Chapter 2

STUDY AREA

2.1. Introduction

The study area selected for the present investigation is Achankovil Forest Division, which comes under Kollam and Pathanamthitta districts of Kerala. The Achankovil River originates from this region and it is reckoned as the inter district boundary (CHANDRAN, 2009). This forest division is land-locked on north, west, and south by the reserve forests of Ranni, Konni and Thenmala Forest Divisions respectively, and on east by the Tamil Nadu state. The so called town Achankovil is a forest village, situated about 43 kms east of Punalur. The other nearby town is Shencotta, lying about 30 kms away on the eastern side in Tamil Nadu state. The Punalur – Alimukku – Achankovil - Shencotta road connects these towns. The tract lies within 9°0’ to 9°15’ north latitude and 77° 0’ to 77°16’30” east longitudes. A brief description of Achankovil forest and the life of Malampandaram tribe were sketched under appropriate heads.

2.2. Achankovil forests

This Forest Division was formed as per GO (MS) No: 50/1993/F & WLD dated 29.06.1993. The total area of the forest land including reserve forest, vested forest, revenue land and private land under the jurisdiction of this division is 291.75 sq.kms, comprising 3 ranges: (1) Achankovil Range: 97 sq.kms (2) Kallar Range: 79 sq. kms and (3) Kanayar Range. 115 sq. kms (RADHAKRISHNA PILLAI & MUHAMMAD, 2007). Range wise distribution of forest land is given in Table 1.

2.2.1. Topography: Achankovil forests area is situated on the windward face of the Western Ghats. The whole area is hilly, undulating, and highly rugged (HOSAGoudar et al., 2010). The lofty main Ghats with elevations varying from 85 m to 1923 m. Cliffs and higher slopes of the eastern side protect the forest vegetation from the adverse effects of violent dry northeastern winds. So far, it has a conspicuous saddle at Kottavasal (Mekkara Pass) that form the gateway to Tamil Nadu. Two distinct and prominent valleys are found within the study area: (1) Kallar Valley and (2) Achankovil Valley.
Table 1. Range wise distribution of the forest land of Achankovil forests.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of forest ranges</th>
<th>Reserve forest in ha (km²)</th>
<th>Vested forest in ha (km²)</th>
<th>Revenue land in TN in ha (km²)</th>
<th>Private lands in ha (km²)</th>
<th>Total in ha (km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Achankovil</td>
<td>8919.61 (89.19)</td>
<td>20.82 (0.20)</td>
<td>5.82 (0.05)</td>
<td>693.40 (69.34)</td>
<td>9639.66 (96.39)</td>
</tr>
<tr>
<td>2</td>
<td>Kallar</td>
<td>7923.27 (79.23)</td>
<td>Nil</td>
<td>Nil</td>
<td>24.34 (0.24)</td>
<td>7947.62 (79.47)</td>
</tr>
<tr>
<td>3</td>
<td>Kanayar</td>
<td>11587.88 (11.58)</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
<td>11587.88 (115.87)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>28430.77 (284.30)</td>
<td>20.82 (0.20)</td>
<td>5.82 (0.05)</td>
<td>717.75 (07.17)</td>
<td><strong>29175.17 (291.75)</strong></td>
</tr>
</tbody>
</table>

2.2.2. Altitude: The altitude varies from 85 m to 1923 m (Plate 3.a.). The altitude and related climatic factors of the area have pronounced influence on the type and composition of the vegetation and its growth. The wind effects will be more noticeable at higher altitudes. The highest peak is Devarmala with an altitude of 1923 m, which is located on the eastern boundary of the tract. There are numerous peaks and ridges of different heights and slopes of varying steepness (Radhakrishna Pillai & Muhammad, 2007). The major peaks and their highest elevations are listed in Table 2.

Table 2. Major peaks of Achankovil Forest Division, Western Ghats.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Peak</th>
<th>Height in m</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Devarmala</td>
<td>1923</td>
</tr>
<tr>
<td>2</td>
<td>Peppara</td>
<td>1927</td>
</tr>
<tr>
<td>3</td>
<td>Kottamala</td>
<td>1570</td>
</tr>
<tr>
<td>4</td>
<td>Thoovalmala</td>
<td>1443</td>
</tr>
<tr>
<td>5</td>
<td>Ramakkaltheri</td>
<td>1180</td>
</tr>
<tr>
<td>6</td>
<td>Rishimala</td>
<td>1072</td>
</tr>
<tr>
<td>7</td>
<td>Kalangamalatheri</td>
<td>996</td>
</tr>
<tr>
<td>8</td>
<td>Thalapparamala</td>
<td>991</td>
</tr>
<tr>
<td>9</td>
<td>Mattupetymala</td>
<td>907</td>
</tr>
<tr>
<td>10</td>
<td>Aramba peak</td>
<td>822</td>
</tr>
</tbody>
</table>
2.2.3. **Geology:** The major rock types of this tract are Magmatitic Gneissic, Charnockite and Khondalite of Archaean complex. Quartz, Garnet, Hornblende, Feldspars and Black Mica are also found as constituents in these formations. These rocks have suffered intensive deformation like faulting and folding during the different phases of orogeny, most probably due to tectonic disturbances. The general foliation trend shows NW - SE direction, with steep dip towards SW (RAJESH et al., 2001). The heavy rainfall and high temperature, causing alternate cycles of wetting and drying phenomena favour the process of laterization. The major soil types met with in this tract are Red loamy soil, Laterite soil, Alluvial soil, Sandy loam and Clayey soil.

2.2.4. **Climate:** Generally, the climate in this area is moderately hot and humid. The low-lying area enjoys a healthy and fairly moderate climate, with not much appreciable variation in either seasonal or diurnal temperatures. However, the interior areas experience a little more climatic variations. The three distinct seasons noted in this tract are cold, hot and wet seasons. The hottest season is noted during February to May and the coldest from December to January. In the upland area the temperature declines towards elevated regions. Variations in the radiant energy of the sun with respect to seasons, cloudiness, altitudes, latitudes and diurnal changes were also noted. The temperature varies from 20° C to 36° C in the lower stretches and 17°C to 30 °C at higher altitudes. Mist is common on the higher slopes during November to January.

2.2.4.1. **Rainfall:** Achankovil forests region get heavy rain showers from both south-west monsoon (June to mid-August) and north-east monsoon (mid-September to mid-November). Bulk of the precipitation is from the south-west monsoon. The average rainfall received during the last ten years is 2800.10 mm and the average number of rainy days in a year is 131(RADHAKRISHNA PILLAI & MUHAMMAD, 2007). Maximum rainfall is observed in June, July, and October and lowest during December, January and February months. The tract also receives pre-monsoon showers, preceded by thunderstorms, during April-May.

2.2.4.2. **Wind:** There are two prevailing winds blow on in this tract, following the monsoons. From March-April onwards, the tract experiences a light wind which will gradually develop into south-west monsoon round about the beginning of June. Westerly winds that blow during the south-west monsoon are mild and harmless. But, the easterly winds in months of January and February are much violent and strong.
They cause much havoc and damage to the forest crops growing on the hilltops. The desiccating effect of these winds cause much damage to the forests and may act as the driving force to spread the accidental forest fires.

2.2.4.3. **Humidity:** The profound rainfall and bright sunshine cause a humid and warm climate. Humidity varies from 65 to 98% in different localities in accordance with time and season. The highest relative humidity is noticed during the months of June, July, and August (south-west monsoon) and the lowest in February, when precipitation is kept minimum. General relative humidity is lower in the afternoon and highest during the early morning hours, when the atmospheric temperature will be the minimum.

2.2.5. **Rivers:** Achankovil forests are well drained by two major Rivers, the Kallar River (Plate 5.b.) and the Achankovil River (Plate 6.a.). The Achankovil River drains the southern part of the tract. The Kallar River on the other hand drains the northern part of the tract finally joins the Achankovil River at Mukkada. The converged and swelled up Achankovil River continues its westward flow through the territory of Konni forests.

The Kallar River is the main tributary of Achankovil River (RADHAKRISHNA PILLAI & MUHAMMAD, 2007). This name is derived from the rocky character of its bed. It effectively drains the Kallar valley, through a net work of rills and rivulets. Numerous streamlets and rills flowing down from the western slope of the main ridge between Aruvithalamottai and Uranimottai, join together to form the Mangala Aar. During its westward course, many more brooks such as Vazhaperiyar, Manjapparthodu, Kooramalathodu and Naadukanithodu converge and the watercourse swells up and Kallar River begins to emerge. The Kanayar River that originates from the northern ridges flows in a southerly direction and converges with Kallar River at Kanayarmoozhi. The Chittar River originating from the ridges near Kadamankunnu, drains the northwestern part of the valley, flows in a southerly direction, and converges with Kallar River at Pulikayam. Thenparathodu, Arambathodu and Muthuvanthodu that drain the northwestern part of the tract also join this River at the western boundary, making it a perennial watercourse of this tract. At Mukkada, on the western boundary, this River merges with Achankovil River.

Achankovil River: Its total length is 138 kms (CHANDRAN, 2009). Having an extend of 1340.400 sq.kms, the water shed area of this River spreads over 50 villages in

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Kollam, Pathanamthitta, and Alappuzha Districts. Its average annual sediment load is 77130 ton (CHANDRAMOHAN, 2006). The River emanates by the convergences of several streamlets flowing down from the slopes of Pasukkidaimettu, a ridge near Kottavasal (Elevation 700 m above MSL) on the western slope of the main ghats. During its westward course many more brooks from the northern side (Kumbavuruttythodu, Kalluruttythodu, Aruvikkarathodu, Kumbalamparathodu, Karadipparathodu) as well as the southern side of the valley (Pallikondan Aar, Muthalathodu, Chittarthodu etc) join the River. At Mukkada, it joins with Kallar River and continues its journey in the westwards to join finally with Pamba River at Veeyapuram.

2.2.6. Forest types: Achankovil division has a vast stretch of natural forests. The forest is spread an area of 291 sq.kms, comprising evergreen, semi-evergreen, and deciduous type of forests. As per the classification of the forest types of India (CHAMPION & SETH, 1968; FSI, 2011) the main forest types met with in this tract are:

- West coast tropical evergreen forests
- Southern hilltop tropical evergreen forests
- West coast semi evergreen forests
- Southern moist mixed deciduous forests
- Wet reed brakes, Bamboo brakes, Cane brakes, Myristica swamps and Grass lands with Shola patches

Besides these natural forest types, plantations of Teak, Match wood, Acacia, Rose wood and Pepper were also located in the forest area.

2.2.6.1. West coast tropical evergreen forests: The total area of evergreen forests is about 50 sq.kms. Vegetation is characterized by trees of closed multi strewed canopy, broad-leaved evergreen species of different ages, sizes, and shapes arranged in distinct tiers. Trees belonging to all age groups can be seen here arranged in different tiers. In species diversity, it is the richest habitat. The canopy will be dense and will remain closed always. This helps to retain the soil moisture, which induces incessant microbial activity in the upper layers of the soil and accumulation of the nutrient rich humus. Woody climbers and epiphytes are also common. Absence of grasses and bamboos is another characteristic feature of this forest type. Large patches of evergreen forests are found on the slopes of Kalangamala, Karingolimala and along the banks of Mangala.
River and Kanayar River. Some swamps occur along the inner patches of these forests. However, extensive degradation occurred due to human intervention was observed in Kumbavurutty, Manalar, Priya and Ambanar regions.

2.2.6.2. Southern hilltop tropical evergreen forests: The total area of this forest type comes around 500 ha. This forest type is characteristic with stunted and heavily branched evergreen trees with epiphytes. They occur in the well protected hill folds and hill tops with an elevation of more than 1000 m above MSL. No canopy differentiation is met within this region. The height of the trees generally attains 10 to 15 m, with shorter, irregular boles and somewhat round, dense and thick crowns to resist the wind effect. There is often very dense undergrowth of shrubs that may grow up to a height of 5 m. These types of forests occur in patches in the hill folds of ridges near Thuvalmala, Eramuchady, Aramba and Kanayar.

2.2.6.3. West coast semi evergreen forests: The total area of semi evergreen forest in Achankovil forest division comes around 35 sq. kms. It comprises closed high forests with a fair mixture of evergreen and deciduous species representing a transitional stage between the evergreen and deciduous type of vegetation. These types of forest are seen adjoining the evergreen belt on the banks of Rivers and on the hill slopes. They occur in localities where the annual rain fall is between 2000-2500 mm. The number and diversity of species is high, but less when compared to the evergreen forest types. In the upper reaches where this type merges with the evergreens, the proportion of evergreen species is much higher. But lower canopies are dominated by evergreen species. Generally, the deciduous species forms nearly 40% of the growing stock in the upper canopy. Canopy is also less dense than that of evergreen. Bamboos as well as species belonging to leguminous family occur abundantly. Large woody climbers, epiphytes, ferns, and mosses are also found in this region. Undergrowth is mostly evergreen and quite dense. These forests are located at interior localities viz., Panamthoppu, Ezhukoppam, Chittar, Amarakkathodu and Manalar. The slopes of hillocks like Thuvalmala, Rishimala and Motiramala support this type of forests.

2.2.6.4. Southern moist mixed deciduous forests: This type of forest is characterized by the predominance of deciduous trees that will become totally leafless with the advent of the dry season. The trees are characterized by very thick, rough and fissured bark which shed off in flakes. Some of the trees bear thorns and spikes. Plank
buttresses and cauliflory are not generally observed. Large woody climbers were also observed in this forest. Abundant and luxurious growth of bamboos and grass is another noteworthy feature of this forest type. Occurrence of invasive species and weeds were also observed which indicates threats due to human intervention. Many important timber species like Rosewood, Teak, Terminalia, Grewia and Xyilia were also sited in this region. It also forms the store house of species that yield important non timber forest products and several medicinal species. The vegetation is dominated by plants belonging to families viz., Verbenaceae, Tiliaceae, Lythraceae, Rubiaceae, Leguminoseae, Combretaceae and Bignoniaceae.

2.2.6.5. Wet reed brakes, Bamboos and Cane brakes: Reed brakes are found in the slopes of higher hills, stream banks and roadsides, where the moisture and light conditions are highly conducive for its luxuriant growth. Its population is also observed in the nearby plantations. Secondary origin of reeds was observed along the interstate boundary near the forest checking station of Kottavasal. Extensive patches of reeds were also observed in Ezhukoppam, Pallikondan and Pasukkadatheri regions. The major reed species found in this region are *Ochlandra travancorica* and *Ochlandra wightii*.

**Bamboos:** Dense bamboos population was observed in the natural forests as well as in plantations. The major species of bamboos located at this region is *Bambusa bambos*. The localities like Manalar, Pallikondan, Ezhukoppam, Koorampara and Usmankunnu support dense thickets of bamboo growth. These areas serve as a feeding ground for elephants.

**Cane brakes:** Cane brakes are found along the hill slopes and stream banks, where damp conditions exist. Scattered clumps of cane are also found inside the plantations. Cane population is abundant in those regions were previous attempts were made to augment its growth by artificially planting. The prominent cane species found in this region are: *Calamus gamblei*, *C. hookerianus*, *C. travancoricus* and *C. vattayila*.

2.2.6.6. Grass lands and Shola forests: Many grass lands with areas ranging from 0.5 ha to more than 30 ha were located in this tract. Extensive grassy patches were observed in the hill tops near Thuvalmala. The grassland near the Kottavasal gap is exposed to dry winds blowing from the east and hence, the precipitation is comparatively low in this region. The tops of the ridges of the main ghats are capped...
with the luxuriant growth of grasses and herbs. These grass lands gradually merges with the Shola forests (Climax stage of vegetation). In addition to three prominent grass lands, numerous small grassy patches with scattered tree growth were observed in this region.

### 2.2.6.7. Myristica swamps

Four small patches of myristica swamps with 30 m² area were found in the upper Kumbharuvatty regions (Plate 8. a. & b.). The dominant species identified from these swamps are: *Myristica beddomei*, *M.malabarica*, *Gymnacranthera farquhariana* and *Knema attenuata*. Dense undergrowth of spiny plants of genera Pandanus and Calamus and herbs of Zingiberaceae, Urticaceae, Aroidae and Acanthaceae were also observed.

### 2.2.6.8. Forest plantations

To meet the increasing demand of the soft wood industries, various plantations were raised in forest division of Achankovil. Achankovil Teak is the trade name of a highly durable teak wood and is grown as a major plantation crop in an area of 2383.294 ha. Total area earmarked for the plantations of various crops (Teak, Match wood, Acacia, Rosewood, Reeds, Bamboos and medicinal plants) comes around 12780.651 ha.

### 2.3. Ethnic group

The major ethnic group found inside the Achankovil forest belongs to *Malampandaram* tribe. They belong to foraging community and make their livelihood by minor hunting, fishing and collecting Non-Timber Forest Products (NTFPs)/fuel wood. Nowadays, they are deployed for various forestry works of Forest Department.

**Settlements:** The majority of the *Malampandarams* are nomadic and their stay at a particular camping site or a rock shelter ranges from two to sixteen days, with seven to eight days being the average, although specific families may reside in a particular locality for about six to eight weeks. Nomadic movements, in the sense of shifting camp, usually vary from half-kilometer to 6 kilometers, though in daily foraging activities the *Malampandaram* may travel several kilometers. Temporary settlements of *Malampandarams* were located along the hilly streams of Sabarimalathode, Kallar valley and Pulikkayam. The settlements consist of two to six temporary leaf shelters, each made from a framework of bamboo that is supported on a single upright pole and
is covered by palm/grass leaves. Rectangular lean-tos were also constructed using two upright poles. Such settlements are found scattered throughout the forest ranges except in the interior forest area.

Nowadays, residential groupings (settlements) are observed among Malampandarams. A typical settlement consists of about three to ten huts, widely separated from each other. However, they live in these settlements only on semipermanent basis. The huts are simple, rectangular constructions with split-bamboo screens and grass-thatched roofs; many are little more spacious than roofed shelters. Near the vicinity of their settlements, fruit-bearing trees (Mango, Jack tree and Tamarind) and small scale cultivations (Cassava, Plantain and Ginger) were noticed. The settlements are often some distance away from village communities (with their multi-caste populations) and have no communal focus like religious shrines.

**Permanent settlements:** Efforts were made by the government during last two decades to provide permanent settlement facilities to 45 Malampandarm families (GO (MS) No: 88/1997 Revenue Department dated 11.12.1997) at a locality near Chuttipara. The government earmarked 36.4203 ha of land for tribal settlement. 20 ha of land were developed into Rubber plantations with the assistance of Tribal Welfare Department and the Rubber Board. The original residents have their due share in this plantation. The custodians derive their sustenance from the income generated by maintaining the plantation under their possession. They practice agriculture in the land allotted to them and attend the forestry operations as casual labourers. The government provides various employment opportunities to the tribes under the Vana Samrakshana Samithy (VSS) and Eco Development Society (EDS) schemes for planting trees, engaging in fire protection and eco-tourism activities. About 35% of male members were engaged in timber loading activities. However, these settlers have an affinity to nomadic way of life. They often lead a nomadic way of life during the summer period for collecting non timber forest products. At present 119 families reside in this colony. The details of the population in the colony are: (1) - Number of Families: 119 (2) - Total members: 355 (Male - 174, Female - 181) (3) - Adult Members: 270 (Male- 136, Female- 134) (4) - Number of Children: 85 (Male-38, Female- 47) (5) Literates in the colony: 202 (Male-124, Female- 78) (Literacy Percentage - 56.89 %) (6) Categorization based on Qualifications: Degree holders-3, SSLC Passed: 4 (7) Government Employees: 3 (RADHAKRISHNA PILLAI & MUHAMMAD, 2007).
2.3.1. Socio-cultural aspects of Malampandaram tribe

A few anthropological studies on Malampardarms were reported by earlier researchers (MUKHERJEE, 1954; FÜRER-HAIMENDORF, 1970; MORRIS, 1981, 1986; KRISHNA IYAR, 1937). As revealed from these studies, the tribe shows cultural similarity with south Asian tribe of hunters and food gatherers viz., Chenchus and Veddas of Sri Lanka. They belong to Dravidian lineage and are considered to be the descendants of Tamiloid stock. Resemblances were noted with Paliyan tribes of southern India with respect to their physique, socio-cultural and religious aspects. They show resemblance with Nigroid race in terms of their black or dark brown skin complexion, flat nose and thick lopes. The males have tuft of curly hairs, goatee beards and have scanty hair growth on their chest. All the above mentioned characteristics show their affinity to the most archaic human stratum of south Asia. In short, Malampandarm tribe is reckoned as one of the aboriginal tribes in Kerala, dependent on natural resources for their livelihood.

There is little or no marriage ceremony and there is no formal arrangement of marriage partners, although young men tend to establish prior ties with their prospective parents-in-law. Inbreeding is common among them. No sexual taboos or sex crimes were reported from this group. Besides monogamy, polyandrous and polygynous conditions were also prevalent in this group. As reported by FÜRER-HAIMENDORF (1970), marriages are brittle and older Malampandarm have experienced a series of conjugal partnerships during their lifetime. A cohabiting couple forms an independent household on marriage, but the couple may continue as a unit in the camp aggregate of either set of parents.

2.3.1.1. Family and socialization

The conjugal family is the basic economic unit. Members of a family may live in separate leaf shelters (though spouses share the same leaf shelter) and may form foraging parties with other members of a camp aggregate. The food and other forest products gathered by the individuals of the group were finely pooled together and prepare common food in hearth. Meat, tobacco, and income generated from honey-gathering expeditions were also shared among the members. Since Malampandarm possess no land or material possessions, little emphasis is given to inheritance of material assets. They give utmost importance to individual autonomy and self-sufficiency, and hence children are expected to assert independence. Children collect
forest produce for trade and will often spend long periods away from their parents. There are no ritual worshippers, micro-castes, nor any other sociopolitical/communal organizations or corporate groupings above the level of the conjugal family. Senior citizens in the settlements are recognized as Muttukani (headmen) to facilitate efficient communication with the community. At any cost, social control is maintained in their community. Highest premium is given to avoid aggression and conflict is an appreciable value system. As reported by MORRIS (1986), Malampnadarm tends to avoid conflicts by separation and by flight.

2.3.1.2. Rituals and ceremonies

The Malampandaram has no shrines/temples and do not observe any formal ritual practices and have no specific religious affiliations. They do not give much importance to ritualize the life cycle events such as birth, puberty and death.

Religious beliefs of Malampandaram is distinct in being un-iconic (i.e., not venerating the images of deities, but the crests of mountains) and is focused on the contacts, through possession rites of localized Mala devi (hill spirits). However, occasional ritual offerings were made by people of new generation on festive occasions like Onam and Mandalapooja (December) at village temples of God Aiyappan and Murugan or at local shrines established in forest areas by the labourers. They are not observing the proper rituals of Hinduism. The spiritual beliefs of the Malampandaram are: (i) Mala devi (hill spirits) and (ii) Chavu (ancestral ghosts or shades). Mala devi is equated to a supernatural spirit associated with particular hill or rock cliffs. It is believed that, every 8 square kilometers of forest has a Mala devi and her spiritual power guards the forest. An element of forest conservation is implied in this sort of nature worship. The concept of family worship is noted in Chavu. This ancestral shade are linked to particular families, but like the hill spirits, their influence is mainly beneficent, giving protection against misfortune and offering advice in times of need. As reported by MORRIS (1981), they also believe in Arukula, the spirits of persons who died in accidents (falling from a tree or being killed by a wild animal).

Instead of religious practitioners Malampandarams have Tullukara (men and women having the ability to contact with spirits). Tullukara means possession dancers, and at times of misfortune they are called upon by relatives or friends to ameliorate their problems.
The important religious ceremony is the possession dance, in which the *tullukara* goes into a trance state induced by rhythmic drumming and singing and incarnates one or more of the hill spirits or an ancestral shade. During the *tullu* dance the cause of the misfortune is ascertained (usually the breaking of a taboo associated with the menstrual period) and the help of the supernatural is sought to alleviate the sickness or misfortune. No formal burial ceremonies are observed among the Malampandarams. Corpse was not buried in the ground, instead it is allowed to decay naturally in the wild forest to form part of the mother earth.

2.3.1.3. Cultural aspects

In contrast with other Indian communities, the Malampandaram has few art forms. Nevertheless, their singing is highly developed, and their songs are varied and elaborate and include historical themes.

Majority of Malampandarams are illiterate and are reluctant to undergo formal schooling. Living in the hills that separate the two neighboring states viz., Kerala and Tamil Nadu, the Malampandarams have a mixed dialect of Tamil and Malayalam. It is believed that their language has certain elements of pro-dravidian language.

Nowadays, most of the Malampandarams live in the forest environment and have little day-to-day contact with other communities. However, historical evidences suggest that Malampandaram has a long history of contact with other forest communities of south India viz., Paliyan, Kadar, Kannikar and Mala Ulladan. In earlier period, they had regular trade contacts for marketing Cardamom, Bamboo, Ivory, Honey and Wax with the neighboring agriculturalists, either through barter system or through mercantile trade. References of these tribes inhabited in the forests of the Western Ghats (around the second century BC) were found in the writings of Tamil poets of Sanagam period. The importance of their trade heritage at the beginning of the nineteenth century was also mentioned in the writings of the Abbé Dubois and in the economic survey of the former Travancore State made at that time by two British officials, Ward and Conner (Krishna Iyer, 1937). Forest trade still serves to link the Malampandaram to the wider outer society.

2.3.1.4. Food requirements and hunting activities

Although majority of the Malampandarams are nomadic hunter-gatherers, a minority them are settled agriculturists. Their staple food consists of various kinds of...
yam (collected by means of digging sticks), nuts of *Kalinga* (*Cycas circinalis*), wild fruits and vegetables. Food items viz., Cassava, Rice and essential condiments were purchased from the nearest market at Ariyankavu and Achankovil. Hunting is a collective effort of family members aided by a trained dog. Hunting of small animals such as squirrels, monitor lizards, crabs and fishes are made to meet their food requirements. There is a belief among them that hunting of monkey and buffalo may bring misfortune. The ecological significance of such beliefs and myths among *Malampandaram* should be subjected to detailed investigation.

**2.3.1.5. Traditional botanical knowledge**

*Malampandarams* collect a large number of non-timber forest products including medicinal plants and under utilized wild edible fruits. Detailed description of their traditional uses are dealt under Chapter 5: Results and discussion.

**2.4. Eco tourism potential**

Achankovil forest area has tremendous potential to develop as an ecotourism destination. The scenic beauty of waterfalls (Kumbhavurutty, Manalar and Kottavasal), magnificent grassland and hills (Thoovalmala and Kottavasal) and the Riverine beds (Kallar and Pallimundan) can be managed in a sustainable way to promote sustainable ecotourism.

**2.5. Achankovil Shear Zone (AKSZ)**

As revealed from geological evidences, the Precambrian of Madagascar is divided into two sectors viz., Surma shear zone and the Achankovil shear zone (*WINDLEY* et al., 1994).

Achankovil shear zone lies between Madurai Granulite block in north and Trivandrum Khondalitic block in south. It is the continuum of Mozambic belt (Pan African orogeny) of the Gondwana mass (*DISSANAYAKE & CHANDRAJITH*, 1999). It extends to an area of 8 to 22 km width, which passess through the Achankovil forests (Plate 4. a., b. & c.). The rock type and its geneses of Achankovil shear zone shows affinity to the remnants of the Mozambic belt viz., Madagascar and Sri Lanka. Biological linkages in between these two geographical segments have great significance and hence should be subjected to further investigation.
2.6. River Link Project

Interstate water sharing is highly debated issue in recent days. The objective of River link project is to ensure the availability of water in water deficit areas from the Rivers having surplus water. It also appears to promote national integration and a fair sharing of the country’s natural water wealth (Mehta & Mehta, 2013).

One of the important multi-purpose projects proposed and designed by the National Water Development Authority (NWDA) is the Pamba- Achankovil – Vaipar Link Canal Project. The project report came out in 1995 and the work was proposed to be completed by 2016. This project envisages to link the Pamba and Achankovil Rivers of Kerala with the Vaipar River of Tamil Nadu and it aims to divert the water available in Kerala Rivers to Tamil Nadu through tunnels and canals by constructing three huge dams. The Punnamedu dam, having a height of 150 m and a reservoir capacity of 208 million cu.m, is proposed across Pamba-Kallar River which comes under Ranni Forest Division. Achankovil- Kallar dam, having a height of 100 m and a reservoir capacity of 502 million cu.m, is proposed across the Kallar River. Achankovil dam, having a height of 35 m and a reservoir capacity of 33.86 million cu.m is proposed across Achankovil River at the locality called Thurai, and it comes under Konni Forest Division. These three dams will be inter-connected with a 9 km long tunnel through dense forests. A power house capable of producing 500 mega-watts of electricity will be built near the – Achankovil Kallar dam. It aims to take 634 million cu. m of water from these reservoirs to Tamil Nadu through a 9 km long underground tunnel cutting across the Western Ghats. The water will then be taken to ‘Aligar Odai,’ a tributary of Vaipar, through canals and it will be stored in a dam built across Vaipar River. This water will be used to irrigate 91,400 ha of agricultural lands in Tamil Nadu besides generating electric power. The state government of Kerala and the environmental activists have denounced the project and strongly objected its implementation, as it is highly detrimental to the interests of the State. Achankovil and Pamba Rivers are considered as the ‘life-line’ of Pathanamthitta and Alappuzha Districts. The mere existence of Kuttanadu, the granary of Kerala is solely dependent on the discharge through these two Rivers. The discharge is higher in the Achankovil River than in the other Western Ghats Rivers, such as the Bharathapuzha and Chaliyar (Balakrishna Prasad & Ramanathan, 1999). If the flow in these two Rivers turns feeble or ceases...
due to the construction of dams at the upper region, water in these areas will become saline and it will result in the total annihilation of the local flora and fauna. If the flow of water is not maintained in Pamba River, it may adversely affect the holy bath of pilgrims and further worsen the pollution of Pamba River. The argument of NWDA regarding surplus water in the above Rivers is contradictory to the result of a hydrological study conducted by Centre for Water Resources Development and Management, Kozhikode. According to CWRDM experts, the present discharge through these Rivers is only 12582 million cu.m of water and 15018 million cu.m of water is essential to keep the lower areas of the watershed free from contamination by saline water. Moreover, by implementing the construction of the proposed dams and reservoirs, there are chances for large extents of virgin forests to get submerged along with a part of the Achankovil village, from where the residents are to be evacuated. It also leads to the extinction of the only aboriginal Malampandarms from their natural habitats. According to NWDA, 2004 ha of forest areas will be lost. The Punnamedu reservoir in Pampa will submerge an area of 440 ha of forest area. The area estimated to be submerged at Achankovil-Kalar is 1240.7 ha comprising 871.7 ha of virgin forests and 369 ha of teak forest plantation. The Achankovil dam will submerge an area of 323 ha comprising of 86 ha of virgin forest, 218 ha of forest plantation and 19 ha cultivable land. Large number of persons should be evacuated from the Achankovil village (KRISHNAKUMAR, 2012). The rehabilitation of the affected population is yet another social issue to be tackled. If the project is implemented, Agasthyamala-Periyar elephant corridor may get fragmented. The actual loss of biodiversity with special reference to rare, endemic plants and animals will be much greater than the benefits envisaged by implementation of this project. There are chances for salt water intrusions from Arabian Sea that will alter the ecology of Vembanad Lake. There will be acute scarcity of water at the lower stretches of Alapuzha, Pathanamthitta and Kottayam districts. There will be shortage of water for the functioning of Kayamkulam thermal power station. Another man-made gap will be created in southern Western Ghats. The construction of roads to various work sites, clearings for storing yards/providing dwelling facilities to labourers and officials will necessitate the destruction of virgin forests of Achankovil.
PLATE 1: a. Achankovil Forest Division marked in Agasthyamala Biosphere Reserve.
PLATE 3:  

a. Elevation map of Achankovil forests;  

b. Rivers and Streams in Achankovil Forest Division.
PLATE 4: a. Gondwana reconstructed; b. Achankovil Shear Zone; c. Central line of Achankovil Shear Zone marked in the map.
PLATE 7: a. Thoovalmala (Grassland); b. Kottavasal (Grassland).
PLATE 8: a & b: Kumbaruvatty (Myristica swamp)
PLATE 9: a. Kalanga marsh (Swamp); b. Chittarmoozhi (West coast semi evergreen forests).
PLATE 10: a. Aramba (Southern hilltop tropical evergreen forests); b. Manalar (Southern moist mixed deciduous forests).
PLATE 11: a. Kanayar, a view from Devarmala (Southern hilltop tropical evergreen forests); b. Achankovil (Teak plantation).
2.7. Summary

Achankovil forest has a crucial role in shaping the ecology of Agasthyamala Biosphere Reserve. Factors such as Achankovil Shear Zone (AKSZ), Achankovil River and Kottavasal gaps are significant geological factors in deciding the destiny this fragile ecosystem.