Indian hare, Kabbekku, Giant squirrel, are hunted by the villagers. As villagers say, at least once in a week they have the meat of wild animal in their food.

Kuddebhaji, Visuli bhaji and Pirshi are a type of tubers collected by villagers for edible purpose. These tubers are used as side dish in daily food.

All agriculture implements are collected from forests only. Traditional protection methods like spraying Mukkadaka and using thorny bushes to remove insects are practised in the village. Green manure is mainly used for paddy fields.

The following table shows the approximate quantity of commercial NTFPs collected by villagers and the income earned by the overall families of village during 1997-98. (according to to their own approximation)

Table – 5.2, Anshi cluster

Name of Commercial NTFP	Availability	Price/unit (Rs)	Approximate income (Rs)
Uppage	75 quintals	5000.00	375000.00
Honey	5quintals	7500.00	37500.00
Vatekai	5 quintals	3500.00	17500.00
Rampatre	3quintals	11000.00	33000.00
Dalchinni	1quintals	18000.00	18000.00
Cane articles	2000 nos	40.00	80000.00
Crabs	1000 nos	2.00	2000.00

Recently commercalised NTFP like Uppage and dalchinni are collected in unsustainable manner. Collection of unripe fruits and cutting of branches are obsrved in the last season. Earlier these fruits were not at all harvested in the region even for extracting the oil as in other region of Uttara Kannada district.

Bandala:

History of NTFP collection:

In earlier days no NTFP was collected for commercial purpose. Some of the NTFPs were bartered. Items like Honey, brooms, mats of Ichalu, cane baskets were exchanged for oil, old clothes, and some other groceries. Collections of these NTFP were restricted to only Kharevokkaligas, and harijans (SC) communities. Only women of harijans (SC) prepared Ichalu brooms. Mats of Ichalu leaves were usually woven by women of Kharevokkaliga, cane baskets are mainly by men of Kharevokkaliga.

Commercialisation started about 30 years before. First commercialised NTFP are Harda, Honey and Rampatre. Price of Harda was Rs. 2 per dabba ~~(tin)~~(1 dabba approximately weighs 10 KGs), Honey was Rs 8, or exchanged with a kg of groundnut oil. Rampatre was Rs. 12 / kg.

Collection of Uppage rind started about 15 years back. Earlier only women of Karevokkliga and Havyak communities were collecting the Uppage seeds.

Except Dalchinni and Rampatre all other NTFP, which are collected for commercial purposes were collected for household consumption by villagers about fifteen-year back.

Uppage seeds were collected for extracting oil. However, nowadays, Uppage is collected for mainly for rinds for its commercial value.

The major decreased NTFPs and reasons for the same are discussed further.

Cane: about fifteen year's back, almost all Kharevokkaliga families were preparing agricultural implements from the cane. This was one of the main sources of income for them. Forest department (KFD) restricted these people to collect the cane from the forest. However, on the other hand, KFD, auctioned the Cane for collection. They gave contract to the external persons, for collection. The contractor collected all the cane, whether it is younger, immature, or of any sub species of Cane. As villagers recall, more than 150 truckloads of Cane were extracted from the region itself. This lead to destruction of resource, and hence the non-availability of cane to the forest dependent communities.

As villagers were collecting only about half a truckload, that too only mature cane the collection was done with sustainable harvesting methods. At present, because of non-availability of cane, farmers have to rely upon the plastic, rubber alternatives for use in farming activities.

Some of the poor Kharevokkaligas, whose major income was earned by preparing cane items, had to go in search of other sources of income. Naturally, smuggling of timber is found to be next attractive one. Now, younger generation of this community has forgotten the technique of preparing cane articles.

It is ironical that, the authorities are blaming these forest dependent communities for destruction of the resources.

Ichalu: villagers were using the mats prepared by Ichalu leaves for various purposes. These mats were prepared by usually Kharevokkaliga community. At present the availability of Ichalu leaves in this region, has decreased due to over harvesting by outsiders. Group of 20 30 people from plain areas of the district, come here and they camp here for about week in forest region. They collect all the Ichalu leaves that they have found. Unlike villagers the outsiders collect immature leaves, younger plants and also, all leaves of a plant. This lead to decrease in availability of the leaves for villagers.

Dependence on consumption NTFPs: Havyaks are mainly depended on the NTFP for agriculture purposes and edible uses. They make thambli, gojju, chatni, palya(curry),

kashaya(decoction),sambar, soup, hashi, etc. All these are different preparations used along with boiled rice.

Kare vokkaligas extract oil from the seeds of *Garcinia morella*, locally termed as Arishina andi. The oil is used for frying purposes.

There are more than five persons, belong to various community in the village who give traditional herbal medicines for both human beings and cattle. Most villagers themselves have knowledge of herbal medicines for certain diseases.

Natural fibres, which were essential for villagers in earlier days, are replaced by the easily available polythene threads, choir, and senabu (jute). The basic change in the technology, style of livelihood, like electric fencing in place wooden fencing, and buildings of Mangalore tiles, cement in place of thatched houses, are responsible for decreased dependency on NTFPs.

Fibres: villagers use more than 12 climbers and barks of four plants as fibres or threads in fencing, constructing the thatched houses and for agricultural purposes. (Small houses are built for specific purposes like, *maala* (i.e. watch tower for watching wild animals in paddy field), storage house for fuel wood, fodder and other agriculture equipment.

Agricultural implements: cane baskets of various sizes and shape for specific uses of agriculture, are prepared by the villagers. Local names of these products are Chooli, butti, hedige, kuke, mankri, kalli, akki buttiu, thottilu, hachchige, menasina hachchige, kavaladha hachchige, etc.

Negilu (plough), noga, koradu(=leveller), etc are prepared by several species of plants.

Bio pesticides: farmers for controlling diseases regularly used mukkadaka, lakki, nelli, thumbe etc. At present these practices are sidelined by the use of chemical pesticides.

The following table shows approaximate quantity of NTFP that are sold outside from the village during 1997-98. This quantity is calculated by the villagers.

Table 5.3, Bandala Cluster

	Price/unit	Quantity collected	Total value

Uppage	50	15000.00	75000.00
Rampatre	110.	1000.00	11000.00
Harda	6	2500.00	1500.00
Cane	25-30	2000 nos	6000.00
Dhoop	85	100	8500.00

2 MAGOD

History of NTFP collection: In the past the NTFP is collected only for domestic purpose except wild pepper. About 75 years back only two communities were living in this village, Havyaks and Siddis. Patgar families came to do agriculture. Earlier only the Havyaks had agriculture land which was the only occupation for them. The need for agriculture equipment, manure, fibre, cattle-feed, fuel-wood, fodder, bio-pesticide etc was fulfilled by the surrounding forests. But for the Siddi community living in the forest, Wild fruits, wild roots, wild animals are the main source of food for them. In recent years they encroached forest area for cultivation.

Honey, Canes, Seegekayi are the consumption NTFPs that has commercial demand. Establishing of contact with other towns is responsible for commercialisation of NTFPs. Major portion of cane article is sold locally and in local market.

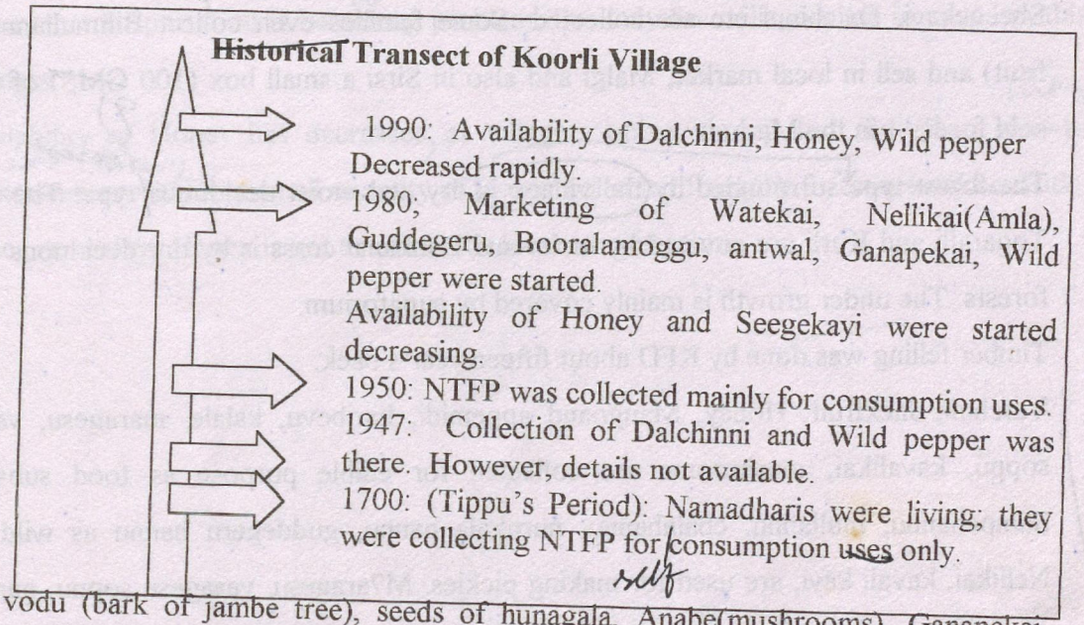
At present more than 16 NTFPs are commercialised. Due to high price, demand ratio of quantity harvested over quantity available is increased. The number of collectors for commercial NTFPs has increased.

The Karnataka Power Corporation proposed dam to Bedti River near Magod. Around 1969 they have cleared more than100 acres of forest where they are supposed to construct the dam. Besides, few more acres of forest was cut down to establish a colony for KPC officials, workers. This has reduced the forest cover in this region.

MALGI

History of NTFP collection: the following chart drawn by the villagers shows the history of NTFP collection in Malgi cluster.

Time line



Jambe vodu (bark of jambe tree), seeds of hunagala, Anabe(mushrooms), Ganapekai, Guddegeru, Kalale, Mullannu are some of the NTFP which acquired market demand recently. Poor villagers in their free time, in lean period of the year, started collecting these NTFP and selling them in the nearest market like Malgi and Sirsi.

Compared to other clusters, the forest resources here are low, because of dry deciduous type of forests. Commercial value of NTFP available is low compared to that available in the evergreen type of forests. However, number of NTFP available in the region is higher. Manure, fodder, fuel wood are collected from the forests. Fencing material, agricultural implements are also collected from the forests. However, dependency on NTFP is decreasing among the villagers, as the new techniques like ibex fencing, biogas plant are becoming popular in the village. Small timber needs is supplied from the forests.

Mushrooms, Jambekai, Dalchinni, mullannu, karibevu, wild pepper, etc are collected by weaker sections. Some of the families collect wild fruits like Mullannu and sold them in the Malgi or in Sirsi. They collect mushrooms, Kalale for commercial purpose.

Weaker communities collect mainly commercial NTFP to earn income.

During the period

In lean season, where the employment opportunity is limited, people collect NTFPs. The availability of most of the NTFP is a matched with lean season, they collect NTFPs. Sheegekayi, Dalchinni etc are collected. Some families even collect Bilimullannu (wild fruit) and sell in local market, Malgi and also in Sirsi a small box (100 GMS) of fruits is sold for Rs 1 in the Market.

i.e. during dry months where agri. activity are limited

The forest type surrounded by the village is dry and moist deciduous type. The villages Togaralli and Kurli are covered by moist and Bankanal cross is by dry deciduous type of forests. The under growth is mainly covered by eupatorium.

Timber felling was done by KFD about fifteen year's back.

Vatehuli, Jackfruit, Honey, Mangoand appemidi, karibevu, kalale, maragesu, vasagesu soppu, kavalikai, mushrooms are collected for edible purpose as food substitutes; Sampehannu, mullannu, chalahannu, nurukala hannu, guddegeru hannu as wild fruits. Nellikai, kavali kayi, are used for making pickles. M7aragesu, vasagesu soppu, ganapekai are used as vegetables.

Table. Title

The following table gives the details about the quantity and price of NTFP tha rae sold by villagers during 1997-98 (approximately).

How about per family collection/family & income

	Quantity collected	Price (Rs) /unit	Total income
Jambekayi	25 bags	25 bag	625.00
Wild pepper	3 quintals	1500.00	4500.00
Karibevu	5 quintals	250.00	1250.00
Mullannu	25 kgs	20.00	500.00
Honey	3 quintals	7500.00	22500.00
Halasu	500 nos	15.00	7500.00
Sheegekai	15 quintals	600.00	9000.00
Vatekai	2 quintals	2500.00	5000.00
Boorala moggu	25kg	30.00	750.00
Dalchinni	2 quintals	85.00	170.00
Mango	5000 nos	15.00	1250.00
mushrooms	500 nos	2.00	1000.00

Market for new prodcuts :

Teak seeds, Hulagala seeds, etc are collected by villagers to meet the demand from forest department to plant these species in the plantations Earlier these seeds are not used by any of the villagers. There is increased income from forest products of the villagers and also

some employment during the lean season. Jambe vodu, a shell is used as fuelwood is being collected by villagers. It marketed for about Rs 25 per bag in Sirsi, nearest town. However, transportation is becoming problem. So, only few villagers are involved in this business.

Availability of Honey has decreased, as villagers opine, during last few years due to unknown reasons. Even small quantity of Honey collected from the forest are sold outside. Hence nowadays Honey is not available for local consumption.

5.3 Trend of collection pattern or Changes in collection pattern over the years.

Villagers were asked to recall the names of NTFPs collected by them at different intervals of time. NTFPs collected before thirty years were recorded. Then information about 20 years back, 10 year, and five years back was recorded from that table. Even though most of the NTFPs are used for more than one use, major use was considered here for sub-classification.

In case of medicinal NTFPs actual name is not recorded as villagers hesitated to name the plant because of the traditional belief. However, in all other cases actual name is recorded.

Results:

The following set of tables shows the variation in collection pattern of NTFPs with respect to types of uses for different clusters.

Table 5.1 Trend of collection pattern of NTFP over the years:
ACHAVE

Year	Edible	Non-edible	Commercial	Medicinal	Grand total
30 years back	28	46	2	62	138
20 years Back	25	30	4	25	84
10 years back(1988)	21	18	6	20	65
1993(5 years Back)	21	18	11	12	62

Present (1998)	21	13	11	9	54

Table- 5.2
ANSHI

Year	Edible	Non-edible	Commercial	Medicinal	Grand total
30 years back	31	41	3	50	125
20 years Back	21	35	5	30	91
10 years back(1988)	20	30	8	25	83
1993(5 years Back)	17	25	11	12	65
Present (1998)	17	25	18	12	72

Bandala

Year	Edible	Non-edible	Commercial	Medicinal	Grand total
30 years back	44	45	3	65	157
20 years Back	40	30	5	50	101
10 years back(1988)	35	26	10	25	86
1993(5years Back)	35	26	15	20	86
Present (1998)	35	26	14	13*	78

* Collection of medicinal NTFP is not correctly marked, because only some of the medicinal ~~men give~~ gave medicine to certain diseases. They were not giving the exact number of plants the are using. This number is collected by the number of plants known to general villagers attended the PRA. Collection of edible NTFP is not much affected, mainly because of certain families of Havyaks are using many of the traditional edible NTFPs even today.

Table- 5.4
Magod

Year	Edible	Nonedible	Commercial	Medicinal	Grand total
30 years back	35	32	4	47	118
20 years Back	30	30	5	47	112
10 years back(1988)	28	26	10	25	89
1993(5 years Back)	28	26	12	15	81
Present (1998)	28	26	19	4	77

Table – 5.5 Malgi

Year	Edible	Nonedible	Commercial	Medicinal	Grand total
30 years back	30	24	3	25	82
20 years Back	25	10	7	20	62
10 years back(1988)	15	10	10	10	45
1993(5 years Back)	15	8	10	5	38
Present (1998)	12	8	26	3	49

Over the years collection of NTFP faced a major drift in type of NTFP collected Traditionally villagers were collecting more and more NTFPs for consumption uses. There was hardly few NTFPs, which were collected for commercial purposes. In all clusters, except Malgi, cane is one of the major NTFP collected. Varieties of handicrafts were made from this. They exchanged it with the commodity like food grains, edible oil etc. Collection of NTFP for mainly commercial purpose started about thirty to forty years back.

Consumptive NTFPs are decreasing over the years. Easier access to market, modern systems of medicine, inferiority to use the traditional species are some of the reasons for this. Some of the NTFPs are changed their importance as consumptive to commercial over the years. Kokum, Uppage, Vatehuli, Honey are some of the examples.

On the other hand, collection of commercial NTFP is increased over the years. Highest numbers of NTFPs are commercialised in Malgi cluster in last three years. Intervention of a NGO, Vikasa helped in developing the market for these new NTFPs.

Thus, the relation between forest dweller and the forest is changing rapidly from consumptive dependency to commercial dependency.

Loss of Knowledge over the years: in all the clusters, NTFPs recorded in PRA is more than that recorded in regular study. In case of PRA villagers have listed the names of the NTFPs collected in earlier time. This data in the following tables shows the *loss of knowledge* over the years in study clusters. However, it should be noted that the names and uses of NTFPs are still known to the elder member of the family. They are not used in these as they are replaced by alternatives.

Maximum knowledge is eroded for medicinal NTFPs. However, more and more NTFPs are added to the list of commercial NTFPs.

Medicinal NTFPs are used in earlier days by certain experienced medicine men of the village. The transfer of knowledge to next generation is not done most of the cases. Younger generation is negligent towards this traditional knowledge. Accessibility to hospitals and quick curable capacity of the modern medicines is also responsible.

People prefer to purchase edible NTFPs from the market than collecting from the forest. The long distance to be travelled for collecting from forest, tedious processing methods

for some of the edible NTFPs is some of the reasons. Also, in most of the cases villagers grow a considerable quantity of vegetables in their kitchen gardens itself.

Non-edible NTFPs like fibres, plough, are replaced by the modern alternatives made up of plastic, iron respectively.

In case of Bandala, one NTFP, Dhoop recorded in PRA is not at all collected in regular study because of the lack of availability. Dalchinni, Cane, Rampatre, are decreasing over the years. Instead of Rampatre (*Myristica malabarica*) villagers started to collect, Giddapatre (*Myristica beddomi*), another similar tree but with smaller size of fruits.

Cane and Dalchinni have decreased because of the over harvesting by the contractors appointed by KFD as explained earlier.

Table 5.6

Achave

Type of Use	Recorded at PRA (a)	Recorded in Regular study (b)	Loss of Knowledge ={(a-b)/a}*100
Commercial	11	11	0.00%
Edible	28	21	25.00%
Medicine	62	4	93.55%
Non edible	46	13	71.74%

Anshi

Type of Use	Recorded at PRA	Recorded in Regular study	Loss of Knowledge ={(a-b)/a}*100
Commercial	18	18	0.00%
Edible	28	17	39.29%
Medicine	62	12	80.65%
Non edible	46	25	45.65%

Bandala

Type of Use	Recorded at PRA	Recorded in Regular study	Loss of Knowledge ={(a-b)/a}*100
Commercial	15	14	6.67%
Edible	44	35	20.45%
Medicine	65	3	95.38%
Non edible	45	26	42.22%

Note: In case of commercial NTFP, one NTFP Dhoop, is not collected now in the clusters because, Dhoop tree is almost extinct in the region. Nobody collected the same during our study period.

Magod

Type of Use	Recorded at PRA	Recorded in Regular study	Loss of Knowledge ={(a-b)/a}*100
Commercial	19	19	0.00%
Edible	35	28	20.00%
Medicine	47	4	91.49%
Non edible	32	26	18.75%

6.67
5
1.33

Malgi

Type of Use	Recorded at PRA	Recorded in Regular study	Loss of Knowledge ={(a-b)/a}*100
Commercial	26	26	0.00%
Edible	30	12	60.00%
Medicine	25	3	88.00%
Non edible	24	8	66.67%

Type of Use	Loss of Knowledge about NTFPs in all clusters over the years
Commercial	1.33% ✓
Edible	32.95% ✓
Medicine	89.81% ✓
Non edible	49.01% ✓

(1) There is difference between loss of knowledge and the number of NTFPs that you capture in 2 diffnt models. It is not clear here, how knowledge is lost if a given NTFP is not collected -

(2) You may want to know the gap in one generations about the NTFPs collected & uses known.

6.0 GENDER AND NTFP PERSPECTIVES

The study gave a special emphasis on the role that women play through the entire process of NTFP collection, processing, consumption, sale/marketing and income generation. It is said that they are providing *'assistance'* in NTFP related activities while their men play the important functions. While one goes into describing their functions, one realises that ther role, goes way beyond mere assistance.,

It was observed that, involvement of women is mainly depended on the type of NTFP. Women are more involved in collecting daily needs than the commercial NTFPs.

The following table shows the number of days spent by men, women and children in collection of NTFPs.

Table – 6.1

No. of days spent in collection of NTFPs by Men, Women and Children per family

		Cluster				
Type of Use	Average manpower in collection (days)	Achave	Anshi	Bandala	Magod	Malgi
Commercial	Male	15.60	50.97	38.97	16.00	41.27
	Female	6.77	11.20	21.30	10.13	44.20
	Child	8.03	15.40	12.67	5.13	26.50
Edible	Male	1.57	2.77	6.30	1.23	2.10
	Female	3.93	3.50	7.83	3.23	1.53
	Child	1.53	1.53	3.17	0.13	1.73
Fuel-wood	Male	4.17	2.07	2.50	2.37	2.73
	Female	7.93	1.87	3.07	1.67	3.37
	Child	3.03	0.87	0.67	0.30	0.80
Non-edible	Male	11.70	9.97	24.80	4.47	4.53
	Female	5.03	2.40	16.87	2.07	3.87
	Child	3.17	3.13	15.27	1.93	5.93
		72.47	105.67	153.40	48.67	138.57

The above Table shows the clear difference between gender. Collection of commercial NTFP is dominated by men whereas collection of edible NTFP is done mainly by women. Fuel-wood collection is also almost equally shared by men and women. In case of Achave, Bandala and Magod Clusters, women spent more time in collection of fuelwood. In remaining two clusters, fuel-wood is mainly collected by men.

Further, caste plays a major role in deciding the collection pattern. In all clusters, it is observed that lower caste women spent more time than the higher caste.

Caste and gender in collection of NTFPs:

Table 6.2

		Type of Use			
Caste	Data	Commercial	Edible	Fuelwood	Non-edible
DESAI	Male	17.88	1.83	4.00	2.50
	Female	4.75	1.67	0.00	1.67
	Child	5.88	0.17	1.50	2.50
HAVYAK	Male	12.06	0.62	8.33	6.39
	Female	8.06	3.56	0.67	3.30
	Child	4.18	0.63	5.33	3.22
Kharevokkaliga	Male	48.91	5.52	49.00	**20.97**
	Female	26.73	7.80	**87.50**	14.68
	Child	21.36	3.32	29.00	11.94
KUNBI	Male	77.00	4.13	27.00	11.45
	Female	16.56	2.40	26.50	2.18
	Child	23.06	2.40	11.50	3.23
LAMBANI	Male	10.00	1.57	6.00	7.00
	Female	46.50	0.71	4.00	7.33
	Child	20.67	2.86	3.00	12.33
MUSLIM	Male	49.33	1.67	25.00	9.33
	Female	48.22	2.33	16.00	7.00
	Child	23.33	0.89	5.00	7.67
NAIK	Male	16.33	1.73	3.00	7.94
	Female	13.58	1.00	3.50	5.00
	Child	10.22	1.13	0.75	7.06
OTHERS	Male	7.57	2.00	2.00	1.78
	Female	1.57	9.20	5.00	0.55
	Child	0.86	1.80	1.00	0.33
PATIL	Male	10.22	3.80	32.00	4.50
	Female	4.11	1.60	58.00	3.00
	Child	3.44	0.80	12.00	4.00
SC	Male	13.20	7.75	28.50	11.15
	Female	4.27	3.25	14.00	7.69
	Child	3.07	2.00	11.00	8.62
SIDDI	Male	19.47	1.64	29.50	5.08
	Female	12.89	0.64	28.00	1.04
	Child	7.42	0.21	4.00	0.72
VODDAR	Male	17.10	2.00	19.00	NA
	Female	16.40	0.50	20.00	NA

	Child	8.70	2.00	4.00	NA

The work that the man and women put in are not balanced in the various activities involved in the NTFP use/trade. In collection of commercial NTFPs like Uppage, Seegekayi, men decide which trees/plants should be harvested. The women perform the passive task and picking up what drops to the ground, put them together in bundles or fill them into baskets and carry them back home. Some of the commercial NTFPs like Rampatre, Honey, Dhoop are collected by mainly men.

Maximum time in collection of commercial NTFP is taken mainly by men in all clusters except Malgi. In Malgi cluster, women spend more time. Tumri leaves are the major NTFPs available in the region, which is mainly collected by women members.

In other words, *nature of NTFP decides the gender in collection of commercial NTFPs.*

In case of rampatre, honey, long distance has to be covered for collection. Since women members have to do their regular work in the house, they cannot go long distance, or spend whole day in the forest as men do. However, they collect NTFPs available in near the village, or the collection is easy which can be done during the spare time.

In processing, women and children are involved to a greater extent than men in activities such as peeling, descending, cleaning, drying, salting etc. The processing has to be done irrespective of whether the harvest is to be used at home or sold. Women have a primary role to play in deciding what should be used for consumption and what should be sold. This is mainly seen in the case of those NTFP that has gained sudden commercial value. This was evident from the uses stated by men and women about common NTFP; while men emphasised the income they earned from selling it, the women spoke more about how they could use it at home.

In marketing of NTFP, women participate only to a limited extent. Most of the women (from the lower socio-economic classes) say that they do not venture into the markets, as they do not have any idea of markets by themselves. Most of the selling which they do, are in the village itself. For e.g. they sell hand made mats and brooms to people who come to buy them, into the villages. Another way is by exchange. Some women also carry these items when they go to visit their relatives and give it to them in exchange for old clothes, arecanut, betel leaf etc. From all these discussions what comes out clearly is

that most women think of making money from NTFP selling only when they need the additional money for some specific purpose or item of expenditure.

Edible NTFPs are mainly collected and processed by women. Except in case of wild animals, meat, men have no work to do with edible NTFPs. However, the time a woman spends in collecting edible NTFP is much less compared to the other type NTFPs. Most of the edible NTFPs are available near the village and need little time. In most of cases women collect these edible NTFPs while coming from fuelwood collection, labour etc. also the concept of kitchen gardens plays important role. Most households, irrespective of the socio-economic status, have a good amount of surrounding land grown with fruits, vegetables, flowers, rhizomes etc. which can be used for consumption regularly by the family.

In spite of all these roles performed by the woman, one can find barring examples of the secondary status given to her in decision making regarding forest issues. It would be very interesting to note the importance given to her participation in VFC meetings and others activities like plantation and harvesting of various species by the KFD. In most of the cases only men have participated in the meetings of VFCs and take decision. Even for selection of species for plantation, so that she can have her own choice according to her needs, like fuel wood, handicrafts etc., she is alienated from the decision making group.

Case of women headed families: women headed families in the study clustrs were selected in clusters whefever they are found. We have identified three families in two clusters. Two in Achave cluster and one in Magod cluster. The whole responsibility of the house was done by the women of these families. Two of them are widows and husband of one woman is not well.

All of them ~~were~~ had no land of their own. Wage earning is the major income sources. Wage they earned per day is Rs 35- 45.00. Average annual income earned by family from wage earning is Rs 8000.00. Average income they earned by collection of NTFP is Rs 936.85. Hence, the total annual income of the family was Rs 8936.85. The employment they got from collection of NTFP is about 26 days in a year. Since all of them go for wage

earning, and is assured source of income they preferred to go for wage earning. They collect only highly beneficial NTFPs or NTFPs with high commercial price like Uppage only. Contribution of NTFP income to the overall income is less compared to the other families i.e., 10.48% only.

By being a women headed family they certain constraints to collect NTFPs from the natural forests, both physical as well as sociological problems. Most of the commercial NTFPs like Rampatre, Uppage, Dalchinni, are all available in the thick forest, far away from the village, sometimes even up-to 10 to 15 kilometres away. Women members cannot go independently to such a long distance ~~independently~~. Usually, women have their own work in the house, like preparing food, grazing and watering of cows, fuel-wood collection etc. They cannot spend whole day inside the forest which men ~~are~~ does for collecting these commercial NTFPs. Also, harvesting of most of commercial NTFP needs the skill of climbing the trees which women members don't preferred to do.

In men dominated society, women members cannot compete with men in collection of commercial NTFPs. However, collection consumptive NTFPs, like edible, non-edible and medicinal this not found to obstruct.

In case of marketing of commercial NTFPs, they themselves decide the market. However, since they collect a small quantity they have little bargaining power.

7.0 ECOLOGICAL STUDY

In order to understand the dynamics of the NTFP harvesting and its impact on ecology, we have conducted studies in selected forest region of Western Ghats. Ecological studies tried to observe the influence of collection and degradation of forest on regeneration, species diversity, and composition and population structure. These aspects were studied using Line transact method and Direct observation at the time of harvesting.

Increased prices and tenurial problems promote forest dwellers to harvest NTFP destructively in most of the cases. For example, Dhoop (*Canarum strictum*), Ramapatre (*Myristica malabarica*) etc. are on the verge of extinction. The high price due to increased

demand may lead to the extinction of Uppage (*Garcinia gummigatta)* species, if the pressure of extraction continues.

One of our assumptions from observation and field experience is that the major reason for *extraction pressure* on NTFP is the problem of *property rights*. In order to study this we tried to observe the extraction pressure of NTFP, in two different tenureal systems. In reserve forests and its comparison in relation to the land with private ownership.

Our objectives of ecological study are:

1. Influence of tenureal rights on the method of harvesting.
2. To study Regeneration status of NTFP species threatened with high extraction pressure.

Methodology: In order to achieve the above-mentioned objectives we have used mainly two methods of ecological study viz. line transect method and observation at the time of harvesting.

Line-transact method:

Two regimes of harvesting *heavily harvested* (HH) and *lightly harvested* (LH) have been identified based on proximity of area to villages and previous observations. In each regimes five linear transacts of 1km length and 20m width were laid. In each transact, all NTFP species along with prominent trees were recorded. GBH (Girth at breast Height) of trees, heights of tree (approximately), canopy covering, etc was considered. Observations were made for collection of fuel wood, litter collection, lopping, grazing, fire, etc. In addition, the number of cut, broken and dead stems, was recorded. In case of cane, number of shoots, length, support for climbing, cuttings were considered. Further ~~(Diameter at Breast Height) DBH~~ class distribution and regeneration status of these selected species was analysed.

Since the method is very time-consuming ~~and cumbersome if done~~ for every/most species, we have selected certain types of NTFP for which transacts are laid and having high extraction pressure. Five NTFP species (Uppage (*Garcinia gummi-gatta*), Dhoop

(*Canarium strictum*), Cane (*Calamus spp)*, Ramapatre (*Myristica malabarica*) and Dalchinni (*Acacia cincina*)) having high extraction pressure were studied in detail.

While selecting the transects, care was taken to include the two regimes with approximately same population density, soil structure, major tree species, latitudinal ranges. In selecting the two regimes of low harvesting pressure our assumptions were the geographical factors of the region, like distance from the village, valleys, streams which influences collectors when they go for collection.

Table-7.1 Information about transects

Transect No	Nearest Village/House	Approx. population of village/hamlet
1HH	Nilkund	150
2HH	Thanya	100
3HH	Lakkisaval	35
4HH	Nandyane	25
5HH	Mulgund	75
1LH	Olakote	0
2LH	Doddaante	5
3LH	Bangalegudda	3
4LH	Guddekote	0
5LH	Nishane gudda	0
HH indicates Heavily Harvested and LH indicates Lightly Harvested regimes		

Direct observation at the time of harvesting - It was learnt from our experience that when we go inside the forest with collectors while they are collecting the NTFP, they will not collect in their usual method. In other words, we cannot assess the destructive method of collection, which is common for the commercialised NTFP like Rampatre, Dalchinni and Uppage.

So, we have identified some trees at reserved forest as well as the land with private ownership and also at heavily harvested area and lightly harvested area. Each tree was observed at alternate day for harvesting. When it is observed that the tree was harvested information was collected about the harvesting. Data about GBH of tree, yield of tree, quantity collected from tree, method of harvesting etc. were collected for the trees, Harvesting pressure and impact of property rights were observed.

Results:

Description of Selected NTFP species:

Uppage (*Garcinia gummi-gatta*):

Uppage is one of the six species of *Garcinia* found in evergreen forests of Western Ghats of Karnataka, with botanical name *Garcinia gummi-gatta*. Other local names of this plant are Dhad Birind, Kondapuli and Dharambe. It is a medium sized, evergreen tree found in tropical evergreen forests of Western Ghats. The tree grows straight, with branches grown almost perpendicular to main stem. This tree grows in middle layer of the multi-layered tropical forests.

The fruits of Uppage (*Garcinia gummi-gatta*) are yellow in colour, with wrinkles ranging from 6 to 9. Fruit contains almost same number of seeds. The rind is thick with high percentage of moisture/water content. The endocarp of seeds is used for extracting oil.

Patre:

Patre is general name used for *Myristica* species. These are medium sized trees growing in the deep evergreen forests of the Western Ghats. There are three types of trees observed in the forest. They are locally called as Rampatre, Giddapatre, and Heda patre (or Hedamangala). Nowadays, original Ramapatre trees are very rare in the forest. The local variety known as `giddapatre (*Myristica beddomi*)' and 'hedamangala' (*Knema attenuata*) is being collected in the name of Ramapatre. All these species look ~~alike with~~ minor differences. The fruits of Ramapatre are big compared to giddapatre and the trees slightly blacker compared to the latter. Sine the ecological requirements for both these species are same, we have identified only *(Myristica beddomi)* ~~only~~ for our observation. It is very rare to see the trees of Rampatre (*Myristica malabarica*). This is one of the endangered species of the region.

Cane (*Calamus sp*): Mainly two species of cane are found in the study. They are locally termed as halu betta and handi betta. Here we have collected data for only halu betta (*Calamus rotang*), commonly used in the region. Cane is used by the villagers as fibre, thread and weaving handicrafts, and articles. This has been given on contract by the forest department for extracting. They were collected in huge numbers from this region to supply the demands of the cane furniture industries of the urban area.

Dhoop: (*Veteria indica*): Boswellia *serratta*, *Canarium Strictum*, *Vateria indica* are all locally called as Dhoop. All these species are used for collecting Dhoop. We have selected one of the ~~most~~ endangered species *Vateria indica* for our study, as it was one of the trees abundantly available in the region.

This is a straight growing tree found in the evergreen to semi evergreen type of forest. Tan is extracted by making a scratch on the stem as in case of Rubber.

Dalchinni *Cinnamomum zylenicum*.): an evergreen, medium sized tree found in the natural forest. Buds are used as spices. Small buds are collected by cutting the branches of trees and later separating it from the branches. This practice of collection is leading to the extinction of this species.

Section: 1

Observation at the time of Harvesting:

Uppage (*Garcinia gummi-gatta*):

Collection practices and ecological impact:

Method of harvesting:

It was planned to observe the actual harvesting while the collectors were harvesting the fruits. However, it was learnt from our experiences that when we, external persons, are with them, while they are collecting, they are not harvesting in their usual practice. We might not able to observe the destructive harvesting practice which is common in case of Uppage. So, we have decided to identify fifty trees in different tenurial systems. Ten each in Betta land, encroached land, five in far distant forest (lightly disturbed forest), and twenty-five in open access land. Each tree was observed before harvesting. Information about expected yield in each tree was noted with help of two local collectors. Later each tree was visited every alternative day and percentage of ripe and unripe fruits was noted. If it was found that some tree was harvested then percentage of fruits left in the tree, method of harvesting, number of branches cut, etc were noted. Approximate quantity and quality collected by collector was estimated with help of data of previous day's observation. We also met the actual collector. Besides, wherever possible, actual harvesting was observed.

To cross check the data all outlets markets viz., middlemen, agents, dealing in the village were asked to give the actual quantity and quality of Uppage rinds.

Method of harvesting:

Open access area: open access area is the region in the forest for which villagers frequently go for collection. This area is near to the village and hence easily accessible. This region has considerably high density of Uppage trees.

Harvesting in open access area near to village was done in more destructive way compared to other areas. Collection from this region started much before than other regions. Out of 25 trees observed 32% of trees were harvested before any fruits in the trees were ripening in the tree. Another 44% of trees were harvested when hardly 10% of fruits were ripened. 16% of fruits were harvested with only 20 % of ripen fruits in the tree. All trees were harvested before 30% of fruits were ripened.

As harvesting of fruits in open access region is about to complete people started to collecting fruits distant forest. By the time about 20 % of fruits were ripen in most of the trees. 10% fruits were harvested from such trees.

In case of encroached forestland, the owner of the land holds authority to harvest the fruits. In case of such encroached forestland it was found that no fruits were harvested without any ripe fruits in the tree. About 10% of fruits were harvested from the trees with about 20% and 30% of ripen fruits. Maximum quantity of fruits was harvested from the trees with 40% of ripen fruits (70%).

However, in case of Betta land no fruits were harvested before the trees have 30% of ripe fruits. Most of the fruits (60%) were harvested when there are 40% of ripen fruits in the tree. Even some trees (10%) were harvested after fruits were completely ripened.

On an average, almost 88 % of uppage fruits were harvested in a tree, when the tree has less than 40% of ripe fruits in it. More unripe fruits are harvested from open access area followed by distant forest (Non tenure region). Trees in Betta land and in Encroached land are harvested with more ripe fruits (Tenured Region).

Uppage: harvesting pattern:

Region	Total Branches	Branches cut	Total
Tenure	521	0	521
No Tenure	749	200	949
	1270	200	1470

Chi-square = 127, $p<0.001$

	Total Fruits	Fruits remaining	Total
Tenure	11506	200	11706
No Tenure	28031	749	28780
Total	39537	949	40486

Chi-square = 38, $p<0.001$

24.871	4.463	8.882	14.897	26.759	1.067	8.760	14.026
14.015	2.045	2.353	17.897	10.172	0.667	4.693	7.870
10.279	1.694	2.588	6.103	7.586	0.333	4.589	5.867
2.758	1.892	5.414	1.387	1.562	1.500	2.409	2.385

***Harvesting methods**: Above tables shows the detail about the branches cut in tenure and non-tenure regions. Also it shows details of fruits remained in the trees after harvesting. It is observed that, out of 25 trees in open access area about 11 trees were badly damaged with cutting of more than 20 % of branches. Other four were partially damaged, with cutting of one or two branches. In case of distant area, out of five trees observed three trees were damaged severely (more than fifty percent of branches were cut.). In case of the area encroached by villagers, fruits were harvested when 87.56% of fruits ripened.*

However, in case of betta land no tree was observed damaged. In fact, out of ten trees regularly observed, from eight trees fruits were collected only after they are naturally fallen on the ground.

In both the regions very small number of fruits were remained in the trees leaving lesser chances for natural regeneration.

Conclusions:

Tenurial security plays an important role in deciding the harvesting method of fruits in a tree. Trees in open access areas are harvested first followed by reserved forest far away

from villages. Encroached lands and betta lands are harvested much later. In other words, trees in open access areas were harvested with maximum unripe fruits than the latter. In addition, it was found that harvesting method was most destructive in open access area. However, in case of encroached and betta land it was not the case. However, in betta land and encroached lands, there are always the chances of theft. So, some of the betta land and encroached landholders harvest the crop/fruit before they are completely ripen.

Giddapatre(Rampatre) ***Myristica beddomi)***:

Methodology of data collection:

This tree is commonly seen in good natural forest. It is a difficult to find them in region having tenureal security or private owned land. We were able to identify only two in betta land, five in encroached land. ~~All the trees observed are~~ *Myristica beddomi* ~~only~~. In all, we have identified about 30 trees in the natural forest, with fruits.

The trees were therefore observed at regular intervals. Information about total fruits in the tree, total ripen fruits, GBH (Girth at Breast Height) of tree, approximate height of the tree were recorded for each of these trees. Later, each of these identified trees ~~was~~ were observed at an interval of 4 to 5 days and status of fruits were recorded. When the process of fruits being collected was observed, information like fruits remaining in the tree, disturbance made to tree and method of collection was recorded.

Wet to dry ratio: Fruits collected by forest dwellers were counted before they removed the mace from the fruits. Later wet and dried weight of mace were calculated. This was done for mace of completely mature fruits as well as the immature fruits collected by collectors. Hence, the loss in weight and price by collecting the unripe fruits were calculated.

Observations:

Men usually collect the patre. They go to forest in the morning with a sickle and a bag. For collecting patre, they have to go deep in the forest. After identifying the suitable tree, they climb the tree to harvest. They usually neglect the tall trees with few fruits. Or in other words, they prefer to collect many fruits from trees spending as little time as possible in the process. After plucking the fruits, they de-husk the fruits using a stone. The outer shell is removed to get the mace around the fruit. In the process the seed would be crushed and left in the forest. The men bring only the mace of the fruit. It is observed that most of fruits were collected from the tree before they are fully ripened.

It was observed that about 27% of trees were harvested with no ripen fruits. Trees with only 10% of ripe fruits were harvested in about 17% of observed trees. 23% of trees were harvested with only 20% ripen fruits and another 20% of trees were harvested with 30% of ripen fruits. All fruits were collected before about 60% of fruits were ripening in a tree. Hardly 6% of fruits remained in the tree.

Destructive methods of harvesting like cutting of branches were observed in about 62% of trees. Total numbers of branches cut were in the range of 1 to 12.

It was found that collection of unripe fruits affects weight and price of the commodity. It was calculated that there were about 20% of weight loss for unripe fruit. The price for unripe fruit also decreased from Rs. 130 for ripe mace to Rs. 85 for unripe mace.

Impact of tenure: Unlike Uppage, Patre is harvested almost same state of the open access natural forest i.e. with about 30 % of the ripen fruits. This is because the owner of the betta land was not interested in the small quantity of Patre available from the tree (as he was rich, having other major sources of income). So, they gave little attention to protect the fruits. The same collectors who collect from the Forest collects fruits from the Betta land. They follow the same procedure as they follow for collecting fruits from natural forest.

However, in case of encroached land, (poor land owner) fruits were harvested with about 60% of ripen fruits, in more sustainable manner, without damaging any branches.

Conclusions:

1) Harvesting of Rampatre is done with mostly unripe fruits leaving very minimum number of fruits for regeneration.

2) Collection of unripe fruits results in decrease of weight and price.

3) De-husking of fruits damages the seed in the present system of harvesting, leaving no possibilities for regeneration.

Dalchinni Moggu (*Cinnamomum zylenicum.*):

Dalchinni is a medium sized tree. Flowering buds are collected from these trees. Very few trees were observed in the forest. Densities of these trees were calculated as per hectare.

Methodology of data collection:

Six trees were identified in the natural forests. In each tree, approximate yield, numbers of branches, GBH and approximate heights were noted. These were observed regularly. After harvesting, each tree was observed for method of harvesting. To assess this, information was collected about the number of branches cut. The percentage of ripen fruits to total fruits collected was calculated. The ratio between number of branches cut to actual number of branches was also assessed.

Observations:

As Dalchinni buds are very small, collection or plucking buds from the branches is a very time consuming activity. So most collectors cut the branches it self and then pluck the small twigs from the branches. They carry the twigs to the house to collect buds. It is in their homes that they separate the fruits from these twigs and dry them before marketing.

All trees were harvested before any fruits become ripe. The collection method was also destructive. About 76% of the branches were cut for harvesting. No buds were left in the trees. We were able to identify only six trees in the range of about 20 sq. kilometres. (It is learnt from the experienced forest dwellers that tree will not yield if they are cut severely.)

Conclusion:

1) Harvesting method of Dalchinni is most destructive. No trees were observed with sustainable method of harvesting.

2) This tree is becoming rare due to lopping and over harvesting. The high commercial value is also responsible for over harvesting.

Dhoop

There are hardly few trees of these spices in the natural forest. Due to over harvesting most of the tree have died. We were able to identify only five trees in 10 sq. kilometres of forest. They are regularly observed. There are only two collectors involved in collecting dhoop. Since there is very little number of trees and also, availability of dhoop per collection is small most of the collectors of NTFP do not prefer to collect the same. We have collected the data about the actual quantity collected from each tree from these two collectors. Besides, GBH, Height, scratch were measured.

Table 7.5 Yield of Dhoop

GBH of tree cms	Height in mts	Size of Scratch Cms (b*h)	Total quantity extracted (gms)		
			Per collection	No of collection	per year
85	5.0	20*35	150	9	1350
124	6.5	35*58	50	16	800
91	4.8	15*31	100	11	1100
68	4.0	21*17	119.50	14	1677.2
112	4.0	18*25	162.89	16	2608.0
					7535.2

Hardly five yielding trees were observed, the data is insufficient to arrive at a conclusion. However, it is observed that yield is decreasing by years and also trees are dying. Growth rate seems to be hindered by the extraction methods. However, this should be studied in detail. Also, regeneration of this species is also not known. Seeds (20 numbers) directly sown have not germinated at all. The villagers believe that a bird, locally called as 'Dhoopada hakki is a necessary agent for germination. They also, claim that, they have

observed the seeds inside the stomach, after killing. Later, this bird is identified as ' ~~emerald~~ Imperial *pigeon*'. This needs be studied in detail.

Discussion and conclusions: From the above studies it is clear that all the species of NTFP discussed above are facing the threat of over harvesting. Over exploitation, premature ~~exploitation,~~ and destructive harvesting are affecting the regeneration of the trees. Regeneration is severely affected by this (See next section: transect data)

It also shows that tenureal security plays a major role in deciding the method of harvesting. Assured ownership rights over the resources can help in conservation of the resources.

With properly framed JFPM policies, with mutual responsibilities can help in protecting the forest resources and sustaining the livelihood conditions of the forest dependent communities.

8.0 MARKETING OF NTFPs:

Introduction:

Western Ghats represents one of the most fragile ecosystems in South India. The forest comprises of tropical evergreen, semi evergreen, moist deciduous, ~~and~~ deciduous types and scrub types. The degradation of forest due to commercial exploitation of timber, encroachment, increased demand for timber, fuel-wood and other requirements for agriculture needs have attracted attention of foreign governments. ODA (Overseas development Administration) U.K in collaboration with Karnataka Forest Department has formulated Western Ghats Forestry and Environment Project (WGFP) in 1992. Major objective of the WGFP is to conserve and management of forests in the Western Ghats under Joint forest Planning and Management (JFPM). This is the process of managing forest resources in participation with the people and to form village level institutions to afforest wasteland and to protect

through sharing the benefits. In this, process more than 300 village Forest Committees (VFC's) were formed.

NTFP plays a major role in the economy of the several people, especially on the forest dwelling communities in Uttara Kannada, Promoting sustainable harvesting of NTFP, processing and marketing of NTFP is also one of the objective of the JFM.

8. 1 Concept of JFPM and VFC

The launching of JFPM and formation of VFCs (Village Forest Communities) is heralded as one of the solutions to resolve the issue of marketing of NTFPs. The VFC is an institution created to overcome the hurdles of middlemen and contractor system that led to exploitative relationship between collector and marketing agencies. Legally, the KFD has given collection rights over NTFP to VFCs. While giving the NTFP tender to contractors (or while auctioning the NTFP) the area, which comes under VFC, is excluded from the auction. It is clearly mentioned that VFC has exclusive right over collection of NTFP from VFC area. The constitution of VFCs has its advantages and disadvantages. The forming of VFCs in certain villages has improved participation of the community in the protection of the forest, and hence improved relations with the Karnataka Forest Department and reduced the incidence of fires. Regulation was also made easier with improved monitoring, control of harvesting, and transit. The policy of giving NTFP collection rights of VFC sounds rationale. However, while implementing this at village level one can see the failure of this policy causing financial loss to the NTFP collectors.

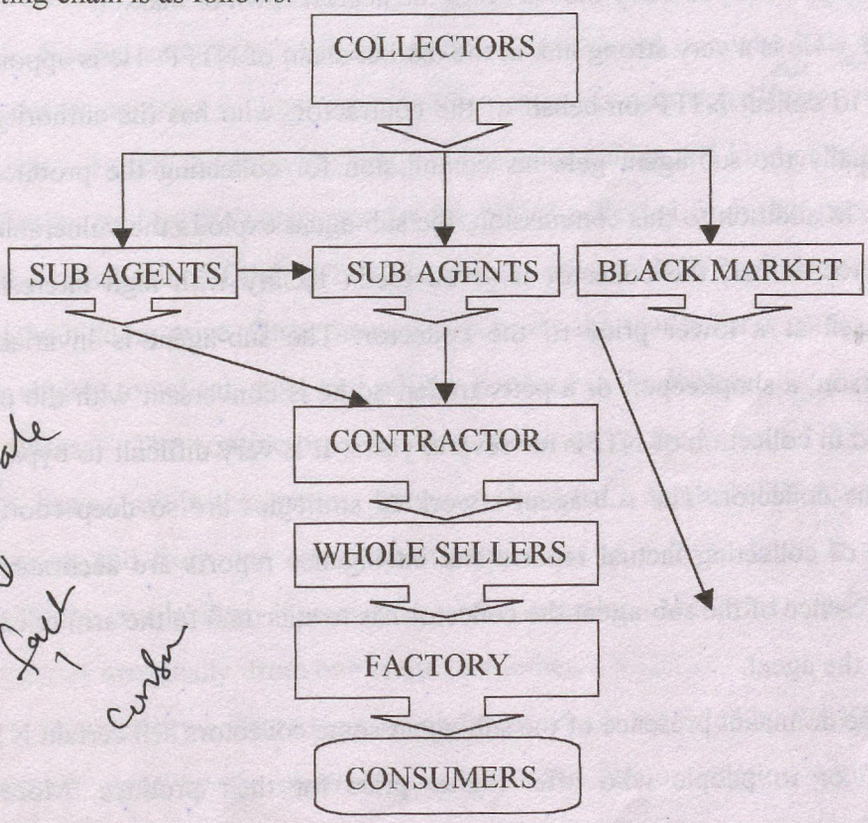
8.2 Present systems operating in Uttara Kannda to Market NTFP:

The market for NTFPs has increased in recent years. Traditionally the major NTFP collected from the forests of Uttara Kannada was 'pepper'. Wild pepper was available in abundance and the forest dwellers extracted these from forests part, which was exported to the Gulf and European countries. The market for NTFPs was slack in the sixties.

However during the 1980's the demand increased and new products were included into the NTFP fold. The household consumption of NTFPs decreased and the market demand changed the entire NTFP scenario. The discovery of new drugs based on plant resources accelerated the demand for NTFPs. The establishment of processing industries helped to find new markets for these products. Based on the increased demand and reasonable prices for this produce the collectors started harvesting the products. There are several ways/systems through which the NTFP is marketed, the most dominant being the government's tender-cum-auction system.

Contractor System in NTFP:

The marketing chain is as follows:



The collectors, who form the base of this system, that are invariably the forest dweller sell this produce to the local sub agent. In many villages the sub-agent, appointed by the contractor is a petty shopkeeper or a hawker. They provide credit facility to the collectors, with the assurance to sell all the NTFP material to the sub agent. Thus, the person to

whom the collector can sell is predetermined. The credit facility provided by the sub agent is very crucial to the cash strained household economy of the poor harvester. He is aware of the cheating practices adopted by the sub-agent. Many times the agent gives a lower price on the pretext that the quality is not good or that the processing has not been properly done. Other means of exploitation of the poor illiterate collector adopted by the sub-agent are through fraudulent measurements or weights. Unfortunately, the collector is not in a position to withhold the produce for a long time due to cash crunch. In many cases, there is problem of storage space as well as the perishable nature of the product. This also forces the collectors to sell his product at low rates. They are not in a position to spend time and money to carry the NTFP to the nearest town or market.

Sub-agent: - He is a very strong link in the market chain of NTFP. He is appointed by the contractor to collect NTFP on behalf of the contractor, who has the authority to collect NTFP. Usually the sub-agent gets his commission for collecting the produce from the contractor. In addition to this commission, the sub-agent exploits the vulnerable collector. As mentioned earlier, the collector is given credit facility with high interest rates and forced to sell at a lower price to the collector. The sub-agent is invariably a local businessperson, a shopkeeper, or a petty trader, so he is conversant with the people who are involved in collection of NTFP for several years. It is very difficult to bypass this sub-agent by the collector. The sub-agent's working strategies are so deep rooted that his mechanism of collecting factual reports and intelligence reports are accurate. Aware of this omnipresence of the sub-agent the collector has to succumb to the arm twisting tactics adopted by the agent.

Inspite of the dominant presence of the sub-agent some collectors sell certain NTFP to the '*smugglers*' or to people who offer higher price for their produce. More than the collector, the person who buys the produce is at the risk of being caught for keeping stock of a particular NTFP without legal sanction. This is the existence of black market in the NTFP trade. This kind of black market exists only for those items, which has high market value, for example U*ppage* and M*urugalu*.

The black market offers a higher price for the collector.

Contractors: - The contractor is the one who obtains legal sanction to collect NTFP from KFD. The method of auctioning of NTFP every alternate year for each particular Range is followed by KFD. The contractors bid in the auction to get control over high value NTFP like U*ppage.*

However, in order to safeguard the interest of contractors there are many instances where the contractor form 'rings' among them and restrict the rise of prices in tenders. The formation of 'ring' among the contractors is a clever strategy to keep the price of NTFP at a low level. They do not allow the rise in prices, but the 'ring' decides the price payable for the NTFP. This is another way of controlling the price of NTFP by contractors.

Auction by KFD: – The State Forest Department auctions the commercial NTFPs once in two years. Normal auctioning proceedings are followed and one who bids the highest gets the tender or contract for that season. The auction is conducted for a forest range ~~wise~~. The VFC areas are excluded from the auction. The price bidden is a kind of tax or royalty to the KFD to be paid by the contractor for the NTFP collected from that particular area and is not the actual price of the NTFP. The market price of NTFP will be several times higher than the bidding price. Once the contractor gets the tender for a particular NTFP, he is legally eligible to collect, store and sell this produce in the region.

Fixing of prices: – The contractor determines the price of the various NTFPs and the Forest Dept. has no say in this matter. The price fixed for a single NTFP may vary from region to region and from one contractor to the other at a given time. It also differs depending on the availability. However in actual practice the price fixed by the contractors varies marginally from one range to another.

Quantity: – The quantity collected in a range forest area is recorded by the KFD. It is an arbitrary number given by the contractor to KFD and has no relation with the actual amount collected. This is because the Forest Department does not verify the figure given to them by the contractor and which leaves plenty of room for manipulation.

Other NTFPs not auctioned by the KFD – The KFD auctions the major NTFPs available in that region. However, there are several other commercially important NTFPs in that region which is not auctioned by the Forest Department. Coupled with the ignorance of the primary collectors, many collectors have taken advantage of this situation. It has been

noted that the same contractors who have been given the licenses for collection of NTFP auctioned by the Forest Dept., are also involved in the collection of non-auctioned commercial NTFP claiming the authority of their licenses to do so. This goes on with the connivance of the Forest Dept. officials in several areas.

Illegal traders: – Illegal trading of NTFP takes place in two ways – 1) The illegal traders directly collect the product from the forest, and 2) The illegal traders approach the primary collectors offering a higher price than those fixed by the legal contractor. Traders involved in direct collection usually collect the products that are banned for collection by the Forest Department or used by the ayurvedic pharmacies such as gulmavu (*Machilus macarantha*), *dhoopa* (*Veteria indica*), *dalchinni chakke* (Bark of *cinnamom* trees) etc. The second type of trader's purchase mainly high priced NTFPs like *uppage* from the primary collectors and sells it outside the state.

Collection pattern by the authorised contractors: – The contractor, to whom KFD has auctioned the NTFP, recruits many sub-agents throughout the area allotted to him by the Forest Dept. For some of the major commercial NTFPs, the number of sub-agents appointed will be more than 75 per range forest area. The primary collectors have to sell their products only to these sub-agents who in turn pays the price for the NTFP as fixed by the contractor. For this purpose, the contractor gives the sub-agent cash in advance and he gets a commission on every kilogram of product thus collected from the contractor.

Collection pattern by the unauthorised contractors: – These contractors either directly purchase the products from the collectors or recruit agents to purchase certain highly priced NTFPs. There may be many such contractors in a single region. Usually they pay little more than the price fixed by the legal contractor. In certain cases, due to the intervention of the illegal contractor, the authorised contractors are forced to hike their collection prices.

Local dealers: – Apart from authorised and unauthorised contractors, there are some local dealers who purchase some of the NTFPs directly from the collectors. Although they do not have any legal sanctity to do so, they operate in a very small region. The local dealers purchase the NTFPs that are popular such as honey, cane and bamboo artefacts, wild vegetables, fruits and roots as well as medicinal plants. These products are sold to

other neighbouring villages where these products are not available and to tourists where the village is located near a highway.

Ayurvedic pharmacies/Traditional medicine men: -Ayurvedic pharmacies train people in the identification and harvesting methods of medicinal plants and they then collect these products directly from the forest. This act is itself illegal since there is no permission to collect barks, roots, and leaves from the forest. In case of traditional medicine person, collection of the products is done as and when they require.

Siddi Development Co-operative Society for NTFP marketing: The society is formed in 1998 in Manchikeri consisting of 80% members belong to Siddi community and other members include Gouli and Kunabi communities. The society got lease to collect and market Seegekayi for 4 years, 1994-95 and 1996-97. During 1994-95 the society collected about 390 quintal of Seegekayi and during 96-97 it has collected 385 quintals. In the first year of collection of Seegekayi the society purchased the product at a price of Rs 8 to 10 per kilogram from the collectors. The society collected 190 kilograms of Seegekayi in the first year and invested about Rs16.50 per kilogram of Seegekayi including the royalty it has to pay to KFD. The society paid Rs122500.00 to KFD as royalty. They tried to sell the product outside, in Bangalore, Pune, and Belgaum and in Khanapur. But couldn't succeed in doing so due to various reasons. Out side industries agreed to purchase the product at a price of Rs15 per kilogram. The Sirsi based contractor purchased initial 100 kilograms of Seegekayi at a price Rs 16 per kilogram and remaining 90 kilograms for Rs17. Thus the product was sold to local contractor at a no profit no loss basis. But for the second period the Co-op society sold the Seegekayi to the same contractor with a net profit of Rs. 70,000-00. Society has collected at a price of Rs 8 to 10 per kilogram of Seegekayi from the collectors and Rs12 per kilogram from those collectors who have Seegekayi in their private land. The royalty paid to KFD was Rs135000. During 1998-99 the Society wanted to get the lease for Seegekayi collection and sale but KFD increased the royalty to collect it. Thus the society decided not to get the lease for Seegekayi.

The society opines that it is never possible to compete with the contractors. The contractors have enough capital and are dealing with several NTFP. They can keep the stock of NTFP and are able to wait until the price of product increases. They know the complete background of the marketing chain and can control over entire market system.

8.3 METHODOLOGY FOR STUDY OF VFCs:

VFCs for the study were selected from the region, which has highest NTFP resources. These regions include all ecozones of the Districts. Thus totally 16 VFCs were selected for the study.

Information was collected about quantity of NTFP purchased by VFC from collectors, buying price, selling price, wear housing, net profit enjoyed by VFC, facilities given to collectors .In each VFC ten persons, representing all caste / community, were selected for study. Besides people belonging to different section of the society are also interviewed to have the opinion of collectors.

From all such selected persons information about the NTFP collected, quantity of NTFP sold to V.F.C.s as well as the other marketing agencies was collected. The loss and benefit to the collector by marketing the NTFP to the V.F.C.s was analysed.

The study was based on:

- Interviews with the NTFP collectors
- Survey of VFC's
- Questionnaire and data sheets pertaining to NTFP collection and marketing.

Results:

There are 1263 villages in Uttara Kannada District (district statistical department). At the time of writing this report 309 VFCs are formed in this district. In these, only few VFCs deal with NTFP issues. According to rough estimate, only 10% of the total VFCs done NTFP related activities like marketing, and implementing sustainable harvesting. The VFCs studied are Kondemane, Belageri, Geral, Naginkoppa, Ramanguli, Baraade, Hukli, Mulgund, Anshiwaad, Badagi, Manjguni, Oudhal, Vatekoppa, Hallibail, Mensi and Gumblegadde. Data is collected from 160households of forest dependent communities.

In Uttara Kannada district, 37 NTFPs are recorded as collected for commercial purposes. In these, 21 NTFPs are available in the studied VFC areas. In these, attempts were made to market only for four NTFP through different VFC's.

Performance of the VFC:

Results of the questionnaires: Out of total quantity of NTFP marketed in 160 household in different VFCs, 97.43% is marketed outside the VFC. Only 2.57% of NTFP are marketed through VFC. Out of the total revenue from selling of NTFP, it is observed that 98.85 % is earned from selling in open market, and only 1.15% of the revenue is earned selling through the VFC (outside market- contractors, SHG, Co-operative society). Thus, it is very clear that VFC is not at all attractive for NTFP collectors.

The main reason for such a difference is the price given to collectors by VFC. On an average for Uppage the rates offered to the villagers by the dealers is Rs.48.50. However, VFC gives only Rs. 35 to the collectors after deducting the tax and share of government. There is no direct benefit from VFC to the villagers in marketing NTFPs.

There are six VFC's in southern part of Joida taluk. Earlier all these V.F.C.s were selling their products through Ulavi VFC. Ulavi is the major commercial centre. Kunbis, the forest dwelling community living in this region are expert basket weavers, and manufacture other handicrafts. They have been marketing their goods in Ulavi during annual festival. After formation of the Ulavi Shree Channabasaveshwara VFC, marketing was done through this VFC along with neighbouring VFC. Cane articles are collected from the tribes through the respective V.F.C.s and marketed in Ulavi festival.

Table No. Title ?

Year	No of Butti purchased from villagers	Net revenue
1996	324	1016.00
1997	888	7165.00

Buttis(cane baskets) were purchased at Rs 26.00, 20.00, and 18.00 according to the size. But as the tribal states, the same baskets were sold in the market for about Rs 40.00 per basket. The high profits have been reaped by the VFC Chairman. This benefit is not transferred to the villagers.

Case of Anshi V.F.C.: In Anhsi, V.F.C. was formed about two years back. However, V.F.C.s gave advances for villagers for making cane products.

Uppage, one of the recently commercialised NTFP in this region, was collected by the villagers from about three years. This was commercialised by some of the traders from Kumta and other places. This year they promised to pay about Rs 50 per kg for the dry rinds of this fruit. Villagers collected about 60 to 80 kgs per household. They sold some of the produce to the traders for the Rs 50. However, later in the month of August, forest department came to know about the marketing of Uppage. Then forest department insisted VFC members to purchase and market the produce through the VFC only. As per the guideline of the forest department the President of VFC, started collecting Uppage. Nevertheless, the price given to collector was just Rs 30. This is because, as claimed by VFC president, tax to be paid to KFD and the collection charge and commission of President. Collectors were forced to sell their produce to the VFC with a lower (20 rupees less) price than the trader or the price they would have got in the market.

Results of opinion survey about V.F.C as a marketing system:

About 89% of the villagers know about the existence of VFC in their village, and 11%villagers still do not know about the existence of the VFC in their village. In regions, where NGO's are working 100% of villagers know about existence of VFC, whereas in non-NGO area only 78% villagers know the presence of VFC. Only the ~~general body~~ members (on an average 5 to 8 members out of 11) of the VFC were attending the meetings and in other activities related to JFM.

98% people expressed unsatisfaction over the price offered by the VFC for NTFP. It is observed from the study that collectors would have got Rs.16.3 more than VFC if they sell the product in the open market. However the VFC could able to give Rs 1more for honey, Rs1more to Seegekayi and 2.4 rupees to cane. On average collectors would have got 13.5%more prices for NTFP if they sell in the open market.

Fifty four percent of people expressed satisfaction with the services offered by VFC in general. 46% of people surveyed were unhappy with the services offered by VFC. There are certain problems to traditional NTFP collectors to collect and market the NTFP. In Banagi, villagers have established a self-help group to collect and market the NTFP. However, after the formation of VFC they were told that VFC is dealing with the NTFP

and SHG should have to stop collection and marketing. In certain VFC areas the collectors are forced to sell the products to VFC at a lower price as discussed earlier.

During our study, 33.36% of NTFP collectors said that they are facing problems to collect and market NTFP after the introduction of VFC is their village. 66.6% of NTFP collectors said they do not have any problem.

Benefits from the VFC

Tenure Security- Taking VFC as an instrument some villagers were able to avoid the entry of outside collectors into the forest surrounding their village, avoiding the over exploitation of the products to some extent. At Banagi, VFC is restricted the collectors to harvest the unripe fruit of Uppage (see case study).

VFC provides Tenureal Security

Name of the village and VFC: Bangane

Taluk: Kumta

Forest Range: Kumta

Division: Honnavar

"Bangane" is a village, situated on the bank of Aghanashini River in Kumta taluk of Uttara Kannada District. Thick evergreen forests of foothills of Western Ghats surround the village. Major NTFPs are Uppage, Rampatre, Dalchinni, Heddapatra are available is the forest along with the variety of subsistence NTFPs.

Major communities living in the villages are Maratis and Havyakas. There are about 60 Marati families and 12 Havyak families. The increased price of NTFPs motivated more and more people to go for collecting Uppage rind from the forest. Some outsiders from Santeguli, nearest village, and Kumta have also started coming to the forest for collecting Uppage.

Increased extraction pressure resulted in destructive harvesting. Collectors started cutting branches and in some cases cutting the tree, to extract as much as possible in minimum time.

During 1996, VFC was formed in the village. For first year, VFC concentrated more on plantations. However, last year, they started to think about Uppage. VFC members decided to put an end to the process of collecting Uppage in destructive manner. Villagers agreed to protect the trees. They prevented neighbouring villages/outside villages to collect from village forest. By this time most of the fruits in the trees are ripened.

It was not decided who should collect from which tree. However, every villager was informed about the sustainable harvesting of Uppage. They have collected ripe fruits with the help of long poles with a hook at the end, without damaging the tree.

Thus this year all villagers collected ripe Uppage rinds from the forest without cutting the trees. This in turn helped them in getting higher price. This year the price for ripe and unripe rinds of Uppage is Rs 55 and Rs 35 respectively. All collectors got about Rs 20more per each kg of Uppage. In addition, they have the assurance of getting the

Awareness: Collectors were started think about sustainable harvesting method of NTFP after the formation of VFC. Wherever the NGO's are present, this process is much animated through the VFC.

Marketing and collecting of canes- in contractor system very crude method was followed to harvest the canes. Villagers and local artisans claim that huge quantity of canes along with the younger and immature one's are harvested at once. Where as the local people used to harvest only the mature canes for their agriculture and other requirements. In Ulavi region VFC has taken a best step to control the over harvesting of canes. This is an important religious place and thousands of devotees assemble here during Jatras from different part of the state. While returning, several of these devotees were taking canes articles with them. This lead to illegal and improper harvesting of canes.

However the VFC is now purchasing the canes through the collectors and sells it directly to devotees during Jatras. The collectors were getting more prices to the canes and illegal harvesting was reduced.

Factors affecting performance of VFC

The villagers are not yet confident about the strength and capacity of VFC to deal with NTFP. Except in very few occasions VFC could not able to give higher prices than other marketing systems. Therefore, they hesitate to market their products through VFC. Inexperience of VFC in the business of NTFP and lack of knowledge about the market chain are a disadvantage. During their training, the members of VFC learn very little about the end market for NTFP. Unless they have entire knowledge about the market chain of a particular NTFP, it is very difficult to compete in the market.

Taxation: – When the VFC collects the product and then auctions or sells, it has to give several kind of tax to the products. Where as in case of contractor, he pays the royalty to the KFD, which is just 10%-15% of total amount. The case of Hallibail VFC gives a good example for this tax system. Few years back the VFC decided to collect the Uppage, a major commercial NTFP. Without knowing the end market, VFC further decided to sell the product by auctioning. The market price for one kilogram of dry Uppage rind was Rs.45 to 50 during that time. However, due to the direct tax system VFC could able to

give only Rs 35/ one kilogram of Uppage rind, which was Rs.10 to 15 rupees less than the existing market price.

Misuse of VFC by certain people: *- in certain VFC areas the VFC chairperson or other powerful persons in VFC sometimes along with the secretary were handled the collection and marketing NTFP. The innocent collectors were told that the VFC is collecting the NTFP and they should sell the product only to VFC. Nevertheless, in reality only one or two people personally collected the product in the name of VFC. These people purchased the NTFP at a lower price and sold it to contractors or to someone else taking commission to per kilogram of product. This happened mainly with Uppage rind and in those areas where villagers are poor, illiterate, and innocent. (We have noticed this in Manjguni, Oudhal, and in Badagi VFCs. But there may be several other such areas).*

Conclusions: it is found that the VFC could not help in giving benefits to the forest dwelling communities. As discussed in the previous sections, the VFC were given the price much lesser than the price offered by other marketing systems. The forest dwelling communities are not at all interested in giving the produce to the VFC. In other words, forest dwelling communities are given fewer prices in the name of VFC. It is important to *build the capacity of VFC to deal with NTFP.*

Alternative system for NTFP marketing.

When we asked the villagers, they opined that alternate system is necessary to market NTFP so as to avoid the monopoly of contractors. 42% of them said that co-operative like system is a better solution. The collectors themselves or the VFC together bring the NTFPs to the taluk centres and then auction it like present system of marketing of some agricultural produces. By doing this there will be more competition amongst the contractors or at least the NTFP collectors will have the mass bargaining power. 62% of NTFP collectors wanting this kind of system, 29% of collectors said self help group is ok for them to market NTFP, 20% said VFC is good, only 2.4% villagers said that present contract system is ok for them. 5.8% villagers have no idea about it. LAMPS system is not operating in Uttara Kannada district so the villagers do not know about its performance.

Domestication of a NTFP; prospects and problems

In the present trend of growing commercialization of forest products, domestication is one of the alternatives that finds effective solution for addressing the problems of ecological sustainability and improving the livelihood conditions of forest dependent people. Varieties of products are being used for different types of use. The demand is created for the products by the modern industries and from cities. Neither banning nor giving free access to collectors can affect the resource base itself. The following reasons can be given.

Most of the resources are situated in the small portion of the remaining natural forest. Continuous collection from these sources may affect in long term resource base itself. Given the low density of the tropical species, their reliance on animals for reproduction, and the difficulty experienced in establishing their seedlings, the harvest of any type of plant tissue will necessarily have an effect on the species involved. The delicate ecological balance maintained in tropical forest is easily disrupted by human intervention, and extractive activities that at first glance appear very benign can later have a severe impact on the structure and dynamics of forest trees plantations. This impact may not be immediately visible to the untrained eye- but it is definitely occurring (Peters, 1995)

Most NTFP are available in the natural forest with high bio-diversity. Importance given to only few NTFP may result in neglecting the other species and thereby depletion of such species in long run.

On the other hand the forest dependent communities might suffer, if access to these resources are denied. It is observed by this study and most of the other studies that people living inside and around the forest have been depending on a variety of forest products. Not only employment and income, is met by these resources, but also, edible, medicinal, agricultural and handicraft demands are fulfilled by these forest products.

Uses of most of the NTFPs, forest species are not explored completely. (Varieties of plants are found suitable for medicinal purpose by modern science also!)

Above all most of the products are getting market demand from the cities and other countries. For this reason there is always a possibility of increasing commercial

A case of domestication of Uppage(*Garcinia gummi-gatta*);

One of recently commercialized NTFP.

Name : Narayan Hegde

Village: Bilekal Po: Kanchikai Tq; Siddapur (U.Kannada)

Narayan Hegde is living in a small village near Kanchikai, Siddapur taluk. He is interested in cultivating different plantation crops along with the common crops like arecanut, cardamom, pepper etc.

Uppage (*Garcinia gummi-gatta*) is growing in the surrounding forest. Even in his betta land there are many Uppage trees. He has been collecting the fruits from these trees.

Women members from his family were collecting seeds of Uppage in earlier years. But after increase of commercial demand for the rinds of the fruits, the availability of ripe fruits is started decreasing. Destructive methods of harvesting of these trees started decreasing of the resource in the region. Also, high commercial demand of the fruits forced him to domesticate the trees. The income presently from single tree is almost comparable with his main crop, areca trees.

From last three four years, he started searching for better silvicultural methods for propagating Uppage. According to some of the experienced villagers, Uppage starts yielding only after about eight to ten years of growth. The germination rate of Uppage was found to be low in percentage. So he decided to graft the branches of good tree to saplings of Kokum (*Garcinia indica*), a species from same genus. Thus he could ~~able to~~ achieve the two goals, viz., decreased of the ***first yield time*** and avoided the problem of low germination.

He started planting these grafted trees in his farmland. Also he is supplying to the neighbors. This trend of planting, grafting is slowly spreading in the neighbouring villagers.

A case of preserving the natural resource

Hanumanth Gouda

Tharakanta, Hegge

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NTFP resource is now treated as a *no man's* property but not as everyone's property. Most of the collectors give attention to collecting as much as possible in minimum time not towards either sustainable harvesting or preservation of natural resources. Here is an example of a collector, who has been preserving the naturally grown Uppage trees and continuously getting benefits from the resources.

Hanumanth (65), a karevkkaliga by caste is living in the village near Nilkund. He has four acres of paddy land and an acre of arecanut plantation. He has seven children; four males and three females.

Like most of the Karevokaligas, Havykas, Hanumthas family was also using the oil extracted from seeds for culinary purpose.

His house and land is surrounded by the thick natural evergreen type of forest. In this forest there were many naturally growing Uppage saplings. He preserved these by not cutting them while collecting the green leaves. (Green leaves are collected by the farmers for cowsheds, as manure.) Hanumantha marked some portion of the forest around his land and house and made the boundaries to them. He has given special attention to preserve the natural resources since last fifteen years.

The pressure on the forest increased during last decade when more and more forest products attracted commercial demand. Collection of Uppage rind started around fifteen years back and speeded up during the last five six years. More and more people started collecting Uppage from the forest even near to his house. Competition among the collectors started affecting the resource base by destructive harvesting methods. Since there is no competition for collection he always collects only ripened fruits, which is more sustainable and does not damage the trees. According to Hanumantha, " Uppage trees require special irrigation or manure. But special attention should be paid to preserve the trees from forest fires and high velocity wind.

Most of the Uppage trees in the surrounding areas are now disappearing because of

DISCUSSION:

NTFP management, sustainability and livelihood issues of forest dependent communities:

NTFPs are the integral part of the life of villagers of Uttara Kannada. All communities, economic groups, residing in the district, collect NTFPs. However, the items, type of use, availability varies with the varying forest types and communities.

It is obvious from the study that the dependency on the forests by forest dwelling communities is more for the consumption needs than the commercial needs. All communities irrespective of the caste/ community collect the forest products to meet the consumptive needs.

It is observed in our study as well as in some other studies (Murali, *et all*, 1997) that commercial harvesting of NTFPs affects the regeneration of the NTFP species. Since the demand is from the outside the forest region, and it may always increase, the narrow resource base existed in the natural forests is greatly affected. In addition, importance given to only few highly commercialised NTFPs may lead to the neglect of other species, which results in loss of biodiversity.

In long run, it may also result in demise of the tribal economy.

Livelihood condition and lifestyle of forest dwelling communities are highly inter-linked. Much of the misery of tribal and forest dwellers is due to deforestation which removes the resources on which their livelihoods has been based (Dasguptha, 1988). For instance, tribals in Koraput district of Orissa, earlier used, to depend for eight months of the year on forest products, but now (1988) with the depleted forest resources, their survival is threatened (Indian Express, April 3, 1988). Loss of forests has also increased the pace of migration of tribal to the towns where they become low paid wage labourers. {all references are taken from the paper of N.C. Saxena in Management of MFP for sustainability, Oxford and IBH publishing co}. Also, there are number of references from African and South East Asian countries to support these facts.

Resource base of NTFP is limited. Continuous harvesting from these, without any responsibility of conserving the natural resource, is affecting the natural regeneration. Promotion of harvesting NTFPs for commercial interest, from this limited resource may result in the depletion of the NTFP resource base, biodiversity and natural forest.

Further, Income earned by the marketing of commercial NTFPs can be replaced by alternative employment opportunities. However, it is not the case with consumptive NTFPs (both edible and non-edible).

Harvesting of NTFPs for consumptive (both edible and non-edible) use is not destructive process because the demand is limited and hence there is no competition among the collectors. On the other hand, it helps in extending the healthy relation with the forest. This naturally results in conservation of biodiversity and natural forest. Hence collection of NTFPs for consumptive use i.e. edible, non-edible (like handicrafts, fibres, etc) and medicinal purpose can be promoted. The knowledge about these species is fast eroding among the younger generation. Inferiority about the traditional food systems, easy availability of the ready to use products, long process to be done before using these forest products are the major reasons.

There are number of forest products having good nutritional and medicinal value. These can be explored and promoted for consumptive purposes.

However, exploration any NTFPs for commercial uses should be pre-viewed carefully. Collection of NTFP for commercial purpose may always lead to the competition among collectors and hence destructive impact on resource base itself. Demand is created from external sources and is not limited or restricted to the few villagers.

Management options:

Some of the NTFPs are already commercialised. Highly commercialised NTFPs are found to be harvested more destructively. The main reason for these is tenureal insecurity among the collectors.

The immediate solution, we propose for conserving these natural resources is providing tenureal security through the village level institutions, with properly framed rules/regulations for conserving natural resources by proper identification of boundaries of forests can be promoted.

In long term, in order to decrease the harvesting pressure on the natural forest, stress should be laid to domesticate the NTFP species wherever possible. A proper agro-forestry system should be promoted. Most of the forest dwellers have small land and they are rain-fed and less fertile. Single crop is grown on these lands. Agro-forestry systems with NTFP species can improve their economic condition. In addition, this will help conserving the forest and our rich wild genetic resources.

The present system of contractors promotes *competition among the collectors.* This should be replaced to *competition among the traders/dealer*. Then the problems of exploitation of poorer communities/collectors by the marketing forces as well as unsustainable harvesting can be tackled.

Policy issue:

- At present, there is no complete inventory of any NTFP species available in of the natural forest and therefore there is no information about how much a particular NTFP should be harvested annually.
- There is no proper supervision/ control over the harvesting methods.

Conclusions and recommendations:

NTFP is a broad term that comprises variety of products, used for different purposes. "*Non Timber (Non-Wood) Forest Products include all goods of biological origin as well as services, derived from forest or any land under similar use, and exclude wood in all its forms* (C.Chandrashekaran, FAO Forestry Department, 1995)." We found it appropriate to use sub classification of NTFP for any conclusion and recommendation. Hence, we specifically use the sub classifications in this section. A single NTFP is used for different

purpose by villagers. In such cases, it should be noted that, recommendations suggested are for such specific uses only.

Results of Socio-economic study:

- Dependency on commercial NTFP is related with economic condition of the villagers not on the caste.
- Dependency on consumption (edible and non edible) NTFP is related with more on culture and caste of the villagers but not on the economic condition.
- Villagers are getting considerable amount of employment from NTFP collection.
- Most of the families in the study cluster use medicinal NTFPs for small ailments. However, the trend is decreasing.

Results of regular study:

- Most of the NTFPs collected for commercial purpose are not beneficial to villagers compared to minimum wage earning.
- In regions of good natural forests people collect more NTFPs for non-commercial uses. However, in plains, where forest has less diversity, villagers go to forest more for commercial purpose than the consumptive needs.
- There lesser number of NTFPs is commercialised in evergreen type of forests.

Results of PRA:

- Collection of NTFP for commercial purpose started from last three decades before only.
- There is a growing trend of collecting NTFP more and more for commercial purpose. Contrary to this use of consumptive (edible and non edible) and medicinal NTFP are decreasing.
- For forest dependent communities, collection of NTFP is important for cultural and sociological values than for the commercial value. Commercial dependency on forest products, especially in this region, unlike most of researchers conclude, is the phenomenon of last quarter of this century. The commercial demand is from outside the village and may always increase.
- Villagers have been collecting variety of NTFPs for different uses in their daily life.

- There is a decreasing trend in use of consumptive NTFPs, i.e. edible, non-edible and medicinal NTFPs. However, in case of commercial NTFPs this is not holds true. The number of NTFPs commercialised is increasing over the years.
- Knowledge about the NTFPs is decreasing among the younger generations. Knowledge about the medicinal values is fast eroding, followed by non-edible and edible NTFPs.

Results of Ecological study:

- Collection of some of the highly commercialised NTFPs affected the forest resources. Increase of commercial demand leads to the increase in harvesting pressure on the forest resources. Increase of harvesting pressure leads to the destructive collection practices.
- The major reasons for destructive harvesting a practice is lack of tenureal security.
- Harvesting pressure is high in the region of open access area.
- Consumptive and medicinal NTFPs are collected for household consumption only. Hence, there is no harvesting pressure on the resources base. Also, these adds to the diversity of the resources.