FOREST INVENTORY OF SACRED GROVES IN MEGHALAYA
VOLUME – III
YEAR: 2023-2024



FOREST RESOURCES SURVEY DIVISION
WORKING PLAN, RESEARCH & TRAINING AND
DISTRICT COUNCIL AFFAIRS WING
FOREST AND ENVIRONMENT DEPARTMENT
GOVERNMENT OF MEGHALAYA



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Shri Conrad K. Sangma
Hon'ble Chief Minister & Minister in-charge
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Govt. of Meghalaya



FOREWORD

Conservation of nature and natural resources has been an integral part of cultural ethos of tribal communities in Meghalaya. Communities have protected and conserved several tracts of forests for religious and cultural belief. The Meghalaya is a home to several such undisturbed virgin forests commonly known as 'sacred groves'. Local tribal communities believe that their deity who guards them from natural calamities and diseases as well as provide for their well-being resides in these forests.

Sacred groves which have remained undistributed for centuries are repositories of rich biodiversity. They are the last refuge for a large number of endemic, endangered, rare and relic native taxa. Sacred groves are the last bastion where rich culture and customs of indigenous communities are still preserved. Sacred groves are a living example of the strong symbiotic relation between forests and the local tribal communities in Meghalaya.

With the gradual subordination of spiritual, cultural and religious beliefs by materialistic needs, traditional faith and cultural ethos which helped in preservation of sacred groves are gradually eroding. Erosion of the faith and reverence is resulting in degradation and shrinkage of several sacred groves. Absence of a proper regulatory and funding mechanism for conservation, protection and scientific management has hastened the pace of degradation of sacred groves.

It gives me immense pleasure to learn that Working Plan, Research & Training and District Council Affairs Wing in the Forest and Environment Department is undertaking inventory of sacred groves in the State and is bringing out third volume of a Report containing details of twenty four sacred groves. I am sure the Report will make residents of the State aware of importance of sacred groves and will motivate them to join hands with the Forests and Environment Department for conservation and protection of sacred groves.

I congratulate the Principal Chief Conservator of Forest, Working Plan, Research & Training and District Council Affairs Wing in the Forest and Environment Department and his entire team for their initiative and hard work to publish this Report.

(Conrad K Sangma)

Shri Pravin Bakshi, IAS
Commissioner and Secretary
Forest and Environment Department
Govt. of Meghalaya



MESSAGE

Sacred Groves are large vegetative areas rich in biodiversity protected by communities living around them for religious and cultural purposes. They serve as conservation sites for many valuable crops and medicinal plants which act as a gene pool. They also help in conservation of vulnerable wildlife species. Sacred groves of Meghalaya are live examples of rich tradition of biodiversity preservation in the State. Sacred groves showcase rich conservation practices of local tribal communities which have been part of their traditional ethos and passed on from generations to generations.

While many sacred groves are being preserved by the communities with full religious fervour, some sacred groves reflect neglect, degradation and degeneration. Vanishing of species in many of the sacred groves due to various anthropogenic disturbances like alteration of natural habitat, excessive utilization, pollution and invasion of alien invasive species is so fast that many precious taxa may disappear even before they are identified, properly documented and their scientific, cultural, therapeutic and commercial values are discovered.

I am happy to learn that Working Plan, Research and Training and District Council Affairs Wing in Forest and Environment Department has taken initiative to bring out third volume of a publication on sacred groves. I sincerely hope that this publication will be a very significant documentation of the rich cultural and conservation heritage of the State and will be useful for policy makers, forest administrators, researchers and common residents of the State.

I congratulate the Principal Chief Conservator of Forest, Working Plan, Research & Training and District Council Affairs Wing and his entire team for their efforts in compiling valuable information about the sacred groves.

(Pravin Bakshi)

Shri R. S. Gill, IFS
Principal Chief Conservator of Forest & Head of Forest Force
Forest and Environment Department
Govt. of Meghalaya



MESSAGE

Sacred groves are forests which are belived to house spiritual deities as per the Khasi and Jaintia culture. They are also known as "Nature's Museum". The Khasi, Jaintia and Garo are known to be living in sync with nature, because their culture and custom believed the divine connection with nature. Sacred Groves of these hills and slopes are proof of awareness of ancient environment conservation concept nurtured by them. Sacred Groves are store house of rich biodiversity. Preservation and conservation of the Sacred Groves in Meghalaya is a good in-situ conservation strategy which in turn will enable the rare biodiversity of the state to be conserved.

It gives me immense pleasure to learn that Forest Resources Survey Division, Shillong under the aegis of the Climate Change, Research & Training Wing of Forest & Environment Department is continuing the inventorisation and documentation of Sacred Groves in Meghalaya and has added another volume of the publication titled **"Forest Inventory of Sacred Groves in Meghalaya"** ***Volume III***.

I congratulate the success achieved by the Forest Resources Survey Division, Shillong under Climate Change, Research & Training Wing of Forest & Environment Department Meghalaya. I hope this publication will help in preservation and conservation of Sacred Groves in Meghalaya.

(R. S. Gill)

Shri Harish C. Chaudhary, IFS
Principal Chief Conservator of Forest, Working Plan,
Research & Training and District Council Affairs
Forest and Environment Department
Govt. of Meghalaya



PREFACE

The picturesque landscape of Meghalaya is dotted with patches of undisturbed, virgin forests protected by the local tribal communities for centuries for religious and cultural practices. These forests, commonly known as sacred groves are rich repositories of biodiversity and cultural heritage. Sacred groves provide a number of ecosystem services such as reduction in soil erosion, maintenance of hydrological cycle, ensuring availability of water free from contamination and natural dispersal of seeds. The sacred groves also help in maintaining health of ecosystem, reduce habitat destruction and conserve the viable population of pollinators and predators. The value of these undisturbed, virgin forest patches for biodiversity conservation and carbon sequestration has gained increasing attention with the rising impacts of climate change. Area of sacred groves varies from less than a hectare to more than 200 hectares.

Sacred groves in Meghalaya are known as *Law Lyngdoh, Law Niam, Khloo Blai, Law Kyntang* and *Kosi* depending on the place where they are located. Sacred groves in Khasi and Jaintia Hill regions of the Meghalaya enjoy legal protection under the United Khasi and Jaintia Hills Autonomous District (Management and Control of Forests) Act, 1958. The Act mandates survey, mapping and registration of each sacred grove with the concerned Autonomous District Council. Majority of sacred groves have however, not been surveyed, mapped and registered. Consolidated information about area, floral and faunal diversity, growing stock, associated customs and cultural practices and management of sacred groves in the State is not available.

To facilitate long term conservation, protection and scientific management of sacred groves, Working Plan, Research & Training and District Council Affairs Wing in the Forest and Environment Department through the Forest Resources Survey Division has initiated survey, mapping and inventory of growing stock in sacred groves in the State. Volume-I and Volume-II of a Report on Forest Inventory of Sacred Groves of Meghalaya, each containing details of 20 sacred groves, have been published in the year 2017 and the year 2022 respectively. This Volume-III of the publication contains details of twenty four sacred groves located in East Khasi Hill district.

I believe that the publication will serve as a ready reference for researchers and officials of the State Government and Autonomous District Councils and will help acquaint everyone with ecological, economic, religious and cultural importance of sacred groves. It is my fervent wish that this publication will inspire nature lovers and young researchers in the northeast India to take up research to unravel and document various types of ecological services provided by sacred groves and to suggest pragmatic and cost-effective solutions for conservation, protection, restocking and rejuvenation of sacred groves. The publication may also serve as base document for formulation and registration of carbon credit proposals.

(H.C. Chaudhary)

Shri Sanwar Mal Swami, IFS
Divisional Forest Officer,
Forest Resources Survey Division,
Forest and Environment Department
Govt. of Meghalaya



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I am grateful to Shri Conrad K. Sangma, Hon'ble Chief Minister and Minister in-Charge Forest and Environment Department, Government of Meghalaya for his support and guidance in bringing out this publication.

I appreciate and acknowledge the whole hearted administrative support received from Shri Pravin Bakshi, IAS, Commissioner and Secretary to the Government of Meghalaya and Shri R.S. Gill, IFS, Principal Chief Conservator of Forests and Head of Forest Force (HoFF), Meghalaya for publication of this Report.

Publication of this Report would not have been possible without the constant support and guidance by Shri H.C. Chaudhary, IFS, Principal Chief Conservator of Forests, Working Plan, Research & Training and District Council Affairs, Meghalaya. I place on record my heartfelt thanks and gratitude to Shri H.C. Chaudhary for his leadership.

I express my gratitude to Shri. B. Wahlang, IFS, Shri Jiswordy Dkhar, MFS and Shri F.S. Wann. MFS for their initiative and hard work during the field work and for their gesture to allow me to have the honour to bring out this publication.

I convey my heartfelt gratitude to Lyngdohs and other Management Bodies of these sacred groves for their consent, help and support in mapping of sacred groves and collection of field inventory data.

I am thankful to Shri. J. R. B. Blah, Range Officer and other staff of Forest Resources Survey Division for their hard work in collection and analysis of field data. I am also thankful to Shri. Arkin Shngainlang Nongbri; Smti. Bemeness Lyngdoh and Smti. Senobia Chyne for their dedication in data entry, providing assistance in analysis of field inventory data and typing of this document.

I appreciate the cartographic assistance provided by Shri Jerry F. Kharkongor, Analytical Assistant, Ms. Angie Lyngdoh Tron and Ms. Mouriucia Kharsohtun, both working as GIS Expert in office of the Principal Chief Conservator of Forests, Working Plan, Research & Training and District Council Affairs.

(Sanwar Mal Swami)

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Chapter –I

SACRED GROVES IN MEGHALAYA: A BRIEF OVERVIEW

1.1 INTRODUCTION

Meghalaya is known for an age old conservation practice of the local communities in the form of preserving sacred groves and several other community owned forests. These untouched virgin forests, also known as "Nature's Museum"are believed to house spiritual deities of the local communities. Residents of Meghalaya belonging to Khasi, Jaintia and Garo tribes are known to have lived in close harmony with nature, as their culture and custom believe in the divine connection through nature. According to the estimates by different academicians and researchers, number of sacred groves and forest sowned and protected by communities and clans in the Meghalaya is likely to be more than four hundred. These sacred groves and community and clan owned forests are repository of rich flora and faunal diversity. Traditional knowledge, beliefs, stories, rituals and faith of the people are associated with these sacred groves and forests.

In spite of huge ecological and economic importance, a few scientific studies have only been undertaken on sacred groves and forests owned by communities and clans. A very little is known about flora, fauna, growing stock, carbon stock *etc*. in these forests. To bridge this information gap, the Forest Resources Survey Division under the Working Plan, Research & Training and District Council AffairsWing in the Forests and Environment Department, Meghalaya has initiated detailed forest inventory of sacred groves and forests owned by communities and clans in the State in a phased manner as a continuing work over the several years. Inventory includes boundary mapping, listing of all floral species including herbs, shrubs and bamboo species, assessment of growing stock and diameter class wise distribution of trees. Inventory has been done using a systematic random sample design for each sacred grove and forest owned by communities and clans separately in random sample plots. Sample plots of 0.2 Ha.were laid on the ground for measurement of the identified parameters. Methodology of inventory has been described in detail in a later section of this document. In the first two volumes published earlier, inventory of 40 sacred groves located in Khasi and Jaintia Hills region of the State have been documented. This volume contains inventory results and other observations for 24 additional sacred groves and forests owned by communities and clans.

1.2 GENERAL INFORMATION ON SACRED GROVES OF MEGHALAYA

A good example of the traditional practices by various indigenous communities of the world in the conservation and protection of small forests patches is to dedicate these forests to local 'deities'. Such forest patches are called "Sacred Groves". Sacred groves are the tracts of virgin forests that are left untouched by local inhabitants for religious beliefs and customs. Sacred groves harbour rich biodiversity and are protected by the local communities for their culture and religious beliefs and taboos believing that their deities reside in them.

Sacred Groves and other forests owned and protected by communities and clans are in existence in Meghalaya since time immemorial, much before the advent of Christianity. Local tribal residents believe that *'U Basa'* or goddess dwells in these thick, virgin forests. Local communities

believe that pleasing the *'U Basa'* through sacrifice of animals such as pig, goat, cow, buffalo and fowl *etc.* together with performance of dances, the *'U Basa'* will protect their villages or clans from famine, bad omens and other sufferings. In the past, people did not dare to enter or cause any harm to these forests. It is interesting to know that even today, in some sacred groves, no one is allowed to even pluck twigs of a plant, use a steel, wire, nail or any other metallic object, wear shoes or slippers, take photograph or attend nature's call. In some sacred groves rituals are performed regularly even today.

All forms of vegetation in a sacred grove are believed to be protected by the reigning deity, and any disturbance is a taboo (Vartak and Gadgil 1973 Khan et al. 1987, Khiewtam and Ramakrishnan 1989). Sacred Groves are used as indicators for potential natural vegetation (Schaaf 1998) and are vital for the well-being of the society. Sacred groves and sacred trees serve as a home for birds and mammals and hence, they indirectly help in conservation of living organisms (Islam et al. 1998). Even before starting the survey works in some selected sacred groves, the Lyngdoh (Priest) has to initially perform rituals to seek permission from the *'U Basa'* to allow field crew to enter and carry out the survey works.

With the advent of Christianity coupled with improvement of education system and exposure to western lifestyle, people are gradually drifting away from the traditional beliefs of *'U Basa'*. This trend perhaps led to degradation in some sacred groves. In many sacred groves and other community and clan owned forests, religious rituals are no longer performed. Some of the sacred groves are plagued with encroachments, illegal felling of trees and invasion by unwanted weeds and invasive species which has in turns destroyed these pristine and relic forests of the State.

Provisions of the Sixth Schedule to the Constitution extend to the almost entire Meghalaya, except a small area falling under jurisdiction of the Shillong Municipal Board. The Sixth Schedule provides for constitution of a Districts Council in each of the three Autonomous Districts in Meghalaya namely; Khasi Hills Autonomous District, Jaintia Hills Autonomous District and Garo Hills Autonomous District. As per paragraph 3 of the Sixth Schedule, District Council for an autonomous district in respect of all areas within the district shall have power to make laws with respect to, among others, management of any forest not being a reserved forest.

In exercise of the powers conferred by paragraphs 3 of the Sixth Schedule, the United Khasi Jaintia Hills Autonomous District Council (Management and Control of Forests) Act, 1958 has been enacted. Provisions of the Act extend to the entire Khasi and Jaintia Hill regions in the State. Section 3 of the Act classifies the forests under control of the Autonomous District Council into eight categories. As per the said classification, forests set apart for religious purpose and hitherto managed or controlled by the Lyngdoh (*Priest*) on other person or person to whom the religious ceremonies for the particular locality or village or villagers are entrusted are known as *Law Lyngdoh or Law Kyntang or Law Niam.* In Jaintia Hills these forests are also known as *Khloo Blai* by the local communities. Similarly, the village forests hitherto reserved by the villagers themselves for conserving water, etc; for the use of the villagers are known as *Law Adong* or *Law Shnong*. Forests belonging to an individual clan or joint clans which are grown or inherited such clan or clans in a village or common raj land are known as *Law-Ri-Sumar*.

As per the United Khasi Jaintia Hills Autonomous District Council (Management and Control of Forests) Act, 1958, *Law Lyngdoh, Law Kyntang* and *Law Niam*, are managed by the Lyngdoh (*Priest*) on other person or person to whom the religious ceremonies for the particular locality or village or villages are entrusted in accordance with the customary practice in vogue subject to the rules that may be framed by the Executive Committee of the District Council from, time to time. *Law Adong* and *Law Shnong*, as per the said Act, are managed by the *Sirdar* or Headmen with the help of the Village *Dorbar* in accordance with the customary practice in vogue subject to the rules that may be framed by the Executive Committee of the District Council from time to time. Similarly, *Law-Ri-Sumar*, as per the said Act, are managed by the clan or clans which own these forests, subject to the rules that may be framed by the Executive Committee of the District Council from time to time in the general interest of the forestry of the district.

Sacred groves and forests owned by communities and clans provide a number of ecosystem services such as reduction in erosive force of water, conservation of soil, maintenance of hydrological cycle, availability of water of desired quality, natural dispersal of seeds of useful species and conservation and storage of germplasm. The sacred groves also help in maintaining the desired health of ecosystem, reduce habitat destruction, conserve viable population of pollinators and predators, serve as potential source of propagules that are required for colonization of wastelands and fallows, conserve the indigenous flora and fauna and preserve the cultural and ethical practices developed through indigenous knowledge of generations (Ramakrishnan and Ram 1988, Godbole et al. 1998, Godbole and Sarnaik 2004, Tiwari et al. 1998a, b, Singh et al. 1998).

The National Forest Policy, 1988,which aims to at bring at least 33% of the country's geographical area and at least 60% of the total geographical area in hilly States like Meghalaya under forest/tree cover lays much emphasis on protection and improvement of the existing forests in the wake of various ecological and anthropological threats. Sacred groves and other communities and clan owned forests need to be conserved and protected to achieve the goals enunciated in the National Forest Policy.

The traditional religious practices of worship of nature as followed in different parts of world greatly contribute to the promotion and achievement of the global, regional and national goals of conservation of biodiversity and keeps the ecological processes balanced, which is necessary for human survival. They also play an important role in the conservation of flora and fauna. Several rare and threatened species are found only in sacred groves, which perhaps are the last refuge for those vulnerable species.

In Khasi Hills, *Law Lyngdoh Nonglyngkien* and *Law Lyngdoh Ing-blei Nonglyngkien* situated in South West Khasi Hill district are good examples of such sacred groves. These two sacred groves are owned and controlled by the *Lyngdoh Nonglyngkien* clan. These sacred groves were registered with the Chief (Syiem) of Maharam Syiemship more than a century ago on 5thApril, 1909. Persons belonging to Lyngdoh clan are only allowed to enter these sacred groves, that too at the time of performing rituals only. Moreover, designated members of the clan directly involved in performing rituals such as *Nongknia Lyngdoh Rangbah* (head of sacrifice ceremony), *U Lyngdoh Pomblang*

(one who sacrifices goat),*U Lyngdoh Dieng Sning* (one who plant *Quercus* species during rituals), *Ka Nongseng Knia* (one who prepares the sacrifice) and *Ka Nongpomsla* (one who gather leave for the sacrifice) can only enter into the sacred grove, that too only four times in a year.

Four types of rituals, as per the details given below, are performed by the *Lyngdoh Nonglynkien* clan in these sacred groves:

1. ***Krod Lyngdoh***- This ritual is performed every year in the month of March. The ritual involves preparation of an altar, jungle clearance along the boundary of sacred groves and burning of debris. This ritual is performed to seek blessings of the deity before sowing the crops.

2. ***Rah Snieh***- This ritual is performed every year during the month of June. The ritual involves planting a sapling of *Quercus* species (*Diengsning*) in front of the altar while chanting hymns, singing, dancing and beating of drums. The ritual symbolizes commitment of the community for preservation of the flora of the sacred grove. Ritual also involves sacrifice of a goat while praying todeity to bless them and cleanse their sins. Head of the goat sacrificed during the ritual is kept on the saplings planted during the ritual as a symbol of the sacrifice.

3. ***Knia San dei***- This ritual is performed during the month of October. The ritual involves sacrifice of a fowl (hen) by a lady priest and *U Lyngdoh*. Prayers are made during the ritual to seek blessing of the deity for protection of their crops like rice, maize, etc. from the storms, or other calamities until harvest time.

4. ***Shat dur***- This ritual is performed during the month of December or January after harvest. In this rituala portion of harvest gathered from each household is offered to the deity while singing and dancing to thank the deity for the harvest. The ritual is performed in the altar of *Law Lyngdoh Ingblei*.

Other prominent sacred groves which are still performing annual rituals are *Law Lyngdoh Lyngiong* and *Khloblai Raij Khonshnong*.

Chapter – II

METHODOLOGY FOR INVENTORY OF GROWING STOCK

2.1 ESTIMATION OF GROWING STOCK (WOOD VOLUME)

The information on growing stock has traditionally been reckoned as a key indicator of forest health and productivity. Periodic assessment of growing stock is essential to develop policies and strategies for sustainable use of forest resources. In addition, the growing stock estimate helps in quantification of biomass and assessment of carbon stored in the forest ecosystems. Estimation of growing stock has, therefore, assumed significance in the existing climate change scenario. In addition, precise and time series information on growing stock has become essential for formulation of proposals and registration thereof on appropriate carbon registry to earn carbon credits.

For estimation of growing stock,133 sacred groves and community owned forests spread over different locations in Khasi and Jaintia Hills region of the State have been identified. The extent of the groves varies from as low as 0.2 ha to about 200 ha. The terrain varies from flat, gently rolling to steep slope. Most of the groves are home to dense forest of mixed species. These groves are managed by traditional authorities. In some of the groves, plantations have been raised by the Forest and Environment Department.

2.2 METHODOLOGY

2.2.1 Sampling Intensity

For the purpose of estimating growing stock, enumeration has been carried out as per the following sampling intensity: -

(i) 100% enumeration in groves having less than 10 hectare area.

(ii) 20% enumeration in groves having 10 hectare to 50 hectare area.

(iii) 10% enumeration – in groves having more than 50 hectare area.

2.2.2 Enumeration in groves having less than 10 hectare area

In the sacred groves having less than ten hectare area all trees having more than 10 cm diameters (over bark) at breast height (1.37 meter from the ground level) are enumerated. For the ease in enumeration, sacred groves are divided in different parts with the help of a nylon rope, as per the convenience and enumeration is carried out part by part. The trees which are enumerated are marked with some marker or chalk stick to prevent possibilities of multiple counting or skipping of any tree.

2.2.3 Identification of Number and Location of Sample Plots for Enumeration in Sacred Groves having More Than 10 Hectare Area

Following methodology is adopted to identify the number and location of sample plots in a systematic random manner for enumeration in sacred groves having more than 10 hectare area:

(i) On the map of the sacred grove, grid lines are drawn along the latitude and longitude at an interval of 2" x 2".

(ii) The cells having less than half of their area in the sacred grove are ignored. Starting from the north-west corner, the remaining cells having at least half of their area in the sacred grove are serially numbered. The numbering is done column wise in north to south direction.

(iii) Based on area of a sacred grove, total area for enumeration (20 % in case of sacred groves having area from 10 ha to 50 ha and 10% for sacred groves having more than 50 ha area) is estimated.

(iv) The area estimated for enumeration (in hectare) is divided by 0.20 to estimate the number of samples plots, each of 0.20 hectare area.

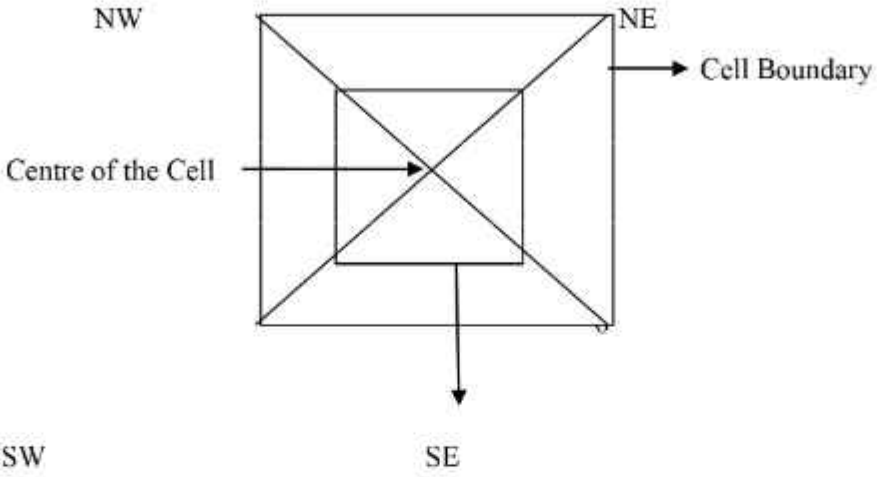
(v) The total number of valid cells in a sacred grove is divided by the number of sample plots. The remainder and the quotients are respectively the serial number of the cell in which the first sample plot is to be laid and the interval in serial number of two consecutive cells to be selected for laying of sample plots. For example, for selection of the cells for laying 10 sample plots in a sacred grove having 25 valid cells, 25 is divided by 10. The remainder *i.e.* 5 is serial number of the cell in which first sample plot is laid and quotient *i.e.* 2, is interval in serial number of two consecutive cells to be selected for laying sample plots. In this case, sample plots are laid in cells having serial number 5, 7, 9, 11, 13, 15, 17, 19, 21, 23.

(vi) The center of a sample plots, having 0.20 ha. area is co-terminus with the center of the identified cell (*i.e.* inter-section of two diagonals of the cell).

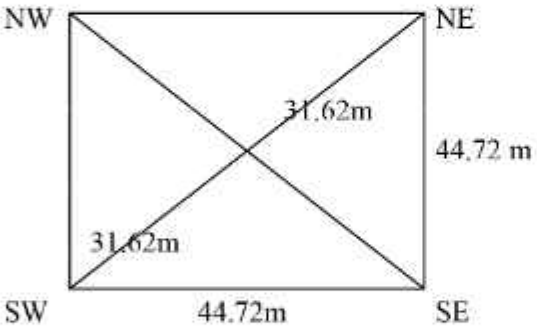
2.2.4 Laying of Sample Plots on Ground

Location of the centre point of each cell identified for laying of sample plots is identified on the ground by using a hand-held GPS by feeding the geo-coordinates (latitude- longitude) of the central point. Location of the centre point is marked on the ground by fixing a stout wooden peg of 10 cm dia. and 1.5 meter height. From the centre point 31.62 m distance is measured in NE, SE, NW and SW directions *i.e.*, in the direction of 45°, 135°, 225° and 315° to mark location of four corner points. Location of each of these corner points is marked on ground by fixing a 1.50 meter high wooden peg. The corner points are joined by a nylon rope to form the desired sample plot of 0.20 hectare area. Each side of the plot is measured to confirm that the same is 44.72 metres. Wherever feasible, ranging rods or flags are fixed at the corner points for reference during the enumeration. While laying sample plots, all distances are measured horizontally. In case a part of a sample plot laid in a cell located on boundary of the sacred grove falls outside the sacred grove, the same is shifted to

ensure that the entire sample plot falls within the sacred grove. If any selected cell is inaccessible due to difficult terrain, the sample plot is laid in the adjoining cell.



Sample plot of 0.2 ha Area



2.2.5 Data collection

After reaching the sacred grove some of the qualitative information are recorded based on ocular observations and interaction with village elders and other persons conversant with history and management of the sacred grove. Other quantitative data and qualitative information are collected during the enumeration. The Information and data collected during the enumeration are recorded in **Sacred Grove Plot Description Form** (Field Form No. 1) and **Sacred Grove Plot Enumeration Form** (Field Form No. 2). A brief summary of information to be recorded in each of these two forms are given below:

2.2.5.1 Sacred Grove Description Form

Only one Sacred Grove Description Form is filled for each sacred grove. In this form general information about the sacred grove is recorded based on ocular observations and local enquiry.

2.2.5.2 Sacred Grove Plot Enumeration Form

In this form,diameter at breast height and height of all trees having diameter at breast height (1.37m) of 10cm and above are recorded. The dead and dying tress having less than 70% utility and all trees having diameter at breast height less than 10 cm are ignored. If a plot contains bamboo, each bamboo clump is considered as a tree for the purpose of Sl. No., name of species and height except for girth, for which number of culms in the clump are recorded. For filling this form following instructions are followed:

Item	Description/Definitions
Plot No	in two digits from the map
Name of the District	in text form
Name of the Sub-division	in text form
Name of Block	in text form
Name of the grove	in text form
Name of village/Nearest village	in text form
Syiemship	in text form
Distance from road	in text form
Lat-long of plot centre	from map in numeric form
Total No. of trees enumerated	in three digits
Sl. No. of tree	in three digits
Species Name	in text form, - the name should preferably be botanical otherwise common/local names may also be written
Girth of tree	in cms in three digits
Tree height	in metres in two digits

2.2.6 Field Measurements

The following two measurements are taken for each tree standing in a sample plot:

(a) Measurements of Girth/DBH (Diameter at Breast Height) over bark:

Girth of the tree is measured at breast height i.e., 1.37 m above the ground with the help of measuring tape to the nearest cm and recorded in the field form in 3 digits *e.g.,* 85 cm girth is

recorded as 085 cm. Wherever required, diameter of the tree over bark (DBH.OB) is measured with the help of a calliper keeping all the arms of the calliper horizontal. For the sake of uniformity, girth of a tree is only measured. In hilly terrain, the measurements are taken at 1.37 meters above the ground towards uphill side.

(b) Measurement of Height of a tree:

The height of a tree is measured in meter to the nearest even number from bottom of the tree to the top of the tree with the help of ***Abney's Level*** or ***Blume Leiss Hypsometer***. In hilly terrain, bottom of the tree is considered in the uphill side and corrections are applied for the slope. The height is recorded in two digits in the field form.

2.2.7 Equipment and Other Materials Used by Each Survey Team

The following equipment and other materials are used by each survey team:

(i)	Silva Compass or any other compass	1 No.
(ii)	GPS handset with extra batteries	1 No.
(iii)	Hypsometer/Abney's level for height measurement	1 No.
(iv)	30-50 m (self-rolling) measuring tape or rope/chain marked at every 10 meters	2 no.
(v)	Digital Camera with charger	1 No.
(vi)	Caliper	1 No.
(vii)	Field Maps	As required
(viii)	Field Forms	As required
(ix)	Field Manual	As required
(x)	Note Books	As required
(xi)	Pen & Markers	As required
(xii)	Hand calculator	1 No.
(xiii)	Khukhri/ Dao	2 No.
(xiv)	Girth measuring tapes (2m length)	2 No.

2.2.8 Estimation of Volume of a Tree

Volume of each enumerated tree is calculated by using the local volume equations developed by the Forest Survey of India, Dehradun for Meghalaya State. Tree species for which volume equation for Meghalaya are not available, volume equation of adjoining State of Assam have been used. A list of volume equations used for estimating the volume of the trees is as below:

Volume Equations for Forests of Meghalaya

1. *Albizzia* spp 2. *Bombax ceiba* 3. *Duababga sonneratiodes*	Local	$V = 0.29208 + 0.00092412\ D^2$ (dia in cm)
4. *Amoora wallichii* 5. *Gmelina arborea* 6. *Kydia calycina*	Local	$V = -0.0087 + 0.003675D + 0.0007398D^2$ (dia in cm)
7. *Anthocephalus cadamba* 8. *Schima wallichii*	Local	$V = -0.0189 + 0.0008073D^2$ (dia in cm)
9. *Lanne acoromandelica* 10. *Toona ciliata*	Local	$V = -1.391 - 0.14129D + 0.001645D^2 + 0.90411''D$ (dia in cm)
11. *Pinus khasiana*	Local	$V = 0.0232 - 0.011613D + 0.0011549D^2$ (dia in cm)
12. *Shorea robusta* 13. *Tectona grandis*	Local	$V = -0.027862 + 0.0010882D^2$ (Dia in cm)

14. *Artocarpus chaplasha* – Local $V = 1.65081 - 4.57531\sqrt{D} + 11.62114\ D^2$
15. *Callicarpa* spp – Local $\sqrt{V} = -0.04506 + 2.33466\ D$
16. *Careya arborea* – Local $\sqrt{V} = 0.23738 + 2.33289D + 0.48512\ \sqrt{D}$
17. *Casearia* spp – Local $V = 0.14031 - 2.06478\ D + 11.25750\ D^2$
18. *Cassia siamea* – Local $V = 0.5159 - 0.53331D + 3.46016\ D^2 + 10.18473\ D^3$
19. *Cinnamomun* spp – Local $V = 0.14885 - 1.62875D + 5.93114\ D^2 + 11.73286\ D^3$
20. *Dillenia pentagyna* – Local $\sqrt{V} = 0.31202 + 4.75915D - 1.83940\ \sqrt{D}$
21. *Dillenia indica* – Local $\sqrt{V} = 0.05376 + 3.73731D - 0.79622''D$ (At P-88 of book)
22. *Dysoxylum linectiferum* – Local $V = 0.04752 + 0.50667D + 1.88433\ D^2 + 11.30632\ D^3$
23. *Elaeocarpus* spp – Local $\sqrt{V} = 0.43483 + 5.72522D - 2.59907\ \sqrt{D}$

24. *Emblicia officinalis* – Local V = 0.13734-2.49039D+15.59566 D^2-11.06205 D^3
25. *Erythrina* spp – Local V = - 0.07803+1.70258D-9.16180 D^2+33.91455 D^3
26. *Ficus* spp – Local $\sqrt{V}$ = 0.3629+3.95389D-0.84421 $\sqrt{D}$
27. *Grewia* spp – Local V = - 0.44075+7.49221D-36.09962 D^2+71.91238 D^3
28. *Macaranga denticulata* – Local V = 0.13333-2.18825D+13.12678 D^2
29. *Mallotus philippinensis* – Local V = 0.14749-2.87503D+19.61977 D^2-19.11630 D^3
30. *Michelia* spp – Local V = 0.23057-3.51494D+17.62619 D^2
31. *Quercus* spp – Local V = 0.000295-0.0079835 D+0.000862 D^2 (Dia in cm)
32. *Rhododendron* spp – Local V = - 0.08934+0.70730D +2.139141D^2
33. *Spondias pinnata* – Local $\sqrt{V}$ = 0.49487+6.18662 D-2.95076 $\sqrt{D}$
34. *Sterculia villosa* – Local V = 0.27909-3.26515D+13.46829 D^2
35. *Terminalia* spp – Local V = 0.50603-6.64203 D+25.23882 D^2 -9.19797 D^3
36. *Vitex penducularis* – Local V = - 0.16386+2.23116D-7.00969 D^2 +22.13099 D^3
37. Rest of the species – Local V= - 0.081297+0.0010659D^2 (Dia in cm)

Volume in cubic metres (m^3) and diameter (D) is in meters. In some equations it is in cm and has been mentioned there itself.

- Diameter (D) = $\frac{\text{Girth (G)}}{3.14}$ where D and G both in cms.

  If D is in meters and G is in cm then

  (D) = $\frac{\text{Girth (G)}}{314}$

2.3 SACRED GROVES IDENTIFIED FOR MAPPING AND INVENTORY OF GROWING STOCK

Forest Resources Survey Division in the Forest ad Environment Department, Government of Meghalaya has initiated mappings of sacred grove in the State. So far 133 sacred groves as per details given in table 2.1 have been identified for mapping and inventory of growing stock. All these sacred groves have been mapped with the help of hand held GPS.

TABLE 2.1: Sacred Groves Identified for Mapping and Inventory of Growing Stock

Sl. No.	Name of the Sacred Grove	Area (in ha)
1	Khlieh Shnong Sohra Syiemship at Mawphon Syiem	15.932
2	Sacred Groves of Raid Nongpoh	53.710
3	Protected Forest of Rikaksiem, Mustoh Village	9.567
4	Sacred Groves of Umwai, at Diengkain	1.246
5	Sacred Groves of Mawthang Sohkhyllung, Wahlong	0.277
6	Protected Forest of Kynrem Umwai, Mawlong Sirdarship	9.203
7	Protected Forest of Umwai Village, Mawlong Sirdarship at Nurbah	2.001
8	Sacred Groves of Kyntoit Nongduh, Mawlong	0.511
9	Umiong Protected Forest of Khlieh Shnong, Sohra	200.580
10	Ingkhrong Sacred Groves of Khlieh Shnong Sohra	11.390
11	Sacred Groves of Kyntoit Mawriang, Mawlong	0.279
12	Protected Forest of Mawthoh Umwai	3.020
13	Sacred Groves of Kyntoit Diengsiar, Mawlong Sidarship,	0.675
14	Law Adong of Mawhiang at Sawsymper	103.440
15	Law Adong of Pamsanngut Sirdarship at Tyrsad	51.002
16	Law Adong of Nongsiej Laitwir Kmawan at Bisap Tdei Pongkung	5.866
17	Sacred Groves of Nongsiej Laitwir Kmawan Clan at Shanglop Nongspung Syiemship	15.715
18	Law Adong of Nongsiej Laitwir Kmawan Nongdom at Lait Nomlang	17.189
19	Law Adong of Lait Mawpat at Wah Mawpat	66.273
20	Law Kyntang Lumsymper at Sawsymper, Pongkung-Lang Symphut	78.189
21	Protected Forest of Mawlynnu at Khon Weiloi	4.851
22	Law Kyntang Kmawan Rum at Khlar Rumphet	1.933
23	Protected Forest of Lum Kyrphei at Kyrphei	24.138
24	Protected Forest of Mawteibah Village at Lyngkha U Jon	134.960
25	Law Kyntang Khongsit Clan of MawlumTyrsad, Mylliem Syiemship	1.839
26	Law Adong of Khongsit Clan at MawlumTyrsad Mylliem Syiemship	195.070
27	Protected Forest of Kur Myrthong at Umlangmar, Nongspung Syiemship	107.000
28	Law Adong of Mawlynnu at Mawksan War of Raid Saw Symper	39.628
29	Law Adong of Mawtangor village Pnenbah Mawpait	3.783
30	Protected Forest of Mawlynnu at Rngi Weiloi	62.648
31	Khlaw Blai Pohmurang Dongwahshnong Khlaw Blai Kur Biam Raliang	2.040
32	Sacred Groves Khlaw Blai Moopasah Khonshnong, Raliang	0.600
33	Khlaw Blai Shyllong Raliang- Khlaw Blai Kur Biam	0.080
34	Law A-Dong of Pynden Sakwang,	9.890
35	Law A-Dong Tyllong Um Kyrwiang of Hill and Village	16.200
36	Khlaw Blai Raij Niaw Kmai Pohpyrda, Raliang	4.360
37	Khlaw Blai Iaw Elaka Raliang Dolloiship	0.680
38	Myllep Khlo- Blai of Raij Khonshnong at Umdeinlieng, Raliang	11.850
39	Law-Adong Diri of Mawranglang Village,	6.930

40	Sacred Grove Khlo Pohpuja, Raliang	0.630
41	Law-Adong Synrai-Hu,	13.300
42	Mynthliang Sacred Grove of Raid Niaw Kmai, Raliang	0.330
43	Law Lyngdoh Mawlot Phyllut	16.540
44	Law Adong Nongrimbah Mawlangwir	34.650
45	Law Adong Nongsynrieh Maharam Syiemship	9.830
46	Salariang, Jakrem	10.500
47	Twahsamparat	29.090
48	Rei-missiom Law Adong of Photja-ud	8.590
49	Law Lyngdoh Rngaid Nonglang	2.040
50	Law Lyngdoh Iingblei Nonglyngkien	2.390
51	Law Lyngdoh (Lyngdoh Nonglyngkien)	5.234
52	Law Adong Sawkpoh Wanniang,	5.150
53	Law Adong Phlangwanbroi,	9.650
54	Law Lyngdoh Lyngiong,	62.420
55	Law Adong of Raid Raitong at Lumprah Mawkhyrdop Raitong	10.130
56	Khlaw Bri Raij Bhoirymbong	10.000
57	Law Lyngdoh Mawnai under Hima Nongkhlaw,	2.300
58	Law Adong Laitkynsew at Mawkdar,	3.790
59	Law Adong Laitkynsew at Lumlaitdihum	17.650
60	Khlo Blai Lyngdoh at Raliang village,	3.680
61	Khlaw Blai Ryngkaw Khonshnong Elaka Raliang	55.620
62	Jri-Pastieh Khlo Blai of Raij Khonshnong Raliang Elaka	3.300
63	Law Kyntang Blai of Raij Niaw Kmai, Raliang Elaka	0.470
64	Khlaw Blai Raij Niaw Kmai, Iongbong Elaka, Raliang Dalloiship	1.790
65	Khlaw Blai Raij Niaw Kmai Tyrsha Elaka Raliang	0.510
66	Law Lyngdoh Umjapiar, Mawskuin	4.010
67	Law Lyngdoh Lynching, Mawskuin	19.044
68	Sangriang Sacred Grove, Sangriang	16.380
69	Wah Shangiar Law Adong at Mawmluh	24.113
70	Swer Dohling Sacred grove	73.320
71	Law Adong Wahsier, Swer	34.690
72	Law Adong Sawktang, Mawmluh	18.520
73	Law Adong Law Madan, Mawmluh	11.680
74	Mawsawa Sacred Grove, Mawmluh	16.430
75	Mawsahep Sacred grove, Nongriat	1.000
76	Law Kyntang Nongrim Kheinbsap Raij Mawlieh	1.430
77	Law Lyngdoh Raid Wahkhen	1.970
78	Law Adong Kohlu Khyrdop, Raid Mawlieh	1.190
79	Law Lyngdoh Lait Raid Mawkhap	4.880
80	Law Lyngdoh Synryn-ew Khap Mawjuta	1.010
81	Law Lyngdoh Shillong Raid Mawkhap	0.260
82	Law Lyngdoh Kharai Raid Nongkhlieng	1.430

83	Law Adong Tyrjut Raid Nongkhlieng	13.520
84	Law Adong Wah Shadsngi Nongmadan, Shadsngi	1.150
85	Law Adong Kliar Umrem Nongmadan, Shadsngi	2.590
86	Law Adong Wah Rangmuh, Raid Nongkhlieng	2.580
87	Law Kyntang Nohksiar, Raid Mukertilla	0.130
88	Law Kyntang Mawbang, Raid Mukertilla	0.110
89	Law Kyntang Ka Mukertilla Raid Mukertilla	6.260
90	Law Kyntang of Tken Raid Mukertilla	1.490
91	Law Kyntang Mawbrai Kur Ryngksai, Raid Mukertilla	0.146
92	Law Lyngdoh Erbamon, Raid Mukertilla	0.240
93	Law Kyntang of Smti Philo & Shri August Tynsong, Raid Mukertilla	0.990
94	Law Adong Niangblah, Lad Mawphlang	22.000
95	Law Adong Phud Synrang, Mawmihthied	1.180
96	Law Adong Sohum, Mawmihthied	1.170
97	Law Adong Wahthlong Mawmihthied	0.690
98	Law Adong Wah Umsohphie, Mawmihthied	2.920
99	Law Adong Wah Marobin, Mawmihthied	1.90
100	Law Adong Wahing Bah, Mawmihthied	2.670
101	Law Adong Kor at Ladmawphlang	7.160
102	Law Adong Thymmai, Laitryngew	1.320
103	Law Adong Kshaid, Laitryngew	3.420
104	Law Adong Law Nongshlem, Mawmihthied	43.940
105	Law Adong Law Suid Noh, Laitryngew	1.160
106	Law Adong Them-U-Mud, Mawmihthied	1.050
107	Law Adong Wahthlong, Laitryngew	1.900
108	The Lawkyntang Ryngkew Swer	11.070
109	Law Adong Tad Latom at Swer	17.580
110	Law Adong Lawarliang, Laitryngew	11.070
111	Law Adong Law Pjaih, Laitryngew	6.040
112	Law Adong Law Kait, Laitryngew	0.580
113	Law Adong Iapmoit-2, Laitryngew	3.661
114	Law Adong Sohmyndong, Laitryngew	0.800
115	Law Adong Kur Nongrem Khain Nongdiat	6.930
116	Law Adong Kur Nongrem Khain Nongdiat	6.940
117	Law Adong Saw Kpoh Kur NonglangNongsynrieh	22.720
118	Pon Pyrnon Law Adong of Mawranglang	22.240
119	Umkyrsian Sacred Grove, Nongriat	0.270
120	Kyllai Langsngun Law Adong Kur-Paliar Lai Kpoh Demnar	39.360
121	Lawpyllun Law Adong Kur Iawphniaw Mawsaw	52.030
122	Law Lyngdoh Law Adong Kur Lai-Kynja, Rangblang	14.810
123	Lum-Niang Ram Law Lyngdoh of Kur Myrthong	144.390
124	Jri Tyngkong Lawadong Shnong Umtung	10.120
125	Law Adong of Mawtneng	5.386

126	Khloo Blai Sein Raij Tuber	89.430
127	KhlooThangbru Umsymphu	19.600
128	Khloo Pohblai Mooshutia	33.500
129	Khloo Blai Chyrmang Sein Raij Kongwasan Chyrrmang Kmai	7.000
130	Khloo Langdoh Kur Pyrtuh	15.400
131	Mynso (Sula Lynter) Ka Khloo Thangbnai Sula Lynter Sein Raij Mynso	3.243
132	Khloo Blai Mynso	0.852
133	Khloo Blai Ka Raij U Langdoh Ionglang (Mootyrshiah)	15.120
	Total	**2,507.315**

2.4. SACRED GROVES FOR WHICH INVENTORY OF GROWING STOCK HAS BEEN COMPLETED

Forest Resources Survey Division has completed inventory of growing stock in 64 sacred groves.

Results of the inventory of growing stock undertaken in the first phase in 20 sacred groves have been published in Vol-I of this publication in 2017. Details of these sacred groves are given in Table 2.2.

TABLE 2.2: DETAILS OF SACRED GROVES INCLUDED IN INVENTORY OF SACRED GROVES IN MEGHALAYA(VOL.-I)

Sl. No.	Name of Sacred Groves	Area (Ha.)	District	No. of Plots
1	Law Lyngdoh Mawlot Phyllut	16.540	South West Khasi Hills	15
2	Law Adong Nongrimbah Mawlangwir	34.650	South West Khasi Hills	36
3	Law Adong Nongsynrieh Maharam Syiemship	9.830	South West Khasi Hills	100%
4	Salar–iang Jakrem	10.500	South West Khasi Hills	10
5	Twahsamparat, Tynnai	29.320	South West Khasi Hills	29
6	Law Adong Photja-ud	8.590	South West Khasi Hills	100%
7	Law Lyngdoh Rngaid Nonglang	2.040	South West Khasi Hills	100%
8	Law Lyngdoh Iingblei Nonglyngkien	2.390	South West Khasi Hills	100%
9	Law Lyngdoh-Lyngdoh Nonglyngkien	5.234	South West Khasi Hills	100%
10	Law Adong Sawkpoh Wanniang	5.150	South West Khasi Hills	100%
11	Law Adong Phlangwanbroi, Hima Malai Sohmat	9.650	East Khasi Hills	100%
12	Law Lyngdoh Lyngiong, Hima Lyngiong	62.420	East Khasi Hills	31
13	Law Adong Raid Raitong	54.900	Ri-Bhoi	25
14	Khlaw Bri Raij Bhorymbong, Raitong	10.000	Ri-Bhoi	10
15	Law Lyngdoh Mawnai under Hima Nongkhlaw	23.700	West Khasi Hills	25
16	Law Adong Laitkynsew at Mawkdar	3.790	East Khasi Hills	100%
17	Law Adong Laitkynsew at Lumlaitdihum	17.650	East Khasi Hills	17
18	Khlo Blai Lyngdoh at Raliang village of Raliang Elaka	3.680	West Jaintia Hills	100%
19	Khlaw Blai Ryngkaw Khonchnong Elaka Raliang Doloiship	55.620	West Jaintia Hills	27
20	Jri-Pastieh Khlo Blai of Raij Khonchnong Raliang Elaka	3.300	West Jaintia Hills	100%
	Total	**368.954**		

Results of the inventory of growing stock undertaken in second phase in 20 sacred groves have been published in Vol-II of this publication in 2022. Details of these sacred groves are given in Table 2.3.

Table 2.3: Details of Sacred Groves Included in Inventory of Sacred Groves in Meghalaya (Vol.-II)

Sl. No.	Name of Sacred Groves	Area (Ha.)	District	No. of Plots
1	Law Adong Phudsynrang Shyiap	1.180	East Khasi Hills	100%
2	Law Adong Wahthlong	0.690	East Khasi Hills	100%
3	Law Adong Umsohphie	2.920	East Khasi Hills	100%
4	Law Adong Lait Raid Mawkhap	4.880	East Khasi Hills	100%
5	Ingkhrong Sacred Groves Sohra Khliehshnong	11.390	East Khasi Hills	11
6	Mawphon Syiem Sacred Groves at Khliehshnong, Sohra	15.932	East Khasi Hills	16
7	Law Adong Umiong at Khliehshnong, Sohra	200.580	East Khasi Hills	100
8	Law Adong Wah Shiangiarat Mawmluh	24.113	East Khasi Hills	24
9	Law Adong Mawkulai at Mawmluh	38.521	East Khasi Hills	38
10	Law Adong Mawsawa at Mawmluh	16.430	East Khasi Hills	16
11	Kyllai-Lyngsnguin Law Lyngdoh Kur Lai Kpoh Paliar, Demnar	39.360	South West Khasi Hills	39
12	Law Adong Swer Dohling	73.320	East Khasi Hills	37
13	Ka Khloo Thangbru Umsympu, Mukhaialong village	19.600	East Jaintia Hills	20
14	Ka Khloo Pohblai Mooshutia, Mukhaialong village	33.500	East Jaintia Hills	33
15	Ka Khloo Langdoh Kur Pyrtuh, Sohmynting	15.400	West Jaintia Hills	15
16	Ka Khloo Blai Sein Raij Kongwasan, Chyrmang	7.040	West Jaintia Hills	100%
17	Ka Khloo Blai Sein Raij Tuber	89.430	East Jaintia Hills	44
18	Ka Khloo Blai ka Raij Langdoh Ionglang, Mootyrshiah	15.120	West Jaintia Hills	15
19	Sula Lynter Law Kyntang Mynso	3.243	West Jaintia Hills	100%
20	Khloo Blai Mynso	0.852	West Jaintia Hills	100%
	Total	**613.501**		

Results of the inventory of growing stock undertaken in the third phase in 24 sacred groves are being published in this publication (Vol-III). Details of these sacred groves are given in Table 2.4.

Table 2.4: Details of Sacred Groves Included in Inventory of Sacred Groves in Meghalaya (Vol.-III)

Sl. No.	Name of Sacred Groves	Area (Ha.)	District	No. of Plots
1	Law Adong Mawhiang	103.440	East Khasi Hills	52
2	Law Adong Pamsanngut	51.002	East Khasi Hills	26
3	Law Adong Nongsiej Laitwir Kmawan	5.866	East Khasi Hills	100%

4	Law Adong Nongsiej Laitwir Kmawan Nongdom	17.189	East Khasi Hills	17
5	Law Adong Lait Mawpat	66.273	East Khasi Hills	33
6	Law Kyntang Lumsymper	78.189	East Khasi Hills	39
7	Law Kyntang Kmawan Rum	1.933	East Khasi Hills	100%
8	Law Kyntang Khongsit Clan, Mawlum Tyrsad	1.839	East Khasi Hills	100%
9	Law Adong Khongsit Clan, Mawlum Tyrsad	195.070	East Khasi Hills	98
10	Law Adong Kur Myrthong	107.000	East Khasi Hills	54
11	Law Adong Mawlynnu	39.628	East Khasi Hills	40
12	Law Adong Mawtangor	3.783	East Khasi Hills	100%
13	Law Lyngdoh Law Adong Kur Sangriang	16.380	West Khasi Hills	40
14	Law Kyntang Ryngkew Swer	11.070	East Khasi Hills	11
15	Law Adong Wahsier	34.690	East Khasi Hills	34
16	Law Adong Sawktang	18.520	East Khasi Hills	18
17	Law Adong Law Madan	11.680	East Khasi Hills	12
18	Law Lyngdoh Raid Wahkhen	1.970	East Khasi Hills	100%
19	Law Adong Tyrjut Raid Nongkhlieng	13.520	East Khasi Hills	14
20	Law Adong Niangblah	22.000	East Khasi Hills	22
21	Law Adong Nongshlem	43.940	East Khasi Hills	44
22	Law Kyntang Ka Kur Sakwang Mukertilla	6.260	East Khasi Hills	100%
23	Liewlong Khlaw Kur Marwein	52.032	West Khasi Hills	26
24	Lawpyllun Law Adong Kur Iawphniaw	52.030	West Khasi Hills	26
	Total	**955.304**		

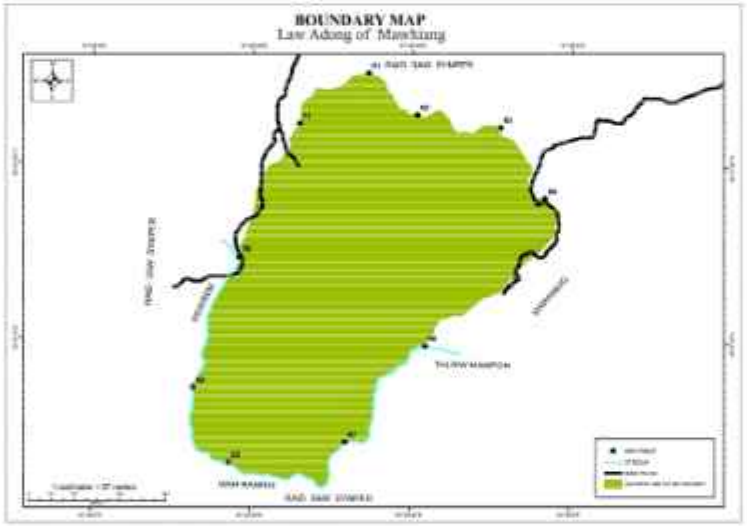
CHAPTER-III

DESCRIPTION OF SACRED GROVES

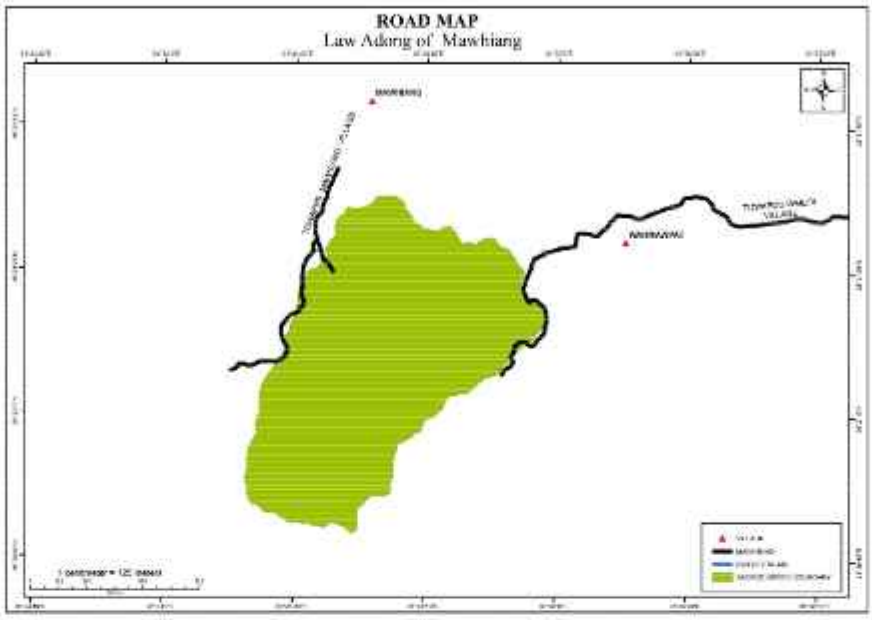
3. 1. LAW ADONG MAWHIANG

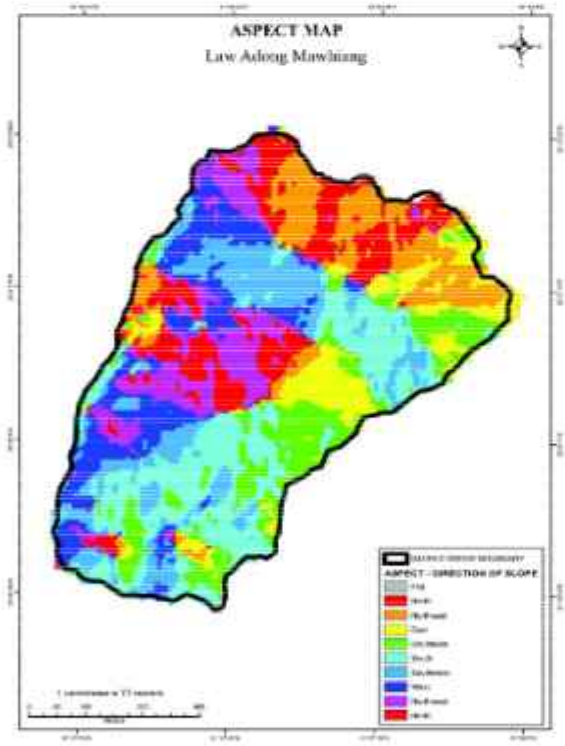
3.1.1 Location

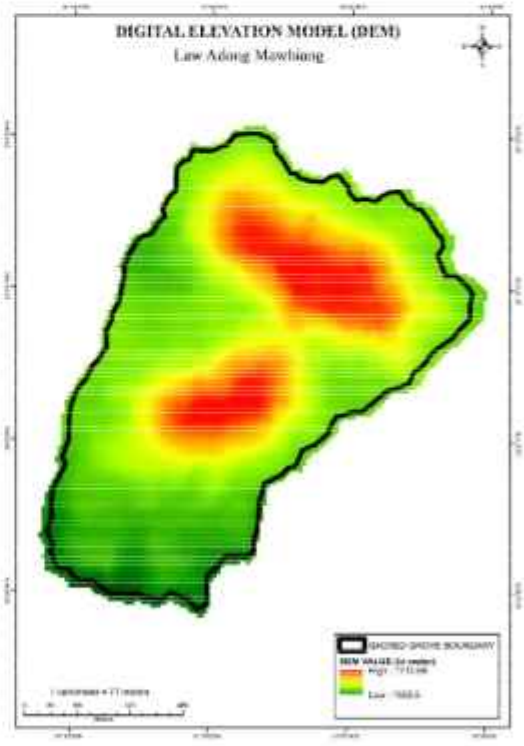
Law Adong Mawhiang is situated in East Khasi Hills District of Meghalaya at *Mawhiang* village under the Maharam *Syiemship*. It has an area of 103.44 ha. It lies between 25° 20"45" N to 25° 21´ 30" N latitude and 91° 34´10" E to 91° 34´ 58" E longitude at an altitude of 1,655 m from mean sea level (msl). It is bounded in the North by Raid *Sawsymper* and in the South by Wah Ramrai Stream, in the East by Raid *Sawsymper* and *ThliewMawpon* Stream and in the West by *Weikrem* stream and Raid *Sawsymper*. The *Law Adong Mawhiang* is accessible by road from Shillong *via* Weiloi. It is about 54 km from Shillong.

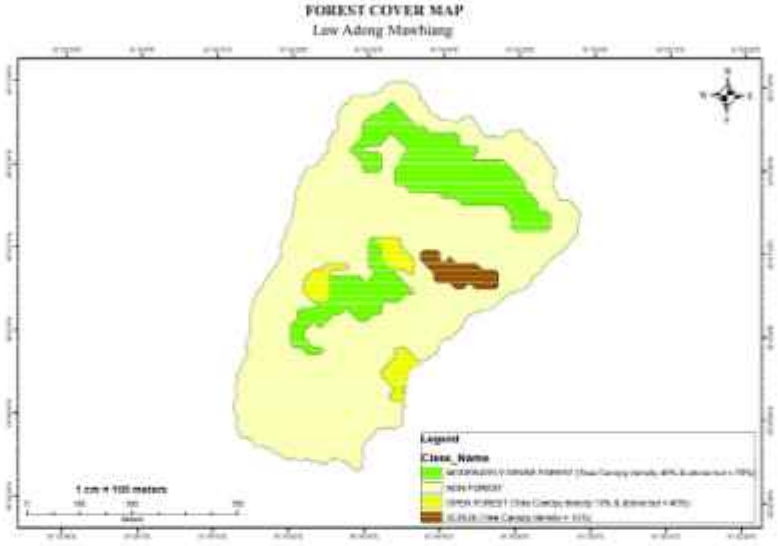


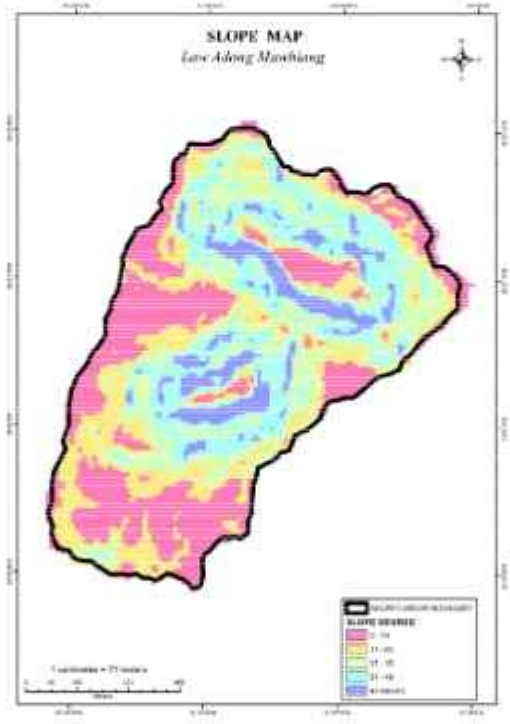



ROAD MAP
Law Adong of Mawbiang


ASPECT MAP
Law Adong Mawbiang
ASPECT - DIRECTION OF SLOPE


DIGITAL ELEVATION MODEL (DEM)
Law Adong Mawbiang





3.1.2 Brief History

As informed by the village elders, *Law Adong Mawhiang* is in existence for several centuries. It is owned, managed and administered by the Village dorbar of *Mawhiang*. In the past, religious rituals were performed in this grove. However, presently no such rituals are performed in this forest.

Felling of trees in this forest is strictly prohibited. However, wood and firewood required for funeral purposes for bonafide residents of the village are permitted to be extracted from the forest with prior permission from the Village dorbar.

This Sacred grove is found to be free from biotic pressure such as encroachment, hunting, poaching and illegal felling of trees are found to be absent in this forest. However, wildfire and grazing have been observed in the forest.

3.1.3 Geography and climate

The topography of the grove is hilly in nature with slope varying from 0.1° to 49°. Area of the grove falls in almost all aspects. Major part of the *Law Adong Mawhiang* falls in South and South-West, North and North East aspects. Soil texture is sandy loam with boulders and gravel. Soil consistency is friable. The colour of the soil is brown with shallow soil depth. Soil erosion is almost negligible.

Winter season starts from end of October and last still March of the next year. The sacred grove receives high rainfall during the monsoon season from April to September. Average temperature varies from 7°C to 23°C.

3.1.4 Forest Type

As per the Champion and Seth classification (1968), forests found in the sacred grove are of the *Type 8B/C2 Khasi Sub-Tropical Wet Hill Forest*.

3.1.5 Forest cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun forest cover in the *Law Adong Mawhiang* is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	19.03	18.39
Open Forest (10% - 40%)	3.88	3.75
Scrub Forest (<10%)	2.21	2.14
Non-Forest	78.32	75.72
Total	**103.44**	**100**

3.1.6 Flora and fauna

About three-fourth area of the *Law Adong Mawhiang* is covered by grasslands. The remaining area is covered by trees, shrubs and herbs of native species. *Itea chinensis* and *Castanopsis indica* are

respectively the 1st and 2nd dominant tree species. The *Law Adong Mawhiang* is home to many rare, endangered and endemic plant species.

3.1.6.1 Floral species

Table 3.1.1:Trees found in *Law Adong Mawhiang*

Sl.No	Local Name	Botanical Name	Family
1	*Dieng sohlamut*	*Agapetes variegate*	*Ericaceae*
2	*Dieng ri*	*Albizia lucidor*	*Fabaceae*
3	*Dieng latymphu*	*Aralia armata*	*Araliaceae*
4	*Dieng lieng*	*Betula alnoides*	*Betulaceae*
5	*Dieng tyrnem*	*Camelia caduca*	*Theaceae*
6	*Dieng sohot*	*Castanopsis indica*	*Fagaceae*
7	*Dieng sohotdngiem*	*Castanopsis spp*	*Fagaceae*
8	*Dieng siar*	*Castonopsis armata*	*Fagaceae*
9	*Dieng porkhnai/ diengsning*	*Castonopsis tribuloides*	*Fagaceae*
10	*Dieng latyrdop*	*Cinnamomum begolghota*	*Lauraceae*
11	*Dieng tyrthia*	*Cinnamomum pauciflorum*	*Lauraceae*
12	*Dieng siasia*	*Cinnamomum spp*	*Lauraceae*
13	*Dieng latyrdop*	*Cinnamomum tamala*	*Lauraceae*
14	*Dieng coffee*	*Coffea khasiana/ Nostolachma triflorum*	*Rubiaceae*
15	*Dieng latyngkrong*	*Cyathea spinulosa*	*Cyatheaceae*
16	*Dieng phyllad*	*Derris robusta*	*Fabaceae*
17	*Dieng sohkhyllam*	*Elaeocarpus lanceaefolios*	*Elaeocarpaceae*
18	*Dieng lasaw*	*Elaeocarpus robusta*	*Elaeocarpaceae*
19	*Dieng lba*	*Engelhardtia spicata*	*Juglandaceae*
20	*Dieng sohpyrsit/pyrshit*	*Eurya accuminta*	*Theaceae*
21	*Dieng doh*	*Exbucklandia populnea*	*Hamamelidaceae*
22	*Dieng thylliang*	*Ficus lamponga*	*Moraceae*
23	*Dieng sohkhwang*	*Garcinia anomala*	*Clusiaceae*
24	*Dieng jyrti/jerti*	*Glochidion acuminatum*	*Phyllanthaceae*
25	*Dieng sohmehblang*	*Grewia abutilifolia*	*Tiliaceae*
26	*Dieng lalieh*	*Imuala cappa*	*Aquifoliaceae*
27	*Dieng sohsyrtet*	*Itea chinensis*	*Iteaceae*
28	*Dieng lapyllun/ lamyllon*	*Itea macrophylla*	*Iteaceae*
29	*Dieng kynphorblei/sohkynphorshrieh*	*Knema linifolia*	*Myristicaceae*
30	*Dieng lieh*	*Lindera latifolia*	*Lauraceae*
31	*Dieng jing*	*Lithocarpus fenestrate*	*Fagaceae*
32	*Dieng rang*	*Litsasea meissneri*	*Lauraceae*
33	*Dieng sohsying*	*Litsea cubeba*	*Aquifoliaceae*
34	*Dieng sohiongkrem*	*Mahonia accanthifolia*	*Berberidaceae*

35	*Dieng sohstem/synrei/synrai*	*Marinda augustifolia*	*Rubiaceae*
36	*Dieng sohniar*	*Michelia oblonga*	*Magnoliaceae*
37	*Dieng raikup*	*Michelia panduana*	*Magnoliaceae*
38	*Dieng sohphie*	*Myrica esculenta*	*Fagaceae*
39	*Dieng sohliya*	*Myrica indica*	*Fagaceae*
40	*Dieng tyllong rangsei*	*Pantapanox racemasmum*	*Araliaceae*
41	*Dieng shlan*	*Pasania americana*	*Fagaceae*
42	*Dieng soh larmaw/ snam maw*	*Photinia integrifolia*	*Rosaceae*
43	*Dieng kseh*	*Pinus khasiana/Kesiya*	*Pinaceae*
44	*Dieng sohryngkham*	*Pourthiaea arguta*	*Rosaceae*
45	*Dieng latyrkhang/latyrkhong*	*Prunus undulate*	*Rosaceae*
46	*Dieng sohjhur/sohshur*	*Pyrus pashia*	*Rosaceae*
47	*Dieng sohotdngiem/lyngiem*	*Quarcus spp*	*Fagaceae*
48	*Dieng soh kbublang*	*Rauvolfia densiflora*	*Apocynaceae*
49	*Dieng sohsyrtet*	*Itea chinensis*	*Iteaceae*
50	*Dieng sohma*	*Rhus chinensis*	*Anacardiaceae*
51	*Dieng sohphlang*	*Sauraia spp*	*Actinidiaceae*
52	*Dieng ngan*	*Schima khasiana*	*Theaceae*
53	*Dieng krot*	*Smilax glaucophylla*	*Smilacaceae*
54	*Dieng dpei lieh*	*Symplocos perifolia*	*Symplocaceae*
55	*Dieng dpei iong*	*Symplocos theafolia*	*Symplocaceae*
56	*Dieng lingin*	*Lithocarpus elegans*	*Fagaceae*
59	*Dieng shadmoit*	*Wendlandia wallichii*	*Rubiaceae*

Table 3.1.2: Shrubs found in *Law Adong Mawhiang*

Sl No.	Local Name	Botanical Name	Family
1.	*Soh tyrkhum*	*Acer laevigatum*	*Sapindaceae*
2.	*Soh shiah*	*Rubus ellipticus*	*Rosaceae*
3.	*Soh khlor*	*Elaeagnus pyriformis*	*Elaeagnaceae*
4.	*Jalyntem*	*Polygonum chinense*	*Polygonaceae*
5.	*Dieng snammaw/sohlarmaw*	*Photinia spp*	*Rosaceae*
6.	*Kophikhlaw*	*Caffeakhasiana*	*Rubiaceae*
7.	*Dieng tyrthia*	*Cinnamomum pauciflorum*	*Rubiaceae*
8.	*Dieng soh pyrsit*	*Eurya acuminate*	*Theaceae*
9.	*La tyngkrong*	*Macropanax dispermus*	*Araliaceae*
10.	*La tyngkien*	*Rauvolfia densiflora*	*Apocynaceae.*
11.	*Sohlangeitksew*	*Viburnum simonsii*	*Adoxaceae.*
12.	*Soh lamut*	*Agapetes vareigata*	*Ericaceae*
13.	*Dieng shadmoit*	*Wendlndia waliichi*	*Rubeceae*
14.	*Dieng sahmehblang*	*Grewia abutilifolia*	*Tiliaceae*
15.	*Dieng jing*	*Lithocarpus fenestrate*	*Fagaceae*
16.	*Dieng tyrnem*	*Camelia caudula*	*Theaceae*

Table 3.1.3: Herbs found in *Law Adong Mawhiang*

Sl No.	Local Name	Botanical Name	Family
1.	Slamet	Phrynium spp	Pubinevve
2.	Ja lyngthem	Polygonum chinense	Polygonaceae
3.	Wang khlaw	Esculenta spp	Araceae
4.	Tiew sying maw	Gingiber purpureum	Zingiberaceae
5.	Shynrai khlaw	Alpineaalogus	Gingiberaceae
6.	Wang um	Homolonina aromatic	Araceae
7.	Jajew lieh	Begonia spp	Begoniaceae
8.	Jajew maw	Begonia spp	Begoniaceae
9.	Soh byrthit	Urena lobata	Malvaceae
10.	Tiew rusum	Hedychium coccinium	Zingiberaceae
11.	Soh byrthitrit	Sida rhombijolia	Malvaceae
12.	Soh ngangkhlaw	Solanum torvum	Solanaceae
13.	Khliang syiar	Centella asiatica	Apiaceae
14.	Soh byrthit bah	Sida acuta	Malvaceae
15.	Soh thud	Osbeckia spp	Melostomaceae
16.	La shing	Curcuma spp	Zingiberaceae
17.	Sying khlaw	Zingiber purpureum	Zingiberaceae
18.	Soh krismas	Sarcandra glabra	Zingiberaceae
19.	Soh byrthitrit	Sida rhombijolia	Chloranthaceae
20.	Sla eitmut	Eupatorium spp	Asteraceae

Table 3.1.4: Climbers found in *Law Adong Mawhiang*

Sl No.	Local Name	Botanical Name	Family
1.	Soh shangkhlor/lyngshang	Elaeagnus pyriformis	Elaeagnaceae
2.	Soh nepbah	Rubus rugosus	Rosaceae
3.	Jyrmi kynsew	Argyreia nervosa	Convolvulaceae
4.	Soh krot	Smilax zeylanica	Smilacaceae
5.	Sla kynda jyrmi	Pothos scandens	Araceae
6.	Sla kynda jyrmi	Pothos spp	Aralaceae
7.	Phan synreh	Dioscorea alata	Dioscoreaceae
8.	Phan jyrmi	Stephania glabra	Liliaceae
9.	Jyrmi stein	Lonicera macrantha	Caprifoliaceae
10.	Jyrmi japan	Agevatina adenofora	Asteraceae
11.	Jyrmi shiah	Xanthozylum khasiana	Rotaceae
12.	Jyrmi khlaw	Entoda spp	Luguminaceae

Table 3.1.5: Orchids found in *Law Adong Mawhiang*

Sl No.	Local Name	Botanical Name	Family
1.	Tiew dieng	Micropera manii	Orchideceae
2.	Soh khasaw	Pleione praecox	Orchideceae
3.	Tiew smehmasi	Dendrobium chrysanthum	Orchideceae
4.	Soh khaleh	Pleione maculate	Orchideceae
5.	Tiew slaremmaw	Rafidopohra lancifolia	Orchideceae

6.	*Tiew pawang lum*	*Anoectochilus setaceus*	*Orchidaceae*
7.	*Talong khnai*	*Oberonia manii*	*Orchideceae*
8.	*Tlong khnai*	*Oberoniajen kinsiana*	*Orchideceae*
9.	*Tiew pawanglum*	*Arundina graminifolia*	*Orchideceae*
10.	*Tiew dohmaw*	*Anoectochilus brevilabris*	*Orchideceae*
11.	*Tiew dohmaw*	*Anoectochilus roxburghii*	*Orchideceae*
12.	*Tiew lynksiar*	*Cymbiduim traceyamum*	*Orchideceae*
13.	*Knup mawiang*	*Paphiopedium insigne*	*Orchideceae*
14.	*Syntiew die*	*Bulbophyllum cylindraceum*	*Orchideceae*

Table 3.1.6: Bamboos and Canesfound in *Law Adong Mawhiang*

Sl No.	Local Name	Botanical Name	Family
1.	*Sylli*	*Melocanna baceifera*	*Poaceae*
2.	*Namlang*	*Chimonobambusa khasiana*	*Poaceae*
3.	*Spit/spar*	*Chimonobambusa spp*	*Poaceae*
4.	*Kdait*	*Saccharum spontaneum*	*Poaceae*
5.	*Sohthri*	*Calamus erectus*	*Poaceae*

Table 3.1.7: Creepers found in *Law Adong Mawhiang*

Sl No.	Local Name	Botanical Name	Family
1.	*Sohnep bah*	*Rubus rogosus*	*Rosaceae*
2.	*Tmain Khla*	*Lycopodoum cernuum*	*Lycopodiaceae*
3.	*Sla kyndajyrmi*	*Pothos spp*	*Aralaceae*
4.	*Dieng sohrengblang*	*Strophanthun wallichi*	*Apocynaceae*
5.	*Lapadong*	*Rhaphidophora spp*	*Araleceae*
6.	*Tympewkhlaw*	*Pipper spp*	*Peppereceae*
7.	*Jyrmi kynsiew*	*Argyreia nervosa*	*Convolvulaceae*

Table 3.1.8: Grasses found in *Law Adong Mawhiang*

Sl No.	Local Name	Botanical Name	Family
1.	*Lang tylli*	*Arundinella khasiana*	*Poaceae*
2.	*Lang snuih*	*No listed*	*Poaceae*
3.	*Phlangtraw*	*Imperata cylindrical*	*Poaceae*
4.	*Lasier*	*Corexs piculata*	*Poaceae*
5.	*Lang trengsning*	*Potentilla polyphylla*	*Poaceae*
6.	*Lang phot*	*Juncus effuses*	*Poaceae*
7.	*Synsar*	*Thysanolaena maxima*	*Poaceae*
8.	*Phlangphreit*	*Cymbopogon exsertus*	*Poaceae*

Table 3.1.9: Ferns found in *Law Adong Mawhiang*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhang iong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodalioceae*

3.1.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Adong Mawhiang* has been carried out so far. However, as per the local residents, presence of several wild animals such as jackal, rabbit, jungle fowls, pangolin, barking deer and various types of birds and reptiles has been reported in this forest.

3.1.7 Growing Stock

As per the methodology described in Chapter-II, enumeration was carried out in 10% area of the forest as area of this forest is more than 50 ha. In each sample plot all the trees having girth (over bark) at breast height more than 30 cm were enumerated by measuring their top height (in metres) and the girth at breast height (in centimeters). Data collected during the enumeration were entered in Sacred Grove Description Form and Plot Enumeration Form. During the enumeration total 1,206 trees were found within 52 plots, each of 0.2 ha size. These include 186 *Itea chinensis* (1st dominant), 107 *Castanopsis indica* (2nd dominant), 86 *Quercus spp,* (3rd dominant)and 827 trees of rest of the species. Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each species for each of the 13 girth classes starting from 30-40 cm to 151 cm and above. Details of the same are given in the Table: 3.1.10 & 3.1.11 below. As may be seen, total growing stock in this forest is 4,411.46 cubic metres.

Table 3.1.10: Species wise Distribution of Growing Stock in Different Girth Classes

(cum)

Girth-Classwise	*Itea chinensis* 1st Dominant	*Castanopsis indica* 2nd Dominant	*Quercus spp* 3rd Dominant	Rest of the species	Growing Stock in 52 Sample Plots	Growing Stock in Entire Forest
30-40	4.057	1.45	0.12	12.850	18.48	185.56
41-50	6.717	2.06	1.01	25.93	35.72	358.70
51-60	7.465	5.09	2.08	30.27	44.91	450.97
61-70	4.476	3.34	2.44	32.020	42.28	424.57
71-80	3.497	2.6	3.750	24.65	34.50	346.44
81-90	2.95	4.78	3.91	23.61	35.25	354.01
91-100	0	6.47	5.13	23.08	34.68	348.28
101-110	1.088	7.6	3.49	24.86	37.04	371.96
111-120	0	5.27	0.85	24.510	30.63	307.61
121-130	0	3.3	2.04	20.83	26.17	262.82

131-140	0	1.89	0	11.63	13.52	135.78
141-150	0	0	0	13.540	13.54	135.98
151 & above	0	6.96	7	58.610	72.57	728.80
Total	**30.25**	**50.81**	**31.82**	**326.39**	**439.27**	**4,411.46**

Figure 3.1.1: Girth Class-Wise Growing Stock in Entire Forest



Table 3.1.11: Species-wise Distribution of Growing Stock in Different Girth Classes in the Entire Forest

(cum)

Girth Class Vise	Itea chinensis 1st Dominant	*Castanopsis indica* 2nd Dominant	*Quercus spp* 3rd Dominant	Rest of the species	Total (for 107.00 ha' area)	%wrt total volume
30-40	40.74	14.56	1.21	129.05	**185.56**	4.21
41-50	67.46	20.69	10.14	260.41	**358.70**	8.13
51-60	74.97	51.12	20.89	303.99	**450.97**	10.23
61-70	44.95	33.54	24.50	321.57	**424.57**	9.63
71-80	35.12	26.11	37.66	247.55	**346.44**	7.86
81-90	29.63	48.00	39.27	237.11	**354.01**	8.03
91-100	0.00	64.98	51.52	231.79	**348.28**	7.90
101-110	10.93	76.32	35.05	249.66	**371.96**	8.43
111-120	0.00	52.93	8.54	246.15	**307.61**	6.97
121-130	0.00	33.14	20.49	209.19	**262.82**	5.96
131-140	0.00	18.98	0.00	116.80	**135.78**	3.08
141-150	0.00	0.00	0.00	135.98	**135.98**	3.08
151 & above	0.00	69.90	70.30	588.60	**728.80**	16.53
Total	**303.79**	**510.27**	**319.56**	**3277.84**	**4411.46**	
%wrt total volume	6.89	11.57	7.25	74.32		100.00

As may be seen, 6.89 % of the total growing stock is contributed by the 1st dominant species (*Itea chinensis*). The 2nd dominant species(*Castanopsis indica.)* constitutes 11.57% of the total growing stock. Similarly, the 3rd dominant species (*Quercus spp)* constitutes 7.24% of the total growing stock. A major part of the growing stock *i.e.* 74.30% is constituted by the rest of the species.

Figure 3.1.2: Girth Class-Wise Distribution of Growing Stock

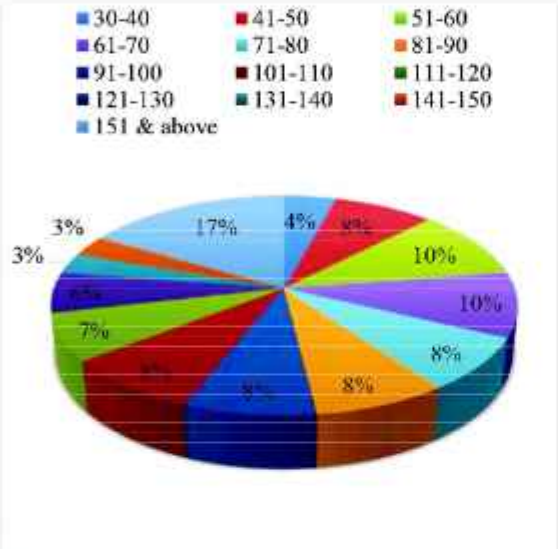
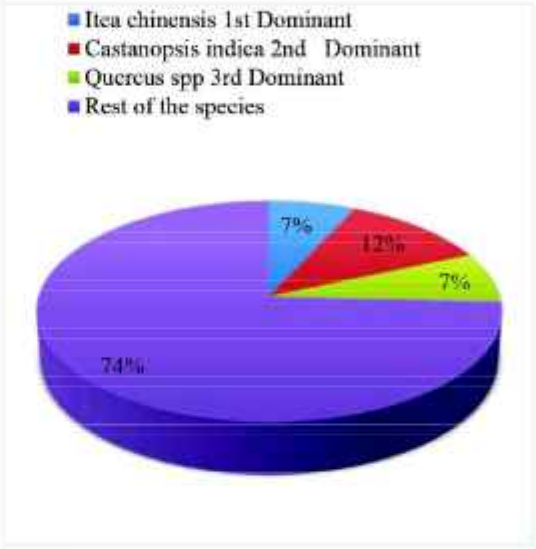
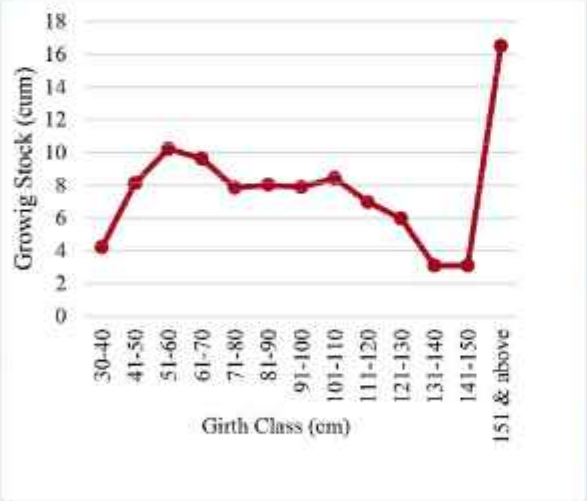


Figure 3.1.3: Species-Wise Distribution of Growing Stock







3.1.8 Number of Stems

Species-wise numbers of stems in each girth class are given in Table: 3.1.12 &Table: 3.1.13 below. As may be seen, maximum numbers of stems are found in lower girth classes *i.e.* from 30-40 cm to 61-70 cm. Numbers of stems are inversely proportional to mid-diameter of the girth class.

Table 3.1.12: Species-wise Distribution of Stems in Different Girth Classes in 52 Sample Plots

(Number of Stems)

Girth Classwise	*Itea chinensis* 1st Dominant	*Castanopsis indica* 2nd Dominant	*Quercus spp* 3rd Dominant	Rest of the species	Total
30-40	83	27	4	254	368
41-50	48	15	14	183	260
51-60	31	21	16	122	190
61-70	12	9	11	85	117
71-80	7	5	12	46	70
81-90	4	7	9	33	53
91-100	0	7	9	25	41
101-110	1	7	5	22	35
111-120	0	4	1	18	23
121-130	0	2	2	13	17
131-140	0	1	0	6	7
141-150	0	0	0	6	6
151 & above	0	2	3	16	21
Total	**186**	**107**	**86**	**829**	**1,208**

Table 3.1.13: Species-Wise Number of Stems in Different Girth Classes in the Entire Forest

(Number of Stems)

Girth Classwise	*Itea chinensis* 1st Dominant	*Castanopsis indica* 2nd Dominant	*Quercus spp* 3rd Dominant	Rest of the species	Total
30-40	834	271	40	2551	3,696
41-50	482	151	141	1838	2,611
51-60	311	211	161	1225	1,908
61-70	121	90	110	854	1,175
71-80	70	50	121	462	703
81-90	40	70	90	331	532
91-100	0	70	90	251	412
101-110	10	70	50	221	351
111-120	0	40	10	181	231
121-130	0	20	20	131	171
131-140	0	10	0	60	70
141-150	0	0	0	60	60
151 & above	0	20	30	161	211
Total	**1,868**	**1,075**	**864**	**8,325**	**12,132**

Figure 3.1.6: Number of Stems in Different Girth Classes

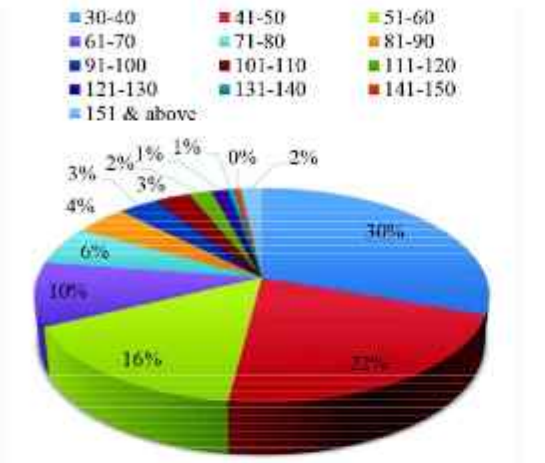


Figure 3.1.7: Species-wise Distribution of Stems

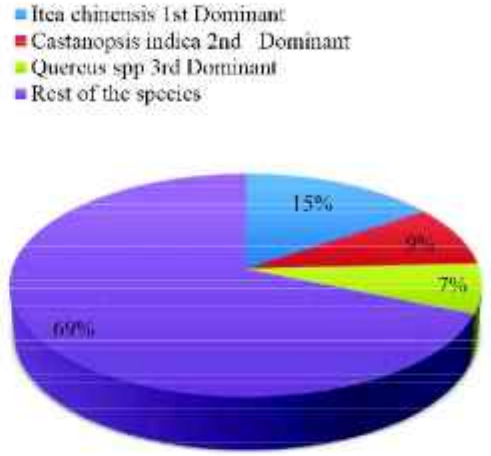


Figure 3.1.7:Number of Stems in Different Girth Classes

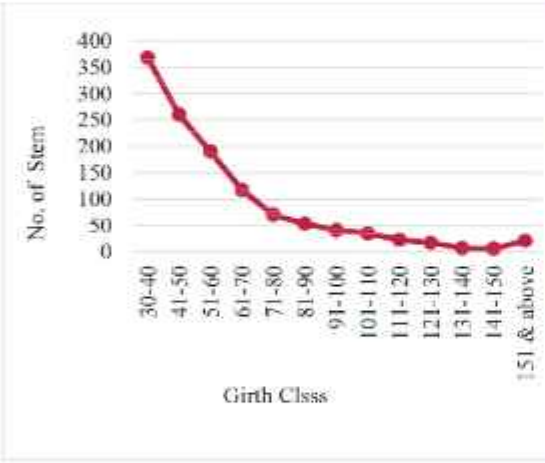


Figure 3.1.8: Inside view of *Law Adong Mawhiang*.



3.1.9 Prescriptions for Future Management

3.1.9.1 Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each *Law Adong* located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Adong Mawhiang* has not been registered with the KHADC. The Chief Forest Officer (CFO) of the KHADC and the Village Dorbar of Mawhiang may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Adong Mawhiang* with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.1.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal recognition and protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The Village *Dorbar* of *Mawhiang* and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Law Adong Mawhiang* as a Community Reserve.

3.1.9.3 Boundary Demarcation

Boundary of the *Law Adong Mawhiang* has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachments. To prevent and to ensure early detection of encroachments, boundary of the *Law Adong Mawhiang,* wherever it is not constituted by natural features of permanent nature, such as rivers, streams, hill ridge *etc.*,may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.1.9.4 Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India, during a period of 22 years (2002 -2023) no fire incident has occurred in the *Law Adong Mawhiang*. As per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Adong Mawhiang* is neither vulnerable nor prone to forest fire. However, to prevent damage to the *Law Adong Mawhiang* from accidental forest fires, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Adong Mawhiang* and engagement of fire watchers during the critical months *etc*. may be taken.

3.1.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench etc. may be constructed at suitable locations in the *Law Adong Mawhiang*.

3.1.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Adong Mawhiang* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath/ walking trail, sign board, washrooms *etc.* may be constructed to attract tourists.

3.1.9.7 Restocking of Open Degraded Areas

About three-fourth of the *Law Adong Mawhiang* is covered by grasslands. The remaining area is covered by moderately dense and open forests, Efforts may be made to afforest the blank grasslands and restock the open degraded patches in the *Law Adong Mawhiang* by assisting and promoting natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.1.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Adong Mawhiang* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Adong Mawhiang*.

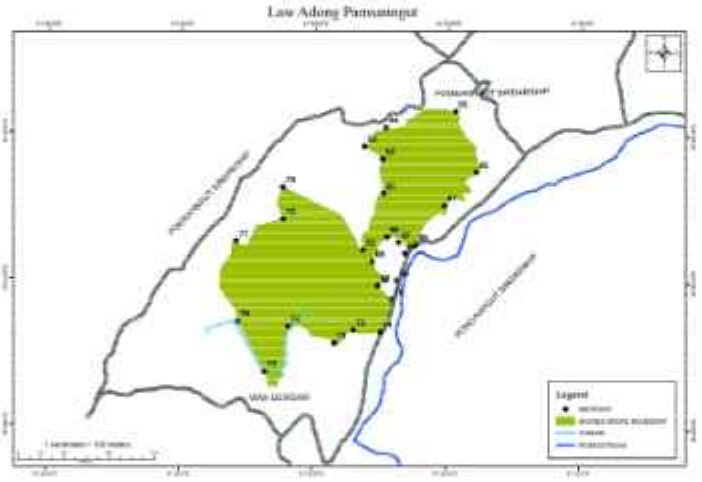
3.1.9.9 Awareness Campaign

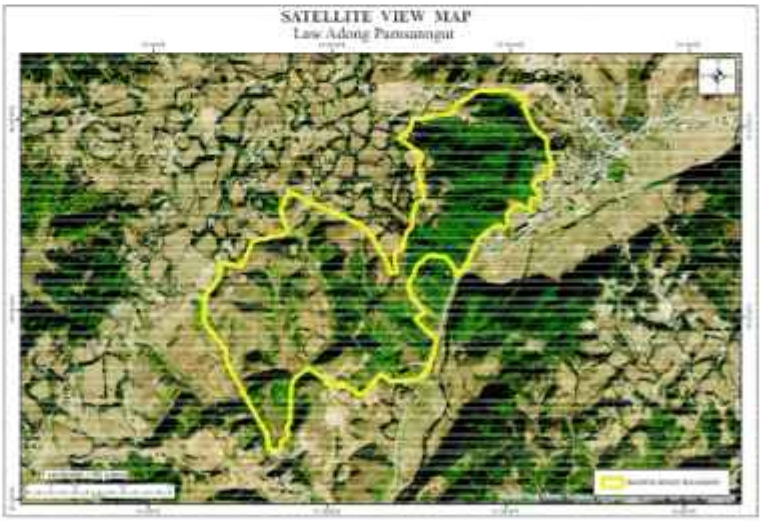
The *Law Adong Mawhiang* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore needs to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

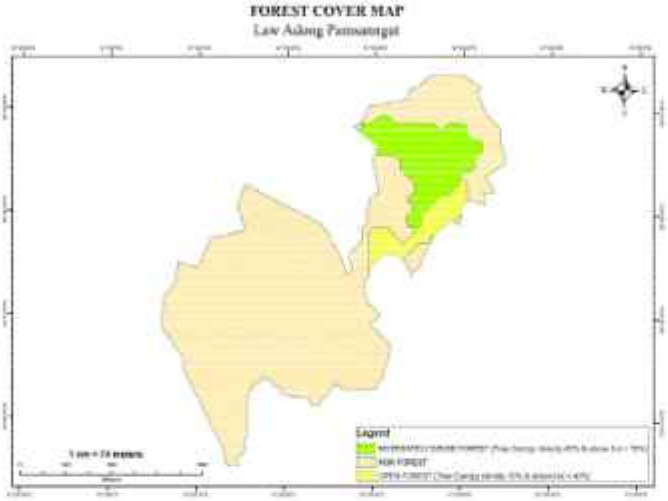
3.2. LAW ADONG PAMSANNGUT

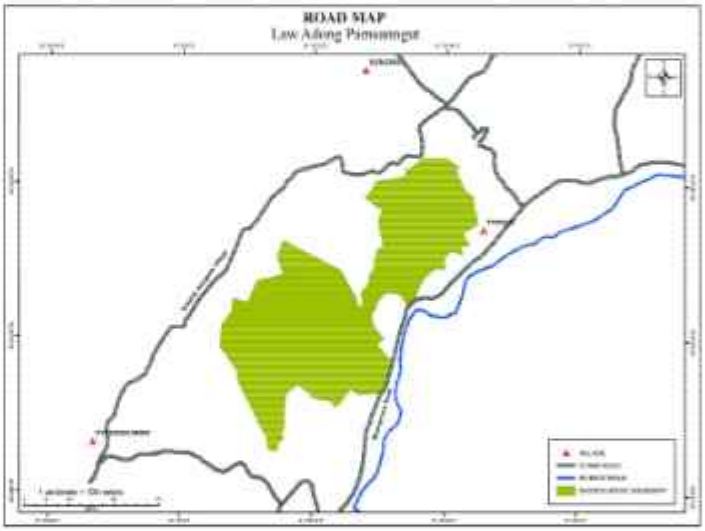
3.2.1 LOCATION

Law Adong Pamsanngut is situated in East Khasi Hills District of Meghalaya at Tyrsad village under *Pamsanngut Sirdarship*. It covers an area of 51.002 ha. It lies between 91° 39¹ 10" E to 91° 39¹ 45"E longitude and 25° 24¹ 05" N to 25° 24¹ 45" N latitude at an altitude of 1,712 m from mean sea level.







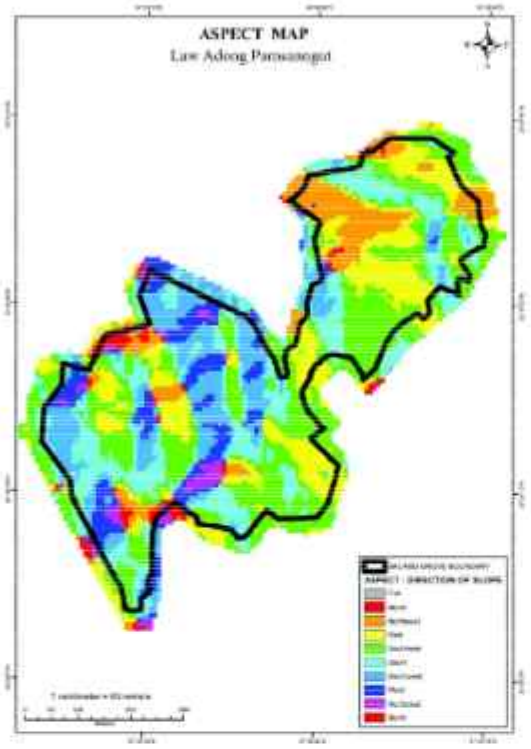


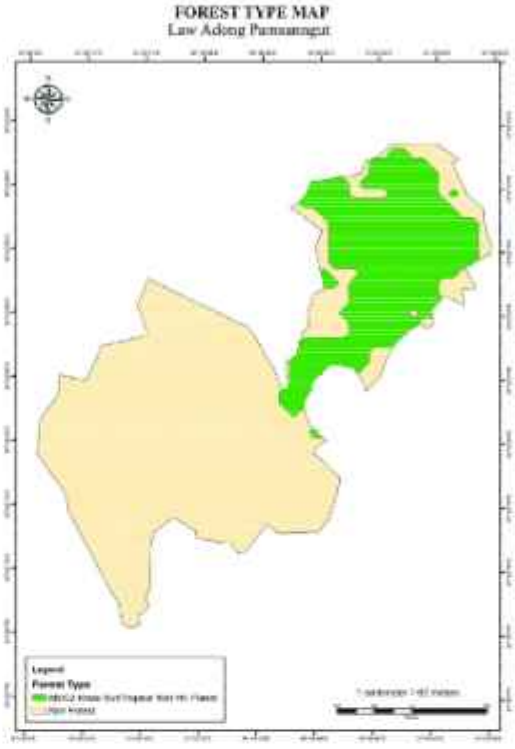
It is bounded by Tyrsad Village in the North and North-East, by Tyrsad Umskeh Village in the South-East, by Nongmadan Village in the South-West, by *Wah Dewsaw* Stream and *Ramjumai* streamin the South. It is accessible by road from Shillong via Mawphlang-Balat Road. It is located at about 35km from Shillong.

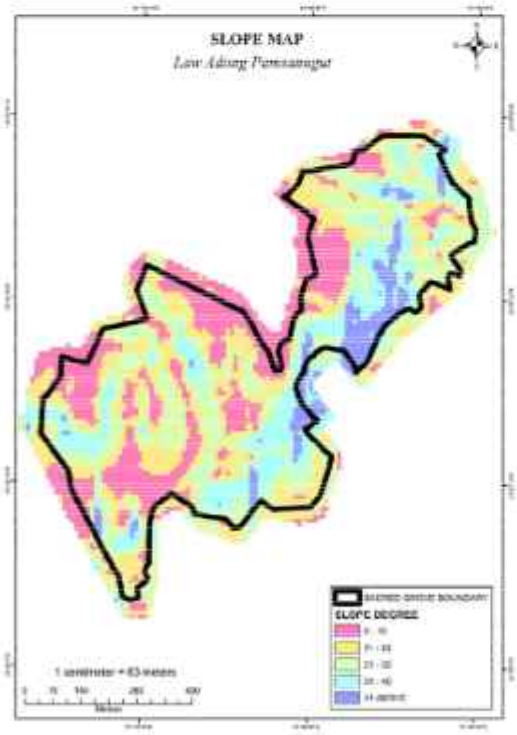
3.2.2 Brief History

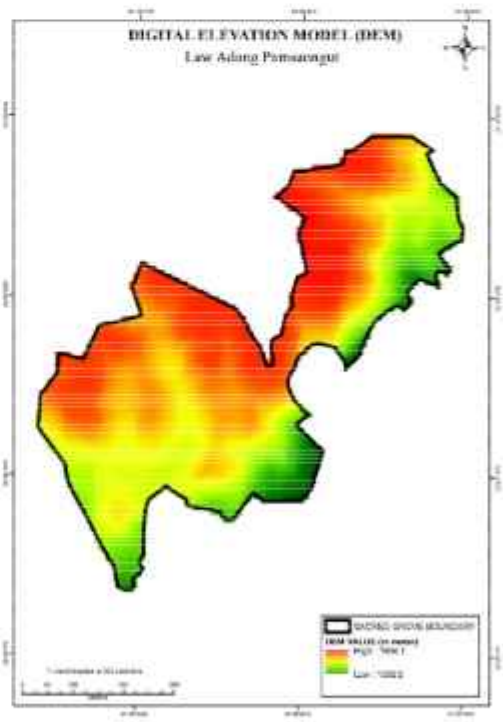
The *Law Adong Pamsanngut* is in existence for centuries from the beginning of human settlements in this part of Khasi Hills. It is managed and administered by the Dorbar of *Pamsanngut Sirdarship*. North East part of the *Law Adong Passanngut* is still revered and considered as a sanctum sanctorum by the local residents. A burial ground is located on northern side of this forest.

The *Law Adong Pamsanngut* is free from encroachments. However, it is experiencing biotic pressure such as grazing.


ASPECT MAP
Law Adong Pamsaingut


FOREST TYPE MAP
Law Adong Pamsaingut
Legend
Forest Type


SLOPE MAP
Law Adong Pamsaingut
SLOPE DEGREE


DIGITAL ELEVATION MODEL (DEM)
Law Adong Pamsaingut

3.2.3 Geography and Climate

Topography of the grove is hilly in nature with slope varying from 0.1° to 48°. Major part of the *Law Adong Pamsanngut* falls under South-West, South, North and South East aspects. Soil texture is sandy loam with gravel and coarse fragments. Soil consistency is slightly compact. Colour of the soil is brown with shallow soil depth.

Mild soil erosion has been observed in the *Law Adong Pamsanngut*. *Wah Dewsaw* stream forms its Southern boundary. This stream serves as a water source for adjoining agricultural fields. Several waterholes located within the *Law Adong Pamsanngut* provide year-round water supply to all the nearby villages of *Pamsanngut Sirdarship*.

Winter season starts from end of October and last still March of the next year. *Law Adong Pamsanngut* receives high rainfall during the monsoon season from April to September. Average temperature varies from 5°C to 23°C. The *Law Adong Pamsanngut* experiences frost during December to February.

3.2.4 Forest Type

As per the Champion and Seth classification (1968), North-Easten part of the *Law Adong Pamsanngut* is covered by the forests of ***Sub-type 8B/C2 Khasi Sub-tropical Wet Hill Forest***.

The remaining part of the *Law Adong Pamsanngut* consists of forests of the ***Sub-Type 9/C2 Assam Sub-Tropical Pine Forest.*** Pine trees existing in this part are mainly of the plantation origin.

3.2.5 Forest cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun forest cover in the *Law Adong Pamsanngut* is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	6.67	13.07
Open Forest (10% - 40%)	2.63	5.16
Scrub Forest (<10%)	0	0
Non-Forest	41.70	81.77
Total	**51.002**	**100**

3.2.6 Flora and fauna

A major part of the *Law Adong Pamsanngut* is constituted by grasslands. North-Eastern part of the *Law Adong Pamsanngut* is covered by patches of natural forests. The remaining area consists of patches of pine trees of plantation origin. *Pinus kesiya and Quercus dealbata* are respectively the 1st and 2nd dominant tree species. The forest is home to many rare, endangered and endemic plant species.

3.2.6.1 Floral species

Table 3.2.1: Trees found in *Law Adong Pamsanngut*

Sl No.	Local Name	Botanical Name	Family
1	*Dieng liengiong*	*Alnus nepalensis*	*Betulaceae*
2	*Dieng ksuid*	*Alstonia scholaris*	*Apocynaceae*
3	*Dieng latymphu*	*Aralia armata*	*Araliaceae*
4	*Dieng lieng*	*Betula alnoides*	*Betulaceae*
5	*Dieng tyrnem*	*Camelia caduca*	*Theaceae*
6	*Dieng sohot*	*Castanopsis indica*	*Fagaceae*
7	*Dieng siar*	*Castonopsisarmata*	*Fagaceae*
8	*Dieng latyrpad khlaw*	*Cinnamomum bejholgota*	*Lauraceae.*
9	*Dieng latyrpad*	*Cinnamomum tamala*	*Lauraceae.*
10	*Dieng kseh bilat*	*Cryptomeria japonica*	*Cupressaceae*
11	*Dieng sohphohkhasi*	*Docynia indica*	*Rosaceae*
12	*Dieng sohkhlur*	*Elaeagnus puriformis*	*Elaeagnaceae*
13	*Dieng lba*	*Engelhardtia spicata*	*Juglandaceae*
14	*Dieng pyrshit*	*Euryaacuminate*	*Theaceae*
15	*Dieng doh*	*Exbucklandia populnea*	*Hamamelidaceae*
16	*Dieng jem*	*Glochidion velutium/acuminatum*	*Phyllanthaceae*
17	*Dieng sla lamehblang/soheitblang*	*Grewia abutifolia*	*Malvaceae*
18	*Dieng sohpaiat*	*Ligustrum lucidum*	*Oleaceae*
19	*Dieng syiang*	*Ligustrum robustum*	*Oleaceae*
20	*Dieng jing*	*Lithocarpus fenestrata*	*Fagaceae*
21	*Dieng sohsying*	*Litsea cubeba*	*Lauraceae*
22	*Dieng sohphie*	*Myrica esculenta*	*Fagaceae*
23	*Dieng siasia*	*Pasania fenestrata*	*Fagaceae*
24	*Dieng Kseh Kashmir*	*Pinus betula*	*Betulaceae*
25	*Dieng kseh*	*Pinus khasiana/kesiya*	*Pinaceae*
26	*Dieng jakba*	*Polygala arillata*	*Polygalaceae*
27	*Dieng sohlarmaw*	*Potenia integrefolia*	*Rosaceae*
28	*Dieng sohjhur*	*Pyrus pashia*	*Rosaceae*
29	*Dieng sai*	*Quercus dealbata*	*Fagaceae*
30	*Dieng tiewthoin/Dieng tiew saw*	*Rhododendron arboreum*	*Ericaceae*
31	*Dieng kain*	*Rhus succedanea*	*Anacardiaceae*
32	*Dieng ngan*	*Schima khasiana*	*Theaceae*
33	*Dieng sohkrot*	*Smilax glaucophylla*	*Smilacacea*
34	*Dieng dpei*	*Symplocos theafolia*	*Symplocaceae*
35	*Dieng sohlang eitsier*	*Viburnum foetidium*	*Viburnaceae*
36	*Dieng sohlang eitksew*	*Viburnum simonsii*	*Adoxaceae*

Table 3.2.2: Shrubs found in *Law Adong Pamsanngut*

Sl No.	Local Name	Botanical Name	Family
1.	Soh shiah	Rubus ellipticus	Rosaceae
2.	Soh khlor	Elaeagnus pyriformis	Elaeagnaceae
3.	Dieng snammaw/sohlarmaw	Photinia spp	Rosaceae
4.	Dieng pyiur	Corylopsishimalayana	Hamamelidaceae
5.	Dieng siasia (latyrpadkhlaw)	Cinnamomum tamala	Lauraceae
6.	Dieng tyrthia	Cinnamomum pauciflorum	Lauraceae
7.	Dieng soh pyrsit	Eurya acuminate	Theaceae
8.	La tyngkrong	Macropanax dispermus	Araliaceae
9.	La tyngkien	Rauvolfia densiflora	Apocynaceae.
10.	Sohlangeitksew	Viburnum simonsii	Adoxaceae
11.	Soh lamut	Agapetes vareigata	Ericaceae
12.	Dieng shadmoit	Wendlndia waliichi	Rubeceae
13.	Dieng sahmehblang	Grewia abutilifolia	Tiliaceae
14.	Dieng jing	Lithocarpus fenestrata	Fagaceae
15.	Dieng tyrnem	Camelia caudula	Theaceae

Table 3.2.3: Herbs found in *Law Adong Pamsanngut*

Sl No.	Local Name	Botanical Name	Family
1.	Slamet	Phrynium spp	Pubinevve
2.	Ja lyngthem	Polygonum chinense	Polygonaceae
3.	Wang khlaw	Esculenta spp	Araceae
4.	Tiew sying maw	Gingiber purpureum	Zingiberaceae
5.	Shynrai khlaw	Alpine aalogus	Gingiberaceae
6.	Wang um	Homolonina aromatica	Araceae
7.	Jajewlieh	Begonia spp	Begoniaceae
8.	Jajew maw	Begonia spp	Begoniaceae
9.	Soh byrthit	Urena lobata	Malvaceae
10.	Tiew rusum	Hedychium coccinium	Zingiberaceae
11.	Soh byrthitrit	Sida rhombijolia	Malvaceae
12.	Soh ngangkhlaw	Solanum torvum	Solanaceae
13.	Khliangsyiar	Centella asiatica	Apiaceae
14.	Soh byrthit bah	Sida acuta	Malvaceae
15.	Soh thud	Osbeckia spp	Melostomaceae
16.	La shing	Curcuma spp	Zingiberaceae
17.	Sying khlaw	Zingiber purpureum	Zingiberaceae
18.	Soh krismas	Sarcandra glabra	Zingiberaceae
19.	Soh byrthitrit	Sida rhombijolia	Chloranthaceae
20.	Sla eitmut	Eupatorium spp	Asteraceae

Table 3.2.4: Climbers found in *Law Adong Pamsanngut*

Sl No.	Local Name	Botanical Name	Family
1.	Soh shangkhlor/lyngshang	Elaeagnus pyriformis	Elaeagnaceae
2.	Soh nepbah	Rubus rugosus	Rosaceae
3.	Jyrmi kynsew	Argyreia nervosa	Convolvulaceae
4.	Sohkrot	Smilax zeylanica	Smilacaceae
5.	Sla kyndajyrmi	Pothos scandens	Araceae
6.	Sla kyndajyrmi	Pothos spp	Aralaceae
7.	Phan synreh	Dioscorea alata	Dioscoreaceae
8.	Phan jyrmi	Stephania glabra	Liliaceae
9.	Jyrmi stein	Lonicera macrantha	Caprifoliaceae
10.	Jyrmi japan	Agevatina adenofora	Asteraceae
11.	Jyrmi shiah	Xanthozylum khasiana	Rotaceae
12.	Jyrmi khlaw	Entoda spp	Luguminaceae
13.	Jyrmi tiewkulap	Not Listed	Rosaceae

Table 3.2.5: Orchids found in *Law Adong Pamsanngut*

Sl No.	Local Name	Botanical Name	Family
1.	Tiewdieng	Micropera manii	Orchideceae
2.	Tiew smehmasi	Dendrobium chrysanthum	Orchideceae
3.	Soh khaleh	Pleione maculate	Orchideceae
4.	Tiew slaremmaw	Rafidopohra lancifolia	Orchideceae
5.	Tiew pawang lum	Anoectochilus setaceus	Orchidaceae
6.	Tlong khnai	Oberoniajen kinsiana	Orchideceae
7.	Tiew pawanglum	Arundina graminifolia	Orchideceae
8.	Tiew dohmaw	Anoectochilus brevilabris	Orchideceae
9.	Tiew dohmaw	Anoectochilus roxburghii	Orchideceae
10.	Tiew lynksiar	Cymbiduim traceyamum	Orchideceae
11.	Knupmawiang	Paphiopedium insigne	Orchideceae
12.	Syntiew die	Bulbophyllum cylindraceum	Orchideceae

Table 3.2.6: Bamboo found in *Law Adong Pamsanngut*

Sl No.	Local Name	Botanical Name	Family
1.	Siej Naga heh	Arundinaria spp	Poaceae

Table 3.2.7: Creepers found in *Law Adong Pamsanngut*

Sl No.	Local Name	Botanical Name	Family
1.	*Sohnep bah*	*Rubus rogosus*	*Rosaceae*
2.	*TmainKhla*	*Lycopodoum cernuum*	*Lycopodiaceae*
3.	*Sla kyndajyrmi*	*Pothos spp*	*Aralaceae*
4.	*Dieng sohrengblang*	*Strophanthun wallichi*	*Apocynaceae*
5.	*Lapadong*	*Rhaphidophora spp*	*Araleceae*
6.	*Tympewkhlaw*	*Pipper spp*	*Peppereceae*
7.	*Jyrmikynsiew*	*Argyreia nervosa*	*Convolvulaceae*

Table 3.2.8: Grasses found in *Law Adong Pamsanngut*

Sl No.	Local Name	Botanical Name	Family
1.	*Lang tylli*	*Arundinella khasiana*	*Poaceae*
2.	*Lasier*	*Corex spiculata*	*Poaceae*
3.	*Lang phot*	*Juncus effuses*	*Poaceae*
4.	*Phlangphreit*	*Cymbopogon exsertus*	*Poaceae*

Table 3.2.9: Ferns found in *Law Adong Pamsanngut*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhang iong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodalio*

3.2.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Adong Pamsanngut* has been carried out so far. However, as per the local residents presence of several wild animals such as barking deer, pangolin, jungle fowls, jackals and many more vertebrates and invertebrates has been reported in this forest.

3.2.7 Growing Stock

As per the methodology described in Chapter-II, enumeration was carried out 10% area of the forest as its total area is more than 50 ha. In each sample plot all the trees having more than 30 cm girth (over bark) at breast height were enumerated by measuring top height (in metres) and girth (in centimeters) at breast height. Data collected during the enumeration were entered in Sacred Grove Description Form and Plot Enumeration Form. During the enumeration total 1,338 trees were found within 26 plots each of 0.2 hectarein size. These include 466 *Pinus kesiya* (1st dominant), 381 *Quercus*

dealbata (2nd dominant), 199 *Myrica esculenta (3rd Dominant)* and 292 rest of the species. Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each species for each of the 13 girth classes starting from 30-40cm to 151cm and above. Details of the same are given in the Table: 3.2.10 &Table: 3.2.11 below. As may be seen, total growing stock in this forest is 3,209.37 cubic metres.

Table 3.2.10: Specieswise Distribution of Growing Stock in Different Girth Classes

(cum)

Girth Class wise	*Pinus kesiya* 1st Dominant	*Quercus dealbata* 2nd Dominant	*Myrica esculenta* 3rd Dominant	Rest of the species	Growing Stock in 26 sample plots	Growing Stock in entire Forest
30-40	11.32	23.87	3.39	5.65	**44.23**	442.29
41-50	10.46	29.03	6.95	7.36	**53.80**	537.99
51-60	4.89	24.19	6.41	9.97	**45.46**	454.59
61-70	1.96	21.49	6.26	8.76	**38.47**	384.75
71-80	1.74	16.20	7.32	9.17	**34.43**	344.26
81-90	0.55	11.74	4.14	8.04	**24.48**	244.76
91-100	0.66	10.57	4.62	6.96	**22.80**	228.04
101-110	1.90	8.52	3.38	5.58	**19.38**	193.81
111-120	1.12	0.00	4.08	5.65	**10.85**	108.49
121-130	0.00	3.37	3.41	1.66	**8.44**	84.40
131-140	0.00	4.01	5.67	0.00	**9.68**	96.75
141-150	1.95	0.00	2.35	2.07	**6.37**	63.69
151 & above	0.00	2.55	0.00	0.00	**2.55**	25.54
Total	**36.54**	**155.53**	**57.99**	**70.86**	**320.92**	**3,209.37**

Figure 3.2.1: Girth class-wise Growing Stock in Entire Forest



Table 3.2.11: Species-wise Distribution of Growing Stock in Different Girth Classes in the Entire Forest

(cum)

Girth Class wise	*Pinus kesiya* 1st Dominant	*Quercus dealbata* 2nd Dominant	*Myrica esculenta* 3rd Dominant	Rest of the species	Total (for 51.002ha' area)	%wrt total volume
30-40	113.19	238.68	33.94	56.47	**442.29**	13.78
41-50	104.62	290.26	69.50	73.60	**537.99**	16.76
51-60	48.90	241.88	64.09	99.71	**454.59**	14.16
61-70	19.60	214.94	62.64	87.56	**384.75**	11.99
71-80	17.37	161.96	73.24	91.69	**344.26**	10.73
81-90	5.50	117.40	41.44	80.41	**244.76**	7.63
91-100	6.57	105.69	46.22	69.55	**228.04**	7.11
101-110	18.95	85.20	33.81	55.84	**193.81**	6.04
111-120	11.24	0.00	40.75	56.50	**108.49**	3.38
121-130	0.00	33.70	34.08	16.62	**84.40**	2.63
131-140	0.00	40.06	56.69	0.00	**96.75**	3.01
141-150	19.50	0.00	23.51	20.68	**63.69**	1.98
151 & above	0.00	25.54	0.00	0.00	**25.54**	0.80
Total	**365.45**	**1555.32**	**579.93**	**708.66**	**3209.37**	
%wrt total volume	11.39	48.46	18.07	22.08		100.00

As may be seen, 11.39% of the total growing stock is contributed by the 1st dominant species (*Pinus kesiya*). The 2nd dominant species (*Quercus dealbata*) constitutes 48.46% of the total growing stock. Similarly, the 3rd dominant species (*Myrica esculenta)* constitutes 18.07%of the total growing stock. The remaining 22.08% of the growing stock is constituted by the rest of the species.

Figure 3.2.2: Girth class-wise Distribution of Growing Stock

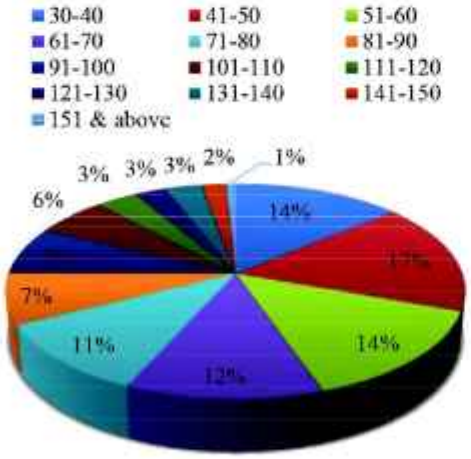


Figure 3.2.3: Species- wise Distribution of Growing Stock

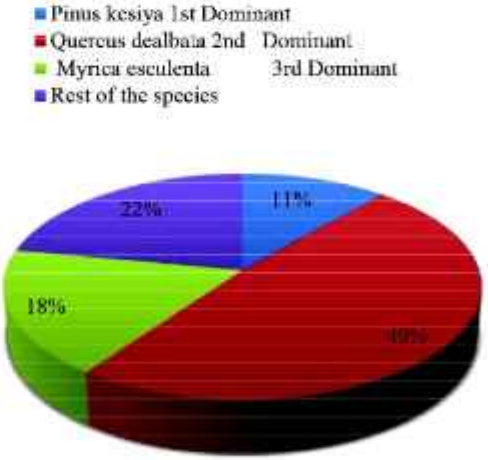


Figure 3.2.4: Girth class wise Distribution of Growing Stock



Figure 3.2.5: Over view of *Law Adong Pamsanngut*



3.2.8 Number of Stems

Species-wise numbers of stems in each girth class are given in the Table 3.2.12 & Table 3.2.13 below. As may be seen, maximum numbers of stems are found in lower girth classes *i.e.* from 30-40 cm to 61-70 cm classes. Numbers of stems in a girth class are inversely proportional to mid-diameters of girth classes.

TABLE 3.2.12: Species-wise Distribution of Stems in Different Girth Classes in 26 Sample plots

(number of stems)

Girth Class wise	*Pinus kesiya* 1st dominant	*Quercus dealbata* 2nd dominant	*Myrica esculenta* 3rd dominant	Rest of the species	Total
30-40	307	120	68	131	626
41-50	113	100	52	50	315
51-60	29	61	26	40	156
61-70	7	40	16	24	87
71-80	4	24	14	17	59
81-90	1	14	6	11	32
91-100	1	10	5	8	24
101-110	2	7	3	5	17
111-120	1	0	3	4	8
121-130	0	2	2	1	5
131-140	0	2	3	0	5
141-150	1	0	1	1	3
151 & above	0	1	0	0	1
Total =	**466**	**381**	**199**	**292**	**1338**

Table 3.2.13: Species-wise Number of Stems in Different Girth Classes in the Entire Forest

(number of stems)

Girth Class wise	*Pinus kesiya* 1st dominant	*Quercus dealbata* 2nd dominant	*Myrica esculenta* 3rd dominant	Rest of the species	Total
30-40	3070	1200	680	1310	6,260
41-50	1130	1000	520	500	3,150
51-60	290	610	260	400	1,560
61-70	70	400	160	240	870
71-80	40	240	140	170	590
81-90	10	140	60	110	320
91-100	10	100	50	80	240
101-110	20	70	30	50	170
111-120	10	0	30	40	80
121-130	0	20	20	10	50
131-140	0	20	30	0	50
141-150	10	0	10	10	30
151 & above	0	10	0	0	10
Total	**4,660**	**3,810**	**1,990**	**2,920**	**13,381**

Figure 3.2.6: Number of stems in Different Girth Classes

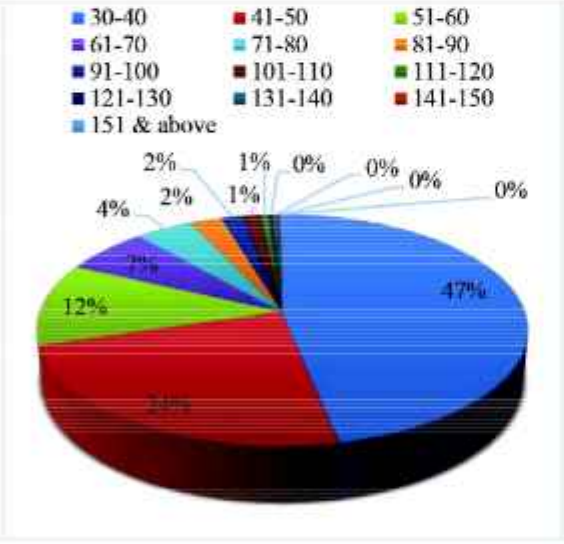


Figure 3.2.7: Species wise Distribution of stems

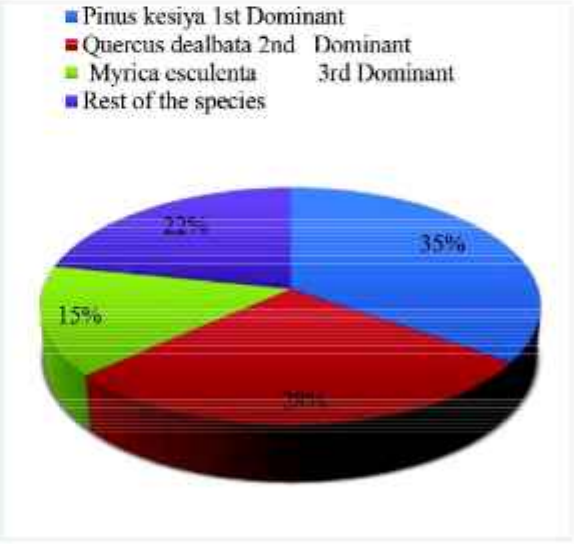


Figure 3.2.8: Number of stems in Different Girth Classes



Figure 3.2.9: Inside view of *Law Adong Pamsanngut*



3.2.9 Prescriptions for Future Management

3.2.9.1 Registration withthe Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each *Law Adong* located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Adong Pamsanngut* has not been registered with the KHADC. The CFO of the KHADC and the Dorbar of *Pamsanngut* Sirdarship may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Adong Pamsanngut* with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.2.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, sanctuary or a conservation reserve, as a community reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes the Forest eligible to receive financial support under Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats". The *Dorbar* of *Pamsanngut Sidarship* and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may take necessary actions for notification of the *Law Adong Pamsanngut* as a Community Reserve.

3.2.9.3 Boundary Demarcation

Boundary of the *Law Adong Pamsanngut* has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachments. To prevent and to ensure early detection of encroachments, boundary of the *Law Adong Pamsanngut*, wherever it is not constituted

by natural features of permanent nature, such as rivers or streams or hill ridges, may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.2.9.4 Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India, during a period of 22 years (2002 -2023) no fire incident has occurred in the *Law Adong Pamsanngut*. As per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Adong Pamsanngut* is neither vulnerable nor prone to forest fire. However, to prevent damage to the *Law Adong Pamsanngut* from accidental forest fires, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Adong Pamsanngut* and engagement of fire watchers during the critical months *etc.* may be taken.

3.2.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench, may be constructed at suitable locations in the *Law Adong Pamsanngut.*

3.2.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Adong Pamsanngut* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath/ walking trail, sign board, washrooms *etc.* may be constructed to attract tourists.

3.2.9.7 Restocking of Open Degraded Areas

More than three-fourth area of the *Law Adong Pamsanngut* is covered by grasslands. The remaining area is covered by moderately dense and open forests, Efforts may be made to afforest the blank grasslands and restock the open degraded patches in the *Law Adong Pamsanngut* by assisting and promoting natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.2.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Adong Pamsanngut* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Adong Pamsanngut.*

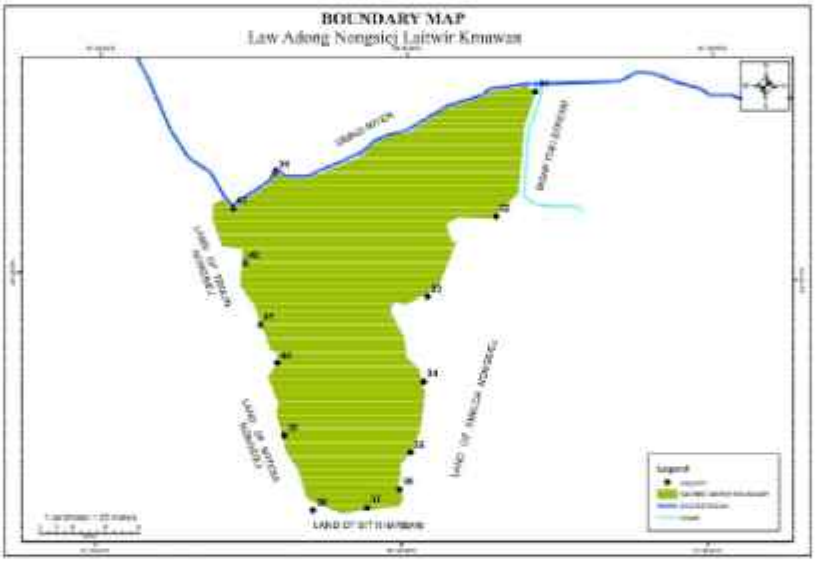
3.2.9.9 Awareness Campaign

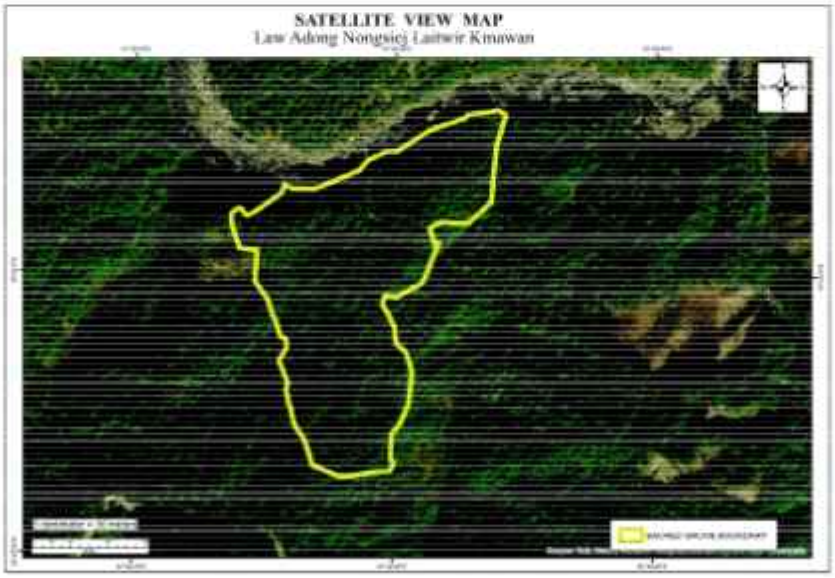
The *Law Adong Pamsanngut* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

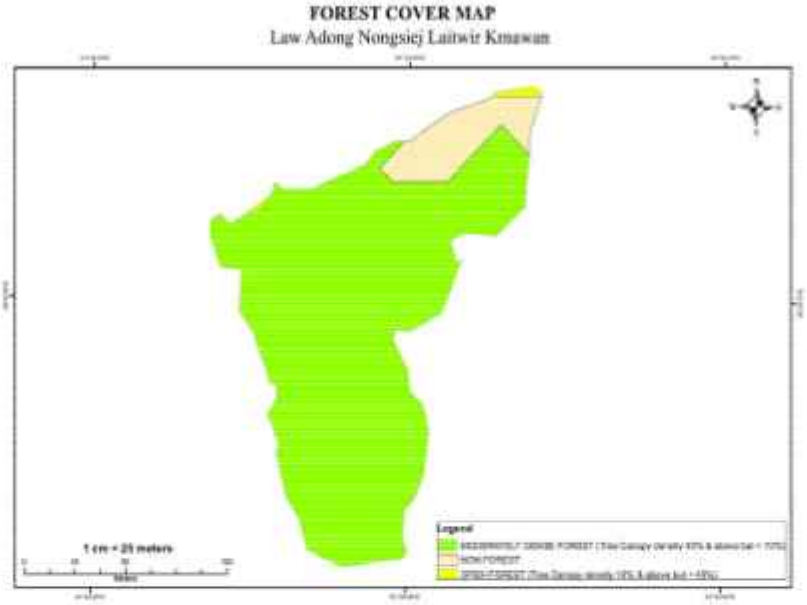
3.3. *LAW ADONG KUR NONGSIEJ LAITWIR KMAWAN*

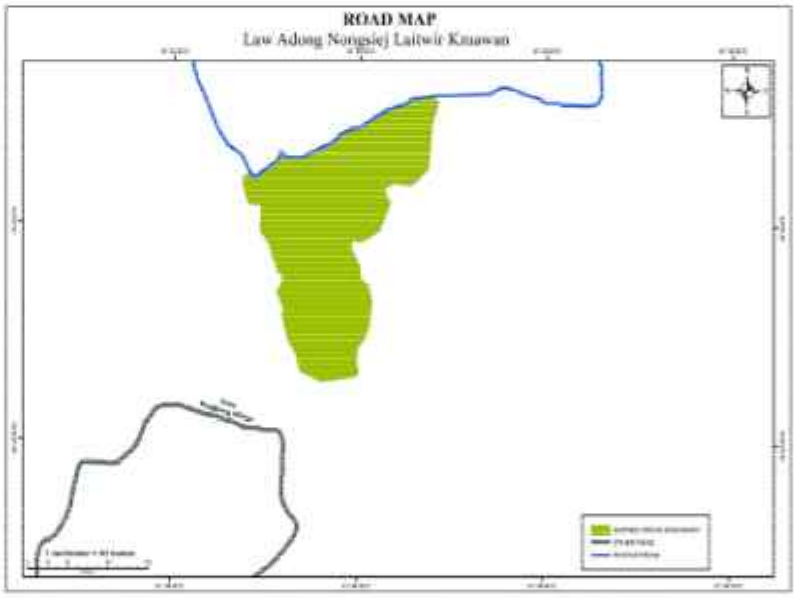
3.3.1 Location

*Law Adong Nongsiej Laitwir Kmawan*is situated in East Khasi Hills District at Bisap Tdei *Pongkung* village under the Syiemship of Hima Maharam. It has an area of 5.866 ha. It lies between 25° 23' 53" N to 25° 24' 06" N latitude and 91° 34' 23" E to 91° 34' 32" E longitude at an altitude of 1,560 m above mean sea level. It is bounded in the North by *Umngi* stream, in the South by private land of Smti. Sit Kharbani, in the East by private land of Smti. Smelda Nongsiej and Bisap Tdeistream and in the West by private land of Smti. Trolin Nongsiej and Smti. Stidia Nongsiej. The grove is accessible by road from Shillong. It is located at 55 km distance from Shillong.



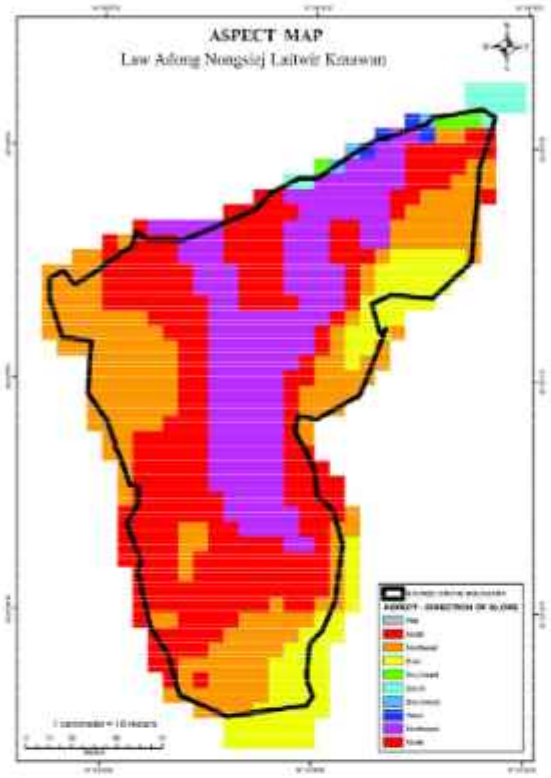


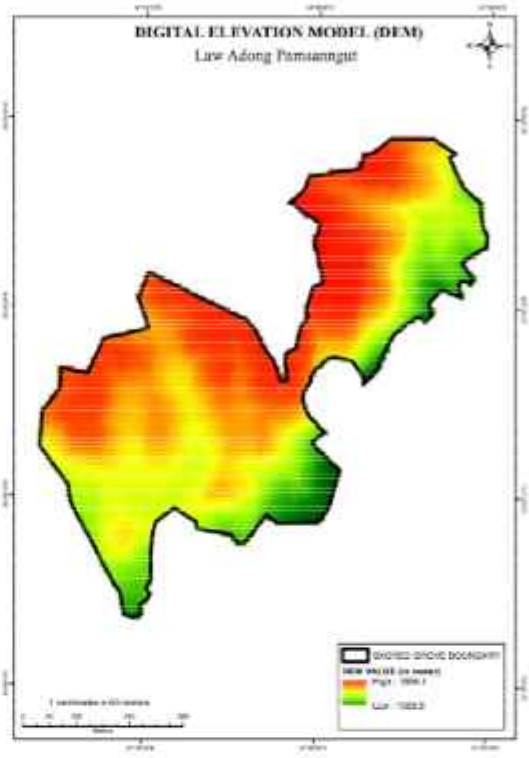


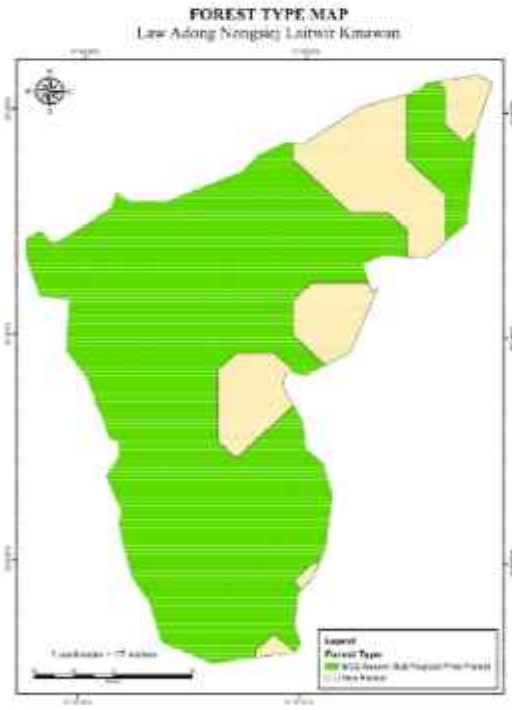


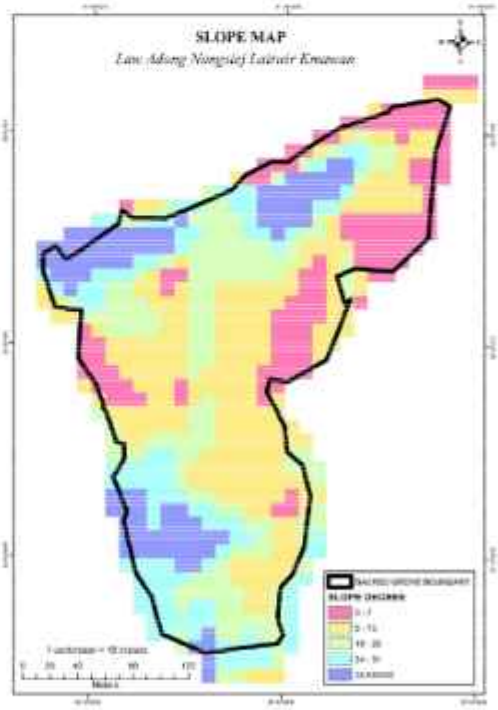
3.3.2 Brief History

Law Adong Nongsiej Laitwir Kmawan, has been established by the *Nongsiej Laitwir Kmawan* clan, centuries ago. It is owned, managed and controlled by the *Nongsiej Laitwir Kmawan* clan.In the past, religious rituals might have been performed in this forest. However, presently, it is being preserved by the clan as a memory of their ancestors and more importantly for its rich biodiversity, which they intend to pass down to their generation to come. Felling of trees is strictly prohibited in this forest.


ASPECT MAP
Law Adong Nongsiej Laitwir Kmawan


DIGITAL ELEVATION MODEL (DEM)
Law Adong Pamsanngut


FOREST TYPE MAP
Law Adong Nongsiej Laitwir Kmawan


SLOPE MAP
Law Adong Nongsiej Laitwir Kmawan

Nongsiej Laitwir Kmawan is so far free from biotic pressures such as encroachments, wildfires, hunting, poaching, grazing and illegal felling of trees *etc.*

3.3.3 Geography and climate

Topography of *Law Adong Nongsiej Laitwir Kmawan* is hilly in nature with slope varying from 3.9° to 36°. Major parts of *Law Adong Nongsiej Laitwir Kmawan* falls in North, North-West and East Aspects. Soil texture is sandy-loam with coarse gravel fragments with slightly compact in soil consistency. The colour of the soil is black with high soil depth. Soil erosion is almost negligible. *Wah Umngi* bounds the grove on the north side, while *Bisap Tdei* stream traverses its east side. Numerous seasonal streams flow within the grove.

Winter season starts from the end of October and last till March of the next year. This forest receives high rainfall during the monsoon season from April to September. Average temperature varies from 5°C to 23°C.

3.3.4 Forest Type

According to the Champion and Seth classification (1968), forests found in the grove are of the ***Type 8B/C2 Khasi Sub-Tropical Wet Hill Forest.***

3.3.5 Forest cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun, forest cover in the *Law Adong Nongsiej Laitwir Kmawan* is as below:

Forest Cover	**Area (ha.)**	**% of total Area**
Very Dense Forest (> 70%)	-	-
Moderately Dense Forest (40 %-70 %)	5.08	86.69
Open Forest (10% - 40%)	0.16	2.73
Scrub Forest (<10%)	-	-
Non-Forest	0.62	10.58
Total	**5.86**	**100**

3.3.6 Flora and fauna

A major part of the *Law Adong Nongsiej Laitwir Kmawan Bisap Tdei Pongkung* is home to three-storied dense virgin forest of natural origin. *Castanopsis indica* and *Quercus dealbata* are respectively the 1st and 2nd dominant tree species. The forest is home to many rare, endangered and endemic plant species.

3.3.6.1 Floral species: -

Table 3.3.1: Trees found in *law adong Nongsiej Laitwir Kmawan Bisap Tdei Pongkung*

Sl No.	Local Name	Botanical Name	Family
1	*Dieng sohtyrkhum*	*Acer laveigatum*	*Sapindaceae*
2	*Dieng tyrnem*	*Camelia caduca*	*Theaceae*
3	*Dieng sning*	*Castanopsis armata*	*Fagaceae*
4	*Dieng sohot*	*Castanopsis indica*	*Fagaceae*
5	*Dieng sning*	*Castanopsis tribuloides*	*Fagaceae*
6	*Dieng rang*	*Cesearia varica*	*Salicaceae*
7	*Dieng pingwait*	*Cinnamomum glanduliferum*	*Lauraceae*
8	*Dieng sohphoh khasi*	*Docynia indica*	*Rosaceae*
9	*Dieng song*	*Erythrina indica*	*Fabaceae*
10	*Dieng pyrshit*	*Eurya japonica*	*Theaceae*
11	*Dieng doh*	*Exbucklandia populnea*	*Hamamelidaceae*
12	*Dieng sohpian*	*Ficus hirta*	*Moraceae.*
13	*Dieng sohthylliang*	*Ficus lamponga*	*Moraceae.*
14	*Dieng jem*	*Glochidion acuminatum*	*Phyllanthaceae*
15	*Dieng sohdieng jem*	*Glochidion acuminatum*	*Phyllanthaceae*
16	*Dieng sohsyieng*	*Ilex venuolsa*	*Aquifoliaceae*
17	*Dieng sohkynphor khlaw*	*Knemalini folia*	*Myristicaceae*
18	*Dieng syiang*	*Ligustrum robustum*	*Oleaceae*
19	*Dieng lieh*	*Lindera latifolia*	*Lauraceae*
20	*Dieng jing*	*Lithocarpus fenestrata*	*Fagaceae*
21	*Dieng sohniar*	*Michelia panduana*	*Magnoliaceae*
22	*Dieng sohphie*	*Myrica esculenta*	*Fagaceae*
23	*Dieng sohliya*	*Myrica indica*	*Fagaceae*
24	*Dieng sohphienam*	*Myrica nagi*	*Myricaceae*
25	*Dieng kseh*	*Pinus khasiana/kesiya*	*Pinaceae*
26	*Dieng sohjhur iong*	*Prunus cerasoides*	*Rosaceae*
27	*Dieng sohtyrkham*	*Prunus undalata*	*Rosaceae*
28	*Dieng sohshur*	*Pyrus pashia*	*Rosaceae*
29	*Dieng sohot dngiem*	*Quercus semicarpifolia*	*Fagaceae*
30	*Dieng sai*	*Quercus dealbata*	*Fagaceae*
31	*Dieng lingim*	*Quercus kamroopii*	*Fagaceae*
32	*Dieng sohot dngiem*	*Quercus semicarpifolia*	*Fagaceae*
33	*Dieng tiewsaw*	*Rhododendron arboreum*	*Ericaceae*
34	*Dieng kain*	*Rhus succedanea*	*Anacardiaceae*
35	*Dieng ngan*	*Schima khasiana*	*Theaceae*
36	*Dieng dpei*	*Symplocos theafolia*	*Symplocaceae*
37	*Dieng sohlangksew*	*Viburnum carilifolium*	*Caprifoliaceae*

Table 3.3.2: Shrubs found in *law adong Nongsiej Laitwir Kmawan Bisap Tdei Pongkung*

Sl No.	Local Name	Botanical Name	Family
1.	Soh tyrkhum	Acer laevigatum	Sapindaceae
2.	Soh shiah	Rubus ellipticus	Rosaceae
3.	Soh khlor	Elaeagnus pyriformis	Elaeagnaceae
4.	Jalyntem	Polygonum chinense	Polygonaceae
5.	Dieng snammaw/sohlarmaw	Photinia spp	Rosaceae
6.	Tiew saw	Rhododendron arboreum	Ericaceae
7.	Sohma	Rhus chinensis	Anacardiaceae
8.	Dieng tyrthia	Cinnamomum pauciflorum	Lauraceae
9.	Dieng soh pyrsit	Eurya acuminata	Theaceae
10.	Diendsasei	Pasania fenestrata	Fagaceae
11.	Dieng sai	Quercus dealbata	Fagaceae
12.	La tyngkrong	Macropanax dispermus	Araliaceae
13.	La tyngkien	Rauvolfia densiflora	Apocynaceae.
14.	Sohlang eitksew	Viburnum simonsii	Adoxaceae.
15.	Soh lamut	Agapetes vareigata	Ericaceae
16.	Dieng siasia	Cinnamomum tamala	Lauraceae
17.	Dieng shadmoit	Wendlndia waliichi	Rubeceae
18.	Dieng sahmehblang	Grewia abutilifolia	Tiliaceae
19.	Dieng jing	Lithocarpus fenestrata	Fagaceae
20.	Dieng tyrnem	Camelia caudula	Theaceae

Table 3.3.3: Herbs found in *Law Adong Nongsiej Laitwir Kmawan Bisap Tdei Pongkung*

Sl No.	Local Name	Botanical Name	Family
1.	Slamet	Phrynium spp	Pubinevve
2.	Ja lyngthem	Polygonum chinense	Polygonaceae
3.	Wang khlaw	Esculenta spp	Araceae
4.	Tiew sying maw	Gingiber purpureum	Zingiberaceae
5.	Shynrai khlaw	Alpine aalogus	Gingiberaceae
6.	Wang um	Homolonina aromatica	Araceae
7.	Jajew lieh	Begonia spp	Begoniaceae
8.	Jajew maw	Begonia spp	Begoniaceae
9.	Soh byrthit	Urena lobata	Malvaceae
10.	Tiew rusum	Hedychium coccinium	Zingiberaceae
11.	Soh byrthit rit	Sida rhombijolia	Malvaceae
12.	Soh ngangkhlaw	Solanum torvum	Solanaceae
13.	Khliang syiar	Centella asiatica	Apiaceae
14.	Soh byrthit bah	Sida acuta	Malvaceae

15.	Soh thud	Osbeckia spp	Melostomaceae
16.	La shing	Curcuma spp	Zingiberaceae
17.	Sying khlaw	Zingiber purpureum	Zingiberaceae
18.	Soh krismas	Sarcandra glabra	Chloranthaceae
19.	Soh byrthit rit	Sida rhombijolia	Malvaceae
20.	Sla eitmut	Eupatorium spp	Asteraceae

Table 3.3.4: Climbers found in *Law Adong Nongsiej Laitwir Kmawan Bisap Tdei Pongkung*

Sl No.	Local Name	Botanical Name	Family
1.	Soh shangkhlor/lyngshang	Elaeagnus pyriformis	Elaeagnaceae
2.	Soh nepbah	Rubus rugosus	Rosaceae
3.	Jyrmi kynsew	Argyreia nervosa	Convolvulaceae
4.	Soh krot	Smilax zeylanica	Smilacaceae
5.	Sla kynda jyrmi	Pothos scandens	Araceae
6.	Sla kynda jyrmi	Pothos spp	Aralaceae
7.	Phan synreh	Dioscorea alata	Dioscoreaceae
8.	Phan jyrmi	Stephania glabra	Liliaceae
9.	Jyrmi stein	Lonicera macrantha	Caprifoliaceae
10.	Jyrmi japan	Agevatina adenofora	Asteraceae
11.	Jyrmi shiah	Xanthozylum khasiana	Rotaceae
12.	Jyrmi khlaw	Entoda spp	Luguminaceae

Table 3.3.5: Orchids found in law adong *Nongsiej Laitwir Kmawan Bisap Tdei Pongkung*

Sl No.	Local Name	Botanical Name	Family
1.	Tiewdieng	Micropera manii	Orchideceae
2.	Soh khasaw	Pleione praecox	Orchideceae
3.	Tiew smeh masi	Dendrobium chrysanthum	Orchideceae
4.	Soh khaleh	Pleione maculata	Orchideceae
5.	Tiew slaremmaw	Rafidopohra lancifolia	Orchideceae
6.	Tiew pawang lum	Anoectochilus setaceus	Orchidaceae
7.	Talong khnai	Oberonia manii	Orchideceae
8.	Tlong khnai	Oberoniajen kinsiana	Orchideceae
9.	Tiew pawanglum	Arundina graminifolia	Orchideceae
10.	Tiew dohmaw	Anoectochilus brevilabris	Orchideceae
11.	Tiew dohmaw	Anoectochilus roxburghii	Orchideceae
12.	Tiew lynksiar	Cymbiduim traceyamum	Orchideceae
13.	Knup mawiang	Paphiopedium insigne	Orchideceae
14.	Syntiew die	Bulbophyllum cylindraceum	Orchideceae

Table 3.3.6: Bamboos & Canes found in *law adong Nongsiej Laitwir Kmawan Bisap Tdei Pongkung*

Sl No.	Local Name	Botanical Name	Family
1.	*Namlang*	*Chimonobambusa khasiana*	*Poaceae*
2.	*Soh thri*	*Calamus erectus*	*Poaceae*
3.	*Siej lieh*	*Dendrocalamus strictus*	*Poaceae*

Table 3.3.7: Creepers found in *Law Adong Nongsiej Laitwir Kmawan Bisap Tdei Pongkung*

Sl No.	Local Name	Botanical Name	Family
1.	*Sohnep bah*	*Rubus rogosus*	*Rosaceae*
2.	*Tmain khla*	*Lycopodium cernuum*	*Lycopodiaceae*
3.	*Sla kyndajyrmi*	*Pothos spp*	*Aralaceae*
4.	*Dieng sohrengblang*	*Strophanthun wallichi*	*Apocynaceae*
5.	*Lapadong*	*Rhaphidophora spp*	*Araleceae*
6.	*Tympew khlaw*	*Pipper spp*	*Peppereceae*
7.	*Jyrmi kynsiew*	*Argyreia nervosa*	*Convolvulaceae*

Table 3.3.8: Grasses found in *Law Adong Nongsiej Laitwir Kmawan Bisap Tdei Pongkung*

Sl No.	Local Name	Botanical Name	Family
1.	*Lang tylli*	*Arundinella khasiana*	*Poaceae*
2.	*Lasier*	*Corex spiculata*	*Poaceae*
3.	*Lang treng sning*	*Potentilla polyphylla*	*Poaceae*
4.	*Lang phot*	*Juncus effusus*	*Poaceae*
5.	*Phlang phreit*	*Cymbopogon exsertus*	*Poaceae*

Table 3.3.9: Ferns found in *Law Adong Nongsiej Laitwir Kmawan at Bisap Tdei Pongkung*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhang iong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodalio*

3.3.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Adong Nongsiej Laitwir Kmawan Bisap Tdei Pongkung* has been carried out so far. However, as per the local residents, presence of several wild animals such as jackal, barking deer, rabbit, jungle fowls, pangolin and various types of birds and reptiles has been reported in this forest.

3.3.7 Growing Stock

As per the methodology described in Chapter-II, 100% enumeration was carried out in the grove as its area is less than 10 ha. In each sample plot all the trees having girth (over bark) at breast height more than 30 cm were enumerated by measuring their top height (in metres) and the girth (in centimetres) at breast height. Data collected during the enumeration were entered in Sacred Grove Description Form and Plot Enumeration Form. In all, 100% enumeration data were collected for 3032 tree species consisting of 827 *Castanopsis indica* (1st dominant), 473 *Quercus dealbata* (2nd dominant), 418 *Pinus kesiya.* (3rd dominant) and 1,314 trees of rest of the species. Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each species for each of the 13 girth classes starting from 30-40 cm to 151cm and above. Details of the same are given in the Table 3.3.10 below. As may be seen, total growing stock in the forest is1043.64 cubic metres.

Table 3.3.10: Species wise Distribution of Growing Stock in Different Girth Classes

(cum)

Girth Class wise	*Castanopsis indica* 1st dominant	*Quercus dealbata* 2nd dominant	*Pinus kesiya* 3rd dominant	Rest of the species	Growing Stock in	Growing Stock in entire forest
30-40	7.46	2.44	0.1	19.12	**29.12**	2.79
41-50	22.48	7.63	0.73	43.14	**73.98**	7.09
51-60	45.79	12.92	4.69	61.41	**124.81**	11.96
61-70	50.780	13.19	11.6	65.14	**140.71**	13.48
71-80	49.96	10.47	27.690	51.73	**139.85**	13.40
81-90	47.68	9.46	52.53	48.79	**158.46**	15.18
91-100	27.83	7.23	53.52	33.87	**122.45**	11.73
101-110	12.250	4.17	49.42	20.76	**86.60**	8.30
111-120	22.56	0	39.99	11.94	**74.49**	7.14
121-130	6.51	0	22.12	7.99	**36.62**	3.51
131-140	7.38	2.46	9.71	10.96	**30.51**	0.00
141-150	6.61	0	6.03	0.00	**12.64**	0.00
151 & above	8.62	0	2.33	2.45	**13.40**	0.00
Total	**315.91**	**69.97**	**280.46**	**377.30**	**1043.64**	
% of Total Growing Stock	**30.27**	**6.70**	**26.87**	**36.15**		**100.00**

As may be seen, 30.27% of the total growing stock is contributed by the 1st dominant species (*Castanopsis indica*). The 2nd dominant species (*Quercus dealbata*) constitutes 6.70% of the total growing stock. Similarly, the 3rddominant (*Pinus kesiya*) constitutes 26.87of the total growing stock. The balance 36.15% of the total growing stocks is constituted by the rest of the species.

Figure 3.3.1: Girth class-wise Distribution of Growing Stock

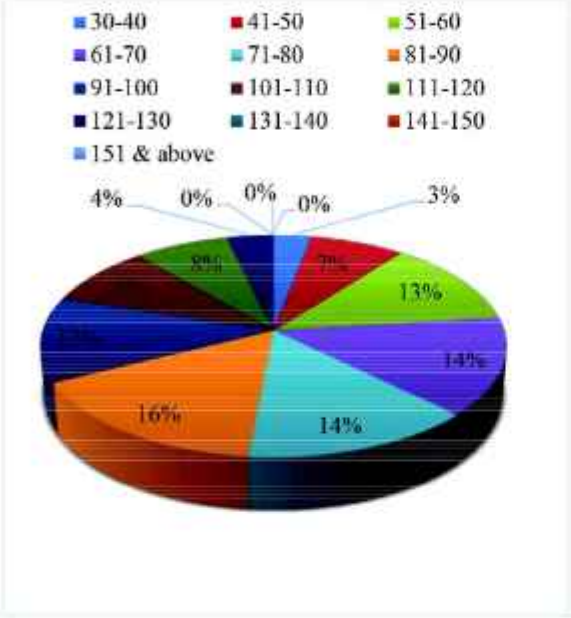


Figure 3.3.2: Species-wise Distribution of Growing Stock

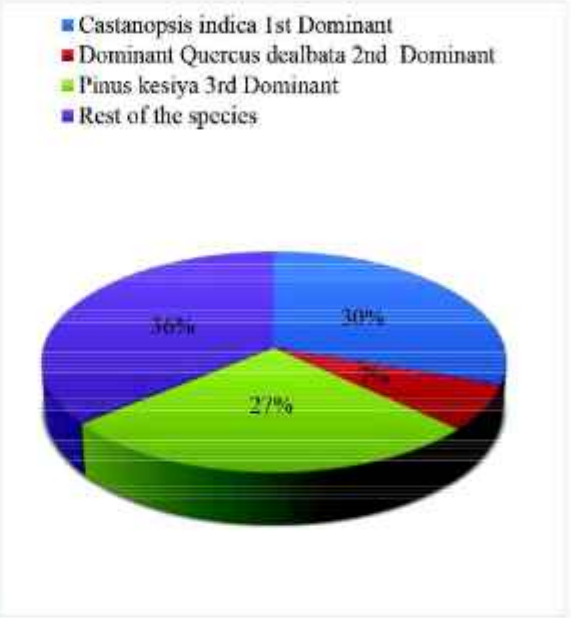


Figure 3.3.3: Girth class-wise Distribution of Growing Stock

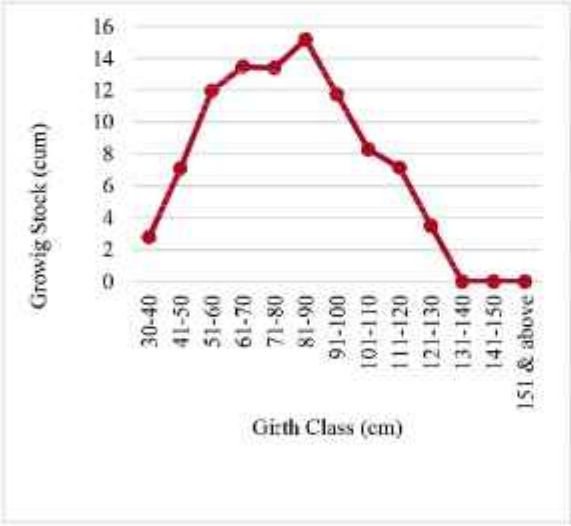


Figure 3.3.4: Over view of Law Adong *Nongsiej Laitwir Kmawan*



3.3.8 Number of Stems

Species-wise numbers of stems in each girth class are given in Table 3.3.11. As may be seen, maximum number of stems are found in lower girth classes *i.e.* from 30-40 cm to 71-80 cm Numbers of stems are inversely proportional to mid-diameter of the girth class.

Table 3.3.11: Species-wise Distribution of Stems in Different Girth Classes

(number of stems)

Girth Class wise	*Castanopsis indica* 1st dominant	*Quercus dealbata* 2nd dominant	*Pinus kesiya* 3rd dominant	Rest of the species	Total
30-40	121	113	2	349	585
41-50	156	114	7	306	583
51-60	182	103	24	244	553
61-70	134	65	40	171	410
71-80	93	35	66	98	292
81-90	69	22	93	69	253
91-100	31	13	72	38	154
101-110	11	6	53	18	88
111-120	17	0	35	9	61
121-130	4	0	16	5	25
131-140	4	2		6	18
141-150	3	0	3	0	6
151 & above	2	0	1	1	4
Total	**827**	**473**	**418**	**1,314**	**3,032**

Figure 3.3.5: Number of Stems in Different Girth classes

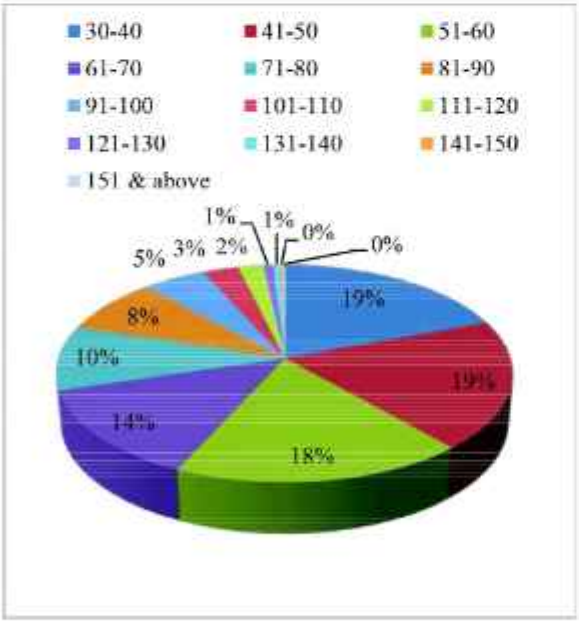


Figure 3.3.6: Species-wise Distribution of stems

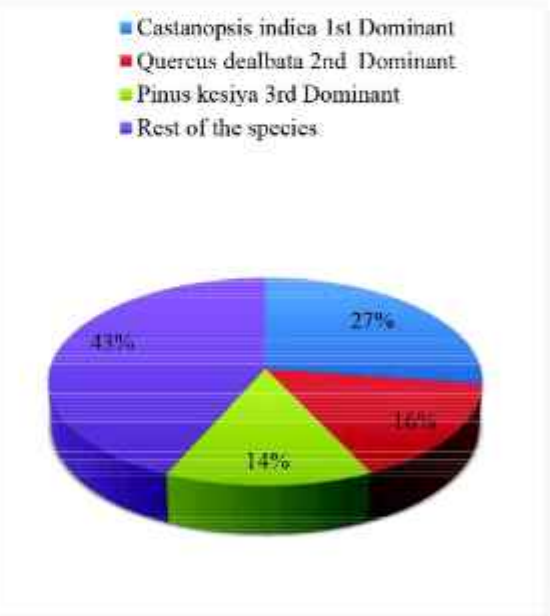


Figure 3.3.7: Number of Stems in Different Girth Classes

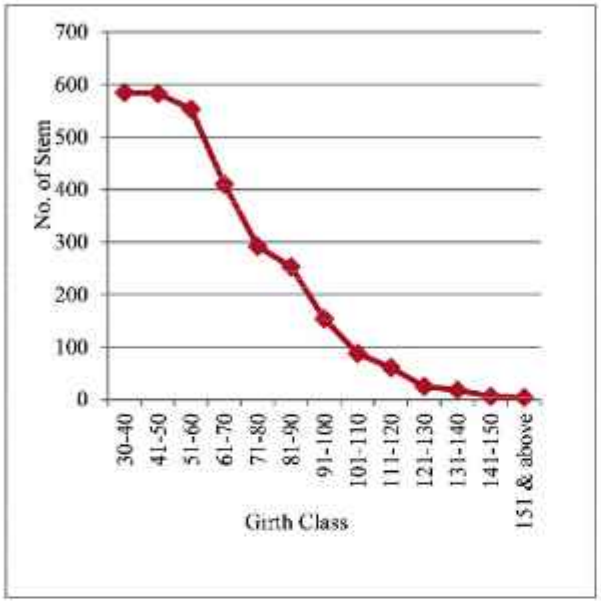


Figure 3.3.8: Inside view of *Nongsiej Laitwir Kmawan*



3.3.9 Prescriptions for Future Management

3.3.9.1 Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Adong Nongsiej Laitwir Kmawan* has not been registered with the KHADC. The CFO of the KHADC and the *Dorbar* of *Nongsiej Laitwir Kmawan* Sirdarship may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Adong Nongsiej Laitwir Kmawan* with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.3.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, sanctuary or a conservation reserve, as a community reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes the Forest eligible to receive financial support under Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats". The *Dorbar* of *Nongsiej Laitwir Kmawan* Sirdarship and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may take necessary actions for notification of the *Law Adong Nongsiej Laitwir Kmawan* as a Community Reserve.

3.3.9.3 Boundary Demarcation

Boundary of the *Law Adong Nongsiej Laitwir Kmawan* has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachment. To prevent and to ensure early detection of encroachments, boundary of the *Law Adong Nongsiej Laitwir Kmawan*, wherever it is not constituted by natural features of permanent nature, such as rivers or streams, may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.3.9.4 Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India during a period of 22 years (2002 -2023) some fire incidents have occurred in *Law Adong Nongsiej Laitwir Kmawan*. A major part of *Law Adong Nongsiej Laitwir Kmawan* is both vulnerable as well as prone to forest fire. Measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Adong Nongsiej Laitwir Kmawan*, engagement of fire watchers during the critical months *etc* are required to be taken to protect it from the forest fire.

3.3.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench, may be constructed at suitable locations in the *Law Adong Nongsiej Laitwir Kmawan*.

3.3.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Adong Nongsiej Laitwir Kmawan* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath/ walking trail, sign board, washrooms *etc*. may be constructed to attract tourists.

3.3.9.7 Restocking of Open Degraded Areas

Efforts may be made to restock the open degraded patches in the *Law Adong Nongsiej Laitwir Kmawan* by assisting and promoting natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.3.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Adong Nongsiej Laitwir Kmawan* or centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Adong Nongsiej Laitwir Kmawan*.

3.3.9.9 Awareness Campaign

The *Law Adong Nongsiej Laitwir Kmawan* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

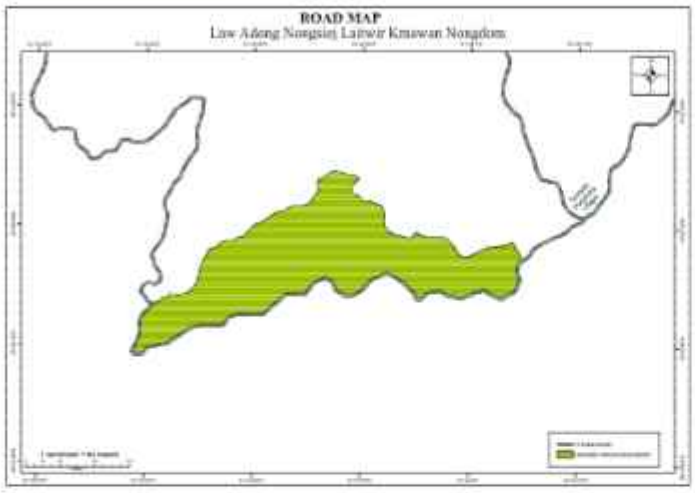
3.4. *LAW ADONG NONGSIEJ LAITWIR KMAWAN NONGDOM*

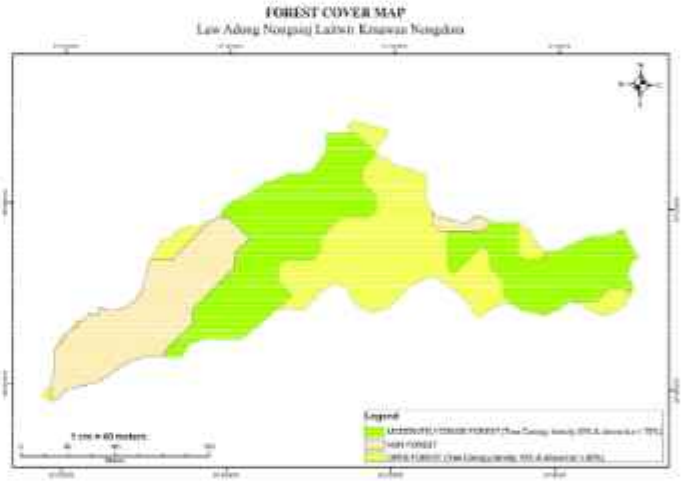
3.4.1 Location

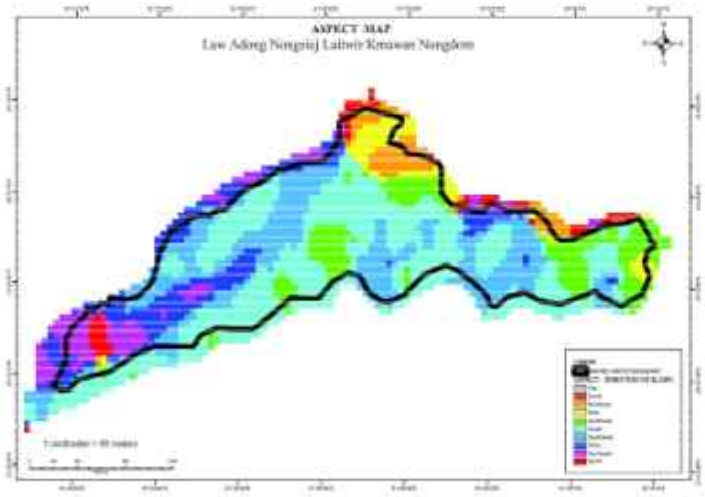


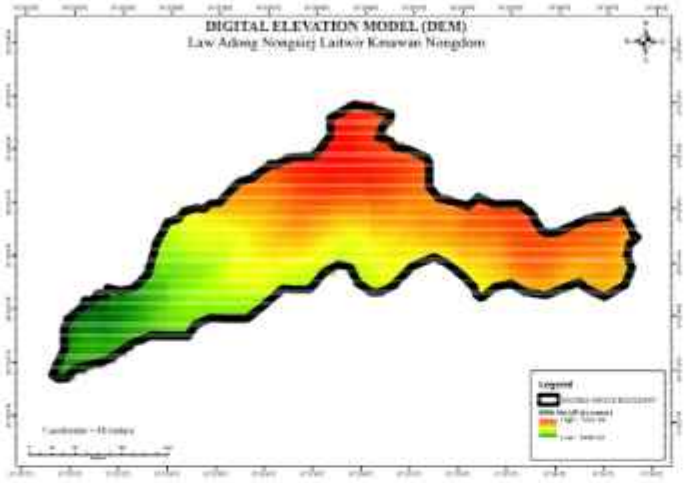
Law Adong Nongsiej Laitwir Kmawan Nongdom is situated in East Khasi Hills District at Laitnam Namlang under the Syiemship of Hima Maharam. It has an area of 17.189 ha. It lies between 25° 23´ 30" N to 25° 23´ 43" N latitude and 91° 33´ 28" E to 91° 34´ 04" E longitude at an altitude of 1577 m from mean sea level. It is bounded in the North by private land of Shri. Bestanis Nongsiej in the South by phud kynsew stream and land of *Nongsiej Laitwir Kmawan*, in the East by private land of Smti. Stidia Nongsiej and Smti. Bet Nongsiej and in the West by private land of *Nongsiej Laitwir Kmawan*. The grove is accessible by road from Shillong, which is 56 km from Shillong.



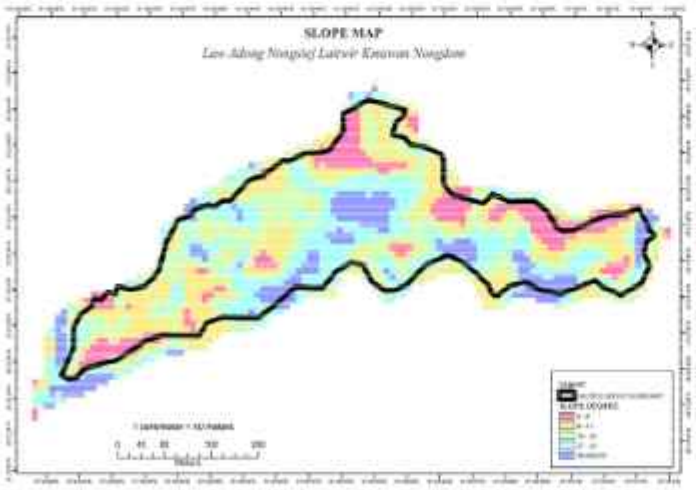

ROAD MAP
Law Adong Nongsiej Laiwir Kmawan Nongdem


FOREST COVER MAP
Law Adong Nongsiej Laiwir Kmawan Nongdem
Legend


ASPECT MAP
Law Adong Nongsiej Laiwir Kmawan Nongdem


DIGITAL ELEVATION MODEL (DEM)
Law Adong Nongsiej Laitsor Kmawan Nongkon


FOREST TYPE MAP
Law Adong Nongsiej Laitsor Kmawan Nongkon
Forest Type


SLOPE MAP
Law Adong Nongsiej Laitsor Kmawan Nongkon

3.4.2 Brief History

This grove was established by the *Nongsiej Laitwir Kmawan* clan, several centuries ago. In the past, religious rituals were performed in this grove. This grove has been preserved by the clan in the honour of their ancestors. With emphasis on conservation of rich biodiversity this legacy has been passed down generation to generation. Felling of trees in this sacred forest is strictly prohibited. It is managed and administered by the *Nongsiej Laitwir Kmawan* clan.

Biotic pressure such as encroachments, wildfires, hunting, poaching, grazing and illegal felling of treesare found to be absent in this sacred forest.

3.4.3 Geography and climate

Topography of the grove is hilly in nature with slope varying from 0.60° to 37°. Major parts of *Law Adong Nongsiej Laitwir Kmawan Nongdom* falls in South and South-West Aspects. Soil texture is sandy-loam with loose stone and boulders. Soil consistency is slightly compact. The colour of the soil is brown with medium soil depth. Soil erosion is almost negligible. *Phudkynsew* stream bounds the grove on the southern side. Numerous seasonal streams flow within the grove.

Winter season starts from the end of October and lasts till March of the next year. This sacred forest receives high rainfall during the monsoon season from April to September. Average temperature varies from 5°C to 23°C.

3.4.4 Forest Type

According to the (Champion & Seth classification, 1968) forests found in the grove are of the ***Type 8B/C2 Khasi Sub-Tropical Wet Hill Forest.***

3.4.5 Forest cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun, forest cover in the *Law Adong Nongsiej Laitwir Kmawan Nongdom* is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	7.58	44.10
Open Forest (10% - 40%)	5.69	33.10
Scrub Forest (<10%)	0	0
Non-Forest	3.92	22.80
Total	**17.19**	**100**

3.4.6 Flora and fauna

Law Adong Nongsiej Laitwir Kmawan Nongdom sacred forest is home to three-storied dense virgin forest of natural origin. *Pinus kesiya* and *Myrica esculenta* are respectively the 1st and 2nd dominant tree species. This sacred Forest is home to many rare, endangered and endemic plant species.

3.4.6.1 Floral species

Table 3.4.1: Trees found in *Law Adong Nongsiej Laitwir Kmawan Nongdom*

Sl No.	Local Name	Botanical Name	Family
1	*Dieng sohot*	*Castanopsis indica*	*Fagaceae*
2	*Dieng sning*	*Castanopsis tribuloides*	*Fagaceae*
3	*Dieng sohphoh khasi*	*Docynia indica*	*Rosaceae*
4	*Dieng soheitblang*	*Elaeocarpus prunifolius*	*Elaeocarpaceae*
5	*Dieng sohkhlur*	*Elaeocarpus pyriformis*	*Elaeocarpaceae*
6	*Dieng lasaw*	*Elaeocarpus robusta*	*Elaeocarpaceae*
7	*Dieng lba*	*Engelhardtia spicata*	*Juglandaceae*
8	*Dieng song*	*Erythinia indica*	*Fabaceae*
9	*Dieng pyrshit*	*Eurya accuminata*	*Theaceae*
10	*Dieng sohpian*	*Ficos globarata*	*Moraceae*
11	*Dieng jem*	*Glochidion acuminatum*	*Phyllanthaceae*
12	*Dieng sohmeblang*	*Grewia abutilifolia*	*Tiliaceae*
13	*Dieng sohsyntein*	*Grewia helicterifolia*	*Tiliaceae*
14	*Dieng sohlamut blang*	*Hypericum patulum*	*Hypericaceae*
15	*Dieng syiang*	*Ligustrum robustum*	*Oleaceae*
16	*Dieng sohsying*	*Litsea cubeba*	*Lauraceae*
17	*Dieng lakhar*	*Macaranga denticulate*	*Euphorbiaceae*
18	*Dieng sohniar*	*Machilus parviflora*	*Magnoliaceae*
19	*Dieng sohphie*	*Myrica esculenta*	*Fagaceae*
20	*Dieng sohliya*	*Myrica indica*	*Fagaceae*
21	*Dieng kseh*	*Pinus khasiana/kesiya*	*Pinaceae*
22	*Dieng lakba*	*Polygata arillata*	*Polygalaceae*
23	*Dieng sohjhur/sohshur*	*Pyrus pashia*	*Rosaceae*
24	*Dieng sai*	*Quercus dealbata*	*Fagaceae*
25	*Dieng ngan*	*Schima khasiana*	*Theaceae*
26	*Dieng dpei*	*Symplocos theofolios*	*Symplocaceae*
27	*Dieng soh langkhlaw/langksew*	*Viburnum corylifolium*	*Caprifoliaceae*
28	*Dieng shadmoit*	*Wendlandia wallichii*	*Rubiaceae*

Table 3.4.2: Shrubs found *in Law Adong Nongsiej Laitwir Kmawan Nongdom*

Sl No.	Local Name	Botanical Name	Family
1.	*Soh tyrkhum*	*Acer laevigatum*	*Sapindaceae*
2.	*Soh shiah*	*Rubus ellipticus*	*Rosaceae*
3.	*Soh khlor*	*Elaeagnus pyriformis*	*Elaeagnaceae*
4.	*Jalyntem*	*Polygonum chinense*	*Polygonaceae*
5.	*Dieng snammaw/sohlarmaw*	*Photinia spp*	*Rosaceae*
6.	*Tiew saw*	*Rhododendron arboreum*	*Ericaceae*
7.	*Sohma*	*Rhus chinensis*	*Anacardiaceae*

8.	Dieng tyrthia	Cinnamomum pauciflorum	Lauraceae
9.	Dieng soh pyrsit	Eurya acuminata	Theaceae
10.	Diend sasei	Pasania fenestrata	Fagaceae
11.	Dieng sai	Quercus dealbata	Fagaceae
12.	La tyngkrong	Macropanax dispermus	Araliaceae
13.	La tyngkien	Rauvolfiadensiflora	Apocynaceae.
14.	Sohlangeitksew	Viburnum simonsii	Adoxaceae.
15.	Soh lamut	Agapetes vareigata	Ericaceae
16.	Dieng siasia	Cinnamomum tamala	Lauraceae
17.	Dieng shadmoit	Wendlndia waliichi	Rubeceae
18.	Dieng sahmehblang	Grewia abutilifolia	Tiliaceae
19.	Dieng jing	Lithocarpus fenestrata	Fagaceae
20.	Dieng tyrnem	Camelia caudula	Theaceae

Table 3.4.3: Herbs found *in Law Adong Nongsiej Laitwir Kmawan Nongdom*

Sl No.	Local Name	Botanical Name	Family
1.	Slamet	Phrynium spp	Pubinevve
2.	Ja lyngthem	Polygonum chinense	Polygonaceae
3.	Wang khlaw	Esculenta spp	Araceae
4.	Tiew sying maw	Gingiber purpureum	Zingiberaceae
5.	Shynrai khlaw	Alpinea alogus	Gingiberaceae
6.	Wang um	Homolonin aaromatica	Araceae
7.	Jajew lieh	Begonia spp	Begoniaceae
8.	Jajew maw	Begonia spp	Begoniaceae
9.	Soh byrthit	Urena lobata	Malvaceae
10.	Tiew rusum	Hedychium coccinium	Zingiberaceae
11.	Soh byrthit rit	Sida rhombijolia	Malvaceae
12.	Soh ngang khlaw	Solanum torvum	Solanaceae
13.	Khliang syiar	Centella asiatica	Apiaceae
14.	Soh byrthit bah	Sida acuta	Malvaceae
15.	Soh thud	Osbeckia spp	Melostomaceae
16.	La shing	Curcuma spp	Zingiberaceae
17.	Sying khlaw	Zingiber purpureum	Zingiberaceae
18.	Soh krismas	Sarcandra glabra	Zingiberaceae
19.	Soh byrthitrit	Sidarhombijolia	Chloranthaceae
20.	Sla eitmut	Eupatorium spp	Asteraceae

Table 3.4.4: Climbers found *in Law Adong Nongsiej Laitwir Kmawan Nongdom*

Sl No.	Local Name	Botanical Name	Family
1.	Soh shangkhlor/lyngshang	Elaeagnus pyriformis	Elaeagnaceae
2.	Soh nepbah	Rubus rugosus	Rosaceae

3.	*Jyrmi kynsew*	*Argyreia nervosa*	*Convolvulaceae*
4.	*Soh krot*	*Smilax zeylanica*	*Smilacaceae*
5.	*Sla kyndajyrmi*	*Pothos scandens*	*Araceae*
6.	*Sla kyndajyrmi*	*Pothos spp*	*Aralaceae*
7.	*Phan synreh*	*Dioscorea alata*	*Dioscoreaceae*
8.	*Phan jyrmi*	*Stephania glabra*	*Liliaceae*
9.	*Jyrmi stein*	*Lonicera macrantha*	*Caprifoliaceae*
10.	*Jyrmi japan*	*Agevatina adenofora*	*Asteraceae*
11.	*Jyrmi shiah*	*Xanthozylum khasiana*	*Rotaceae*
12.	*Jyrmi khlaw*	*Entoda spp*	*Luguminaceae*

Table 3.4.5: Orchids found *in Law Adong Nongsiej Laitwir Kmawan Nongdom*

Sl No.	Local Name	Botanical Name	Family
1.	*Tiew dieng*	*Microperamanii*	*Orchideceae*
2.	*Soh khasaw*	*Pleione praecox*	*Orchideceae*
3.	*Tiew smehmasi*	*Dendrobium chrysanthum*	*Orchideceae*
4.	*Soh khaleh*	*Pleione maculata*	*Orchideceae*
5.	*Tiew slaremmaw*	*Rafidopohra lancifolia*	*Orchideceae*
6.	*Tiew pawang lum*	*Anoectochilus setaceus*	*Orchidaceae*
7.	*Talong khnai*	*Oberoniamanii*	*Orchideceae*
8.	*Tlong khnai*	*Oberoniajen kinsiana*	*Orchideceae*
9.	*Tiew pawanglum*	*Arundina graminifolia*	*Orchideceae*
10.	*Tiew dohmaw*	*Anoectochilus brevilabris*	*Orchideceae*
11.	*Tiew dohmaw*	*Anoectochilus roxburghii*	*Orchideceae*
12.	*Tiew lynksiar*	*Cymbiduim traceyamum*	*Orchideceae*
13.	*Knupmawiang*	*Paphiopedium insigne*	*Orchideceae*
14.	*Syntiew die*	*Bulbophyllum cylindraceum*	*Orchideceae*

Table 3.4.6: Bamboos & Canes found *in Law Adong Nongsiej Laitwir Kmawan Nongdom*

Sl No.	Local Name	Botanical Name	Family
1.	*Namlang*	*Chimonobambusa khasiana*	*Poaceae*
2.	*Soh thri*	*Calamus erectus*	*Poaceae*
3.	*Siej lieh*	*Dendrocalamus strictus*	*Poaceae*

Table 3.4.7: Creepers found *in Law Adong Nongsiej Laitwir Kmawan Nongdom*

Sl No.	Local Name	Botanical Name	Family
1.	*Sohnep bah*	*Rubus rogosus*	*Rosaceae*
2.	*Tmain khla*	*Lycopodoum cernuum*	*Lycopodiaceae*
3.	*Sla kyndajyrmi*	*Pothos spp*	*Aralaceae*

4.	*Dieng sohrengblang*	*Strophanthun wallichi*	*Apocynaceae*
5.	*Lapadong*	*Rhaphidophora spp*	*Araleceae*
6.	*Tympew khlaw*	*Pipper spp*	*Peppereceae*
7.	*Jyrmi kynsiew*	*Argyreia nervosa*	*Convolvulaceae*

Table 3.4.8: Grasses found *in Law Adong Nongsiej Laitwir Kmawan Nongdom*

Sl No.	Local Name	Botanical Name	Family
1.	*Lang tylli*	*Arundinella khasiana*	*Poaceae*
2.	*Lasier*	*Corex spiculata*	*Poaceae*
3.	*Lang trengsning*	*Potentilla polyphylla*	*Poaceae*
4.	*Lang phot*	*Juncus effusus*	*Poaceae*
5.	*Phlang phreit*	*Cymbopogon exsertus*	*Poaceae*

Table 3.4.9: Ferns found *in Law Adong Nongsiej Laitwir Kmawan Nongdom*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhang iong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodalio*

3.4.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Adong Nongsiej Laitwir Kmawan Nongdom* has been carried out so far. However, as per the local residents, presence of wild animals such as jackals, rabbit, jungle fowls, pangolin and various types of mammals, birds and reptiles has been reported in this forest.

3.4.7 Growing Stock

As per the methodology described in Chapter-II, enumeration was carried out in 20% area of the forest as its area is more than 10 ha. In each sample plot all the trees having girth (over bark) at breast height more than 30 cm were enumerated by measuring their top height (in metres) and the girth at breast height (in centimeters). Data collected during the enumeration were entered in Sacred Grove Description Form and Plot Enumeration Form. During the enumeration total 659 trees were found within 17 plots each of 0.2 ha size. These include 312 *Pinus kesiya* (1st dominant), 78 *Myrica esculenta* (2nd dominant), 41 *Castanopsis indica* (3rd Dominant) and 228 trees of rest of the species. Using the Local Volume Equations given in Chapter-II, girth class wise volume was calculated for each species for each of the 13 girth classes starting from 30-40 cm to 151cm and above. Details of the same are given in the Table 3.4.10 and 3.4.11 below. As may be seen total growing stock in this forest is 1894.75 cubic metres.

Table 3.4.10: Specieswise Distribution of Growing Stock in Different Girth Classes

(cum)

Girth Class wise	*Pinus kesiya* 1st dominant	*Myrica esculenta* 2nd dominant	*Castanopsis indica* 3rd dominant	Rest of the species	Growing Stock in 17 Sample plots	Growing Stock in Entire Forest
30-40	0.03	0.31	0.74	2.64	**3.71**	18.77
41-50	0.73	1.47	1.10	5.79	**9.10**	45.98
51-60	3.83	5.81	2.56	12.16	**24.37**	123.19
61-70	11.16	6.16	1.77	10.37	**29.46**	148.95
71-80	18.44	2.61	0.53	8.19	**29.76**	150.46
81-90	32.62	4.24	2.16	10.07	**49.08**	248.14
91-100	32.02	6.33	1.00	10.15	**49.50**	250.23
101-110	39.04	5.35	1.18	3.38	**48.96**	247.51
111-120	38.69	2.65	0.00	11.99	**53.33**	269.62
121-130	23.87	0.00	1.61	6.63	**32.11**	162.33
131-140	4.98	0.00	0.00	7.53	**12.51**	63.23
141-150	9.99	0.00	0.00	6.52	**16.51**	83.49
151 & above	5.13	0.00	0.00	11.26	**16.39**	82.87
Total	**220.53**	**34.93**	**12.65**	**106.68**	**374.78**	**1,894.75**

Figure 3.4.1: Girth class- wise Growing Stock in Entire Forest



Table 3.4.11: Species wise Distribution of Growing Stock in Different Girth Classes in the entire Forest

(cum)

Girth Class wise	*Pinus kesiya* 1st dominant	*Myrica esculenta* 2nd dominant	*Castanopsis indica* 3rd dominant	Rest of the species	Total (for 17.189 ha' area)	%wrt total volume
30-40	0.13	1.54	3.75	13.35	**18.77**	0.99
41-50	3.71	7.45	5.55	29.27	**45.98**	2.42
51-60	19.36	29.39	12.96	61.48	**123.19**	6.50
61-70	56.43	31.13	8.96	52.43	**148.95**	7.85
71-80	93.21	13.18	2.66	41.41	**150.46**	7.93
81-90	164.90	21.44	10.89	50.91	**248.14**	13.08
91-100	161.87	31.98	5.06	51.31	**250.23**	13.19
101-110	197.39	27.07	5.97	17.09	**247.51**	13.05
111-120	195.61	13.39	0.00	60.62	**269.62**	14.22
121-130	120.68	0.00	8.13	33.52	**162.33**	8.56
131-140	25.16	0.00	0.00	38.07	**63.23**	3.33
141-150	50.53	0.00	0.00	32.96	**83.49**	4.40
151 & above	25.94	0.00	0.00	56.93	**82.87**	4.37
Total	1114.91	176.58	63.93	539.33	**1894.75**	
%wrt total volume	58.79	9.31	3.37	28.44		100.00

As may be seen by 58.84%, of the total growing stock is contributed by the 1st dominant species (*Pinus kesiya*). The 2nd dominant species (*Myrica esculenta*) constitutes 9.32% of the total growing stock. Similarly, the, 3rd dominant species (*Castanopsis indica*) constitutes 3.37% of the total growing stock. The remaining part of the growing stock *i.e.* 28.46% is constituted by the rest of the species.

Figure 3.4.2: Girth class wise Distribution of Growing Stock

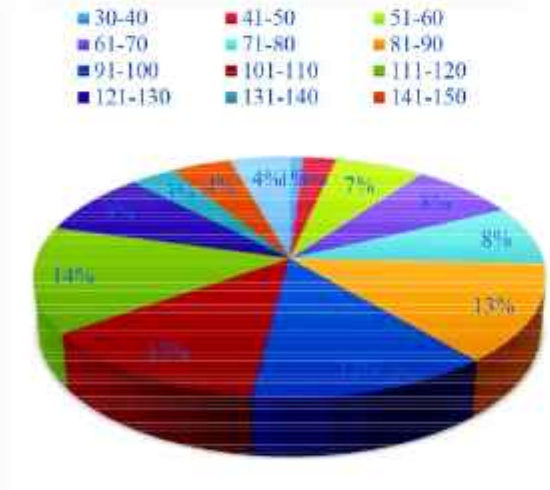


Figure 3.4.3: Specieswise Distribution of Growing Stock

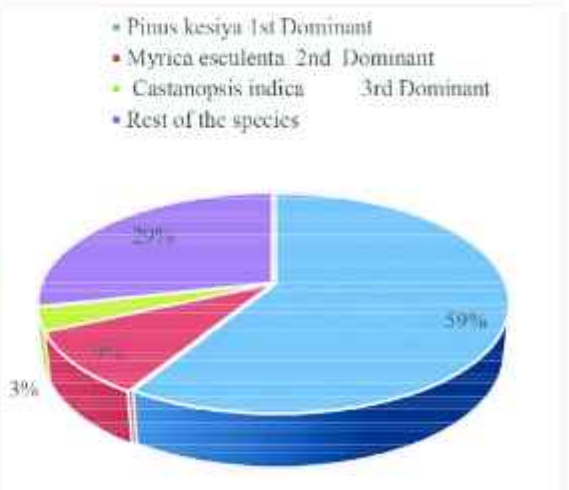


Figure 3.4.4: Girth Class-wise Distribution of Growing Stock



Figure 3.4.5: Overview view of Law Adong *Nongsiej Laitwir Kmawan Nongdom*



3.4.8 Number of Stems

Species-wise number of stems in each girth class are given in Table 3.4.12 & 3.4.13. As may be seen, the maximum numbers of stems are found in lower girth classes *i.e.* from 30-40 cm to 51-60 cm. Number of stems are inversely proportional to mid-diameter of the girth class.

Table 3.4.12: Species wise Distribution of Stems in Different Girth Classes in 17 Sample Plots

(number of stems)

Girth Class wise	*Pinus kesiya* 1st dominant	*Myrica esculenta* 2nd dominant	*Castanopsis indica* 3rd dominant	Rest of the species	Total
30-40	1	5	12	45	63
41-50	7	10	7	42	66
51-60	21	22	10	48	101
61-70	37	16	5	27	85
71-80	43	5	1	15	64
81-90	57	6	3	14	80
91-100	43	7	1	11	62
101-110	42	5	1	3	51
111-120	34	2	0	9	45
121-130	17	0	1	4	22
131-140	3	0	0	4	7
141-150	5	0	0	3	8
151 & above	2	0	0	3	5
Total	**312**	**78**	**41**	**228**	**659**

Table 3.4.13: Species wise Number of Stems in Different Girth Classes in the Entire Forest

(number of stems)

Girth Class wise	*Pinus kesiya* 1st dominant	*Myrica esculenta* 2nd dominant	*Castanopsis indica* 3rd dominant	Rest of the species	Total
30-40	5	25	61	228	319
41-50	35	51	35	212	334
51-60	106	111	51	243	511
61-70	187	81	25	137	430
71-80	217	25	5	76	324
81-90	288	30	15	71	404
91-100	217	35	5	56	313
101-110	212	25	5	15	258
111-120	172	10	0	46	228
121-130	86	0	5	20	111
131-140	15	0	0	20	35
141-150	25	0	0	15	40
151 & above	10	0	0	15	25
Total	**1577**	**394**	**207**	**1153**	**3332**

Figure 3.4.6: Number of Stems in Different Girth Classes

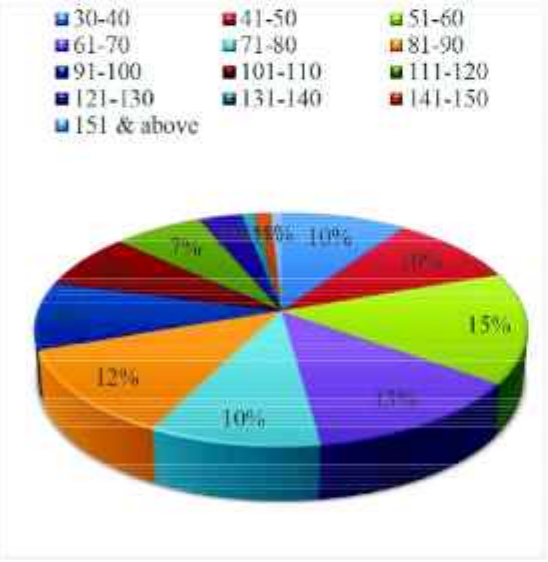


Figure 3.4.7: Specieswise Distribution of Stems

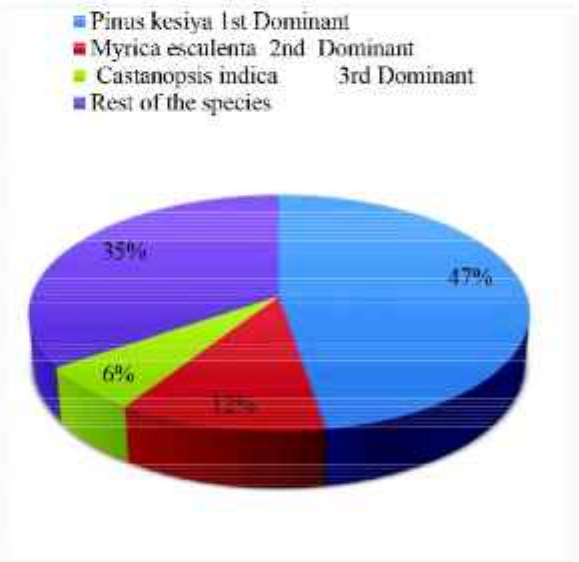


Figure 3.4.8: Number of Stemsin Different Girth classes



Figure 3.4.9: Inside view of Law Adong of *Nongsiej Laitwir Kmawan Nongdom*



3.4.9 Prescriptions for Future Management

3.4.9.1 Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Adong Nongsiej Laiwir Kmawan Nongdom* has not been registered with the KHADC. The CFO of the KHADC and the Village Dorbar of *Nongsiej Laitwir Kmawan Nongdom* may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Adong Nongsiej Laitwir Kmawan Nongdom* with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.4.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The representative of the *Nongsiej Laitwir Kmawan Clan* and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Law Adong Nongsiej Laitwir Kmawan Nongdom* as a Community Reserve.

3.4.9.3 Boundary Demarcation

Boundary of the *Law Adong Nongsiej Laitwir Kmawan Nongdom* has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachments. To prevent and to ensure early detection of encroachments, boundary of the *Law Adong Nongsiej Laitwir Kmawan Nongdom*, wherever it is not constituted by natural features of permanent nature, such as

rivers streams, hill ridge *etc.* may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.4.9.4 Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India, during a period of 22 years (2002 -2023) no fire incident has occurred in the *Law Adong Nongsiej Laitwir Kmawan Nongdom*. As per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Adong Nongsiej Laitwir Kmawan Nongdom* is moderately vulnerable as well as prone to forest fire. To prevent damage to the *Law Adong Nongsiej Laitwir Kmawan Nongdom* from accidental forest fires, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations and engagement of fire watchers during the critical months *etc.* may be taken.

3.4.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench etc. may be constructed at suitable locations in the *Law Adong Nongsiej Laitwir Kmawan Nongdom*.

3.4.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Adong Nongsiej Laitwir Kmawan Nongdom* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath/ walking trail, sign board, washrooms *etc.* may be constructed to attract tourists.

3.4.9.7 Restocking of Open Degraded Areas

Efforts may be made to restock the open degraded patches in the *Law Adong Nongsiej Laitwir Kmawan Nongdom* by assisting and promoting natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.4.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Adong Nongsiej Laitwir Kmawan Nongdom* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Adong Nongsiej Laitwir Kmawan Nongdom*.

3.4.9.9 Awareness Campaign

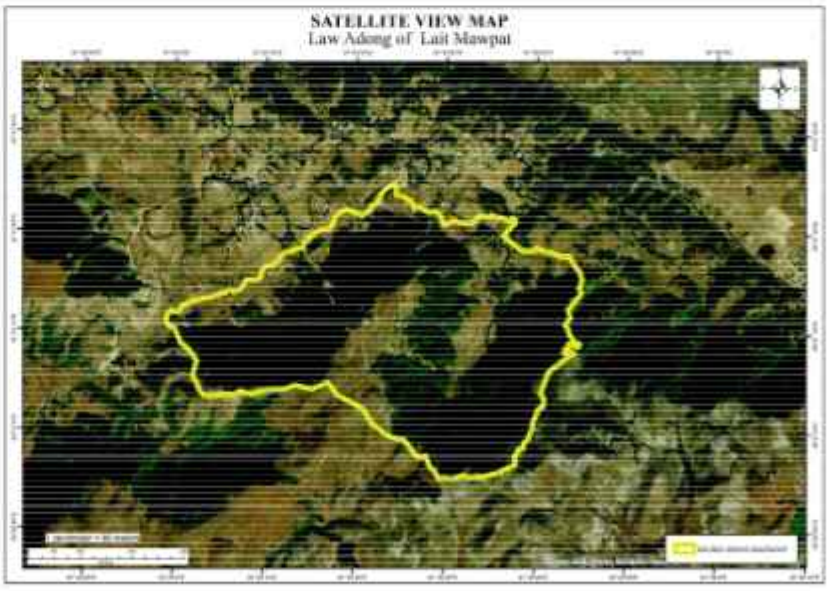
The *Law Adong Nongsiej Laitwir Kmawan Nongdom* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

3.5. *LAW ADONG LAIT MAWPAT*

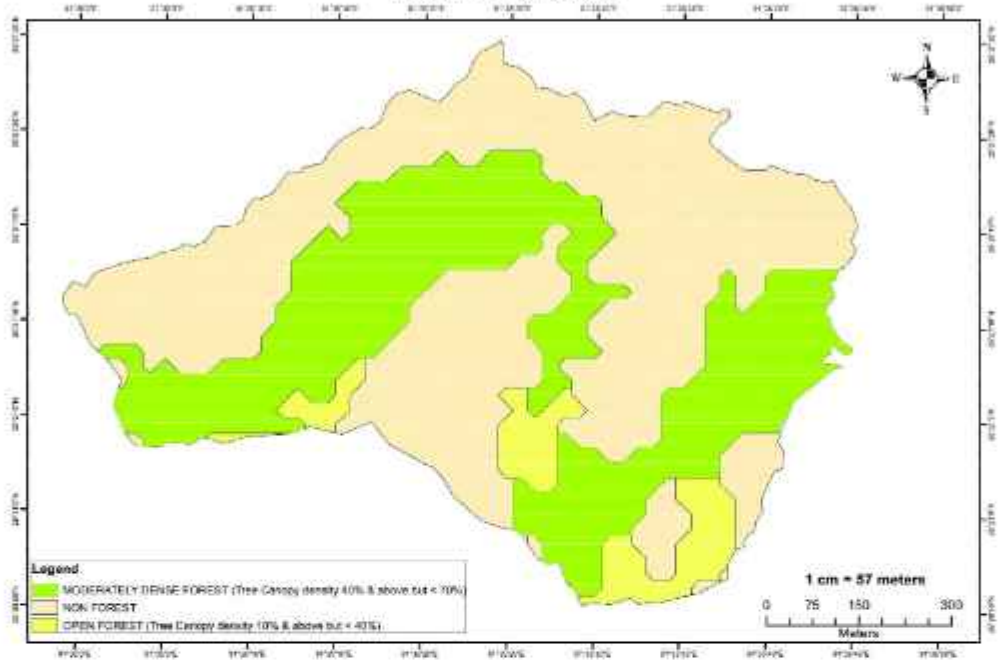
3.5.1 Location

Law Adong Lait Mawpat is situated in East Khasi Hills District of Meghalaya at Wah *Mawpat* village under the Syiemship of Hima Maharam. It has an area of 66.273 ha and lies between 25° 20´ 54" N to 25° 21´ 25" N latitude and 91° 35´ 00" E to 91° 35´ 45" E longitude at an altitude of 1614 m from mean sea level. It is bounded in the North by *Lait Mawpat* area and, in the South by *Raid Sawsymper*, in the East by *Sawsymper* area and in the West by *Mawhiang*. The *Law Adong Lait Mawpat* is accessible by road from Shillong, it is about 54 km from Shillong.

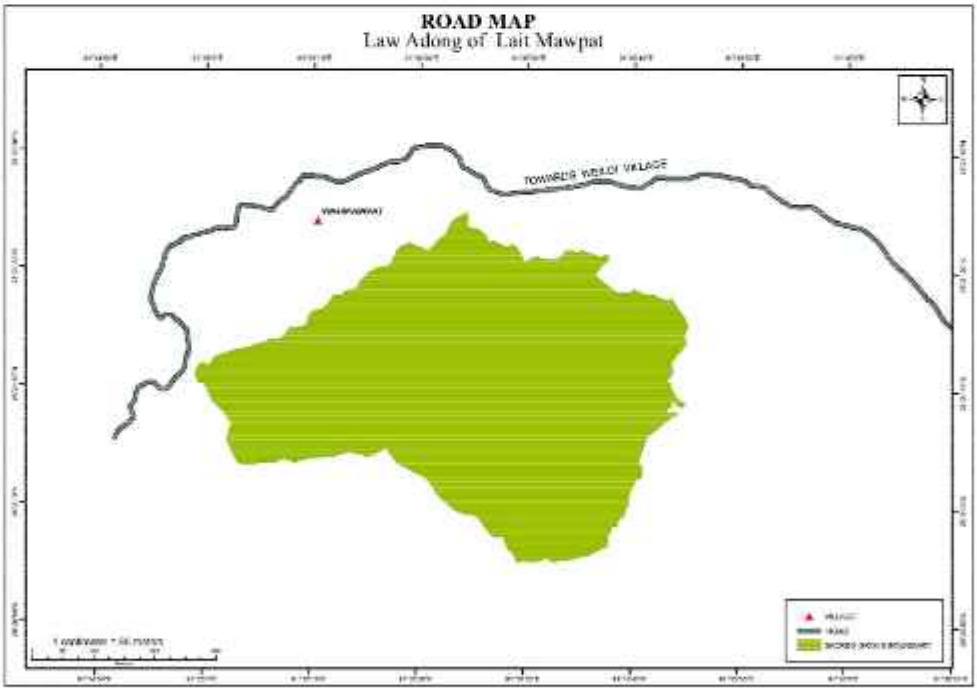


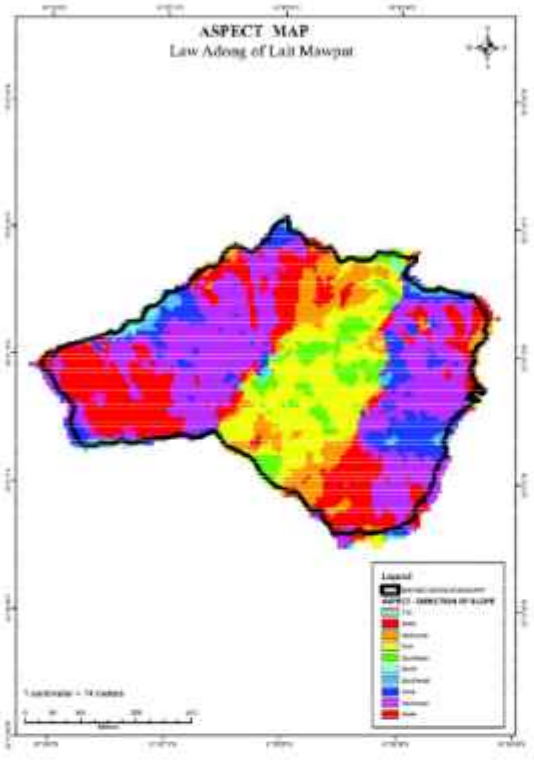


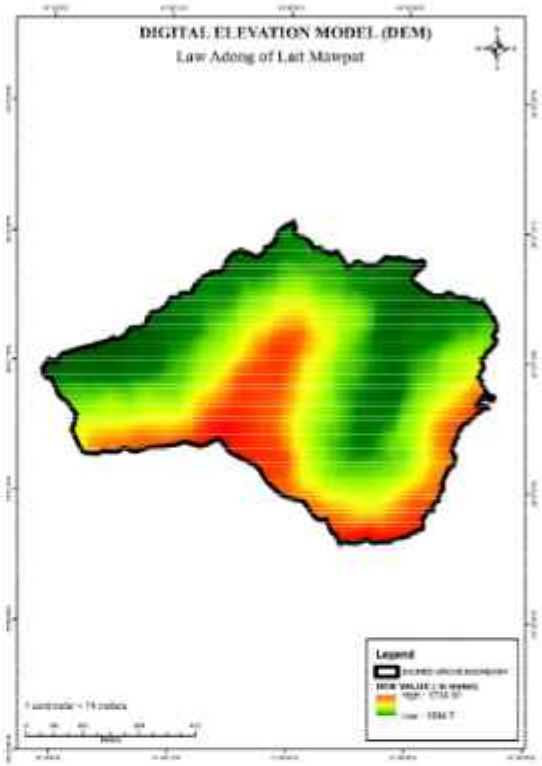
FOREST COVER MAP
Law Adong of Lait Mawpat



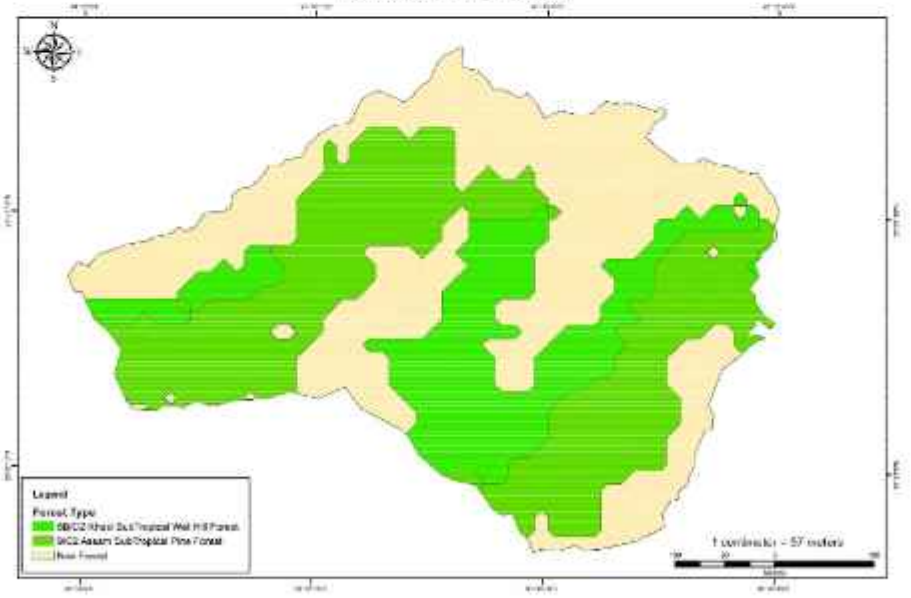
ROAD MAP
Law Adong of Lait Mawpat





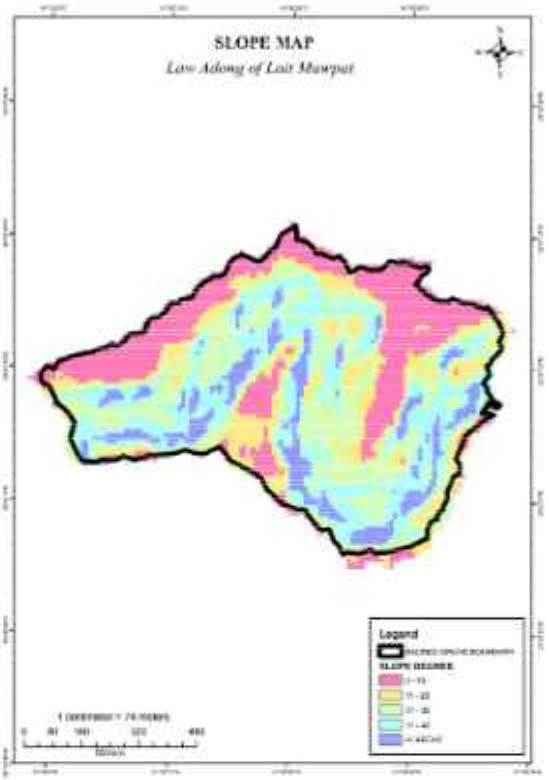


FOREST TYPE MAP
Law Adong of Lait Mawpat



3.5.2 Brief History

As informed by the village elders, it is in existence for several centuries. In the past, religious rituals were performed in this grove. However, presently no such rituals are performed in this forest. Felling of trees is strictly prohibited. However, woods and firewood required for funeral purposes for bona fide resident of the village are permitted to be extracted from the grove with prior permission from the Village *Dorbar*. It is managed and administered by the Village Dorbar of *Lait Mawpat*.



Biotic pressure such as encroachments, hunting, poaching and illegal felling of treesare found to be absent in this sacred forest. However, wildfire and grazing have been observed in this sacred forest.

3.5.3 Geography and climate

Topography of the grove is hilly in nature with slope varying from 0.10° to 48°. Central part of the *Law Adong Lait Mawpat* falls in East and North East Aspects. The Eastern and Western Part of the *Law Adong Lait Mawpat* falls in North-West and North Aspects.The soil texture is sandy loam with loose stone, and the soil consistency is friable. The colour of the soil is brown with shallow soil depth. Soil erosion is almost negligible.

Winter season starts from the end of October and lasts till March of the next year. This sacred forest receives high rainfall during the monsoon season from April to September. Average temperature varies from 7°C to 23°C.

3.5.4 Forest Type

According to (the Champion and Seth classification (1968), forests found in the grove are of the ***Type 8B/C2 Khasi Sub-Tropical Wet Hill Forest.***

3.5.5 Forest cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun, Forest cover in the *Law Adong Lait Mawpat* is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	24.60	37.12
Open Forest (10% - 40%)	4.433	6.69
Scrub Forest (<10%)	0	0
Non-Forest	37.24	56.19
Total	**66.273**	**100**

3.5.6 Flora and fauna

A substantial part of the *Law Adong Lait Mawpat* is home to three-storied virgin dense forest of natural origin. *Lithocarpus elegans*, *Myrica esculenta* and *Schima khasiana* are respectively the 1st, 2nd, and 3rd dominant species. The forest is home to many rare, endangered and endemic plant species.

3.5.6.1 Floral species

Table 3.5.1: Trees found in *Law Adong Lait Mawpat*

Sl No.	Local Name	Botanical Name	Family
1	*Dieng Sohlamut*	*Agapetis vareigata*	*Ericaceae*
2	*Dieng Ri*	*Albiza lucidor*	*Fabaceae*
3	*Dieng Latymphu*	*Aralia armata*	*Araliaceae*
4	*Dieng Lieng*	*Betula alnoides*	*Betulaceae*
5	*Dieng coffee*	*Caffea khasiana*	*Rubiaceae*
6	*Dieng Tyrnem*	*Camelia caduca*	*Theaceae*
7	*Dieng Siar*	*Castonopsis armata*	*Fagaceae*
8	*Dieng Stap*	*Castonopsis hystrix*	*Fagaceae*
9	*Dieng Sohot*	*Castonopsis indica*	*Fagaceae*
10	*Dieng Sning*	*Castonopsis tribuloides*	*Fagaceae*
11	*Dieng latyrdop*	*Cinnamomum bejolghota*	*Lauraceae*
12	*Dieng tyrthia*	*Cinnamomum pauciflorum*	*Lauraceae*
13	*Dieng Tyrkhang*	*Cyathea gigantea*	*Fagaceaae*
14	*Dieng Sohkhyllam*	*Elaeocarpus lancifolius*	*Elaeocarpaceae*
15	*Dieng laSaw*	*Elaeocarpus robusta*	*Elaeocarpaceae*
16	*Dieng Lba*	*Engelhartia spicata*	*Juglandaceae*
17	*Dieng sohlwai/sohlwa*	*Eugenia aquea*	*Myrtaceae*
18	*Dieng Sohum*	*Eugenia jambolina*	*Myrtaceae*
19	*Dieng Doh*	*Ex-baklandia populnea*	*Hamamelidaceae*
20	*Dieng Soh Kwang*	*Garcinia anomala*	*Clusiaceae*
21	*Dieng Tnat Tham*	*Girardinia palmata*	*Urticaceae*
22	*Dieng Jyrti*	*Glochidion acuminatum*	*Phyllanthaceae*
23	*Dieng Sohmehblang*	*Grewia abutifolia*	*Tiliaceae*
24	*Dieng Lalieh*	*Ilex venulosa*	*Aquifoliaceae*
25	*Dieng sohkhawshyieng*	*Ilex venulosa*	*Aquifoliaceae*
26	*Dieng Soh Syrted*	*Itea chinensis*	*Iteaceae*
27	*Dieng Lapyllon/myllon*	*Itea macrophylla*	*Iteaceae*
28	*Dieng Sohkynphor Blei*	*Knema linifolia*	*Myristicaceae*
29	*Disng Sohot Dngiem*	*Lithocarpus elegans*	*Fagaceae*
30	*Dieng jing*	*Lithocarpus fenetrata*	*Fagaceae*
31	*Dieng Rang*	*Litsaea meissneri*	*Lauraceae*
32	*Dieng Lakhar*	*Macaranga denticulate*	*Euphorbiaceae*
33	*Dieng temsyllmar*	*Macaranga spp*	*Euphorbiaceae*

34	Dieng Latyngkrong	Macropanax dispermus	Araliaceae
35	Dieng krot	Meliosma pinnata	Sabiaceae
36	Dieng Shngit	Melosma wallichii	Theaceae
37	Dieng Rai	Michelia champaca	Magnoliaceae
38	Dieng niar	Michelia oblonga	Magnoliaceae
39	Dieng Sohniar	Michelia panduana	Magnoliaceae
40	Dieng Rai Kup	Michelia spp	Magnoliaceae
41	Dieng SohiongKhlaw	Mohinia acanthifolia	Berberidaceae
42	Dieng Sohphie	Myrica esculenta	Fagaceae
43	Dieng Sohphie Nam	Myrica nagi	Myricaceae
44	Dieng SohkhlawShrieh	Myristica augustifolia	Annonaceae
45	Dieng Sohlarmaw	Photinia integrifolia	Rosaceae
46	Dieng Kseh	Pinus Khasian/kesiya	Pinaceae
47	Dieng Jalu	Pittosporum nepaulense	Pittosporaceae
48	Dieng Jakba	Polygala Arillata	Polygalaceae
49	Dieng Sohryngkham	Pourthiaea arguta	Rosaceae
50	Dieng Sohjhur	Pyrus pashia	Rosaceae
51	Dieng Sai	Quercus dealbata	Fagaceae
52	Dieng Lingim	Quercus kamroopii	Fagaceae
53	Dieng Jingbublang/kbublang	Sarcosperma griffithii	Sapotaceae
54	Dieng Jalngap	Saurauia panduana	Actinidiaceae
55	Dieng Ngan	Schima khasiana	Theaceae
56	Dieng Pei	Symplocos theaefolia	Symplocaceae
57	Dieng Jatira	Unknown	Not listed
58	Dieng temSyllar	Unknown	Not listed
59	Dieng Sohryngkham	Vaccinium Griffithianum	Ericaceae
60	Dieng Sohphlang	Watsura robusta	Meliaceae
61	Dieng Shaitmoit	Wendlandua tenetaria	Rubiaceae

Table3.5.2: Shrubs found *in Law Adong Lait Mawpat*

Sl No.	Local Name	Botanical Name	Family
1.	Soh tyrkhum	Acer laevigatum	Sapindaceae
2.	Soh shiah	Rubus ellipticus	Rosaceae
3.	Soh khlor	Elaeagnus pyriformis	Elaeagnaceae
4.	Jalyntem	Polygonum chinense	Polygonaceae
5.	Dieng snammaw/sohlarmaw	Photinia spp	Rosaceae
6.	Kophikhlaw	Caffea khasiana	Rubiaceae
7.	Dieng tyrthia	Cinnamomum pauciflorum	Rubiaceae
8.	Dieng soh pyrsit	Eurya acuminata	Theaceae
9.	La tyngkrong	Macropanax dispermus	Araliaceae

10.	La tyngkien	Rauvolfia densiflora	Apocynaceae.
11.	Sohlang eitksew	Viburnum simonsii	Adoxaceae.
12.	Soh lamut	Agapetes vareigata	Ericaceae
13.	Dieng shadmoit	Wendlndia waliichi	Rubeceae
14.	Dieng sahmehblang	Grewia abutilifolia	Tiliaceae
15.	Dieng jing	Lithocarpus fenestrata	Fagaceae
16.	Dieng tyrnem	Camelia caudula	Theaceae

Table 3.5.3: Herbs found *in Law Adong Lait Mawpat*

Sl No.	Local Name	Botanical Name	Family
1.	Slamet	Phrynium spp	Pubinevve
2.	Ja lyngthem	Polygonum chinense	Polygonaceae
3.	Wang khlaw	Esculenta spp	Araceae
4.	Tiew sying maw	Gingiber purpureum	Zingiberaceae
5.	Shynrai khlaw	Alpinea alogus	Gingiberaceae
6.	Wang um	Homolonina aromatica	Araceae
7.	Jajewlieh	Begonia spp	Begoniaceae
8.	Jajew maw	Begonia spp	Begoniaceae
9.	Soh byrthit	Urena lobata	Malvaceae
10.	Tiew rusum	Hedychium coccinium	Zingiberaceae
11.	Soh byrthit rit	Sida rhombijolia	Malvaceae
12.	Soh ngang khlaw	Solanum torvum	Solanaceae
13.	Khliang syiar	Centella asiatica	Apiaceae
14.	Soh byrthit bah	Sida acuta	Malvaceae
15.	Soh thud	Osbeckia spp	Melostomaceae
16.	La shing	Curcuma spp	Zingiberaceae
17.	Sying khlaw	Zingiber purpureum	Zingiberaceae
18.	Soh krismas	Sarcandra glabra	Zingiberaceae
19.	Soh byrthit rit	Sida rhombijolia	Chloranthaceae
20.	Sla eitmut	Eupatorium spp	Asteraceae

Table 3.5.4: Climbers found *in Law Adong Lait Mawpat*

Sl No.	Local Name	Botanical Name	Family
1.	Soh shangkhlor/lyngshang	Elaeagnus pyriformis	Elaeagnaceae
2.	Soh nepbah	Rubus rugosus	Rosaceae
3.	Jyrmi kynsew	Argyreia nervosa	Convolvulaceae
4.	soh krot	Smilax zeylanica	Smilacaceae
5.	Sla kyndajyrmi	Pothos scandens	Araceae
6.	Sla kyndajyrmi	Pothos spp	Aralaceae
7.	Phan synreh	Dioscorea alata	Dioscoreaceae

8.	*Phan jyrmi*	*Stephania glabra*	*Liliaceae*
9.	*Jyrmi stein*	*Lonicera macrantha*	*Caprifoliaceae*
10.	*Jyrmi japan*	*Agevatina adenofora*	*Asteraceae*
11.	*Jyrmi shiah*	*Xanthozylum khasiana*	*Rotaceae*
12.	*Jyrmi khlaw*	*Entoda spp*	*Luguminaceae*

Table 3.5.5: Orchids found *in Law Adong Lait Mawpat*

Sl No.	Local Name	Botanical Name	Family
1.	*Tiew dieng*	*Micropera manii*	*Orchideceae*
2.	*Soh khasaw*	*Pleione praecox*	*Orchideceae*
3.	*Tiew smehmasi*	*Dendrobium chrysanthum*	*Orchideceae*
4.	*Soh khaleh*	*Pleione maculata*	*Orchideceae*
5.	*Tiew slaremmaw*	*Rafidopohra lancifolia*	*Orchideceae*
6.	*Tiew pawang lum*	*Anoectochilus setaceus*	*Orchidaceae*
7.	*Talong khnai*	*Oberonia manii*	*Orchideceae*
8.	*Tlong khnai*	*Oberonia jenkinsiana*	*Orchideceae*
9.	*Tiew pawanglum*	*Arundina graminifolia*	*Orchideceae*
10.	*Tiew dohmaw*	*Anoectochilus brevilabris*	*Orchideceae*
11.	*Tiew dohmaw*	*Anoectochilus roxburghii*	*Orchideceae*
12.	*Tiew lynksiar*	*Cymbiduim traceyamum*	*Orchideceae*
13.	*Knup mawiang*	*Paphiopedium insigne*	*Orchideceae*
14.	*Syntiew die*	*Bulbophyllum cylindraceum*	*Orchideceae*

Table 3.5.6: Bamboos & Canes found *in Law Adong Lait Mawpat*

Sl No.	Local Name	Botanical Name	Family
1.	*Sylli*	*Melocanna baceifera*	*Poaceae*
2.	*Namlang*	*Chimonobambusa khasiana*	*Poaceae*
3.	*Spit/spar*	*Chimonobambusa spp*	*Poaceae*
4.	*Kdait*	*Saccharum spontaneum*	*Poaceae*
5.	*Sohthri*	*Calamus erectus*	*Poaceae*
6.	*Rngai*	*Bambusa tulda*	*Poaceae*
7.	*Siejlieh*	*Dendrocalamus strictus*	*Poaceae*

Table 3.5.7: Creepers found *in Law Adong Lait Mawpat*

Sl No.	Local Name	Botanical Name	Family
1.	*Sohnep bah*	*Rubus rogosus*	*Rosaceae*
2.	*Tmain khla*	*Lycopodoum cernuum*	*Lycopodiaceae*
3.	*Sla kyndajyrmi*	*Pothos spp*	*Aralaceae*
4.	*Dieng sohrengblang*	*Strophanthun wallichi*	*Apocynaceae*

5.	*Lapadong*	*Rhaphidophora spp*	*Araleceae*
6.	*Tympew khlaw*	*Pipper spp*	*Peppereceae*
7.	*Jyrmi kynsiew*	*Argyreia nervosa*	*Convolvulaceae*

Table 3.5.8: Grasses found *in Law Adong Lait Mawpat*

Sl No.	Local Name	Botanical Name	Family
1.	*Lang tylli*	*Arundinella khasiana*	*Poaceae*
2.	*Lang snuih*	*No listed*	*Poaceae*
3.	*Phlangtraw*	*Imperata cylindrica*	*Poaceae*
4.	*Lasier*	*Carex spiculata*	*Poaceae*
5.	*Lang trengsning*	*Potentilla polyphylla*	*Poaceae*
6.	*Lang phot*	*Juncus effusus*	*Poaceae*
7.	*Synsar*	*Thysanolaena maxima*	*Poaceae*
8.	*Phlangphreit*	*Cymbopogon exsertus*	*Poaceae*

Table 3.5.9: Ferns found *in Law Adong Lait Mawpat*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhang iong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodalio*

3.5.6.2 Faunal species

No scientific study to assess presence and abundance of wildlife in *Law Adong Lait Mawpat* has been caried out so far. However, as per the local residents, presence of several wild animals such as jackal, rabbit, jungle fowls, pangolin and various types of birds and reptiles has been reported in this forest.

3.5.7 Growing Stock

As per the methodology described in Chapter-II, enumeration was carried out in 10% area of the forest as its area is more than 50 ha. In each sample plot all the tree species having girth (over bark) at breast height more than 30 cm were enumerated by measuring their top height (in metres) and the girth (in centimeters) at breast height. Data collected during the enumeration were entered in Sacred Grove Description Form and Plot Enumeration Form. During the enumeration total 3,193 trees were found within 33 plots each of 0.2 ha size. These include 310 *Lithocarpus elegans* (1st dominant), 302 *Myrica esculenta* (2nd dominant), 263 *Schima khasiana,* (3rd dominant) and 2318 trees of rest of the species. Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each species for each of the 13 girth classes starting from 30-40 cm to 151cm and above. Details of the same are given in the Table 3.5.10 & 3.5.11below. As may be seen, total growing stock in this forest is 13472.13 cubic metres.

Table 3.5.10: Species wise Distribution of Growing Stock in Different Girth Classes

(cum)

Girth Class wise	*Lithocarpus elegans* 1st dominant	*Myrica esculenta* 2nd dominant	*Schima khasiana* 3rd dominant	Rest of the species	Growing Stock in 33 Sample Plots	Growing Stock in Entire Forest
30-40	1.85	2.14	0.96	29.18	**34.12**	342.60
41-50	5.93	9.62	6.64	82.28	**104.47**	1049.01
51-60	14.63	13.47	5.88	108.63	**142.61**	1431.95
61-70	25.19	15.02	14.24	107.77	**162.22**	1628.89
71-80	22.63	23.42	23.34	92.84	**162.23**	1629.02
81-90	17.56	18.44	21.53	89.85	**147.37**	1479.81
91-100	13.55	19.90	19.74	69.75	**122.95**	1234.54
101-110	6.49	7.80	6.65	25.66	**46.60**	467.97
111-120	9.42	6.67	17.77	37.80	**71.66**	719.56
121-130	9.41	4.77	13.12	17.62	**44.91**	450.97
131-140	9.39	0.00	7.56	28.40	**45.35**	455.38
141-150	8.77	2.35	11.37	15.86	**38.35**	385.07
151 & above	37.98	7.03	54.98	118.84	**218.83**	2197.37
Total	**182.80**	**130.63**	**203.76**	**824.48**	**1341.66**	**13472.13**

Figure 3.5.1: Girth class wise Growing Stock inn Entire Forest



Table 3.5.11: Species wise Distribution of Growing Stock in Different Girth Classesin the Entire Forest

(cum)

Girth Class wise	*Lithocarpus elegans* 1st dominant	*Myrica esculenta* 2nd dominant	*Schima khasiana* 3rd dominant	Rest of the species	Total (for 66.273 ha' area)	%wrt total volume
30-40	18.54	21.45	9.61	293.01	**342.60**	2.54
41-50	59.57	96.61	66.65	826.18	**1049.01**	7.79
51-60	146.93	135.25	59.01	1090.76	**1431.95**	10.63
61-70	252.96	150.81	142.94	1082.18	**1628.89**	12.09
71-80	227.28	235.15	234.35	932.25	**1629.02**	12.09
81-90	176.29	185.18	216.15	902.19	**1479.81**	10.99
91-100	136.10	199.84	198.22	700.38	**1234.54**	9.16
101-110	65.14	78.34	66.79	257.70	**467.97**	3.47
111-120	94.58	66.97	178.41	379.60	**719.56**	5.34
121-130	94.46	47.92	131.71	176.88	**450.97**	3.35
131-140	94.27	0.00	75.91	285.19	**455.38**	3.38
141-150	88.07	23.61	114.18	159.21	**385.07**	2.86
151 & above	381.37	70.54	552.10	1193.36	**2197.37**	16.31
Total	**1835.54**	**1311.66**	**2046.04**	**8278.88**	**13472.13**	
%wrt total volume	13.63	9.74	15.19	61.46		100

As may be seen, 13.62% of the total growing stock is contributed by the 1st dominant species (*Lithocarpus elegans*). The 2nd dominant species *(Myrica esculenta.)* constitutes 9.74% of the total growing stock, 3rd dominant species (*Schima khasiana)* constitutes 15.19% of the total growing stock. A major part of the growing stock *i.e.* 61.45% is constituted by the rest of the species.

Figure 3.5.2: Girth classwise Distribution of Growing Stock

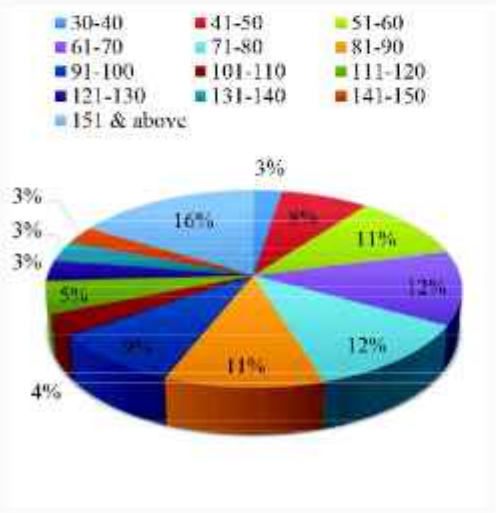


Figure 3.5.3: Species-wise Distribution of Growing stock



Figure 3.5.4: Girth class-wise Distribution of Growing Stock

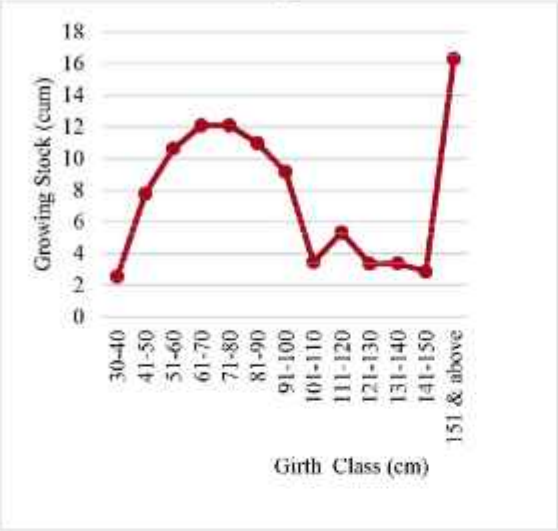


Figure 3.5.5: Over view of *Law Adong Lait Mawpat* Sacred Grove



3.5.8 Number of Stems

Species-wise numbers of stems in each girth class are given in Tables 3.5.12 & 3.5.13 below. As may be seen, maximum numbers of stems are found in lower girth classes i.e. from 30-40 cm to 61-70 cm. Number of stems are inversely proportional to mid-diameter of the girth class.

Table 3.5.12: Species-wise Distribution of Stems in Different Girth Classes in 33 Sample Plots

(number of stems)

Girth Class wise	*Lithocarpus elegans* 1st dominant	*Myrica esculenta* 2nd dominant	*Schima khasiana* 3rd dominant	Rest of the species	Total
30-40	28	36	17	537	618
41-50	40	64	44	581	729
51-60	59	53	23	435	570
61-70	66	39	37	287	429
71-80	42	44	41	172	299
81-90	25	26	30	127	208
91-100	15	22	22	77	136
101-110	6	7	6	23	42
111-120	7	5	13	28	53
121-130	6	3	8	11	28
131-140	5	0	4	15	24
141-150	4	1	5	7	17
151 & above	7	2	13	18	40
Total	**310**	**302**	**263**	**2,318**	**3,193**

Table 3.5.13:Species-wise Number of Stems in Different Girth Classes in the Entire Forest

(number of stems)

Girth Class wise	*Lithocarpus elegans* 1st dominant	*Myrica esculenta* 2nd dominant	*Schima khasiana* 3rd dominant	Rest of the species	Total
30-40	281	361	171	5392	6206
41-50	402	643	442	5834	7320
51-60	592	532	231	4368	5724
61-70	663	392	372	2882	4308
71-80	422	442	412	1727	3002
81-90	251	261	301	1275	2089
91-100	151	221	221	773	1366
101-110	60	70	60	231	422
111-120	70	50	131	281	532
121-130	60	30	80	110	281
131-140	50	0	40	151	241
141-150	40	10	50	70	171
151 & above	70	20	131	181	402
Total	**3,113**	**3,032**	**2,641**	**23,276**	**32,062**

Figure 3.5.6: Number of Stems in Different Girth Classes

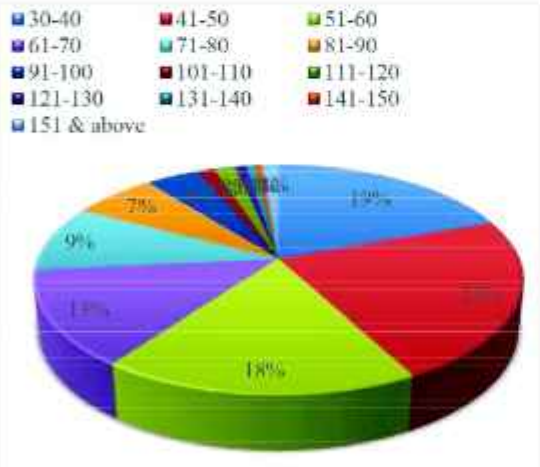


Figure 3.5.6: Number of Stems in Different Girth Classes

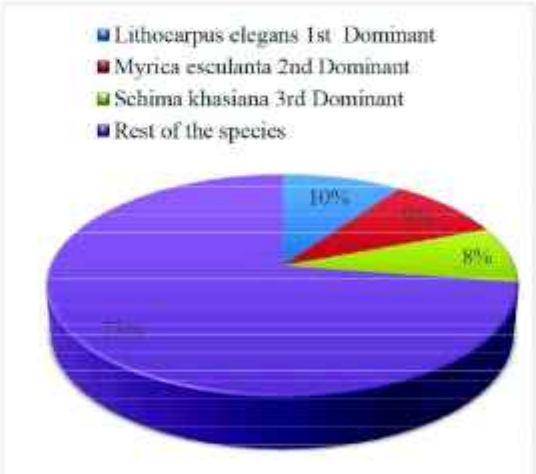


Figure 3.5.8: Number of Stems in Different Girth Classes

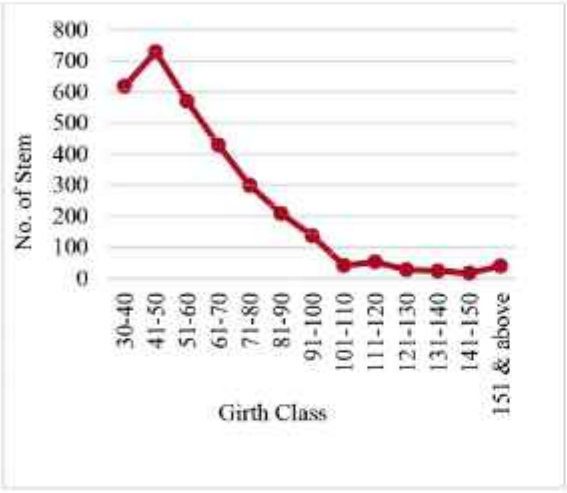


Figure 3.5.9: Inside view of *Law Adong Lait Mawpat*



3.5.9 Prescriptions for Future Management

3.5.9.1 Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Adong Lait Mawpat* has not been registered with the KHADC. The CFO of the KHADC and the Village *Dorbar* of Lait Mawpat may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Adong Lait Mawpat* with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.5.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The *Dorbar* of *Lait Mawpat* Sirdarship and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Law Adong Lait Mawpat* as a Community Reserve.

3.5.9.3 Boundary Demarcation

Boundary of the *Law Adong Lait Mawpat* has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachment. To prevent and to ensure early detection of encroachments, boundary of the *Law Adong Lait Mawpat*, wherever it is not constituted

by natural features of permanent nature, such as rivers, streams, hill ridge *etc.* may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.5.9.4 Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India, during a period of 22 years (2002 -2023) only 2 fire incidents have occurred in the *Law Adong Lait Mawpat.* However, as per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Adong Lait Mawpat* is neither vulnerable nor prone to forest fires. However, to prevent damage to the *Law Adong Lait Mawpat* from accidental forest fires, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Adong Lait Mawpat* and engagement of fire watchers during the critical months *etc.*may be taken.

3.5.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench, may be constructed at suitable locations in the *Law Adong Lait Mawpat.*

3.5.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Adong Lait Mawpat* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath/ walking trail, sign board, washrooms *etc.* may be constructed to attract tourists.

3.5.9.7 Restocking of Open Degraded Areas

Efforts must be made to restock the open degraded patches in the *Law Adong Lait Mawpat* by assisting and promoting natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.5.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Adong Lait Mawpat* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Adong Lait Mawpat.*

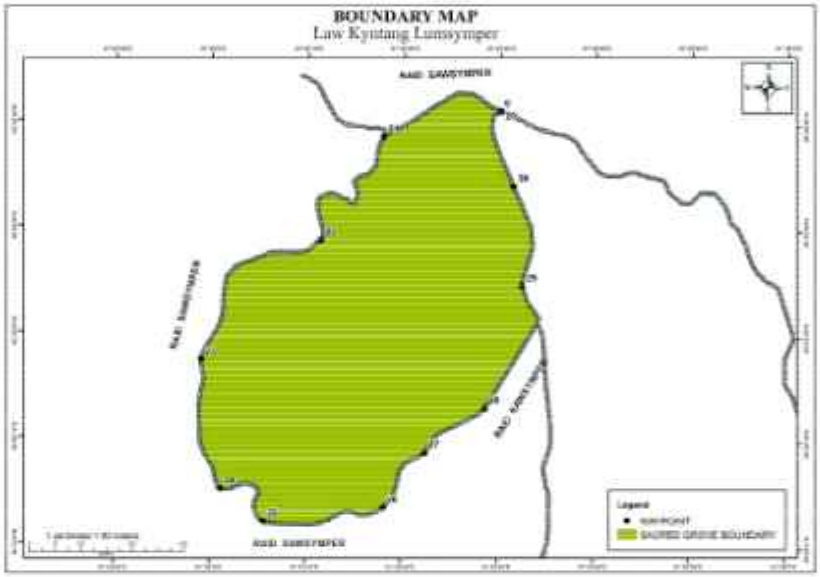
3.5.9.9 Awareness Campaign

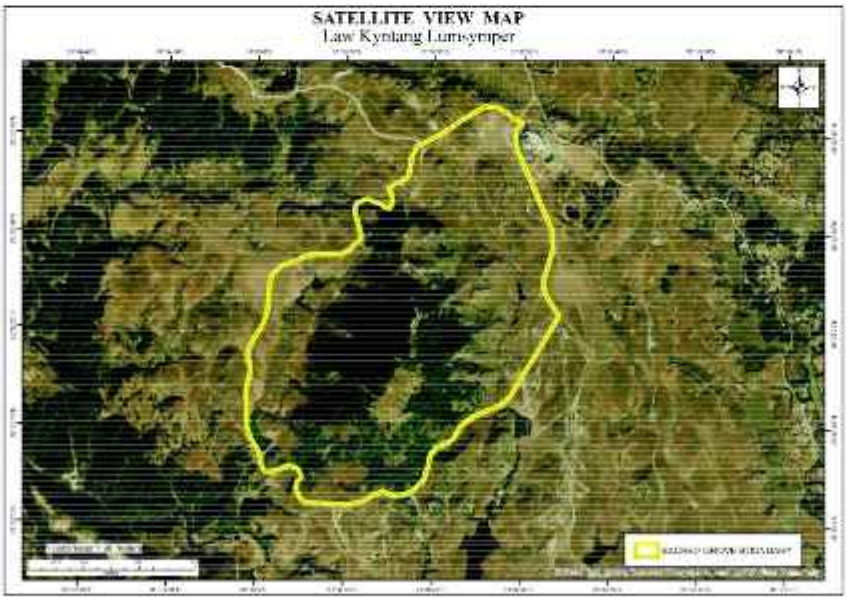
The *Law Adong Lait Mawpat* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

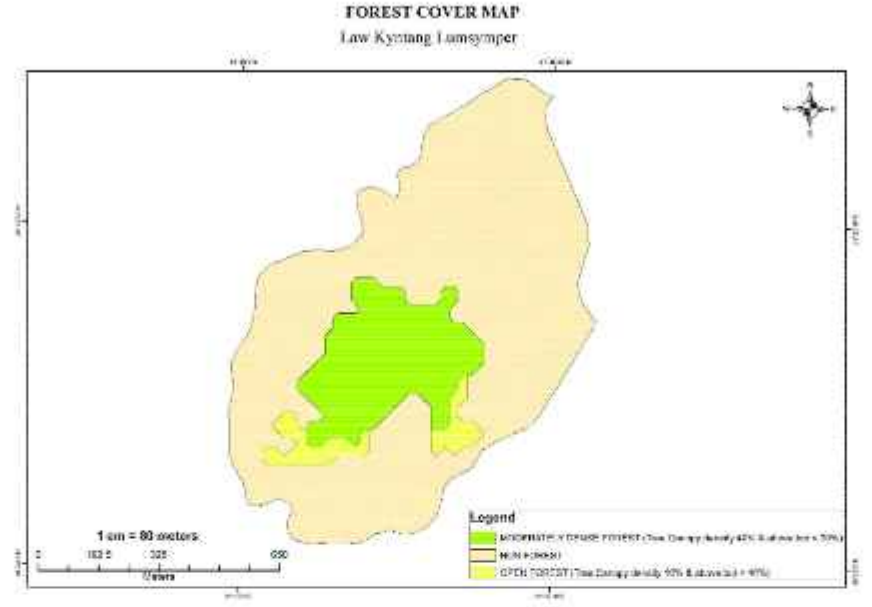
3.6. *LAW KYNTANG LUMSYMPER*

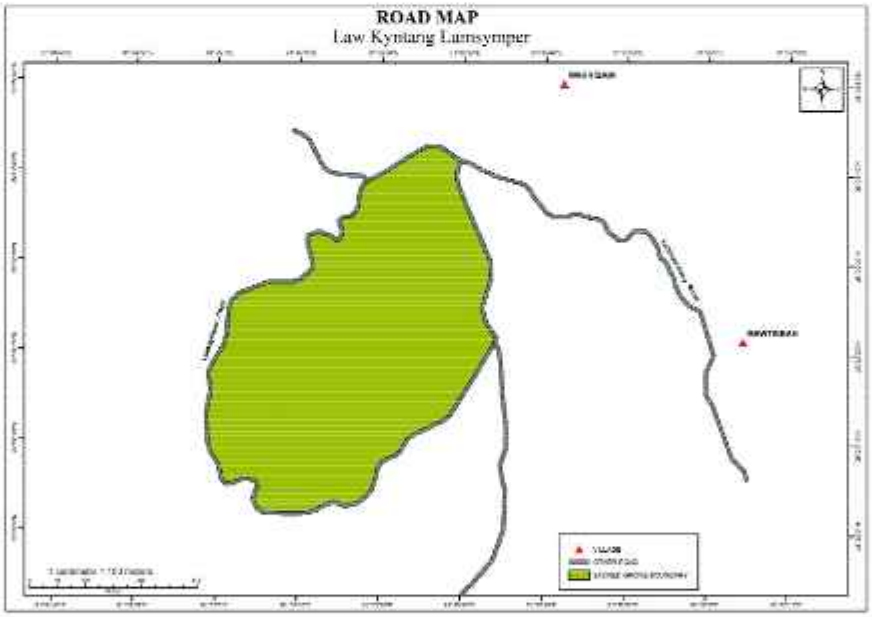
3.6.1 Location

Law Kyntang Lumsymper is situated in East Khasi Hills District of Meghalaya at Sawsymper, *Pongkung-Lang Symphut* village under the Syiemship of Hima Maharam. It has an area of 78.189 ha. It lies between 25° 22' 05" N to 25° 22' 43" N latitude and 91° 35' 00" E to 91° 35' 35" E longitude at an altitude of 1632 m from mean sea level It is bounded on all side by Raid *Sawsymper*. Traversing all along the boundary of this sacred forest is a PWD road. This sacred forest is accessible by road from Shillong, it is 52 km from Shillong.



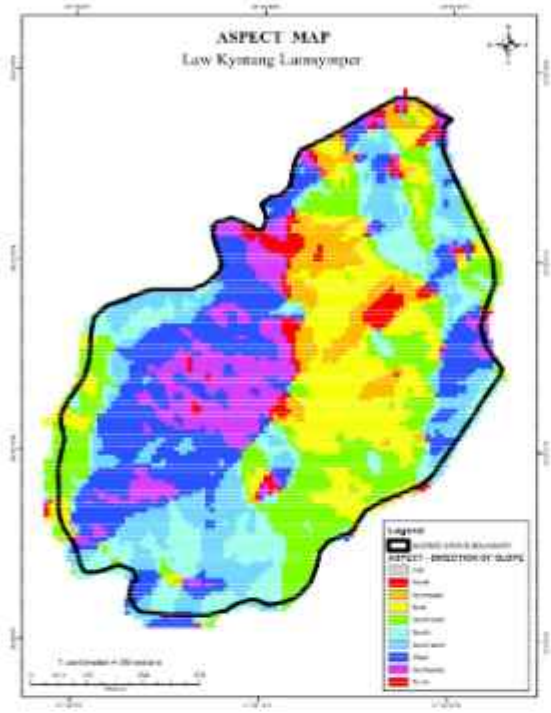


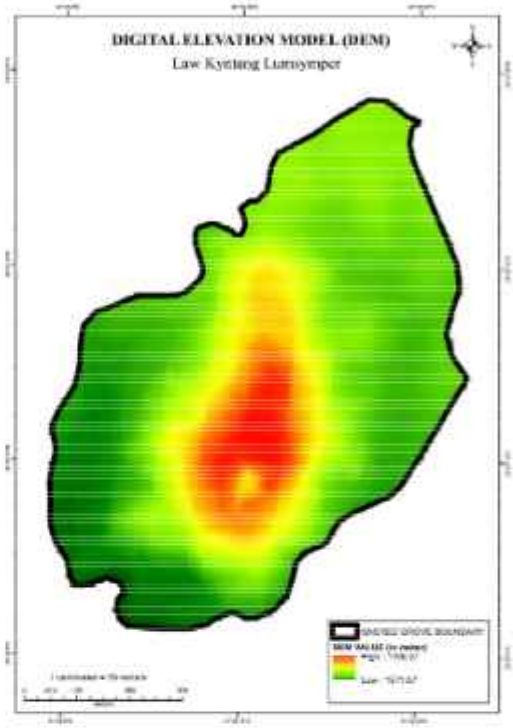


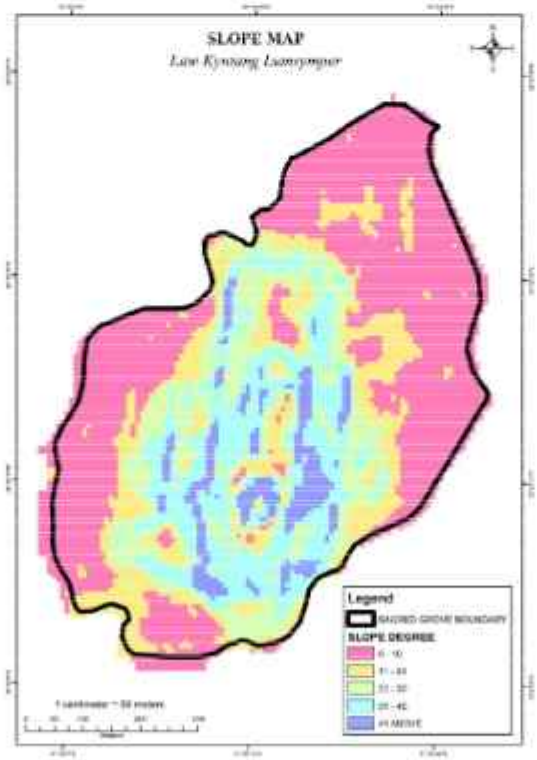


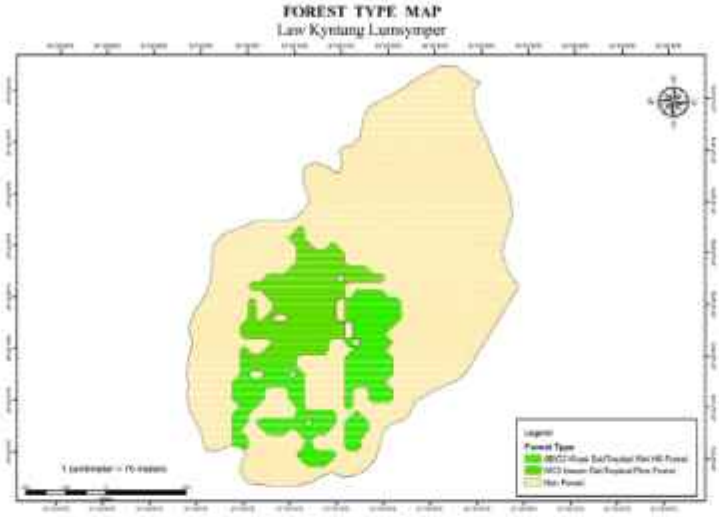
3.6.2 Brief History

As informed by the village elders, *Law Kyntang Lumsymper* is in existence for several centuries. Religious rituals are still performed annually in this grove and at *Kmawan Rum* Village as the deity is selected to resides in *Law Kyntang Lumsymper*. The sacred grove is manageed by the Hima Maharam under the supervision and control of the *Dorbar* of Raid *Sawsymper*.


ASPECT MAP
Law Kyntang Lumsymper


DIGITAL ELEVATION MODEL (DEM)
Law Kyntang Lumsymper


SLOPE MAP
Law Kyntang Lumsymper
Legend
SLOPE DEGREE



Biotic pressure such wildfires, grazing encroachments, hunting and poaching and illegal felling of trees were found to be absent in this sacred forest. However, as this is a picnic spot, such biotic pressure from tourist activities could arise.

3.6.3 Geography and climate

Topography of the grove is hilly in nature with slope varying from 0.0° to 52°. A major part of the *Law Kyntang Lumsymper* falls in East, South, South West and West Aspects. The soil texture is sandy loam with boulders. Soil consistency is slightly compact. Colour of the soil is brown with medium soil depth. Soil erosion is negligible. Numerous seasonal streams flow in and around the *Law Kyntang Lumsymper*. Winter season starts from the end of October and lasts till March of the next year. This forest receives high rainfall during the monsoon season from April to September. Average temperature varies from 7°C to 23°C.

3.6.4 Forest Type

According to the Champion and Seth classification (1968), forests found in the grove are of the ***Type 8B/C2 Khasi Sub-Tropical Wet Hill Forest.***

3.6.5 Forest cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun, Forest cover in the *Law Kyntang Lumsymper* is as below:

Forest Cover	**Area (ha.)**	**% of total Area**
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	13.64	17.44
Open Forest (10% - 40%)	3.19	4.08
Scrub Forest (<10%)	0	0
Non-Forest	61.36	78.48
Total	**78.19**	**100**

3.6.6 Flora and fauna

Around one fifth area of the *Law Kyntang Lumsymper* at *Sawsymper* is home to three-storied dense virgin forest of natural origin. *Castanopsis spp, Pinus kesiya* and *Betula alnoides* are respectively the 1st, 2nd and 3rd dominant tree species. The forest is home to many rare, endangered and endemic plant species.

3.6.6.1 Floral species

Table 3.6.1:Trees found in *Law Kyntang Lumsymper*

Sl No.	Local Name	Botanical Name	Family
1	*Dieng ksuid*	*Alstonia scholaris*	*Apocynaceae*
2	*Dieng latymphu*	*Aralia aramata*	*Araliaceae*
3	*Dieng lieng*	*Betula alnoides*	*Betulaceae*
4	*Dieng tyrnem*	*Camelia caduca*	*Fagaceae*
5	*Dieng sning*	*Castanopis armata*	*Fagaceae*
6	*Dieng sohot*	*Castanopsis indica*	*Fagaceae*
7	*Dieng sohotdngiem*	*Castanopsis spp*	*Fagaceae*
8	*Dieng latyrpadkhlaw/ latyrdop*	*Cinnamomum bejolghota*	*Lauraceae*
9	*Dieng sohphoh*	*Docynia indica*	*Rosaceae.*
10	*Dieng bei*	*Duabanga grandiflora*	*Lythraceae*
11	*Dieng sohkhyllam*	*Elaeocarpus lanceafolios*	*Elaeocarpaceae*
12	*Dieng lasaw*	*Elaeocarpus robusta*	*Elaeocarpaceae*
13	*Dieng lba*	*Engelhardia spicata*	*Juglandaceae*
14	*Dieng sohum*	*Eugenia jambolana*	*Myrtaceae*
15	*Dieng jakba*	*Eurya japonica*	*Theaceae*
16	*Dieng doh*	*Exbucklandia populnea*	*Hamamelidaceae*
17	*Dieng jem*	*Glochidion acuminatum*	*Euphorbiaceae*
18	*Dieng sohmehblang*	*Grewia abutilifolia*	*Tilaceae*
19	*Dieng sohsyrtet*	*Itea chinensis*	*Iteaceae*
20	*Dieng jakba*	*Machilus parviflora*	*Lauraceae*
21	*Dieng jwat*	*Miliusa roxburghiana*	*Annonaceae*
22	*Dieng sohphie*	*Myrica esculenta*	*Myricaceae*
23	*Dieng sohliya*	*Myrica indica*	*Myricaceae*
24	*Dieng sohryngkham/ sohbyrkham*	*Paurthiaea arguta*	*Ericaceae*
25	*Dieng kseh*	*Pinus kesiya/khasiana*	*Pinaceae*
26	*Dieng sai*	*Quercus dealbata*	*Fagaceae*
27	*Dieng tiewsaw*	*Rhododendron arboretum*	*Ericaceae*
28	*Dieng ngan*	*Schima khasiana*	*Theaceae*
29	*Dieng dpei*	*Symplocos theaefolia*	*Symplocaceae*
30	*Dieng shadmoit*	*Wendlandia wallichii*	*Rubiaceae*

Table 3.6.2: Shrubs found in *Law Kyntang Lumsymper*

Sl No.	Local Name	Botanical Name	Family
1.	Soh tyrkhum	Acer laevigatum	Sapindaceae
2.	Soh shiah	Rubus ellipticus	Rosaceae
3.	Soh khlor	Elaeagnus pyriformis	Elaeagnaceae
4.	Jalyntem	Polygonum chinense	Polygonaceae
5.	Dieng snammaw/sohlarmaw	Photinia spp	Rosaceae
6.	Kophi khlaw	Caffea khasiana	Rubiaceae
7.	Dieng tyrthia	Cinnamomum pauciflorum	Lauraceae.
8.	Dieng soh pyrsit	Eurya acuminata	Theaceae
9.	La tyngkrong	Macropanax dispermus	Araliaceae.
10.	La tyngkien	Rauvolfia densiflora	Apocynaceae.
11.	Sohlang eitksew	Viburnum simonsii	Adoxaceae
12.	Soh lamut	Agapetes vareigata	Ericaceae
13.	Dieng shadmoit	Wendlndia waliichi	Rubiaceae
14.	Dieng sahmehblang	Grewia abutilifolia	Tilaceae
15.	Dieng jing	Lithocarpus fenestrata	Fagaceae
16.	Dieng tyrnem	Camelia caudula	Fagaceae

Table 3.6.3: Herbs found in *Law Kyntang Lumsymper*

Sl No.	Local Name	Botanical Name	Family
1.	Slamet	Phrynium spp	Pubinevve
2.	Ja lyngthem	Polygonum chinense	Polygonaceae
3.	Wang khlaw	Esculenta spp	Araceae
4.	Tiew sying maw	Gingiber purpureum	Zingiberaceae
5.	Shynraikhlaw	Alpine aalogus	Gingiberaceae
6.	Wang um	Homolonina aromatica	Araceae
7.	Jajewlieh	Begonia spp	Begoniaceae
8.	Jajew maw	Begonia spp	Begoniaceae
9.	Soh byrthit	Urena lobata	Malvaceae
10.	Tiew rusum	Hedychium coccinium	Zingiberaceae
11.	Soh byrthitrit	Sida rhombijolia	Malvaceae
12.	Soh ngangkhlaw	Solanum torvum	Solanaceae
13.	Khliangsyiar	Centella asiatica	Apiaceae
14.	Soh byrthit bah	Sida acuta	Malvaceae

15.	*Soh thud*	*Osbeckia spp*	*Melostomaceae*
16.	*La shing*	*Curcuma spp*	*Zingiberaceae*
17.	*Sying khlaw*	*Zingiber purpureum*	*Zingiberaceae*
18.	*Soh krismas*	*Sarcandra glabra*	*Chloranthaceae*
19.	*Soh byrthit rit*	*Sida rhombijolia*	*Malvaceae*
20.	*Sla eitmut*	*Eupatorium spp*	*Asteraceae*

Table 3.6.4: Climbers found in *Law Kyntang Lumsymper*

Sl No.	Local Name	Botanical Name	Family
1.	*Soh shangkhlor/lyngshang*	*Elaeagnus pyriformis*	*Elaeagnaceae*
2.	*Soh nepbah*	*Rubus rugosus*	*Rosaceae*
3.	*Jyrmi kynsew*	*Argyreia nervosa*	*Convolvulaceae*
4.	*Soh krot*	*Smilax zeylanica*	*Smilacaceae*
5.	*Sla kyndajyrmi*	*Pothos scandens*	*Araceae*
6.	*Sla kyndajyrmi*	*Pothos spp*	*Aralaceae*
7.	*Phan synreh*	*Dioscorea alata*	*Dioscoreaceae*
8.	*Phan jyrmi*	*Stephania glabra*	*Liliaceae*
9.	*Jyrmi stein*	*Lonicera macrantha*	*Caprifoliaceae*
10.	*Jyrmi japan*	*Agevatina adenofora*	*Asteraceae*
11.	*Jyrmi shiah*	*Xanthozylum khasiana*	*Rotaceae*
12.	*Jyrmi khlaw*	*Entoda spp*	*Luguminaceae*

Table 3.6.5 Orchids found in *Law Kyntang Lumsymper*

Sl No.	Local Name	Botanical Name	Family
1.	*Tiewdieng*	*Micropera manii*	*Orchideceae*
2.	*Soh khasaw*	*Pleione praecox*	*Orchideceae*
3.	*Tiew smehmasi*	*Dendrobium chrysanthum*	*Orchideceae*
4.	*Soh khaleh*	*Pleione maculata*	*Orchideceae*
5.	*Tiew slaremmaw*	*Rafidopohra lancifolia*	*Orchideceae*
6.	*Tiew pawang lum*	*Anoectochilus setaceus*	*Orchidaceae*
7.	*Talong khnai*	*Oberonia manii*	*Orchideceae*
8.	*Tlong khnai*	*Oberonia jenkinsiana*	*Orchideceae*
9.	*Tiew pawanglum*	*Arundina graminifolia*	*Orchideceae*

10.	Tiew dohmaw	Anoectochilus brevilabris	Orchideceae
11.	Tiew dohmaw	Anoectochilus roxburghii	Orchideceae
12.	Tiew lynksiar	Cymbiduim traceyamum	Orchideceae
13.	Knup mawiang	Paphiopedium insigne	Orchideceae
14.	Syntiew die	Bulbophyllum cylindraceum	Orchideceae

Table 3.6.6: Bamboos & Canes found in *Law Kyntang Lumsymper*

Sl No.	Local Name	Botanical Name	Family
1.	Sylli	Melocanna baceifera	Poaceae
2.	Namlang	Chimonobambusa khasiana	Poaceae
3.	Kdait	Saccharum spontaneum	Poaceae
4.	Sohthri	Calamus erectus	Poaceae

Table 3.6.7: Creepers found in *Law Kyntang Lumsymper*

Sl No.	Local Name	Botanical Name	Family
1.	Sohnep bah	Rubus rogosus	Rosaceae
2.	TmainKhla	Lycopodium cernuum	Lycopodiaceae
3.	Sla kyndajyrmi	Pothos spp	Aralaceae
4.	Dieng sohrengblang	Strophanthun wallichi	Apocynaceae
5.	Lapadong	Rhaphidophora spp	Araleceae
6.	Tympewkhlaw	Pipper spp	Peppereceae
7.	Jyrmikynsiew	Argyreia nervosa	Convolvulaceae

Table 3.6.8: Grasses found in *Law Kyntang Lumsymper*

Sl No.	Local Name	Botanical Name	Family
1.	Lang tylli	Arundinella khasiana	Poaceae
2.	Lasier	Corex spiculata	Poaceae
3.	Lang trengsning	Potentilla polyphylla	Poaceae
4.	Lang phot	Juncus effusus	Poaceae
5.	Phlangphreit	Cymbopogon exsertus	Poaceae

Table 3.6.9: Ferns found in Law Kyntang Lumsymper

Sl No.	Local Name	Botanical Name	Family
1.	Tyrkhangiong	Adiantum raddianum	Pteridaceae
2.	Tyrkhang	Cyathea gigantia	Cyatheaceae
3.	Tyrkhang	Maesa indica	Myrsinaceae
4.	Tyrkhang	Polypodium vulgare	Polypodalio

3.6.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Kyntang Lumsymper* has been carried out so far. However, as per the local residents, presence of several wild animals such as jackal, rabbit, jungle fowls, pangolin, barking deer and various types of birds and reptiles has been reported in this forest.

3.6.7 Growing Stock

As per the methodology described in Chapter-II, enumeration was carried out in 10% area of the forest as its area is more than 50 ha. In each sample plot all the trees having girth (over bark) at breast height more than 30cm were enumerated by measuring their top height (in metres) and the girth (in centimeters) at breast height. Data collected during the enumeration were entered in Sacred Grove Description Form and Plot Enumeration form. During the enumeration total 1,313 trees were found within 39 plots each of 0.2 ha size. These include 227 *Castanopsis spp* (1st dominant), 167 *Pinus kesiya* (2nd dominant), 165 *Betula alnoides,* (3rd dominant) and 740 trees of rest of the species. Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each species for each of the 13 girth classes starting from 30-40 cm to 151cm and above. Details of the same are given in the Tables 3.6.10 & 3.6.11 below. As may be seen, total growing stock in this forest is 4646.73 cubic metres.

Table 3.6.10: Species-wise Distribution of Growing Stock in Different Girth Classes

(cum)

Girth Class wise	*Castanopsis spp* 1st dominant	*Pinus kesiya* 2nd dominant	*Betula alnoides* 3rd dominant	Rest of the species	Growing Stock in 39 Sample Plots	Growing Stock in Entire Forest
30-40	2.14	1.09	1.38	12.23	**16.84**	168.81
41-50	10.01	4.14	4.10	23.67	**41.92**	420.22
51-60	8.73	6.81	7.99	28.56	**52.09**	522.16
61-70	10.05	7.95	4.82	3.39	**26.21**	262.74
71-80	11.19	7.79	7.52	28.31	**54.81**	549.43
81-90	10.57	3.30	7.90	25.23	**47.00**	471.14
91-100	7.26	7.19	10.15	15.36	**39.96**	400.57
101-110	2.31	2.99	7.96	7.78	**21.04**	210.91
111-120		3.63	10.92	6.97	**21.52**	215.72
121-130	4.88	1.37	4.61	6.52	**17.38**	174.22
131-140	3.81		2.04	5.67	**11.52**	115.48
141-150	2.19		4.45	17.77	**24.41**	244.69
151 & above	2.42		31.55	54.88	**88.85**	890.65
Total	**75.56**	**46.26**	**105.39**	**236.34**	**463.55**	**4,646.73**

Figure 3.6.1: Girth Class-wise Growing Stock in Entire Forest



Table 3.6.11: Species-wise Distribution of Growing Stock in Different Girth Classes in the Entire Forest

(cum)

Girth Class wise	*Castanopsis spp* 1st dominant	*Pinus kesiya* 2nd dominant	*Betula alnoides* 3rd dominant	Rest of the species	Total (for 78.189 ha' area)	%wrt total volume
30-40	21.45	10.93	13.83	122.60	**168.81**	4
41-50	100.34	41.50	41.10	237.27	**420.22**	9
51-60	87.51	68.27	80.09	286.29	**522.16**	11
61-70	100.74	79.69	48.32	33.98	**262.74**	6
71-80	112.17	78.09	75.38	283.79	**549.43**	12
81-90	105.96	33.08	79.19	252.91	**471.14**	10
91-100	72.78	72.07	101.75	153.97	**400.57**	9
101-110	23.16	29.97	79.79	77.99	**210.91**	5
111-120	0.00	36.39	109.46	69.87	**215.72**	5
121-130	48.92	13.73	46.21	65.36	**174.22**	4
131-140	38.19	0.00	20.45	56.84	**115.48**	2
141-150	21.95	0.00	44.61	178.13	**244.69**	5
151 & above	24.26	0.00	316.26	550.13	**890.65**	19
Total	**757.43**	**463.72**	**1056.45**	**2369.13**	**4646.73**	
%wrt total volume	**16.31**	**9.98**	**22.75**	**51.01**		**100**

As may be seen, 16.30% of the total growing stock is contributed by the 1st dominant species (*Castanopsis spp*). The 2nd dominant species (*Pinus kesiya)* constitutes 9.98% of the total growing stock. Similarly, the 3rd dominant species (*Betula alnoides)* constitutes 22.74%of the total growing stock. A major part of the growing stock *i.e.* 50.98%. is constituted by the rest of the species.

Figure 3.6.2: Girth class-wise Distribution of Growing Stock

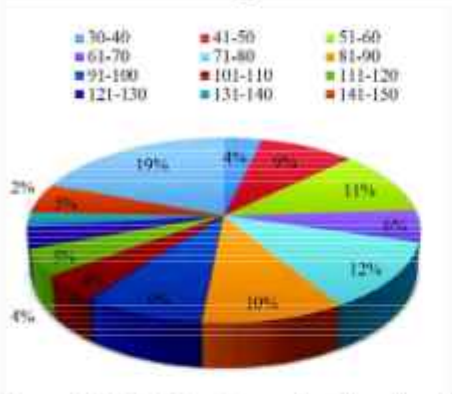


Figure 3.6.3: Species-wise Distribution of Growing Stock

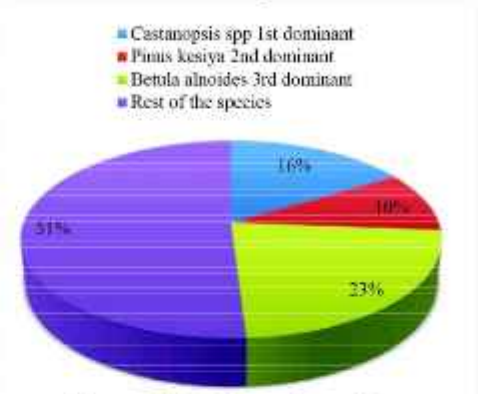


Figure 3.6.4: Girth class-wise Distribution of Growing Stock

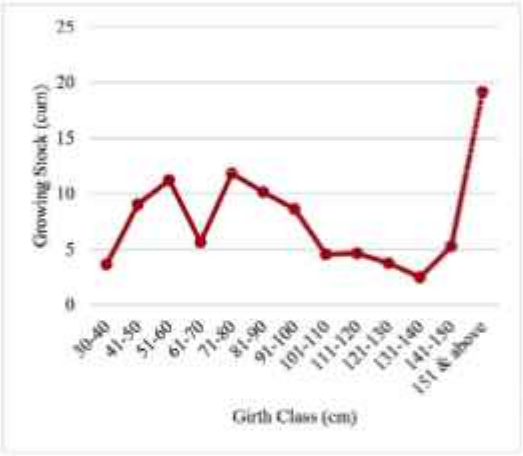


Figure 3.6.5:Over view of *Law KyntangLumsymper*



3.6.8 Number of Stems

Species-wise number of stems in each girth class are given in Tables 3.6.12 & 3.6.13. As may be seen, maximum numbers of stems are found in lower girth classes *i.e.* rom 30-40cm to 61-70cm. Number of stems are inversely proportional to mid-diameter of the girth class.

Table 3.6.12: Species–wise Distribution of Stems in Different Girth Classes in 39 Sample Plots

(number of stems)

Girth Class wise	*Castanopsis spp* 1st dominant	*Pinus kesiya* 2nd dominant	*Betula alnoides* 3rd dominant	Rest of the species	Total
30-40	39	27	27	229	322
41-50	73	43	30	167	313
51-60	35	39	31	116	221
61-70	27	29	13	81	150
71-80	21	20	14	53	108

81-90	15	6	11	36	68
91-100	8	10	11	17	46
101-110	2	3	7	7	19
111-120		3	8	5	16
121-130	3	1	3	4	11
131-140	2		1	3	6
141-150	1		2	8	11
151 & above	1		7	14	22
Total	**227**	**181**	**165**	**740**	**1,313**

Table 3.6.13:Species-wise Number of stems in Different Girth Classes in the Entire Forest

(number of stems)

Girth Class wise	*Castanopsis spp* 1st dominant	*Pinus kesiya* 2nd dominant	*Betula alnoides* 3rd dominant	Rest of the species	Total
30-40	391	271	271	1834	2767
41-50	732	431	301	1373	2837
51-60	351	391	311	932	1985
61-70	271	291	130	601	1293
71-80	211	200	140	471	1022
81-90	150	60	110	321	642
91-100	80	100	110	150	441
101-110	20	30	70	70	190
111-120	0	30	80	40	150
121-130	30	10	30	30	100
131-140	20	0	10	40	70
141-150	10	0	20	70	100
151 & above	10	0	70	140	221
Total	**2,276**	**1,814**	**1,654**	**6,075**	**11,819**

Figure 3.6.6: Number of Stems in Different Girth Classes

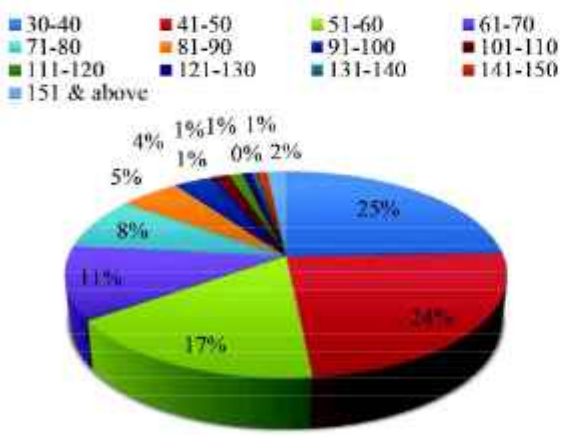


Figure 3.6.7: Species-wise Distribution of Stems

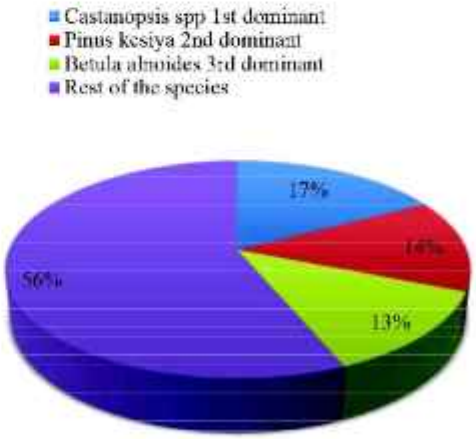


Figure 3.6.8: Number of Stems in Different Girth Classes



Figure 3.6.9: Inside view of *Law KyntangLumsymper*



3.6.9 Prescriptions for Future Management

3.6.9.1 Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Kyntang Lum Symper* has not been registered with the KHADC. The CFO of the KHADC and the Hima Member may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Kyntang Lum Symper* with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.6.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The *Hima Member* and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Law Kyntang Lum Symper* as a Community Reserve.

3.6.9.3 Boundary Demarcation

Boundary of the *Law Kyntang Lum Symper* has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachments. To prevent and to ensure early detection of encroachments, boundary of the *Law Kyntang Lum Symper*, wherever it is not constituted

by natural features of permanent nature, such as rivers or streams or hill ridges may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.6.9.4 Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India, during a period of 22 years (2002 -2023) no fire incident has occurred in the *Law Kyntang Lum Symper*. Similarly, as per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Kyntang Lum Symper* is neither vulnerable nor prone to forest fire. However, to prevent damage to the *Law Kyntang Lum Symper* from accidental forest fires, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Kyntang Lum Symper* and engagement of fire watchers during the critical months may be taken.

3.6.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench etc. may be constructed at suitable locations in the *Law Kyntang Lum Symper*.

3.6.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Kyntang Lum Symper* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view points, footpaths, walking trails, sign boards, washrooms *etc*. may be constructed to attract tourists.

3.6.9.7 Restocking of Open Degraded Areas

More than three-fourth area of the *Law Kyntang Lum Symper* is devoid of any vegetation. Efforts may be made to restock the open degraded patches in the *Law Kyntang Lum Symper* at *Sawsymper* by assisting and promoting natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.6.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Kyntang Lum Symper* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Kyntang Lum Symper*.

3.6.9.9 Awareness Campaign

The *Law Kyntang Lum Symper* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

3.7. *LAW KYNTANG KHLAR RUMPHET*

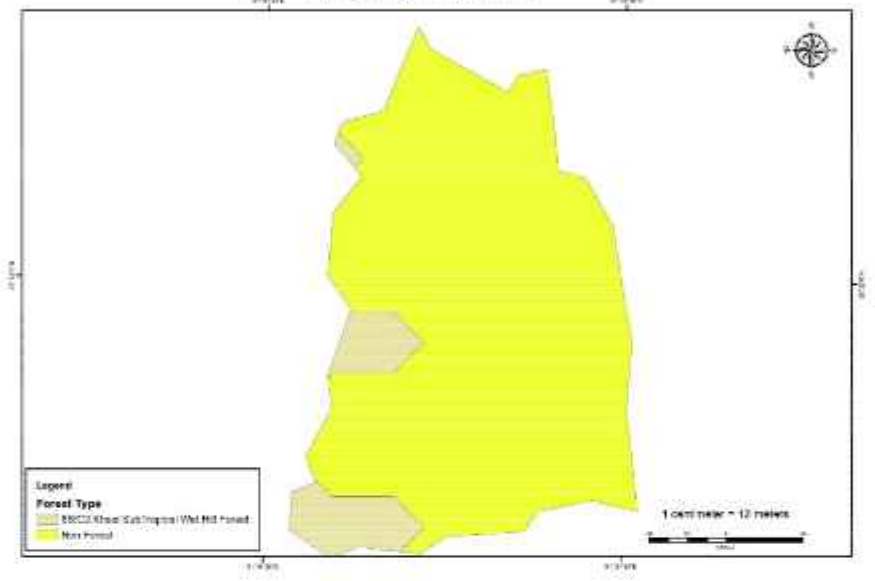
3.7.1 Location

Law kyntang Khlar Rumphet is situated in East Khasi Hills District of Meghalaya at *Kmawan Rum* village under the Syiemship of Hima Maharam. It has an area of 1.933 ha and lies between 25° 22´ 57" N to 25° 23´ 03" N latitude and 91° 34´ 31" E to 91° 34´ 35" E longitude at an altitude of 1,658 m from mean sea level. It is bounded in the North by *Kmawan Rum* Village, in the South by Raid *Sawsymper*, in the East by a Katcha road and in the West by *Umnongkroh* and *Mawlyngkut* area. The grove is accessible by road from Shillong, which is about 56 km from Shillong.

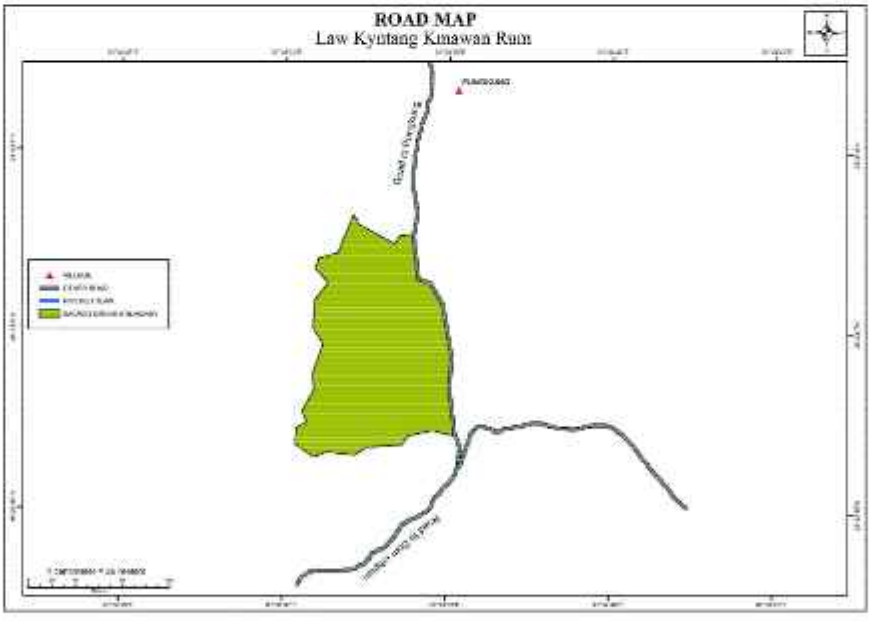


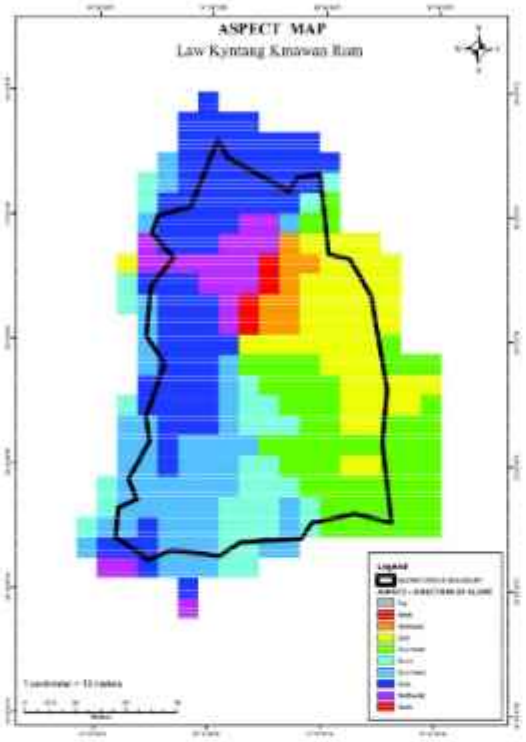


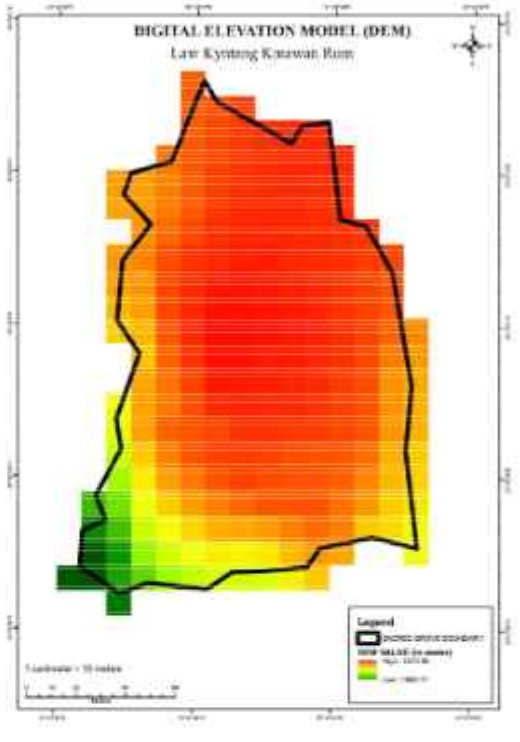
FOREST TYPE MAP
Law Kyntang Kmawan Rum

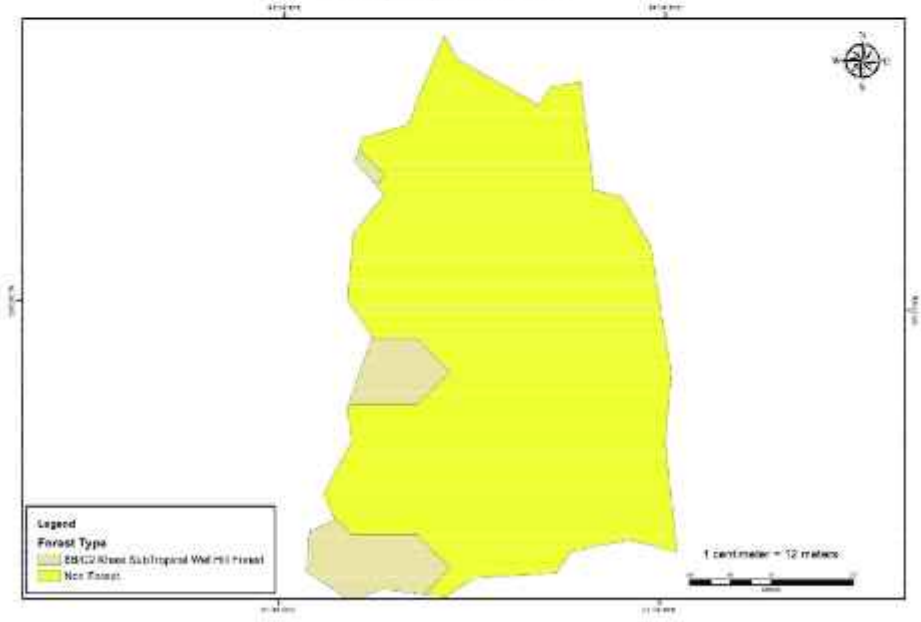


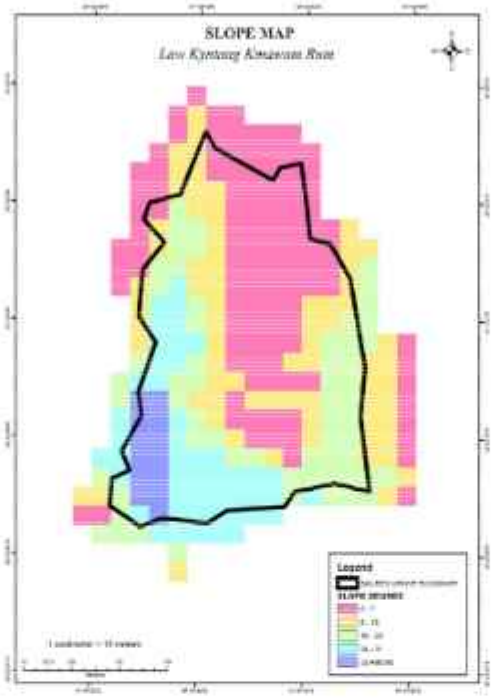
ROAD MAP
Law Kyntang Kmawan Rum




ASPECT MAP
Law Kyntang Kmawan Rum


DIGITAL ELEVATION MODEL (DEM)
Law Kyntang Kmawan Rum
Legend


FOREST TYPE MAP
Law Kyntang Kmawan Rum
Legend
Forest Type
Non Forest
1 centimeter = 12 meters



3.7.2 Brief History

As informed by the elders of the village, this grove is in existence for several centuries. In the past, religious rituals were performed in this grove. However, presently no such rituals are performed in this forest. As it is still revered as a sacred grove, the question of felling of trees does not arise.It is managed and administered by the Village *Dorbar* of *Kmawan Rum.* The State Forest Department has no direct control on the said grove, as it falls under the jurisdiction of the KHADC. As learned, the *Dorbar* Shnong of *Kmawan Rum* had signed a MoU with Khasi Hills (Wildlife) Division for declaring *Law Kyntang Khlar Rumphet* as a Community Reserve.

Biotic pressure, encroachments, huntings and poaching and illegal felling of trees were found to be absent in this sacred forest. However, wildfire and sight grazing has been observed in this sacred grove.

3.7.3 Geography and climate

Topography of the grove is gentle rolling in nature with slope varying from 0.60° to 45°. Major part of the *Law Kyntang Khlar Rumphet* falls in East, South, South East and West Aspects. Soil texture is sandy loam with boulders and gravel. Soil consistency is slightly compact. The colour of the soil is brown with medium soil depth. Soil erosion is negligible. *Umnongkroh* stream flows along boundary of the grove.

Winter season starts from the end of October and lasts till March of the next year. This sacred forest receives high rainfall during the monsoon season from April to September. Average temperature varies from 7°C to 23°C.

3.7.4 Forest Type

According (the Champion and Seth classification (1968), forests found in the grove are of the ***Type 8B/C2 Khasi Sub-Tropical Wet Hill Forest.***

3.7.5 Forest cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun Forest cover in the *Law Kyntang Khlar Rumphet* is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	0.32	16.58
Open Forest (10% - 40%)	0	0
Scrub Forest (<10%)	0	0
Non-Forest	1.61	83.42
Total	**1.93**	**100**

3.7.6 Flora and fauna

The *Law Kyntang Khlar Rumphet* is home to three-storied dense virgin forest of natural origin. *Quercus deal bata,Castanopsis indica* and *Pinus kesiya* are respectively the 1st, 2nd and 3rd tree dominant species.The forest is home to many rare, endangered and endemic plant species.

3.7.6.1 Floral species

Table 3.7.1: Trees found in *Law Kyntang Khlar Rumphet*

Sl No.	Local Name	Botanical Name	Family
1	*Dieng ksuid*	*Alstonia scholaris*	*Apocynaceae*
2	*Dieng latymphu*	*Aralia aramata*	*Araliaceae*
3	*Dieng lieng*	*Betula alnoides*	*Betulaceae*
4	*Dieng kaphi/coffee*	*Cafea khasiana*	*Rubiaceae*
5	*Dieng tyrnem*	*Camelia caduca*	*Theaceae*
6	*Dieng sohot*	*Castanopsis indica*	*Fagaceae*
7	*Dieng sning*	*Castanopsis tribuloides*	*Fagaceae*
8	*Dieng lba*	*Engelhardia spicata*	*Juglandaceae*
9	*Dieng sohpian*	*Ficus hirta*	*Moraceae*
10	*Dieng sohsyrtet*	*Itea chinensis*	*Iteaceae*
11	*Dieng sohniar*	*Michelia panduana*	*Magnliaceae*
12	*Dieng sohphie*	*Myrica esculenta*	*Myricaceae*
13	*Dieng sohphienam*	*Myrica nagi*	*Myricaceae*
14	*Dieng kseh*	*Pinus khasiana/kesiya*	*Pinaceae*
15	*Dieng jakba*	*Polygala arllata*	*Polyglaceae*
16	*Dieng lngiem/dngiem*	*Quercus spp*	*Fagaceae*
17	*Dieng sai*	*Quercus dealbata*	*Fagaceae*
18	*Dieng kain*	*Rhus succedanea*	*Anacardiaceae*
19	*Dieng ngan*	*Schima khasiana*	*Theaceae*

20	Dieng pei	Symplocus theofolios	Symplocaceae
21	Dieng sohlangksew	Viburnum foetidium	Adoxaceae
22	Dieng shadmoit	Wendlandia waliichi	Rubiaceae

Table 3.7.2: Shrubs found in *Law Kyntang Khlar Rumphet*

Sl No.	Local Name	Botanical Name	Family
1.	Soh tyrkhum	Acer laevigatum	Sapindaceae
2.	Soh shiah	Rubus ellipticus	Rosaceae
3.	Soh khlor	Elaeagnus pyriformis	Elaeagnaceae
4.	Jalyntem	Polygonum chinense	Polygonaceae
5.	Dieng snammaw/sohlarmaw	Photinia spp	Rosaceae
6.	Dieng shit	Eurya acuminate	Pentaphylacaceae
7.	La tyngkrong	Macropanax dispermus	Araliaceae
8.	La tyngkien	Rauvolfia densiflora	Apocynaceae
9.	Sohlangeitksew	Viburnum simonsii	Adoxaceae
10.	Dieng jakba	Polygata arillata	Polygalaceae
11.	Dieng shadmoit	Wendlndia waliichi	Rubeceae
12.	Dieng sahmehblang	Grewia abutilifolia	Malvaceae
13.	Dieng tyrnem	Camelia caudula	Theaceae

Table 3.7.3: List of Herbs found in *Law Kyntang Khlar Rumphet*

Sl No.	Local Name	Botanical Name	Family
1.	Wang khlaw	Esculenta spp	Araceae
2.	Tiew sying maw	Gingiber purpureum	Zingiberaceae
3.	Shynraikhlaw	Alpine aalogus	Gingiberaceae
4.	Wang um	Homolonina aromatic	Araceae
5.	Jajewlieh	Begonia spp	Begoniaceae
6.	Jajew maw	Begonia spp	Begoniaceae
7.	Soh byrthit	Urena lobata	Malvaceae
8.	Soh byrthitrit	Sida rhombijolia	Malvaceae
9.	Soh ngangkhlaw	Solanum torvum	Solanaceae
10.	Khliangsyiar	Centella asiatica	Apiaceae
11.	Soh byrthit bah	Sida acuta	Malvaceae
12.	La shing	Curcuma spp	Zingiberaceae
13.	Sying khlaw	Zingiber purpureum	Zingiberaceae
14.	Soh krismas	Sarcandra glabra	Chloranthaceae
15.	Sla eitmut	Eupatorium spp	Asteraceae

Table 3.7.4: Climbers found in *Law Kyntang Khlar Rumphet*

Sl No.	Local Name	Botanical Name	Family
1.	*Sohkrot*	*Smilax zeylanica*	*Smilacaceae*
2.	*Sla kyndajyrmi*	*Pothos scandens*	*Araceae*
3.	*Phan jyrmi*	*Stephania glabra*	*Liliaceae*
4.	*Jyrmi stein*	*Lonicera macrantha*	*Caprifoliaceae*
5.	*Jyrmi japan*	*Agevatina adenofora*	*Asteraceae*
6.	*Jyrmi shiah*	*Xanthozylum khasiana*	*Rotaceae*
7.	*Jyrmi khlaw*	*Entoda spp*	*Luguminaceae*

Table 3.7.5: Orchids found in *Law Kyntang Khlar Rumphet*

Sl No.	Local Name	Botanical Name	Family
1.	*Tiew dieng*	*Micropera manii*	*Orchideceae*
2.	*Soh khasaw*	*Pleione praecox*	*Orchideceae*
3.	*Tiew smehmasi*	*Dendrobium chrysanthum*	*Orchideceae*
4.	*Soh khaleh*	*Pleione maculate*	*Orchideceae*
5.	*Tiew slaremmaw*	*Rafidopohra lancifolia*	*Orchideceae*
6.	*Tiew pawang lum*	*Anoectochilus setaceus*	*Orchidaceae*
7.	*Talongkhnai*	*Oberonia manii*	*Orchideceae*
8.	*Tlongkhnai*	*Oberonia jenkinsiana*	*Orchideceae*
9.	*Tiew pawanglum*	*Arundina graminifolia*	*Orchideceae*
10.	*Tiew dohmaw*	*Anoectochilus brevilabris*	*Orchideceae*
11.	*Tiew dohmaw*	*Anoectochilus roxburghii*	*Orchideceae*
12.	*Tiew lynksiar*	*Cymbiduim traceyamum*	*Orchideceae*
13.	*Tiew mationg*	*Dendrobium chrysanthum*	*Orchideceae*
14.	*Tiew lapaitdong*	*Rhaphidophora lacifolia*	*Orchideceae*
15.	*Knupmawiang*	*Paphiopedium insigne*	*Orchideceae*
16.	*Syntiew die*	*Bulbophyllum cylindraceum*	*Orchideceae*

Table 3.7.6: Bamboo & Cane found in *Law Kyntang Khlar Rumphet*

Sl No.	Local Name	Botanical Name	Family
1.	*Sohthri*	*Calamus erectus*	*Poaceae*

Table 3.7.7:Creepers found in *Law Kytang Khlar Rumphe*

Sl No.	Local Name	Botanical Name	Family
1.	*Sohnep bah*	*Rubus rogosus*	*Rosaceae*
2.	*Tmain Khla*	*Lycopodoum cernuum*	*Lycopodiaceae*
3.	*Sla kyndajyrmi*	*Pothos spp*	*Aralaceae*

4.	*Dieng sohrengblang*	*Strophanthun wallichi*	*Apocynaceae*
5.	*Lapadong*	*Rhaphidophora spp*	*Araleceae*
6.	*Tympew khlaw*	*Pipper spp*	*Peppereceae*
7.	*Jyrmi kynsiew*	*Argyreia nervosa*	*Convolvulaceae*

Table 3.7.8: Grass found in *Law Kyntang Khlar Rumphet*

Sl No.	Local Name	Botanical Name	Family
1.	*Phlangphreit*	*Cymbopogon exsertus*	*Poaceae*

Table 3.7.9:Ferns found in *Law Kyntang Khlar Rumphet*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhang iong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodiaceae*

3.7.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Kyntang Khlar Rumphet* has been carried out so far. However, as per the local residents, presence of several wild animals such as jackal, rabbit, jungle fowls, pangolin, barking deer and various types of birds and reptiles has been noted in this forest.

3.7.7 Growing Stock:

As per the methodology described in Chapter-II, enumeration was carried out in 100% area of the forest as its area is less than 10 ha. In each sample plot all the tree species having girth (over bark) at breast height more than 30 cm were enumerated by measuring their top height (in metres) and the girth at breast height (in centimeters). Data collected during the enumeration were entered in Sacred Grove Description Form and Plot Enumeration Form. During the enumeration total 750 tree were found. These include 155 *Quercus dealbata* (1st dominant), 154 *Castonopsis indica* (2nd dominant), 115 *Pinus kesiya,* (3rd dominant) and 326 trees of rest of the species. Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each species for each of the 13 girth classes starting from 30-40 cm to 151cm and above. Details of the same are given in the Table 3.7.10 below. As may be seen, total growing stock in this forest is 559.00 cubic metres.

Table 3.7.10: Specieswise Distribution of Growing Stock in Different Girth Classes in the Entire Forest

(cum)

Girth Class wise	*Quercus dealbata* 1st dominant	*Castanopsis indica* 2nd dominant	*Pinus kesiya* 3rd dominant	Rest of the species	Total Growing Stock	% Total Growing Stock
30-40	0.28	0.64	0.59	1.61	**3.12**	**0.56**
41-50	1.85	2.51	1.37	6.27	**12.00**	**2.15**
51-60	4.32	6.53	0.17	11.72	**22.74**	**4.07**

61-70	6.41	10.84	1.14	18.31	**36.70**	**6.57**
71-80	5.13	10.90	4.49	22.11	**42.63**	**7.63**
81-90	7.66	14.90	4.53	12.68	**39.77**	**7.11**
91-100	6.58	8.43	6.01	31.71	**52.73**	**9.43**
101-110	1.44	9.14	9.66	18.64	**38.88**	**6.96**
111-120	3.51	8.20	7.31	19.16	**38.18**	**6.83**
121-130	0.00	3.16	17.35	7.91	**28.42**	**5.08**
131-140	1.25	3.87	10.49	17.57	**33.18**	**5.94**
141-150	2.94	6.70	7.89	7.02	**24.55**	**4.39**
151 & above	1.83	10.13	78.89	95.25	**186.10**	**33.29**
Total	**43.20**	**95.95**	**149.89**	**269.96**	**559.00**	**100.00**
% Total Growing Stock	7.73	17.16	26.81	48.29	100.00	

As may be seen 7.73% of the total growing stock is contributed by the 1st dominant species (*Quercus dealbata*). The 2nd dominant species (*Castonopsis indica)* constitutes 17.16% of the total growing stock. Similarly, the 3rd dominant species (*Pinus kesiya)* constitutes 6.57% of the total growing stock. A major part of the growing stock *i.e.* 48.29% is constituted by the rest of species.

Figure 3.7.1: Girth class-wise Distribution of Growing Stock

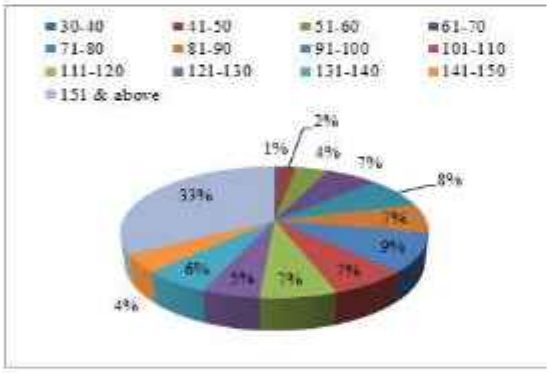


Figure 3.7.2: Species-wise Distribution of Growing Stock

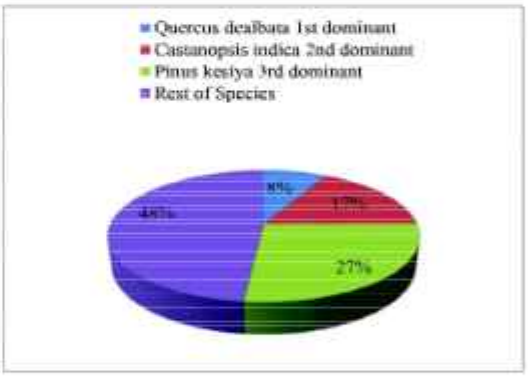


Figure 3.7.3: Girth class wise Distribution of Growing Stock



Figure 3.7.4: Overview of *Law Kyntang Khlar Rumphet*



Species-wise number of stems in each girth class are given in the Table 3.7.11 below. As may be seen, maximum numbers of stems are found in lower girth classes *i.e.* from 30-40 cm to 61-70 cm. number of stems are inversely proportional to mid-diameter of the girth class.

Table 3.7.11: Species-wise Distribution of Stems in Different Girth Classes

(number of stems)

Girth Class wise	*Quercus dealbata* 1st dominant	*Castanopsis indica* 2nd dominant	*Pinus kesiya* 3rd dominant	Rest of the species	Total
30-40	11	9	14	27	**61**
41-50	27	17	13	42	**99**
51-60	31	26	1	46	**104**
61-70	30	28	4	47	**109**
71-80	16	20	11	41	**88**
81-90	18	21	8	18	**65**
91-100	12	9	8	35	**64**
101-110	2	8	10	17	**37**
111-120	4	6	6	14	**30**
121-130		2	12	5	**19**
131-140	1	2	6	9	**18**
141-150	2	3	4	3	**12**
151 & above	1	3	18	22	**44**
Total	**155**	**154**	**115**	**326**	**750**

Figure 3.7.5: Number of Stems in Girth Classes

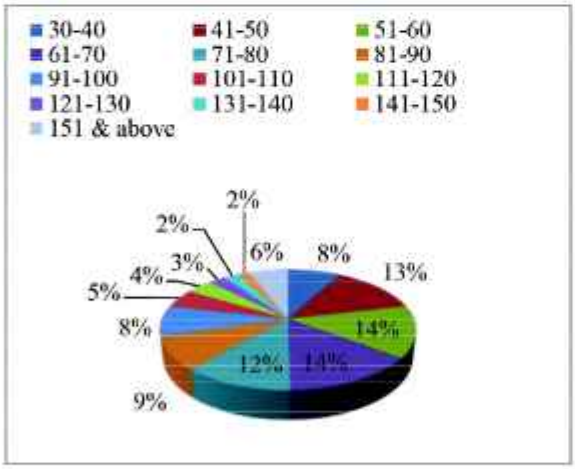


Figure 3.7.6: Species-wise Distribution of Stems

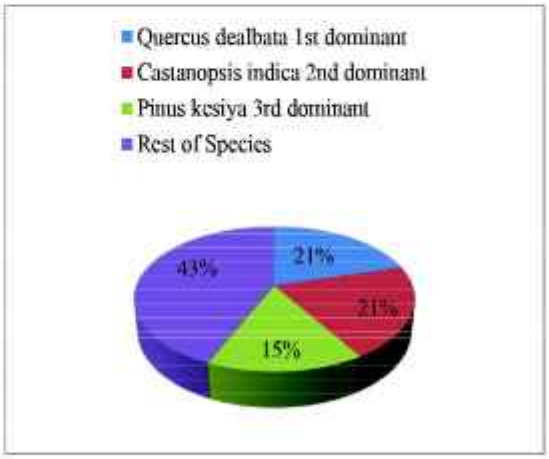


Figure 3.7.7: Number of Stems in Different Girth Classes



Figure 3.7.8: Inside view of *Law Kyntang Khlar Rumphet*



3.7.9 Prescriptions for Future Management

3.7.9.1 Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Kyntang Khlar Rumphet* has not been registered with the KHADC. The CFO of the KHADC and the Village *Dorbar* of *the Kmawan Rum* may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Kyntang Khlar Rumphet* with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.7.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The *Dorbar* of *Kmawan Rum* and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Law Kyntang Khlar Rumphet* as a Community Reserve.

3.7.9.3 Boundary Demarcation

Boundary of the *Law Kyntang Khlar Rumphet* has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachments. To prevent and to ensure early detection of encroachments, boundary of the *Law Kyntang Khlar Rumphet*, wherever it is not constituted by natural features of permanent nature, such as rivers or streams or hill ridges, may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.7.9.4 Fire Protection

As per the Forest Fire Alert System maintained by the Forest Survey of India, during a period of 22 years (2002 -2023) no fire incident has occurred in the *Law Kyntang Khlar Rumphet*. However, as per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Kyntang Khlar Rumphet* is vulnerable to forest fire. The entire area of *Law Kyntang Khlar Rumphet* is not prone to forest fire. To prevent damage to the *Law Kyntang Khlar Rumphet* from accidental forest fires, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Kyntang Khlar Rumphet* and engagement of fire watchers during the critical months may be taken.

3.7.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench etc. may be constructed at suitable locations in the *Law Kyntang Khlar Rumphet.*

3.7.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Kyntang Khlar Rumphet* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath, walking trail, sign board, washrooms *etc.* may be constructed to attract tourists.

3.7.9.7 Restocking of Open Degraded Areas

Efforts may be made to restock the open degraded patches in the *Law Kyntang Khlar Rumphet* by assisting and promoting natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.7.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Kyntang Khlar Rumphet* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Kyntang Khlar Rumphet*.

3.7.9.9 Awareness Campaign

The *Law Kyntang Khlar Rumphet* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

3.8. *LAW KYNTANG KHONGSIT CLAN MAWLUM TYRSAD*

3.8.1 Location

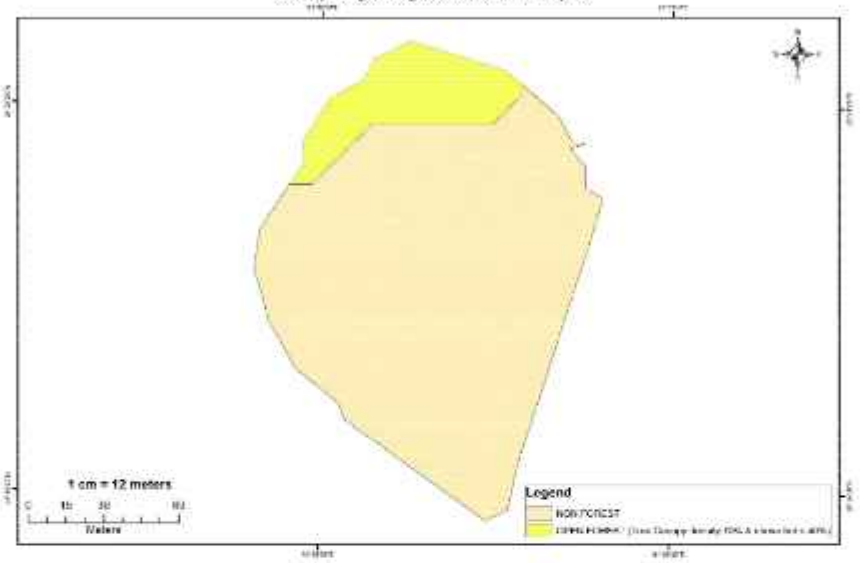
Law Kyntang Mawlum Tyrsad, Phud Lukhla is situated in East Khasi Hills District of Meghalaya at *Mawlum Tyrsad* village under *Hima Mylliem*.It hasan area of 1.839 ha, It lies between 91° 39′ 30" E to 91° 39′ 33"E longitude and 25° 24′ 20" N to 25° 24′ 26" N latitude with an altitude of 1650 m from mean sea level. It is bounded to the North, South and West by *Kur Khongsit* Protected Forest and in the North-East by the Mawphlang-Balat Raod and *Kur Khongsit* Protected Forest. It is accessible by road from Shillong via Mawphlang-Balat Road. It is about 35 km from Shillong.





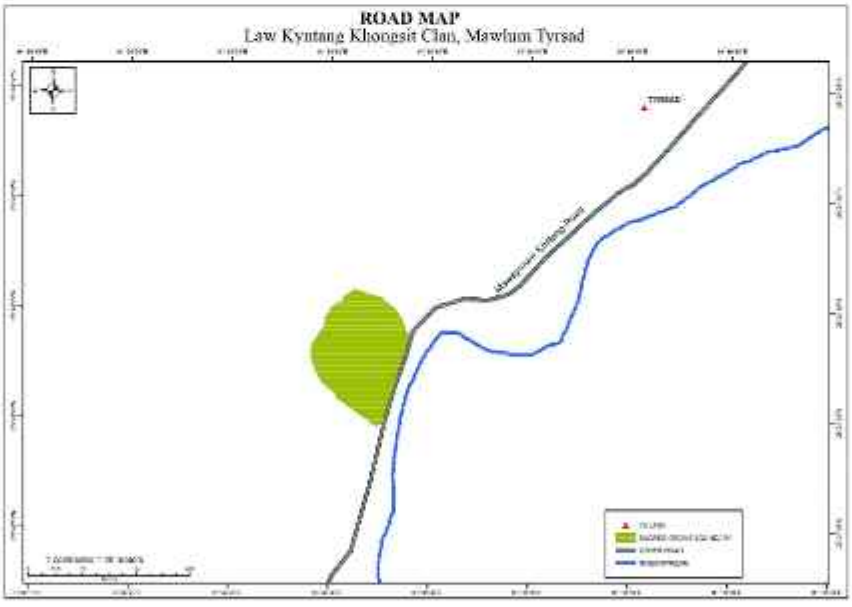
FOREST COVER MAP

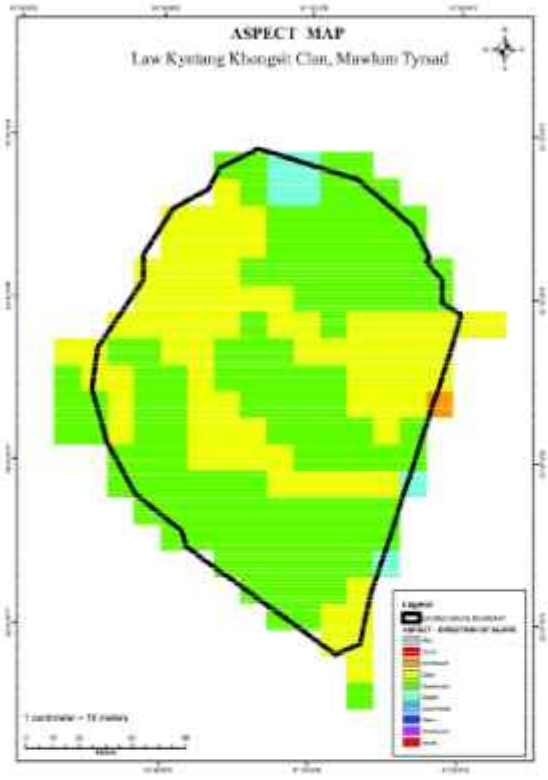
Law Kyntang Khongsit Clan, Mawlum Tyrsad

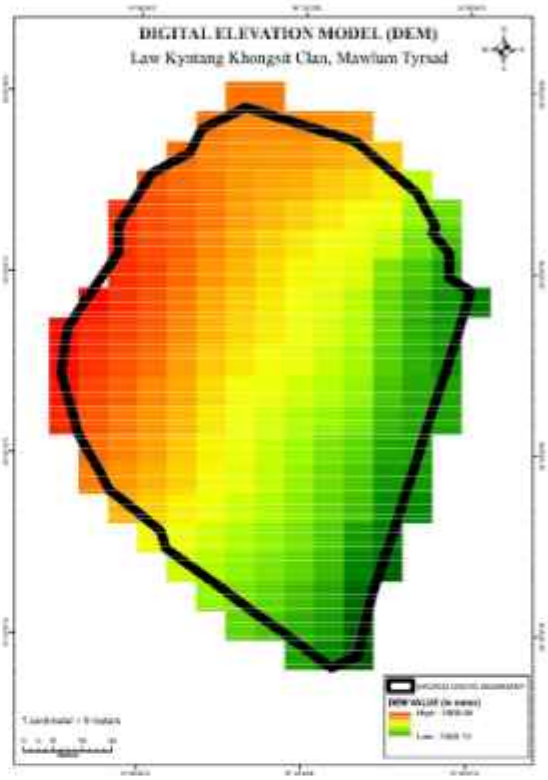


ROAD MAP

Law Kyntang Khongsit Clan, Mawlum Tyrsad



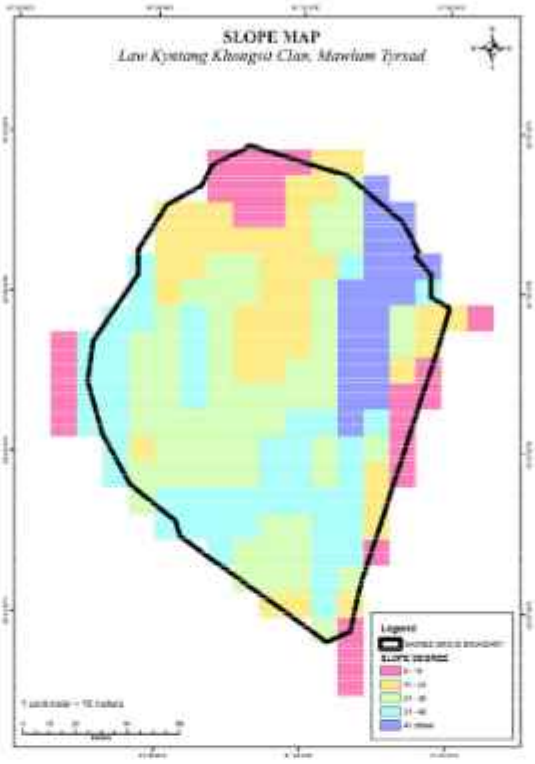




FOREST TYPE MAP

Law Kyntang Khongsit Clan, Mawlum Trysad





3.8.2 Brief History

This Sacred grove is in existence for several centuries, since the settlement of *Kur Khongsit* in this part of Khasi Hills. It is owned by the *Kur Khongsit* and being looked after by the *Dorbar Shnong* of *Mawlum Tyrsad.* Mawlum Tyrsad is a village predominated by the Khongsit clan. In the past, religious rituals were performed in this grove. However, the residents of the village still believe in the *Basa* (Deity) and the *Basa* are still believed to look after the well-being of the village. Trespassing inside the Sacred grove without the knowledge of the *Dorbar* is prohibited. Plucking of twigs, branches or uprooting anything is not strictly prohibited as in case of other sacred grove such as *Law Lyngdoh at Lyngiong or Mawphlang.*

Biotic pressure such as wild fire and grazing were found in the grove. However, there is no report of encroachment.

3.8.3 Geography and Climate

Topography of the grove is gentle rolling in nature with slope varying from 8° to 49°. The *Law Kyntang Mawlum Tyrsad* falls under East and South East Aspects. Soil texture is sandy loam with loose stone and coarse fragments. Soil consistency is slightly compact. The colour of the soil is brown with shallow soil depth. Soil erosion is almost negligible. No perennial stream is located in and around the forest. One water hole is located within this forest.

Winter season starts from the end of October and lasts till March of the next year. This sacred forest receives high rainfall during the monsoon season from April to September. Average temperature varies from 5°C to 23°C. Frost occurs during December to February.

3.8.4 Forest Type:

According to the Champion and Seth classification (1968), forests found in the grove are of the ***Type 9/C2 Assam Sub-Tropical Pine Forest***

3.8.5 Forest cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun, forest cover in the *Law Kyntang Mawlum Tyrsad, Phud Lukha* is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	0	0
Open Forest (10% - 40%)	0.39	21.21
Scrub Forest (<10%)	0	0
Non-Forest	1.449	78.79
Total	**1.839**	**100**

3.8.6 Flora and Fauna:

More than three-fourth of the area of the *Law Kyntang Mawlum Tyrsad, Phud Lukha* is devoid of trees. *Pinus kesiya* and *Quercus dealbata* are respectively the 1st and 2nd dominant.

Presence of some species of animals such as pangolin, jungle fowls, jackals, etc. have been reported in this forest.

3.8.6.1 Floral species

Table 3.8.1: Trees found in *Law Kyntang Mawlum Tyrsad, Phud Lukhla*

Sl No.	Local Name	Botanical Name	Family
1	*Dieng sohot*	*Castanopsis indica*	*Fagaceae*
2	*Dieng lasaw*	*Elaeocarpus robusta*	*Elaeocarpaceae*
3	*Dieng pyrshitiong*	*Eurya accuminata*	*Theaceae*
4	*Dieng pyrshitlieh*	*Eurya japonica*	*Theaceae*
5	*Dieng shyieng*	*Ilex venolosa*	*Aquifoliaceae*
6	*Dieng sohphie*	*Myrica farquhariana*	*Fagaceae*
7	*Dieng kseh*	*Pinus kesiya*	*Pinaceae*
8	*Dieng sohshur*	*Pyrus pashia*	*Rosaceae*
9	*Dieng sai*	*Quercus dealbata*	*Fagaceae*
10	*Dieng tiewsaw*	*Rhododendron arboreum*	*Ericaceae*
11	*Dieng kain*	*Rhus succedanea*	*Anacardiaceae*

Table 3.8.2: Shrubs found in *Law Kyntang Mawlum Tyrsad, Phudlukla*

Sl No.	Local Name	Botanical Name	Family
1	Soh shiah	Rubus ellipticus	Rosaceae
2	Soh khlor	Elaeagnus pyriformis	Elaeagnaceae
3	Dieng snammaw/sohlarmaw	Photinia spp	Rosaceae
4	Dieng pyiur	Corylopsis himalayana	Hamamelidaceae
5	Dieng sai	Quercus dealbata	Fagaceae
6	Dieng tyrthia	Cinnamomum pauciflorum	Lauraceae
7	Dieng soh pyrsit	Eurya acuminata	Theaceae
8	Sohlangeitksew	Viburnum simonsii	Adoxaceae
9	Soh lamut	Agapetes vareigata	Ericaceae
10	Dieng jing	Lithocarpus fenestrata	Fagaceae
11	Dieng tyrnem	Camelia caudula	Theaceae

Table 3.8.3: Herbs found in *Law Kyntang Mawlum Tyrsad, Phudlukla*

Sl No.	Local Name	Botanical Name	Family
1.	Tiew sying maw	Gingiber purpureum	Zingiberaceae
2.	Jajewlieh	Begonia spp	Begoniaceae
3.	Jajew maw	Begonia spp	Begoniaceae
4.	Soh byrthit	Urena lobata	Malvaceae
5.	Tiew rusum	Hedychium coccinium	Zingiberaceae
6.	Soh byrthitrit	Sida rhombijolia	Malvaceae
7.	Soh ngangkhlaw	Solanum torvum	Solanaceae
8.	Khliangsyiar	Centella asiatica	Apiaceae
9.	Soh byrthit bah	Sida acuta	Malvaceae
10.	La shing	Curcuma spp	Melostomaceae
11.	Sying khlaw	Zingiber purpureum	Zingiberaceae
12.	Soh krismas	Sarcandra glabra	Zingiberaceae
13.	Soh byrthitrit	Sida rhombijolia	Chloranthaceae
14.	Sla eitmut	Eupatorium spp	Asteraceae

Table 3.8.4: Climbers found in *Law Kyntang Mawlum Tyrsad, Phudlukla*

Sl No.	Local Name	Botanical Name	Family
1.	Soh shangkhlor/lyngshang	Elaeagnus pyriformis	Elaeagnaceae
2.	Jyrmikynsew	Argyreia nervosa	Convolvulaceae
3.	soh krot	Smilax zeylanica	Smilacaceae
4.	Phan jyrmi	Stephania glabra	Liliaceae
5.	Jyrmi stein	Lonicera macrantha	Caprifoliaceae
6.	Jyrmi japan	Agevatina adenofora	Asteraceae
7.	Jyrmi shiah	Xanthozylum khasiana	Rotaceae
8.	Jyrmi khlaw	Entoda spp	Luguminaceae

Table 3.8.5: Orchids found in *Law Kyntang Mawlum Tyrsad, Phudlukla*

Sl No.	Local Name	Botanical Name	Family
1.	*Tiew dieng*	*Micropera manii*	*Orchideceae*
2.	*Tiew smehmasi*	*Dendrobium chrysanthum*	*Orchideceae*
3.	*Soh khaleh*	*Pleione maculata*	*Orchideceae*
4.	*Tiew slaremmaw*	*Rafidopohra lancifolia*	*Orchideceae*
5.	*Tiew pawang lum*	*Anoectochilus setaceus*	*Orchidaceae*
6.	*Syntiew die*	*Bulbophyllum cylindraceum*	*Orchideceae*
7.	*Tlong khnai*	*Oberonia jenkinsiana*	*Orchideceae*
8.	*Tiew pawanglum*	*Arundina graminifolia*	*Orchideceae*

Table 3.8.6: Creepers found in *Law Kyntang Mawlum Tyrsad, Phudlukla*

Sl No.	Local Name	Botanical Name	Family
1.	*Sohnep bah*	*Rubus rogosus*	*Rosaceae*
2.	*Tmain khla*	*Lycopodoum cernuum*	*Lycopodiaceae*
3.	*Sla kyndajyrmi*	*Pothosspp*	*Aralaceae*
4.	*Dieng sohrengblang*	*Strophanthun wallichi*	*Apocynaceae*
5.	*Lapadong*	*Rhaphidophora spp*	*Araleceae*
6.	*Tympew khlaw*	*Pipper spp*	*Peppereceae*
7.	*Jyrmi kynsiew*	*Argyreia nervosa*	*Convolvulaceae*

Table 3.8.7: Grasses found in *Law Kyntang Mawlum Tyrsad, Phudlukla*

Sl No.	Local Name	Botanical Name	Family
1.	*Lang tylli*	*Arundinella khasiana*	*Poaceae*
2.	*Lang kseh /phlangtynsok*	*Ponium maximum*	*Poaceae*
3.	*Lasier*	*Corex spiculata*	*Poaceae*
4.	*Lang phot*	*Juncus effusus*	*Poaceae*
	Phlangphreit	*Cymbopogon exsertus*	*Poaceae*

Table 3.8.8: Ferns found in *Law Kyntang Mawlum Tyrsad, Phudlukla*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhang iong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodalio*

3.8.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Kyntang Mawlum Tyrsad, Phudlukla* has been carried out so far. However, as per the local residents, presence of several

wild animals such as jackal, rabbit, jungle fowls, pangolin, barking deer and various types of birds and reptiles has occurred in this forest.

3.8.7 Growing Stock:

As per the methodology described in Chapter-II, enumeration was carried out in 100% area of the forest as its area is less than 10 ha. In each sample plot all the trees having girth (over bark) at breast height more than 30 cm is enumerated by measuring the top height (in metres) and the girth at breast height (in centimeters). Data collected during the enumeration were entered in Sacred Grove Description Form and Plot Enumeration Form. During the enumeration total 425 tree species were found, each of 0.2 ha size. These includes 314 *Pinus kesiya* (1st dominant), 83 *Quercus dealbata* (2nd dominant), 15 *Pryus Pashia (3rd dominant)* and 425 trees of rest of the species. Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each species for each of the 13 girth classes starting from 30-40 cm to 151 cm and above. Details of the same are given in the Table 3.8.9 below. As may be seen, total growing stock in this forest is 85.55 cubic metres.

Table 3.8.9: Species-wise Distribution of Growing Stock in Different Girth Classes in the Entire Grove

(cum)

Girth Class wise	*Pinus kesiya* 1st Dominant	*Quercus Dealbata* 2nd Dominant	*Pryus Pashia* 3rd Dominant	Rest of the species	Total Growing Stock	% Total Growing Stock
30-40	1.66	1.02	0.54	0.36	**3.57**	4.18
41-50	7.65	0.66	0.17	0.17	**8.64**	10.10
51-60	11.93	0.48	0.00	0.74	**13.15**	15.37
61-70	14.42	0.00	0.00	0.00	**14.42**	16.86
71-80	11.24	0.00	0.00	0.00	**11.24**	13.13
81-90	12.11	0.00	0.00	1.27	**13.38**	15.64
91-100	12.49	0.00	0.00	0.00	**12.49**	14.60
101-110	6.14	0.00	0.00	0.00	**6.14**	7.17
111-120	1.06	0.00	0.00	0.00	**1.06**	1.23
121-130	1.47	0.00	0.00	0.00	**1.47**	1.72
131-140	0.00	0.00	0.00	0.00	**0.00**	0.00
141-150	0.00	0.00	0.00	0.00	**0.00**	0.00
151 & above	0.00	0.00	0.00	0.00	**0.00**	0.00
Total	**80.15**	**2.16**	**0.71**	**2.54**	**85.55**	
% Total Growing Stock	**93.69**	**2.52**	**0.83**	**2.96**		100.00

As may be seen, 93.69% of the total growing stock is contributed by the 1st dominant species (*Pinus kesiya)*. The 2nd dominant species (*Quercus dealbata*) constitutes 2.52% of the total growing stock. Similarly, the 3rd dominant species (*Pryus pashia)* constitutes 0.83% of the total growing stock.A small fraction of the growing stock *i.e.* 2.96% is constituted by the rest of the species.

Figure 3.8.1: Girth Class-wise Distribution of Growing Stock

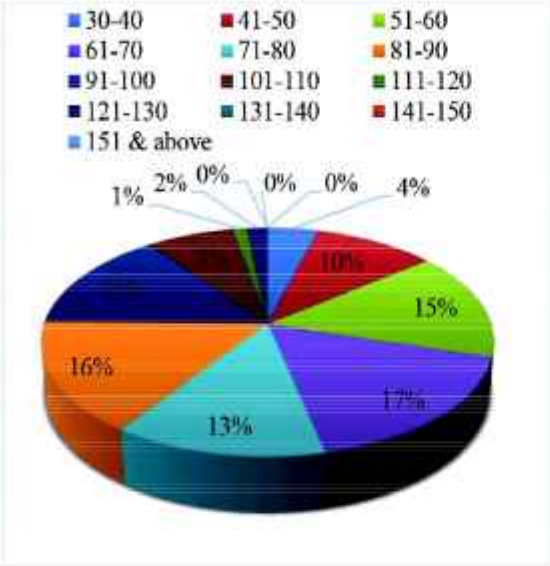


Figure 3.8.2: Species-wise Distribution of Growing Stock

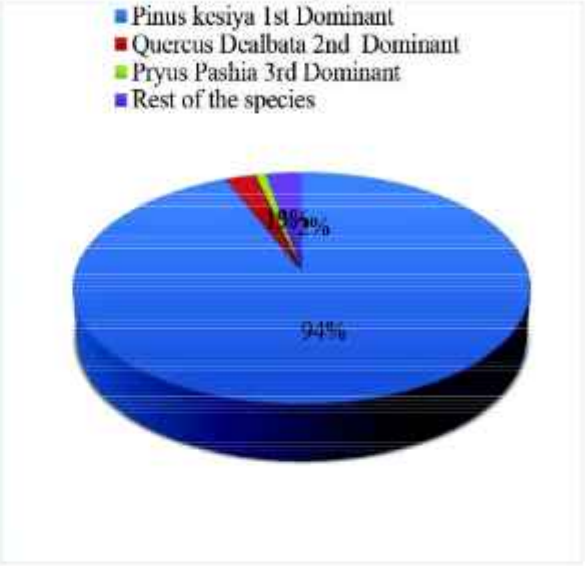


Figure 3.8.3: Girth Class-wise Distribution of Growing Stock

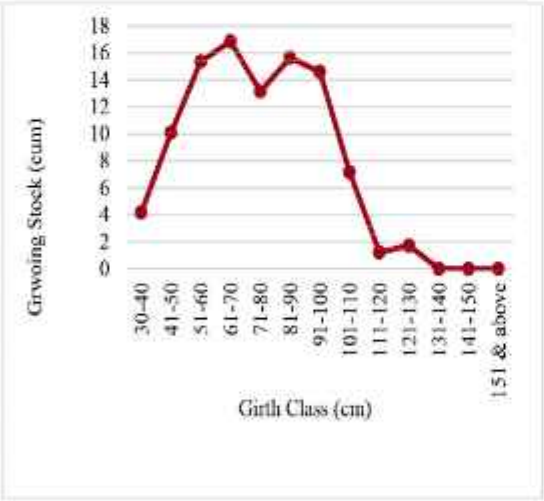


Figure 3.8.6: Over view *Law Kyntang Mawlum Tyrsad, Phudlukla*



3.8.8 Number of Stems

Species-wise number of stems in each girth class and species wise are given in Table 3.8.10 below. As may be seen maximum numbers of stems are found in lower girth classes i.e. from 30-40 cm to 61-70 cm. Number of stems are inversely proportional to mid-diameter of the girth class.

Table 3.8.10: Species-wise Distribution of Stems in Different Girth Classes in the Entire Forest

(number of stems)

Girth Class wise	*Pinus kesiya* 1st Dominant	*Quercus Dealbata* 2nd Dominant	*Pryus Pashia* 3rd Dominant	Rest of the species	Total Stems
30-40	48	69	14	7	138
41-50	74	10	1	1	86
51-60	66	4	0	3	73
61-70	50	0	0	0	50
71-80	28	0	0	0	28
81-90	22	0	0	2	24
91-100	17	0	0	0	17
101-110	7	0	0	0	7
111-120	1	0	0	0	1
121-130	1	0	0	0	1
131-140	0	0	0	0	0
141-150	0	0	0	0	0
151 & above	0	0	0	0	0
Total	**314**	**83**	**15**	**13**	**425**

Figure 3.8.7: Species-wise Distribution of Stems

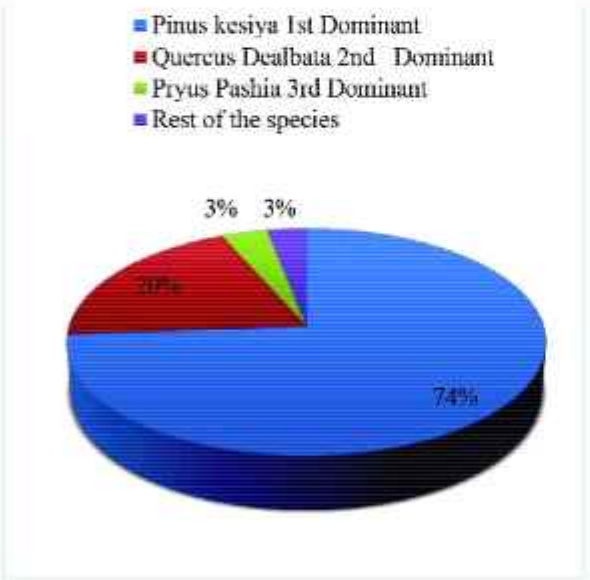


Figure 3.8.8: Number of Stems in Different Girth classes

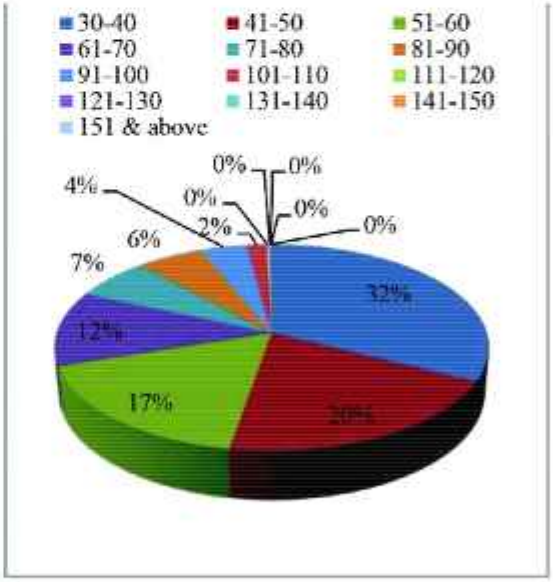


Figure 3.8.9: Number of Stems in Different Girth Classes



Figure 3.8.9: Inside view *Law Kyntang Mawlum Tyrsad, Phudlukla*



3.8.9.1 Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Kyntang Mawlum Tyrsad, Phudlukha* has not been registered with the KHADC. The CFO of the KHADC and the Village *Dorbar* of *Mawlum Tyrsad* may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Kyntang Mawlum Tyrsad, Phudlukha* with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.8.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The *Village Dorbar* of *Mawlum Tyrsad* and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Law Kyntang Mawlum Tyrsad, Phudlukha* as a Community Reserve.

3.8.9.3 Boundary Demarcation

Boundary of the *Law Kyntang Mawlum Tyrsad, Phudlukha* has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachment. To prevent and to ensure early detection of encroachments, boundary of the *Law Kyntang Mawlum Tyrsad, Phudlukha*, wherever it is not constituted by natural features of permanent nature, such as rivers or streams, may

be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.8.9.4 Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India, during a period of 22 years (2002 -2023) no fire incident has occurred in the *Law Kyntang Mawlum Tyrsad, Phudlukha*. However, as per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Kyntang Mawlum Tyrsad, Phudlukha* is neither vulnerable not prone to forest fire. However, to prevent damage to the *Law Kyntang Mawlum Tyrsad* from accidental forest fires, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Kyntang Mawlum Tyrsad, Phudlukha* and engagement of fire watchers during the critical months may be taken.

3.8.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench, may be constructed at suitable locations in the *Law Kyntang Mawlum Tyrsad, Phudlukha*

3.8.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Kyntang Mawlum Tyrsad, Phudlukha* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath, walking trail, sign board, washrooms *etc*. may be constructed to attract tourists.

3.8.9.7 Restocking of Open Degraded Areas

A major part of *Law Kyntang Mawlum Tyrsad, Phudlukha is devoid of any trees*. Efforts may also be made to afforest blank areas and restock open degraded patches in the *Law Kyntang Mawlum Tyrsad, Phudlukha* by assisting and promoting natural regeneration of native species.

3.8.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Kyntang Mawlum Tyrsad, Phudlukha* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Kyntang Mawlum Tyrsad, Phudlukha*.

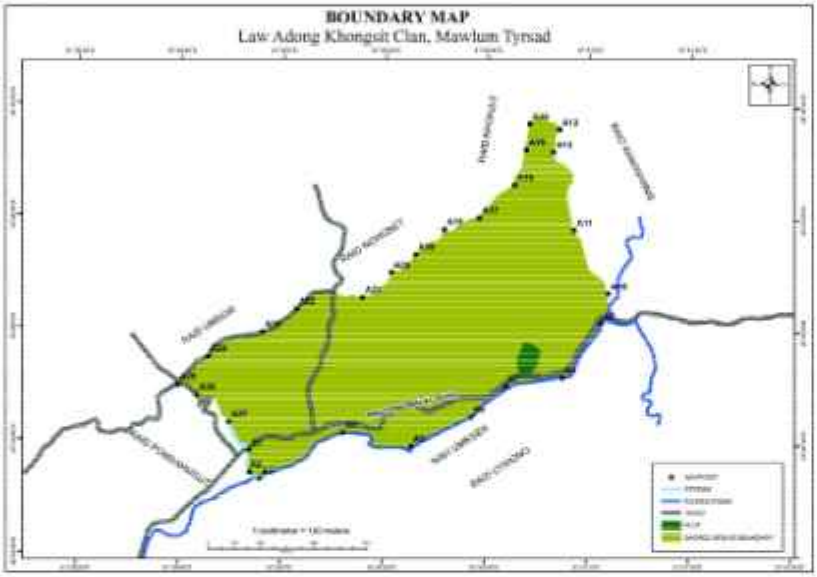
3.8.9.9 Awareness Campaign

The *Law Kyntang Mawlum Tyrsad, Phudlukha* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communitie concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

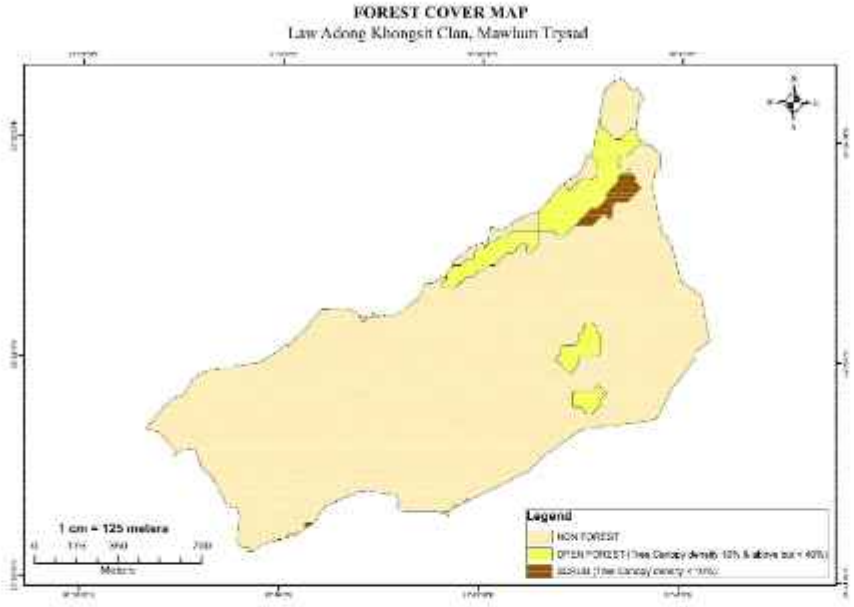
3.9. *LAW ADONG KHONGSIT CLAN, MAWLUM TYRSAD*

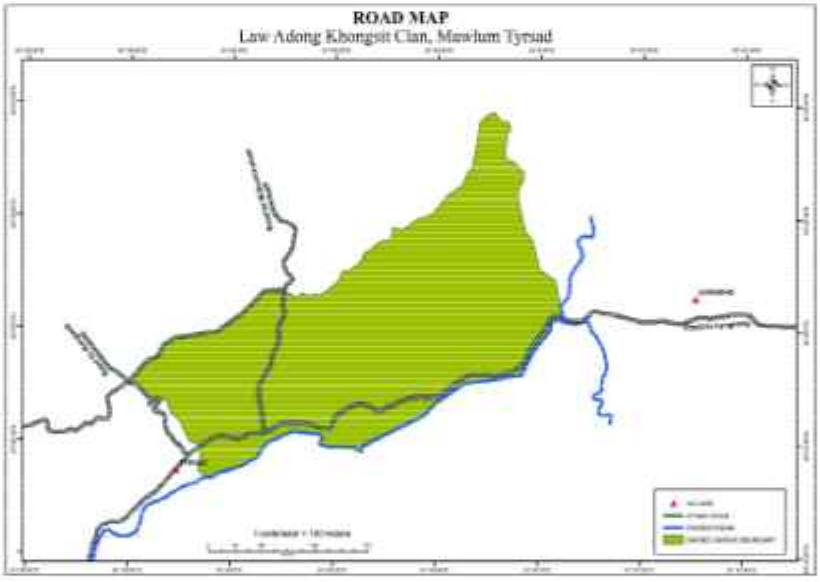
3.9.1 Location

Law Adong of Khongsit clan is situated in East Khasi Hills District of Meghalaya at *Mawlum Tyrsad* village under *Hima Mylliem*. It has an area of 195.07 ha. It lies between 91° 39´ 35" E to 91° 41´ 04"E longitude and 25° 24´ 36" N to 25° 25´ 34" N latitude at an altitude of 1,711 m from mean sea level. It is bounded to the North, North East and West by Raid Khongsit, South West by *Raid Umdor* and *Raid Pansanngut,* and South East *by Raid Kharshiing* and *Wah Umkseh.* It is accessible by road from Shillong via Mawphlang-Balat Road. It is about 36 km from Shillong.



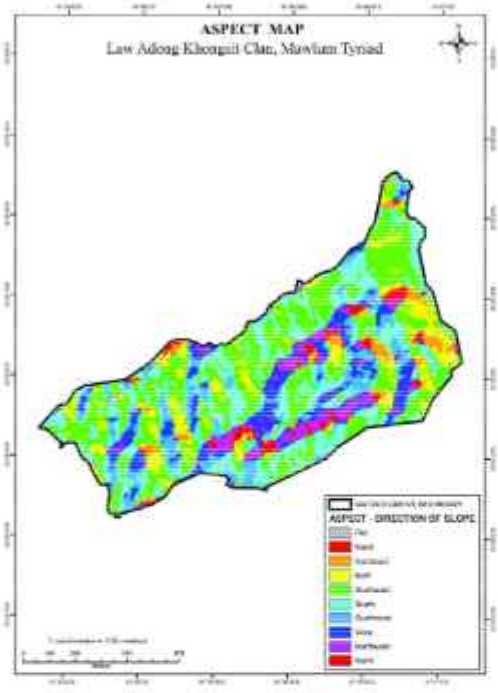


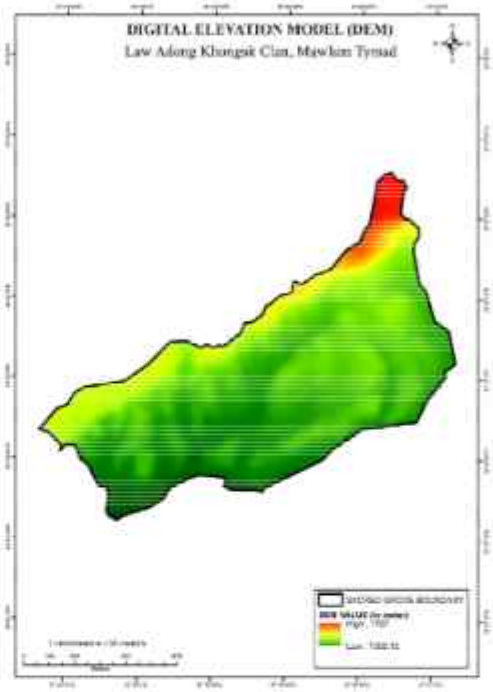


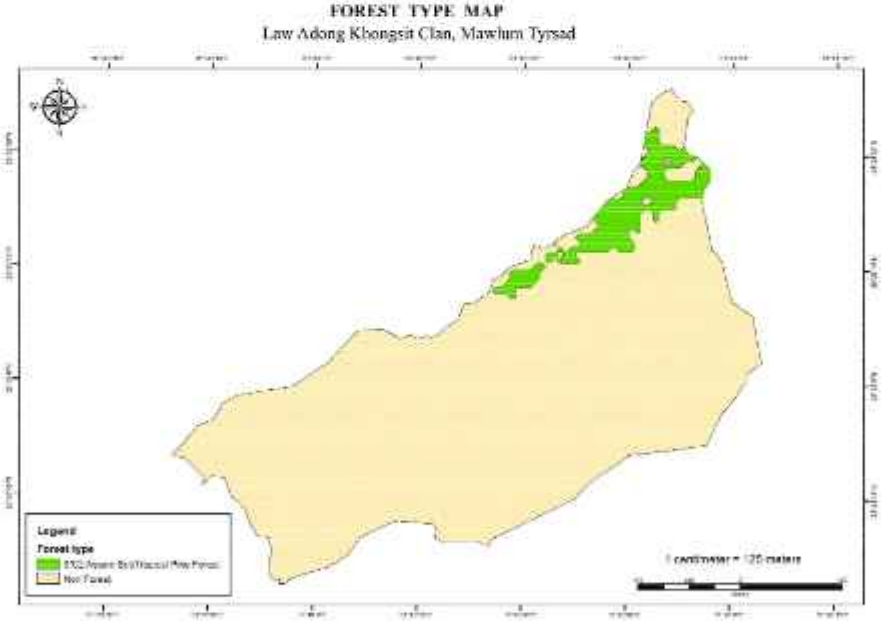


3.9.2 Brief History

As informed by the village elders, this grove is in existence for several centuries, at the dawn of the settlement of *Kur Khongsit* in this part of Khasi Hills. It is owned by the *Kur Khongsit* and managed by the *Dorbar Shnong* of *Mawlum Tyrsad.* Trespassing inside the grove without knowledge of the *Dorbar* is prohibited. This grove has been preserved by the clan in the honour of their



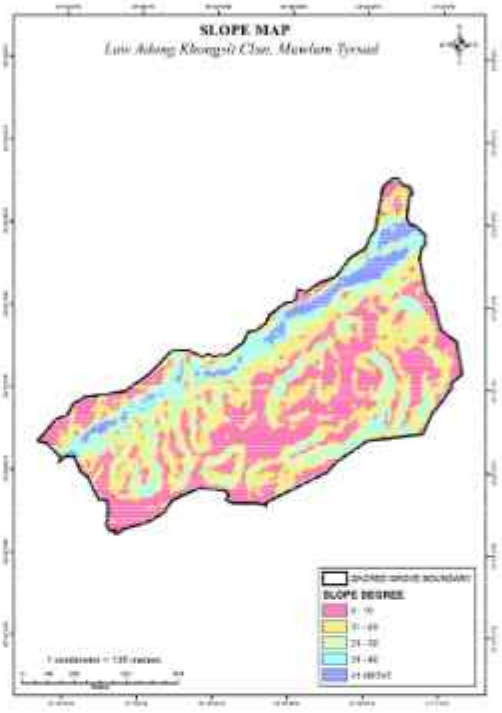




ancestors.With emphasis on conservation of rich biodiversity, this legacy has been passed from generation to generation. However, wood and firewood required for funeral purposes for bona fide residents of the village are permitted to be extracted from the forest with prior permission from the Village Dorbar. It is interesting to note that *Mawlum Tyrsad's* farming area lies within the boundary of

the grove. On the north-east part of this grove is the sacred grove i.e. *Law Adong Khongsit Clan, Mawlum Tyrsad.* Most of the wood land of this grove lies in the north-west part. Land holding, within this grove as part of management of the Land-use System is allotted by the *Village Dorbar* or the Clan.

Biotic pressure such as encroachments, hunting, poaching and illegal felling of trees are found to be absent in this grove. However, wild fire and grazing have been observed in the sacred forest .



3.9.3 Geography and Climate

Topography of the grove is hilly with slope varying from 0.4° to 48°. Major part of the *Law Adong of Khongsit* clan falls in South, South West, North West and East Aspects. Soil texture is sandy-loam with loose stone and coarse fragment.Soil consistency is friable. Colour of the soil is brown with shallow to medium soil depth. Soil erosion is almost negligible.

Winter season starts from the end of October and lasts till March of the next year. This sacred forest receives high rainfall during the monsoon season from April to September. Average temperature varies from 5°C to 23°C. Frost occurs during December to February.

3.9.4 Forest Type:

According to the Champion and Seth classification (1968), forests found in the grove are of the***Type 9/C2 Assam Sub-Tropical Pine Forest***

3.9.5 Forest cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun Forest cover in the *Law Adong Khongsit* clan, *Mawlum Tyrsad* is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	0	0
Open Forest (10% - 40%)	13.63	6.99
Scrub Forest (<10%)	1.98	1.02
Non-Forest	179.46	91.99
Total	**195.07**	**100**

3.9.6 Flora and Fauna

A major part of the *Law Adong Khongsit Clan, Mawlum Tyrsad* is covered by trees. *Pinus kesiya and Viburnum corylifolium* are respectively the 1st and 2nd dominant tree species.

3.9.6.1 Floral species

Table 3.9.1: Trees found in *Law Adong Khongsit Clan, Mawlum Tyrsad*

Sl No.	Local Name	Botanical Name	Family
1	*Dieng latymphu*	*Aralia armata*	*Araliaceae*
2	*Dieng Lba*	*Engelhardtia Spicata*	*Juglandaceae*
3	*Dieng Sohphie*	*Myrica Esculenta*	*Myrtaceae*
4	*Dieng kseh*	*Pinus khasiana/kesiya*	*Pinaceae*
5	*Dieng soh jhur*	*Pyrus pashia*	*Rosaceae*
6	*Dieng ngan*	*Schima khasiana*	*Theaceae*
7	*Dieng sohlangkhlaw*	*Viburnum corylifolium*	*Adoxaceae*
8	*Dieng sohlangeitksew*	*Viburnum simonsii*	*Adoxaceae*

Table 3.9.2: Shrubs found in *Law Adong Khongsit Clan, Mawlum Tyrsad*

Sl No.	Local Name	Botanical Name	Family
1.	*Soh shiah*	*Rubus ellipticus*	*Rosaceae*
2.	*Soh khlor*	*Elaeagnus pyriformis*	*Elaeagnaceae*
3.	*Dieng dpei*	*Symplocos khasiana*	*Symplocaceae*
4.	*Dieng snammaw/sohlarmaw*	*Photinia spp*	*Rosaceae*
5.	*Dieng pyiur*	*Corylopsis himalayana*	*Hamamelidaceae*
6.	*Dieng sai*	*Quercus dealbata*	*Fagaceae*
7.	*Dieng tyrthia*	*Cinnamomum pauciflorum*	*Lauraceae*
8.	*Dieng soh pyrsit*	*Eurya acuminata*	*Theaceae*
9.	*Dieng wah*	*Quercus spp*	*Fagaceae*
10.	*Dieng soh rilang*		
11.	*Sohlangeitksew*	*Viburnum simonsii*	*Adoxaceae*
12.	*Soh lamut*	*Agapetes vareigata*	*Ericaceae*
13.	*Dieng jing*	*Lithocarpus fenestrata*	*Fagaceae*
14.	*Dieng tyrnem*	*Camelia caudula*	*Fagaceae*

Table 3.9.3: Herbs found in *Law Adong Khongsit Clan, Mawlum Tyrsad*

Sl No.	Local Name	Botanical Name	Family
1.	*Tiew sying maw*	*Gingiber purpureum*	*Zingiberaceae*
2.	*Jajewlieh*	*Begonia spp*	*Begoniaceae*
3.	*Jajew maw*	*Begonia spp*	*Begoniaceae*
4.	*Soh byrthit*	*Urena lobata*	*Malvaceae*
5.	*Tiew rusum*	*Hedychium coccinium*	*Zingiberaceae*
6.	*Soh byrthitrit*	*Sidarhombijolia*	*Malvaceae*
7.	*Soh ngangkhlaw*	*Solanum torvum*	*Solanaceae*
8.	*Khliangsyiar*	*Centella asiatica*	*Apiaceae*
9.	*Soh byrthit bah*	*Sida acuta*	*Malvaceae*

10.	*La shing*	*Curcuma spp*	*Zingiberaceae*
11.	*Sying khlaw*	*Zingiber purpureum*	*Zingiberaceae*
12.	*Soh krismas*	*Sarcandra glabra*	*Chloranthaceae*
13.	*Soh byrthitrit*	*Sida rhombijolia*	*Malvaceae*
14.	*Sla eitmut*	*Eupatorium spp*	*Asteraceae*

Table 3.9.4: Climbers found in *Law Adong Khongsit Clan, Mawlum Tyrsad*

Sl No.	Local Name	Botanical Name	Family
1.	*Soh shangkhlor/lyngshang*	*Elaeagnus pyriformis*	*Elaeagnaceae*
2.	*Jyrmi kynsew*	*Argyreia nervosa*	*Convolvulaceae*
3.	*Sohkrot*	*Smilax zeylanica*	*Smilacaceae*
4.	*Phan jyrmi*	*Stephania glabra*	*Liliaceae*
5.	*Jyrmi stein*	*Lonicera macrantha*	*Caprifoliaceae*
6.	*Jyrmi japan*	*Ageratina adenofora*	*Asteraceae*
7.	*Jyrmi shiah*	*Xanthozylum khasiana*	*Rotaceae*
8.	*Jyrmi khlaw*	*Entoda spp*	*Luguminaceae*

Table 3.9.5: Orchids found in *Law Adong Khongsit Clan, Mawlum Tyrsad*

Sl No.	Local Name	Botanical Name	Family
1.	*Tiew dieng*	*Micropera manii*	*Orchideceae*
2.	*Tiew smehmasi*	*Dendrobium chrysanthum*	*Orchideceae*
3.	*Soh khaleh*	*Pleione maculata*	*Orchideceae*
4.	*Tiew slaremmaw*	*Rafidopohra lancifolia*	*Orchideceae*
5.	*Tiew pawang lum*	*Anoectochilus setaceus*	*Orchidaceae*
6.	*Syntiew die*	*Bulbophyllum cylindraceum*	*Orchideceae*
7.	*Tlong khnai*	*Oberonia jenkinsiana*	*Orchideceae*
8.	*Tiew pawanglum*	*Arundina graminifolia*	*Orchideceae*

Table 3.9.6: Creepers found in *Law Adong Khongsit Clan, Mawlum Tyrsad*

Sl No.	Local Name	Botanical Name	Family
1.	*Sohnep bah*	*Rubus rogosus*	*Rosaceae*
2.	*Tmain khla*	*Lycopodoum cernuum*	*Lycopodiaceae*
3.	*Sla kyndajyrmi*	*Pothos spp*	*Aralaceae*
4.	*Dieng sohrengblang*	*Strophanthun wallichi*	*Apocynaceae*
5.	*Lapadong*	*Rhaphidophora spp*	*Araleceae*
6.	*Tympew khlaw*	*Pipper spp*	*Pepperecеae*
7.	*Jyrmi kynsiew*	*Argyreia nervosa*	*Convolvulaceae*

Table 3.9.7: Grasses found in *Law Adong Khongsit Clan, Mawlum Tyrsad*

Sl No.	Local Name	Botanical Name	Family
1.	*Lang tylli*	*Arundinella khasiana*	*Poaceae*
2.	*Lang kseh /phlangtynsok*	*Ponium maximum*	*Poaceae*
3.	*Lasier*	*Corex spiculata*	*Poaceae*
4.	*Lang phot*	*Juncus effusus*	*Poaceae*
5.	*Phlangphreit*	*Cymbopogon exsertus*	*Poaceae*

Table 3.9.8: Ferns found in *Law Adong Khongsit Clan, Mawlum Tyrsad*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhang iong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodalio*
5.	*Tyrkhangnar*	*Lophosoriaquadri pinnata*	*Dicksoniaceae*

3.9.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Adong Khongsit* Clan, *Mawlum Tyrsad* has been carried out so far.

3.9.7 Growing Stock:

As per the methodology described in Chapter-II, enumeration was carried out in 10% area of the forest as its area is less than 10 ha. In each sample plot all the trees having girth (over bark) at breast height more than 30 cm were enumerated by measuring their top height (in metres) and the girth (in centimetres) at breast height. Data collected during the enumeration were entered in Sacred Grove Description Form and Plot Enumeration Form. During the enumeration total 1,029 trees were found within 98 plot plots of 0.2 ha size. These include 985 *Pinus kesiya* (1st dominant), 13 *Viburnum corylifolium* (2nd dominant), 10 *Schima khasiana* and 21 trees of rest of the species. Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each species for each of the 13 girth classes starting from 30-40cm to 151cm and above. Details of the same are given in the Tables 3.9.9 & 3.9.10 below. As may be seen, total growing in this forest is 1970.22 cubic metres.

Table 3.9.9: Species-wise Distribution of Growing Stock in Different Girth Classes *(cum)*

Girth Class wise	*Pinus kesiya 1st dominant*	*Viburnum Corylifolium 2nd dominant*	*Schima khasiana 3rd dominant*	Rest of the species	Growing Stock in 98 Sample Plots	Growing Stock in entire Forest
30-40	11.51	0.31	0.41	0.61	**12.84**	128.45
41-50	23.08	0.38	0.13	0.28	**23.87**	238.79
51-60	26.24	0.44	0.77	0.00	**27.45**	274.60

61-70	34.13	0.73	0.00	0.75	**35.61**	356.23
71-80	38.72	0.00	0.00	0.00	**38.72**	387.34
81-90	26.09	0.00	0.00	0.00	**26.09**	260.99
91-100	17.44	0.00	0.00	0.00	**17.44**	174.46
101-110	9.30	0.00	0.00	0.00	**9.30**	93.03
111-120	3.28	0.00	0.00	0.00	**3.28**	32.81
121-130	0.00	0.00	0.00	0.00	**0.00**	0.00
131-140	0.00	0.00	0.00	0.00	**0.00**	0.00
141-150	0.00	0.00	2.35	0.00	**2.35**	23.52
151 & above	0.00	0.00	0.00	0.00	**0.00**	0.00
Total	**189.79**	**1.86**	**3.66**	**1.64**	**196.95**	**1970.22**

Figure 3.9.1: Girth Class-wise Growing Stock in Entire Forest



Table 3.9.10: Species-wise Distribution of Growing Stock in Different Girth Classes in the Entire Forest

(cum)

Girth Class wise	*Pinus kesiya* *1st dominant*	*Viburnum corylifolium* *2nd dominant*	*Schima khasiana* *3rd dominant*	Rest of the species	Total (for 195.07 ha' area)	%wrt total volume
30-40	115.14	3.10	4.10	6.10	**128.45**	7
41-50	230.88	3.80	1.30	2.80	**238.79**	12
51-60	262.49	4.40	7.70	0.00	**274.60**	14
61-70	341.42	7.30	0.00	7.50	**356.23**	18
71-80	387.34	0.00	0.00	0.00	**387.34**	20
81-90	260.99	0.00	0.00	0.00	**260.99**	13
91-100	174.46	0.00	0.00	0.00	**174.46**	9

101-110	93.03	0.00	0.00	0.00	**93.03**	5
111-120	32.81	0.00	0.00	0.00	**32.81**	2
121-130	0.00	0.00	0.00	0.00	**0.00**	0
131-140	0.00	0.00	0.00	0.00	**0.00**	0
141-150	0.00	0.00	23.52	0.00	**23.52**	1
151 & above	0.00	0.00	0.00	0.00	**0.00**	0
Total	**1898.58**	**18.61**	**36.62**	**16.41**	**1970.22**	**100**
%wrt total volume	**96.36**	**0.94**	**1.86**	**0.83**	**100.00**	

As may be seen, 96.33% of the total growing stock is contributed by the 1st dominant species (*Pinus kesiya*). The 2nd dominant species (*Viburnum corylifolium*) constitutes 0.94% of the total growing stock. Similarly, the 3rd dominant species (*Schima khasiana)* constitutes 1.86% of the total growing stock. A small part of the growing stock *i.e.* 0.83% is constituted by the rest of the species.

Figure 3.9.2: Girth class-wise Distribution of Growing Stock

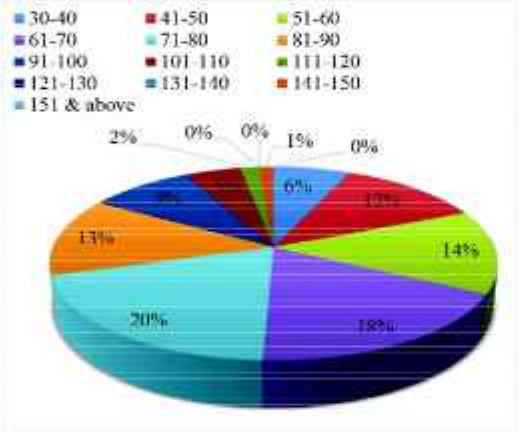


Figure 3.9.3: Species wise Distribution of Growing Stock

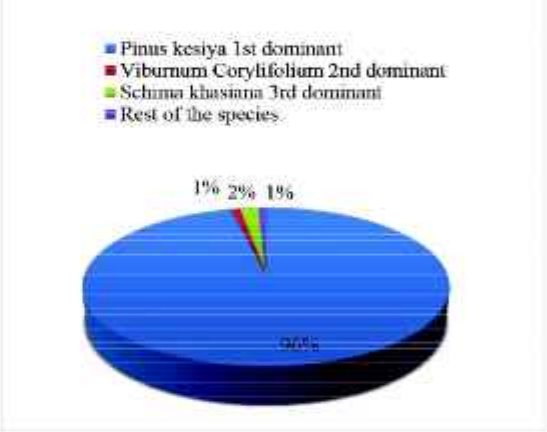


Figure 3.9.4: Girth Class-wise Distribution of Growing Stock



Figure 3.9.5: Overview of *Law Adong Khongsit Clan, Mawlum Tyrsad*



9.8 Number of Stems

Species-wise number of stems in each girth class and are given in Table 3.9.11 & 3.9.12 below. As may be seen, maximum numbers of stems are found in lower girth classes *i.e.* 30-40 cm to 61-70 cm. Number of stems are inversely proportional to mi-diameter of the girth class.

Table 3.9.11: Species-wise Distribution of Stems in Different Girth Classes in 98 Sample Plots

(number of stems)

Girth Class wise	*Pinus kesiya* 1st Dominant	*Viburnum corylifolium* 2nd dominant	*Schima khasiana* 3rd dominant	Rest of the species	Total
30-40	307	6	6	17	**336**
41-50	233	3	1	2	**239**
51-60	146	2	3	0	**151**
61-70	121	2	0	2	**125**
71-80	94	0	0	0	**94**
81-90	47	0	0	0	**47**
91-100	24	0	0	0	**24**
101-110	10	0	0	0	**10**
111-120	3	0	0	0	**3**
121-130	0	0	0	0	**0**
131-140	0	0	0	0	**0**
141-150	0	0	0	0	**0**
151 & above	0	0	0	0	**0**
Total	**985**	**13**	**10**	**21**	**1029**

Table 3.9.12: Species-wise Number of Stems in Different Girth Classes in the Entire Forest

(number of stems)

Girth Class wise	*Pinus kesiya* 1st Dominant	*Viburnum corylifolium* 2nd dominant	*Schima khasiana* 3rd dominant	Rest of the species	Total
30-40	12	634	634	224	**1492**
41-50	16	1268	3804	1902	**6974**
51-60	26	1902	1268	0	**3170**
61-70	31	1902	0	1902	**3804**
71-80	40	0	0	0	**0**
81-90	81	0	0	0	**0**
91-100	158	0	0	0	**0**
101-110	380	0	0	0	**0**
111-120	1268	0	0	0	**0**
121-130	0	0	0	0	**0**
131-140	0	0	0	0	**0**
141-150	0	0	0	0	**0**
151 & above	0	0	0	0	**0**
Total	**2014**	**5706**	**5706**	**4028**	**17454**

Figure 3.9.6: Number of Stems in Different Girth Classes

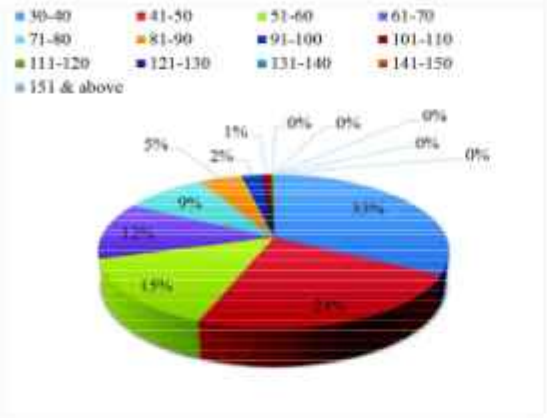


Figure 3.9.7: Species-wise Distribution of Stems

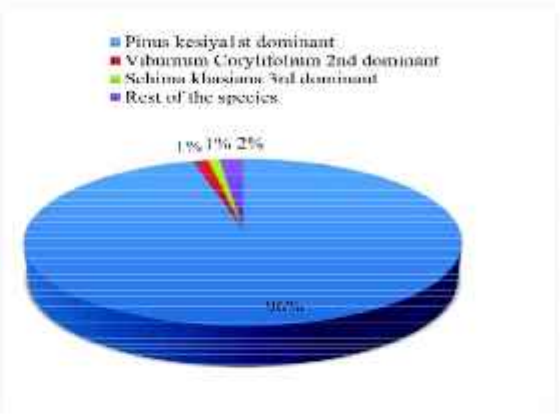


Figure 3.9.8: Number of Stems in Different Girth Classes



Figure 3.9.9: Inside view of *Law Adong Khongsit clan Mawlum Tyrsad*



3.9.9 Prescriptions for Future Management

3.9.9.1 Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Adong Khongsit* Clan, *Mawlum Tyrsad*, has not been registered with the KHADC. The CFO of the KHADC and the Village *Dorbar* of *MawlumTyrsad* may take immediate necessary actions, as provided in Chapter-I of the said rules to register the forest with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.9.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The *Dorbar* of *Mawlum Tyrsad* and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Law Adong Khongsit* Clan, *Mawlum Tyrsad*, as a Community Reserve.

3.9.9.3 Boundary Demarcation

Boundary of the *Law Adong Khongsit* Clan, *Mawlum Tyrsad*, has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachment. To prevent and to ensure early detection of encroachments, boundary of the *Law Adong Khongsit* Clan, *Mawlum Tyrsad*, wherever it is not constituted by natural features of permanent nature, such as rivers or streams or hill ridges may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.9.9.4 Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India, during a period of 22 years (2002 -2023) only one fire incident has occurred in the *Law Adong Khongsit* Clan, *Mawlum Tyrsad*. As per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Adong Khongsit* Clan, *Mawlum Tyrsad* is neither vulnerable not prone to forest fire. However, to prevent damage to the *Law Adong Khongsit* Clan, *Mawlum Tyrsad* from accidental forest fires, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Adong Khongsit* Clan, *Mawlum Tyrsad* and engagement of fire watchers during the critical months may be taken.

3.9.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench etc. may be constructed at suitable locations in the *Law Adong Khongsit* Clan, *Mawlum Tyrsad*

3.9.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Adong Khongsit* Clan, *Mawlum Tyrsad* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath/ walking trail, sign board, washrooms *etc.* may be constructed to attract tourists.

3.9.9.7 Restocking of Open Degraded Areas

A major part of this Law Adong is devoid of any trees. Efforts may be made to afforest the blank areas and restock the open degraded patches in the *Law Adong Khongsit* Clan, *Mawlum Tyrsad* by assisting and promoting natural regeneration of native species.

3.9.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Adong Khongsit* Clan, *Mawlum Tyrsad* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for its better protection and conservation.

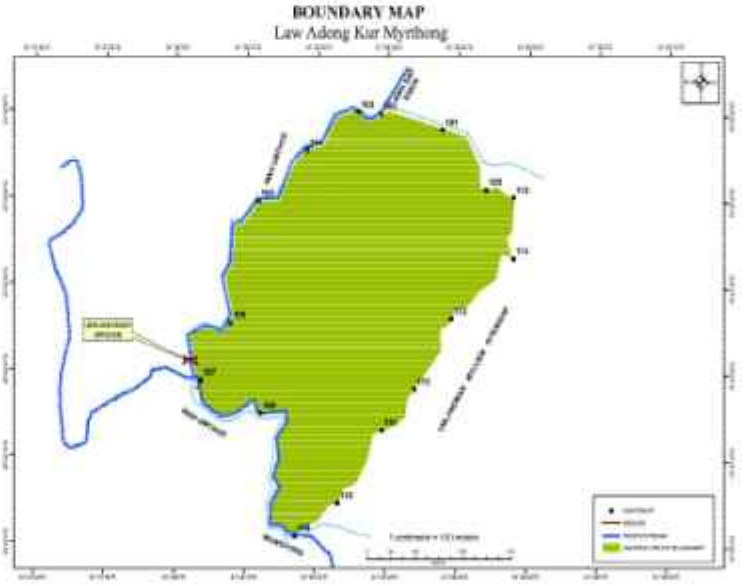
3.9.9.9 Awareness Campaign

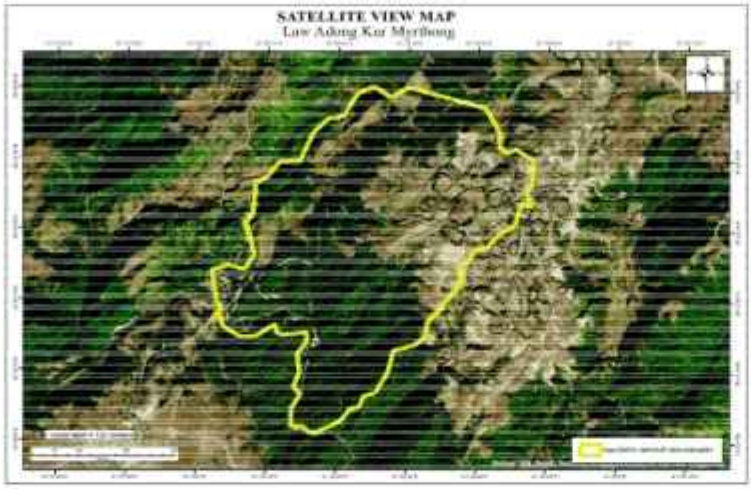
The *Law Adong Khongsit* Clan, *Mawlum Tyrsad* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

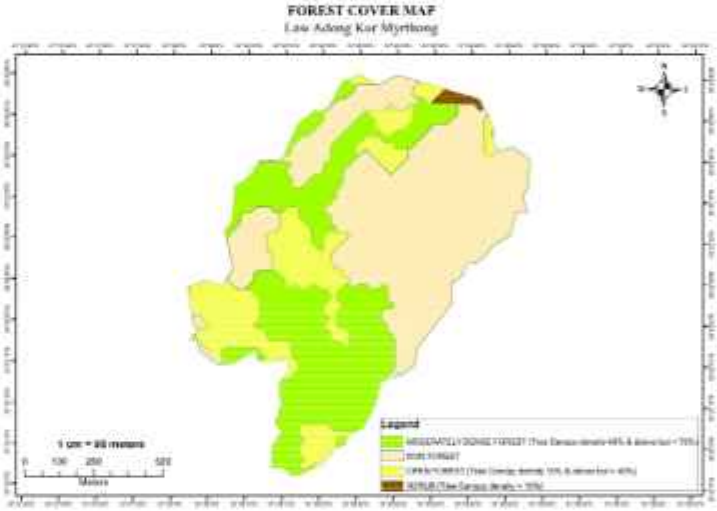
3.10. *LAW ADONG KUR MYRTHONG*

3.10.1 Location

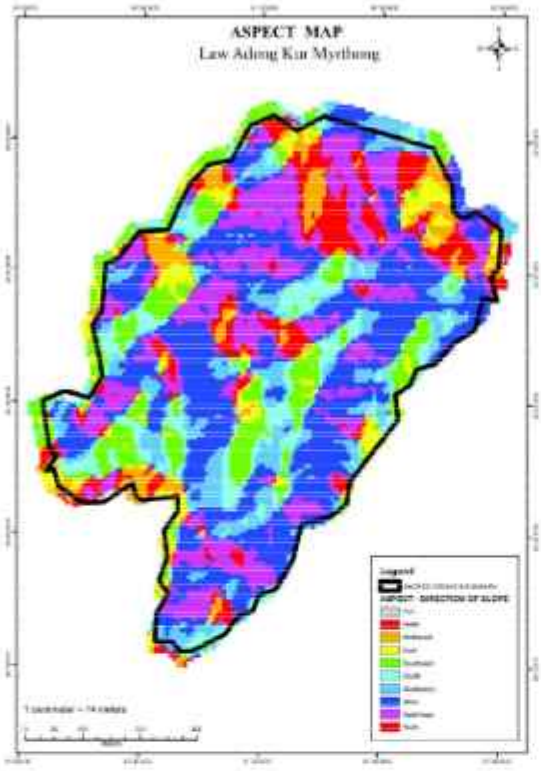
Law Adong Kur Myrthong is situated in East Khasi Hills District of Meghalaya at Umlangmar village under Hima Nongspung. It has an area of 107 ha. It lies between 91° 38′ 05" E to 91° 38′ 45"E longitude and 25° 22′ 05" N to 25° 22′ 47" N latitude at an altitude of 1603 m from mean sea level. It is bounded to the North by *wah Sapbsein and Wah Umthod*, East by Umlangmar area and South West by Wah Umthod. It is accessible by road from Shillong via Mawphlang-Balat Road. It is about 40 km from Shillong.

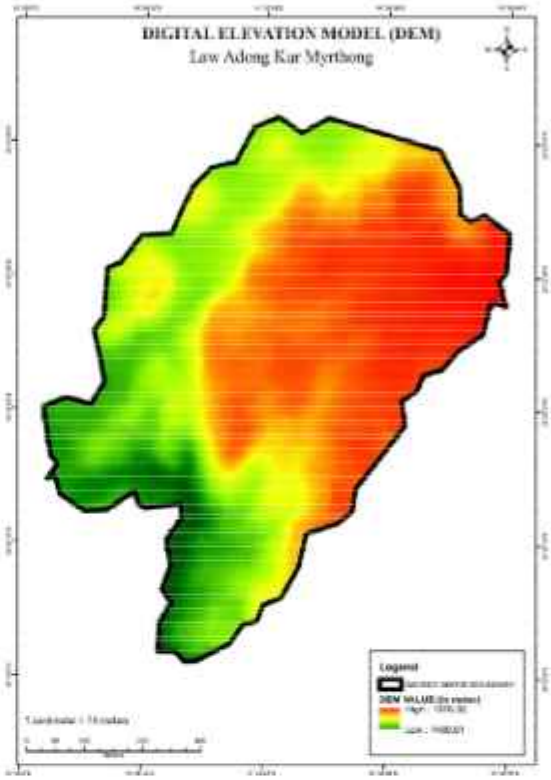



SATELLITE VIEW MAP
Law Adong Kur Myrthong

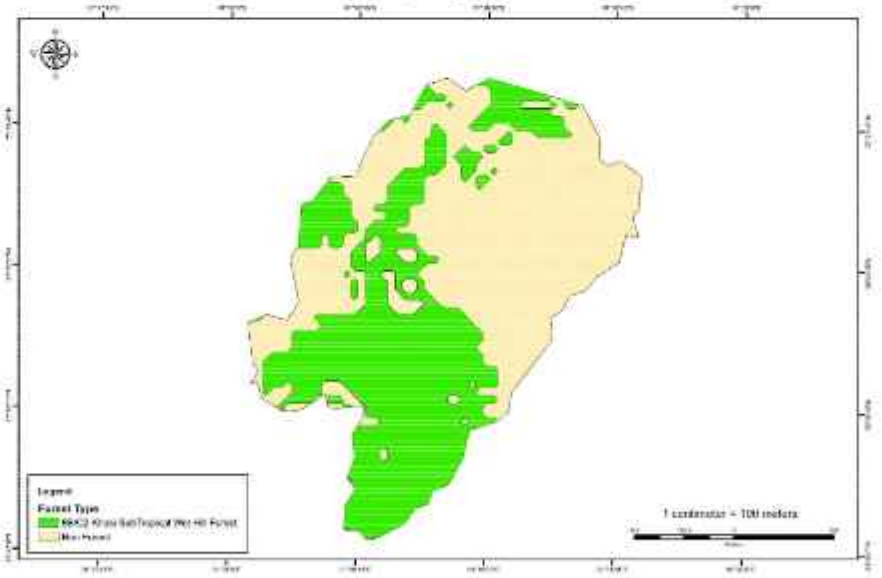

FOREST COVER MAP
Law Adong Kur Myrthong
1 cm = 88 meters
Meters
Legend

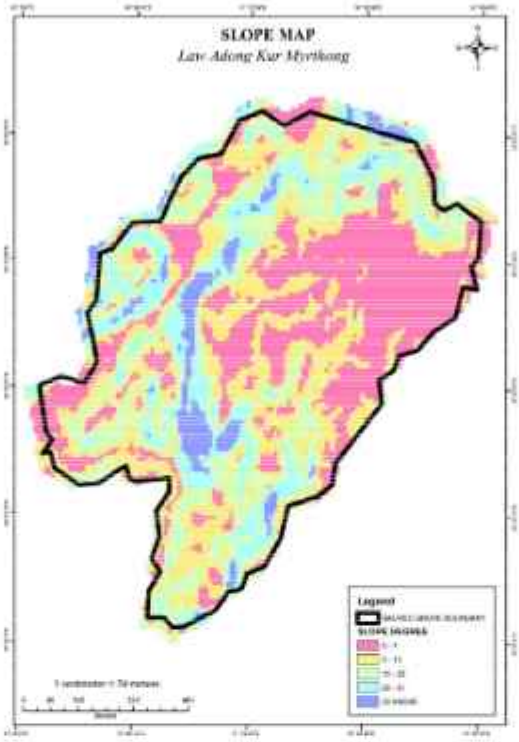

ROAD MAP
Law Adong Kur Myrthong





FOREST TYPE MAP
Law Adong Kur Myrthong





3.10.2 Brief History

This forest is in existence from several centuries, since the start of the settlement of the *Kur Myrthong* in this part of Khasi Hills. Since, majority of the residents of Umlangmar Village are from the *Kur Myrthong,* the *Kur* (clan) had ceded ownership and control of the forest to the *Dorbar* Shnong of *Umlangmar*. It is interesting to note that a part of settlements and farming areas of Umlangmar Village lies within the boundary of the grove. While, on the south-east part this grove is the sacred grove, which is still upheld as the sanctum sanctorum of the residents who still believe in the indigenous faith, and it is revered by the general public too. Land within this grove is allotted by the Village Dorbar. Each land holding is separated by trees and bamboo in the form of shelter belt.

Biotic pressure such as encroachments, wildfires, hunting, poaching and illegal felling of trees are found to be absent in this sacred forest. However, wild fire has been observed in this sacred forest.

3.10.3 Geography and Climate

Topography of the grove is gentle rolling in nature with slope varying from 0.50° to 35°. The *Law Adong Kur Myrthong* falls in North West, South, South West, East and South East Aspects. Soil texture is sandy loam with loose stone and boulders. Soil consistency is slightly compact. The colour of the soil is brown with shallow soil depth.

The Law Adong Kur Myrthong experiences mild soil erosion. *Wah Sapbsien* stream forms its northern boundary and the *Wah Umthod* forms its South-West boundary. These streams serve as a source of perennial drinking water to the village and act as a water source for agricultural fields.

Winter season starts from the end of October and lasts till March of the next year. This sacred forest receives high rainfall during the monsoon season from April to September. Average temperature varies from 5°C to 23°C.

3.10.4 Forest Type

According to (the Champion and Seth classification (1968)), forests found in the grove are of the ***Type 8B/C2 Khasi Sub-Tropical Wet Hill Forest.***

3.10.5 Forest cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun Forest cover in the *Law Adong Kur Myrthong, Umlangmar* Sacred Grove is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	35.92	33.57
Open Forest (10% - 40%)	19.78	18.49
Scrub Forest (<10%)	0.78	0.73
Non-Forest	50.52	47.21
Total	**107.00**	**100**

3.10.6 Flora and Fauna:

The *Law Adong Kur Myrthong, Umlangmar* is home to open and moderately forests of natural origin. *Myrica esculenta and Schima khasiana* are respectively the 1st and 2nd dominant. The Forest is home to many rare, endangered and endemic plant species.

3.10.6.1 Floral species

Table 3.10.1: Trees found in *Law Adong Kur Myrthong, Umlangmar*

Sl No.	Local Name	Botanical Name	Family
1	*Dieng Jalamud/sohlamud*	*Agapites vareigata*	*Ericaceae*
2	*Dieng Ri*	*Albizia Lucidor*	*Fabaceae*
3	*Dieng jyrtieng*	*Alstonia scholaris*	*Apocynaceae*
4	*Dieng Latymphu*	*Aralia Armata*	*Araliaceae*
5	*Dieng Ling*	*Betula alnoides*	*Betulaceae*
6	*Dieng Jalangkrem*	*Buddleja macrostachya*	*Scrophulariaceae*
7	*Dieng Tyrnem*	*Camelia caducca*	*Theaceae*
8	*Dieng Sohstap*	*Castanopsis hystrix*	*Fagaceae*
9	*Dieng Sohot*	*Castanopsis indica*	*Fagaceae*
10	*Dieng Sning*	*Castanopsis tribuloides*	*Fagaceae*
11	*Dieng Latyrpatkhlaw/latyrdop*	*Cinnamomum bejolghota*	*Lauraceae*

12	Dieng tyrthia	Cinnamomum paucifolium	Lauraceae
13	Dieng Sia Sia	Cinnamomum tamala	Lauraceae
14	Dieng Sohkymphor	Citrus latipes	Rutaceae
15	Dieng Pyiur/piur	Corylopsis himalayana	Hamamelidaceae
16	Dieng Thang	Diospyros lanceifolia	Ebenaceae
17	Dieng Sohkhlur	Elaeagnus pyriformis	Elaeagnaceae
18	Dieng Sohkhyllam	Elaeocaspus lanceaefolios	Elaeocarpaceae
19	Dieng Laba	Engelhardtia spicata	Juglandaceae
20	Dieng Song	Erythrina indica	Leguminoseae
21	Dieng Sohum	Eugenia jambolina	Myrtaceae
22	Dieng Doh	Exbucklandia populnea	Hamamelidaceae
23	Dieng Jem	Glochidion velutinum	Phyllanthaceae
24	Dieng Samehblang	Grewia abutilifolia	Tiliaceae
25	Dieng Lalieh	Innuala cappa	Aquifoliaceae
26	Dieng Sohsyrtet	Itea chinensis	Iteaceae
27	Dieng SohkymphorShrieh	Knema linifolia	Myristicaceae
28	Dieng Sohot Dngiem	Lithocarpus elegans	Fagaceae
29	Dieng Jing	Lithocarpus fenestrata	Fagaceae
30	Dieng Sohrang	Litsaea meissneri	Lauraceae
31	Dieng Lakhar	Macaranga denticulate	Euphorbiaceae
32	Dieng Shngit	Melosma wallichii	Theaceae
33	Dieng Rai	Michelia champaca	Magnoliaceae
34	Dieng Laniar	Michelia oblonga	Magnoliaceae
35	Dieng Sohniar	Michelia panduana	Magnoliaceae
36	Dieng Stem	Morinda augustifolia	Rubiaceae
37	Dieng synrei	Morinda augustifolia	Rubiaceae
38	Dieng Sohphie	Myrica esculenta	Fagaceae
39	Dieng Sohlya	Myrica indica	Fagaceae
40	Dieng Sohphie Nam	Myrica nagi	Myricaceae
41	Dieng Tyllong Rangsei	Pantapanox racemasmum	Araliaceae
42	Dieng Soh Larmaw	Photinia integrifolia	Rosaceae
43	Dieng kseh	Pinus khasiana/kesiya	Pinaceae
44	Dieng Jalu	Pittosporum nepaulense	Pittosporaceae
45	Dieng Sohiong	Prunus nepalensis	Rosaceae
46	Dieng Sohshur	Pyrus pashia	Rosaceae
47	Dieng SohphohKhlaw	Pyrus pyrifolia	Rosaceae
48	Dieng Sai	Quercus dealbata	Fagaceae
49	Dieng Lingim	Quercus kamrupii	Fagaceae
50	Dieng Tiewsaw	Rhododendron arboreum	Ericaceae
51	Dieng Sohma	Rhus chinensis	Anacardiaceae
52	Dieng Latyngke/latyngkieng	Schefflera wallichiana	Araliaceae.
53	Dieng Ngan	Schima khasiana	Theaceae
54	Dieng Jamiiang	Symlocos paniculata	Symplocaceae
55	Dieng Dpei	Symplocos theafolia	Symplocaceae
56	Dieng sohlangeitksew	Viburnum simonsii	Adoxaceae

Table 3.10.2: Shrubs found in *Law Adong Kur Myrthong, Umlangmar*

Sl No.	Local Name	Botanical Name	Family
1.	Soh tyrkhum	Acer laevigatum	Sapindaceae
2.	Soh shiah	Rubus ellipticus	Rosaceae
3.	Soh khlor	Elaeagnus pyriformis	Elaeagnaceae
4.	Jalyntem	Polygonum chinense	Polygonaceae
5.	Dieng snammaw/sohlarmaw	Photinia spp	Rosaceae
6.	Dieng pyiur	Corylopsis himalayana	Hamamelidaceae
7.	Dieng tyrthia	Cinnamomum pauciflorum	Rubiaceae
8.	Dieng soh pyrsit	Eurya acuminata	Theaceae
9.	La tyngkrong	Macropanax dispermus	Araliaceae
10.	La tyngkien	Rauvolfia densiflora	Apocynaceae.
11.	Sohlangeitksew	Viburnum simonsii	Adoxaceae.
12.	Soh lamut	Agapetes vareigata	Ericaceae
13.	Dieng shadmoit	Wendlndia waliichi	Rubeceae
14.	Dieng sahmehblang	Grewia abutilifolia	Tiliaceae
15.	Dieng jing	Lithocarpus fenestrata	Fagaceae
16.	Dieng tyrnem	Camelia caudula	Theaceae

Table 3.10.3: Herbs found in *Law Adong Kur Myrthong, Umlangmar*

Sl No.	Local Name	Botanical Name	Family
1.	Slamet	Phrynium spp	Pubinevve
2.	Ja lyngthem	Polygonum chinense	Polygonaceae
3.	Wang khlaw	Esculenta spp	Araceae
4.	Tiew sying maw	Gingiber purpureum	Zingiberaceae
5.	Shynraikhlaw	Alpineaalogus	Gingiberaceae
6.	Wang um	Homolonina aromatica	Araceae
7.	Jajew lieh	Begonia spp	Begoniaceae
8.	Jajew maw	Begonia spp	Begoniaceae
9.	Soh byrthit	Urena lobata	Malvaceae
10.	Tiew rusum	Hedychium coccinium	Zingiberaceae
11.	Soh byrthit rit	Sida rhombijolia	Malvaceae
12.	Soh ngangkhlaw	Solanum torvum	Solanaceae
13.	Khliang syiar	Centella asiatica	Apiaceae
14.	Soh byrthit bah	Sida acuta	Malvaceae
15.	Soh thud	Osbeckia spp	Melostomaceae
16.	La shing	Curcuma spp	Zingiberaceae
17.	Sying khlaw	Zingiber purpureum	Zingiberaceae
18.	Soh krismas	Sarcandra glabra	Zingiberaceae
19.	Soh byrthit rit	Sida rhombijolia	Chloranthaceae
20.	Sla eitmut	Eupatorium spp	Asteraceae

Table 3.10.4: Climbers found in *Law Adong Kur Myrthong, Umlangmar*

Sl No.	Local Name	Botanical Name	Family
1.	Soh shangkhlor/lyngshang	Elaeagnus pyriformis	Elaeagnaceae
2.	Soh nepbah	Rubus rugosus	Rosaceae
3.	Jyrmi kynsew	Argyreia nervosa	Convolvulaceae
4.	soh krot	Smilax zeylanica	Smilacaceae
5.	Sla kyndajyrmi	Pothos scandens	Araceae
6.	Sla kyndajyrmi	Pothos spp	Aralaceae
7.	Phan synreh	Dioscorea alata	Dioscoreaceae
8.	Phan jyrmi	Stephania glabra	Liliaceae
9.	Jyrmi stein	Lonicera macrantha	Caprifoliaceae
10.	Jyrmi japan	Agevatina adenofora	Asteraceae
11.	Jyrmi shiah	Xanthozylum khasiana	Rotaceae
12.	Jyrmi khlaw	Entoda spp	Luguminaceae

Table 3.10.5: Orchids found in *Law Adong Kur Myrthong, Umlangmar*

Sl No.	Local Name	Botanical Name	Family
1.	tiewdieng	Micropera manii	Orchideceae
2.	Soh khasaw	Pleione praecox	Orchideceae
3.	Tiew smehmasi	Dendrobium chrysanthum	Orchideceae
4.	Soh khaleh	Pleione maculata	Orchideceae
5.	Tiew slaremmaw	Rafidopohra lancifolia	Orchideceae
6.	Tiew pawang lum	Anoectochilus setaceus	Orchidaceae
7.	Talong khnai	Oberonia manii	Orchideceae
8.	Tlong khnai	Oberonia jenkinsiana	Orchideceae
9.	Tiew pawanglum	Arundina graminifolia	Orchideceae
10.	Tiew dohmaw	Anoectochilus brevilabris	Orchideceae
11.	Tiew dohmaw	Anoectochilus roxburghii	Orchideceae
12.	Tiew lynksiar	Cymbiduim traceyamum	Orchideceae
13.	Knupmawiang	Paphiopedium insigne	Orchideceae
14.	Syntiew die	Bulbophyllum cylindraceum	Orchideceae

Table 3.10.6: Bamboo & Cane found in *Law Adong Kur Myrthong, Umlangmar*

Sl No.	Local Name	Botanical Name	Family
1.	Namlang	Chimonobambusa khasiana	Poaceae

Table 3.10.7: Creepers found in *Law Adong Kur Myrthong, Umlangmar*

Sl No.	Local Name	Botanical Name	Family
1.	*Sohnep bah*	*Rubus rogosus*	*Rosaceae*
2.	*TmainKhla*	*Lycopodoum cernuum*	*Lycopodiaceae*
3.	*Sla kyndajyrmi*	*Pothos spp*	*Aralaceae*
4.	*Dieng sohrengblang*	*Strophanthun wallichi*	*Apocynaceae*
5.	*Lapadong*	*Rhaphidophora spp*	*Araleceae*
6.	*Tympewkhlaw*	*Pipper spp*	*Peppereceae*
7.	*Jyrmikynsiew*	*Argyreia nervosa*	*Convolvulaceae*

Table 3.10.8: Grasses found in *Law Adong Kur Myrthong, Umlangmar*

Sl No.	Local Name	Botanical Name	Family
1.	*Lang tylli*	*Arundinella khasiana*	*Poaceae*
2.	*Lasier*	*Corex spiculata*	*Poaceae*
3.	*Lang trengsning*	*Potentilla polyphylla*	*Poaceae*
4.	*Lang phot*	*Juncus effusus*	*Poaceae*
5.	*Phlangphreit*	*Cymbopogon exsertus*	*Poaceae*

Table 3.10.9: Ferns found in *Law Adong Kur Myrthong, Umlangmar*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhang iong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodalio*

3.10.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Adong Kur Myrthong, Umlangmar* has been carried out so far. However, as per the local residents, presence of several wild animals such as jackal, rabbit, jungle fowls, pangolin, barking deer and various types of birds and reptiles has occurred in this forest.

3.10.7 Growing Stock

As per the methodology described in Chapter-II, enumeration was carried out in 10% area of the forest as the area of the forest is more than 50 ha. In each sample plot all the trees having girth (over bark) at breast height more than 30cm were enumerated by measuring their top height (in metres) and the girth (in centimetres) at breast height. Data collected during the enumeration were entered in Sacred grove Description Form and Plot Enumeration Form. During the enumeration total 1,883 trees were found within 54 plots each of 0.2 ha size. These include 592 *Myrica esculenta* (1st dominant), 138 *Schima khasiana* (2nd dominant), 134 *Castanopsis indica (3rd dominant)* and 1019

trees of rest of the species. Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each species for each of the 13 girth classes starting from 30-40 cm to 151cm and above. Details of the same are given in the Tables 3.10.10 & 3.10.11 below. As may be seen, total growing stock in this forest is 6,068.91 cubic metres.

Table 3.10.10: Species-wise Distribution of Growing Stock in Different Girth Classes

(cum)

Girth Class wise	*Myrica esculenta* 1st dominant	*Schima khasiana* 2nd dominant	*Castanopsis Indica* 3rd dominant	Rest of the species	Growing Stock in 54 Sample Plots	Growing Stock in Entire Forest
30-40	9.996	1.83	2.03	22.990	**36.85**	368.46
41-50	18.659	5.28	4.38	26.14	**54.46**	544.59
51-60	24.929	3.13	4.02	32.21	**64.29**	642.89
61-70	26.189	6.21	3.96	30.380	**66.74**	667.39
71-80	22.224	8.09	6.200	30.08	**66.59**	665.94
81-90	13.223	6.42	5.79	16.76	**42.19**	421.93
91-100	19.252	6.16	10.79	31.07	**67.27**	672.72
101-110	12.256	0	2.06	28.22	**42.54**	425.36
111-120	2.623	1.48	1.37	9.250	**14.72**	147.23
121-130	1.502	1.5	3.19	8.28	**14.47**	144.72
131-140	1.889	0	0	7.59	**9.48**	94.79
141-150	4.419	2.35	0	2.290	**9.06**	90.59
151 & above	2.97	32.07	21.17	62.020	**118.23**	1182.30
Total	**160.13**	**74.52**	**64.96**	**307.28**	**606.89**	**6,068.91**

Figure3.10.1: Girth Class-Wise Growing Stock in Entire Forest

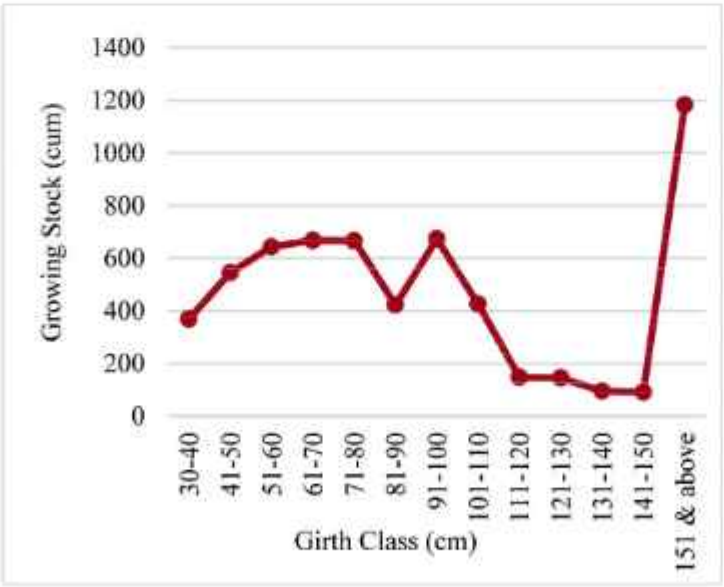


Table 3.10.11:Species-wise Distribution of Growing Stock in Different Girth Classes in the Entire Forest

(cum)

Girth Class wise	*Myrica esculenta* 1st dominant	*Schima khasiana* 2nd dominant	*Castanopsis Indica* 3rd dominant	Rest of the species	Total (for 107.00ha' area)	%wrt total volume
30-40	99.96	18.30	20.30	229.90	**368.46**	6.07
41-50	186.59	52.80	43.80	261.40	**544.59**	8.97
51-60	249.29	31.30	40.20	322.10	**642.89**	10.59
61-70	261.89	62.10	39.60	303.80	**667.39**	11.00
71-80	222.24	80.90	62.00	300.80	**665.94**	10.97
81-90	132.23	64.20	57.90	167.60	**421.93**	6.95
91-100	192.52	61.60	107.90	310.70	**672.72**	11.08
101-110	122.56	0.00	20.60	282.20	**425.36**	7.01
111-120	26.23	14.80	13.70	92.50	**147.23**	2.43
121-130	15.02	15.00	31.90	82.80	**144.72**	2.38
131-140	18.89	0.00	0.00	75.90	**94.79**	1.56
141-150	44.19	23.50	0.00	22.90	**90.59**	1.49
151 & above	29.70	320.70	211.70	620.20	**1182.30**	19.48
Total	**1601.31**	**745.20**	**649.60**	**3072.80**	**6068.91**	
%wrt total volume	26.39	12.28	10.70	50.63		100.00

As may be seen, 26.39% of the total growing stock is contributed by the 1st dominant species (*Myrica esculenta*). The 2nd dominant species (*Schima khasiana*) 12.28 % of the total growing stock. Similarly, the 3rd dominant species (*Castanopsis indica*) constitutes 10.70 % of the total growing stock. More than half of the growing stock *i.e. 50.63* % is constituted by the rest of the species.

Figure 3.10.2: Girth Class -Wise Distribution of Growing Stock

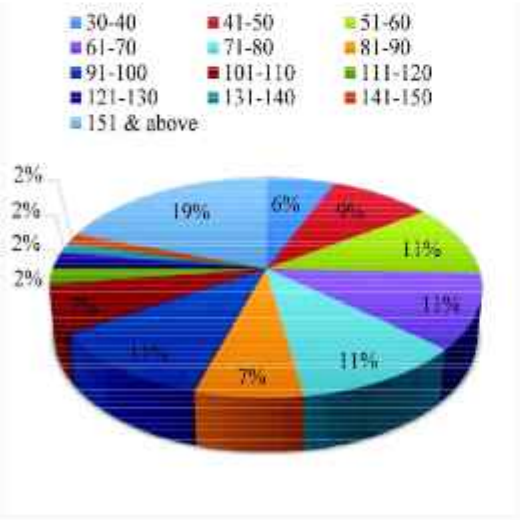


Figure 3.10.3: Species -Wise Distribution of Growing Stock

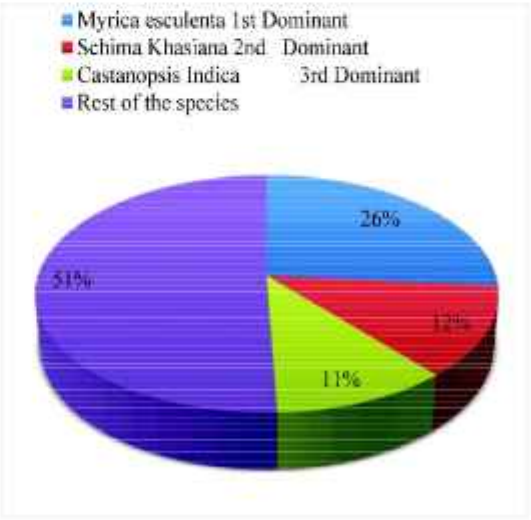


Figure 3.10.4: Girth Class -Wise Distribution of Growing Stock



Figure 3.10.5: Over view of *Law Adong Kur Myrthong*



3.10.8 Number of Stems

Species-wise number of stems in each girth class and are given in the Tables 3.10.12 & 3.10.13 below. As may be seen maximum numbers of stems are found in lower girth classes i.e. from 30-40 cm to 61-70 cm classes. Numbers of stems are inversely proportional to mid diameter of the girth class.

Table 3.10.12: Species-wise Distribution of Stems in Different Girth Classes in 54 Sample Plots

(number of stems)

Girth Class wise	*Myrica esculenta* 1st dominant	*Schima khasiana* 2nd dominant	*Castanopsis indica* 3rd dominant	Rest of the species	Total
30-40	191	37	36	457	721
41-50	133	36	31	187	387
51-60	99	13	16	130	258
61-70	69	16	11	80	176
71-80	42	15	12	56	125
81-90	19	9	8	24	60
91-100	21	7	12	34	74
101-110	11	0	2	25	38
111-120	2	1	1	7	11
121-130	1	1	2	5	9
131-140	1	0	0	4	5
141-150	2	1	0	1	4
151 & above	1	2	3	9	15
Total	**592**	**138**	**134**	**1019**	**1883**

Table 3.10.13: Species-Wise Numberof Stems in Different Girth Classes in the Entire Forest

(number of stems)

Girth Class wise	*Myrica esculenta* 1st dominant	*Schima khasiana* 2nd dominant	*Castanopsis indica* 3rd dominant	Rest of the species	Total
30-40	1910	370	360	4570	7210
41-50	1330	360	310	1870	3870
51-60	990	130	160	1300	2580
61-70	690	160	110	800	1760
71-80	420	150	120	560	1250
81-90	190	90	80	240	600
91-100	210	70	120	340	740
101-110	110	0	20	250	380
111-120	20	10	10	70	110
121-130	10	10	20	50	90
131-140	10	0	0	40	50
141-150	20	10	0	10	40
151 & above	10	20	30	90	150
Total	5920	1380	1340	10190	18830

Figure 3.10.6: Number of Stems in Different Girth Classes

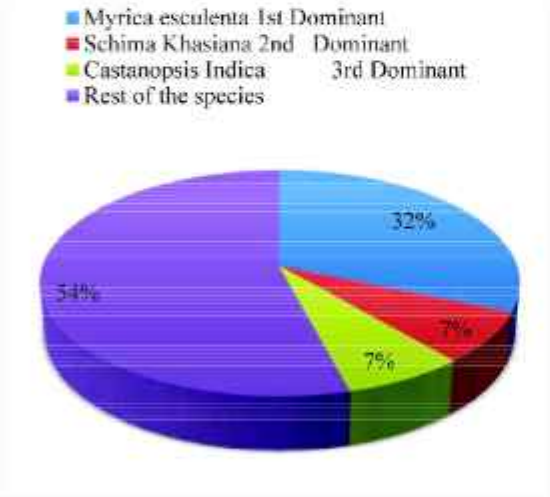


Figure 3.10.7: Species-Wise Distribution of Stems

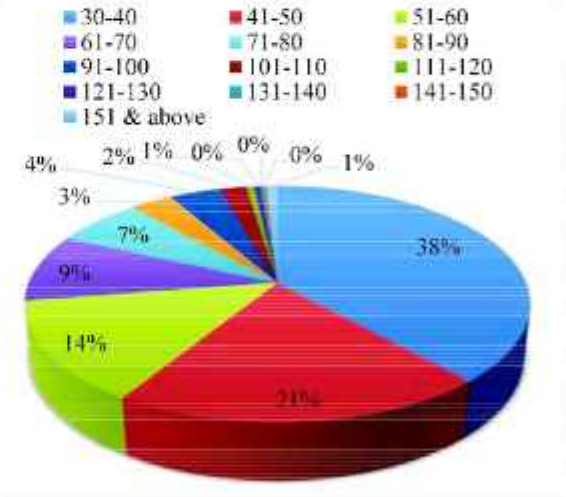


Figure 3.10.8: Number of Stems in Different Girth Classes



Figure 3.10.9: Inside view *Law Adong Kur Myrthong, Umlangmar*



3.10.9 Prescriptions for Future Management

3.10.9.1 Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Adong Kur Myrthong, Umlangmar* has not been registered with the KHADC. The CFO of the KHADC and the Village *Dorbar* of *Umlangmar* may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Adong Kur Myrthong, Umlangmar*, with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.10.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The *Dorbar* of *Umlangmar* Sirdarship and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Law Adong Kur Myrthong, Umlangmar*, as a Community Reserve.

3.10.9.3 Boundary Demarcation

Boundary of the *Law Adong Kur Myrthong, Umlangmar*, has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachment. To prevent and to ensure early detection of encroachments, boundary of the *Law Adong Kur Myrthong, Umlangmar*,

wherever it is not constituted by natural features of permanent nature, such as rivers or streams, may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.10.9.4Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India, during a period of 22 years (2002 -2023) no fire incident has occurred in the *Law Adong Kur Myrthong, Umlangmar*. However, as per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Adong Kur Myrthong, Umlangmar* is moderately vulnerable to forest fire. The entire *Law Adong Kur Myrthong, Umlangmar*, as per the said information system, is not prone to forest fire. To prevent damage to the *Law Adong Kur Myrthong, Umlangmar* from accidental forest fires, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Adong Kur Myrthong, Umlangmar* and engagement of fire watchers during the critical months may be taken.

3.10.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench, may be constructed at suitable locations in the *Law Adong Kur Myrthong, Umlangmar*

3.10.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Adong Kur Myrthong, Umlangmar* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath, walking trail, sign board, washrooms *etc*. may be constructed to attract tourists.

3.10.9.7 Restocking of Open Degraded Areas

Efforts may be made to restock the open degraded patches in the *Law Adong Kur Myrthong, Umlangmar* by assisting and promoting natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.10.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Adong Kur Myrthong, Umlangmar* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Adong Kur Myrthong, Umlangmar*.

3.10.9.9 Awareness Campaign

The *Law Adong Kur Myrthong, Umlangmar* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

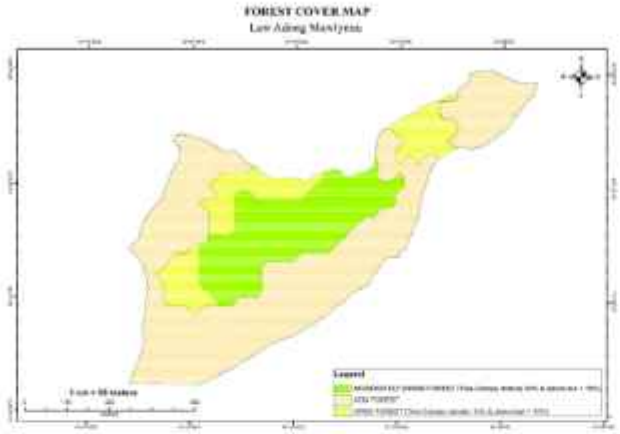
3.11. *LAW ADONG MAWLYNNU*

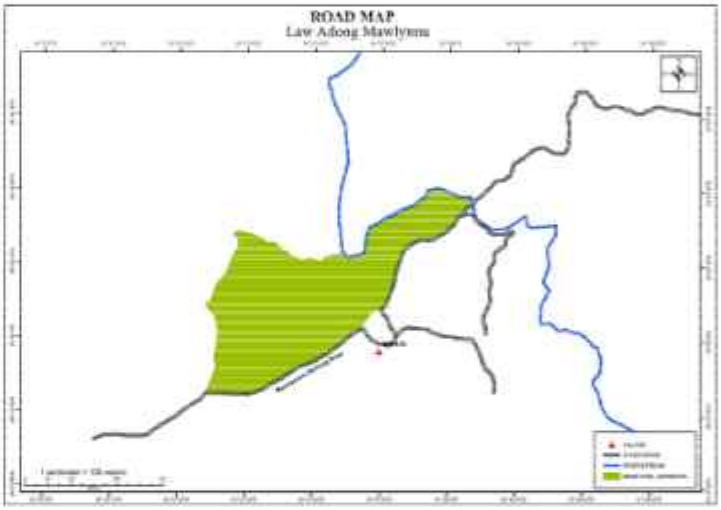
3.11.1 Location

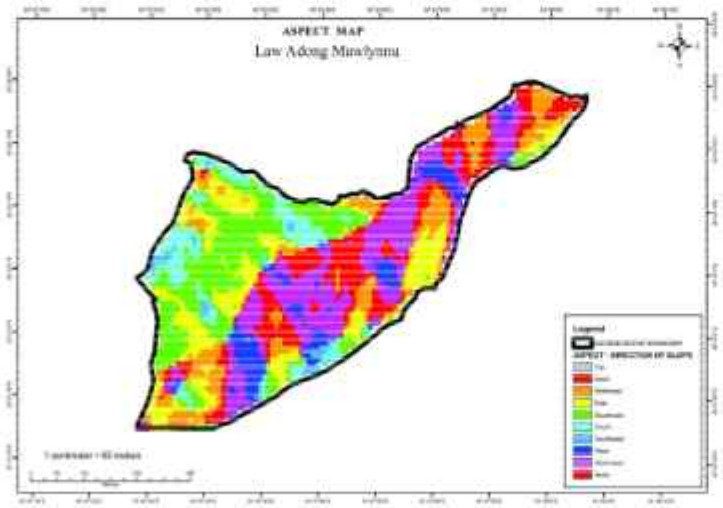
Law Adong Mawlynnu is situated in East Khasi Hills District of Meghalaya at *Mawksan War* village under Hima Maharam. It has an area of 39.628 ha. It lies between 91° 37′ 25" E to 91° 38′ 01"E longitude and 25° 21′ 54" N to 25° 22′ 18" N latitude at an altitude of 1614 m from mean sea level. It is bounded on the North by *Mawteibah, Wah Umlangmar and Ummawwar stream*, to the South and East by PWD road (Shillong-Mawsymram Road) and West by Raid *Sawsymper*. It is accessible by road from Shillong. It is about 42 km from Shillong.

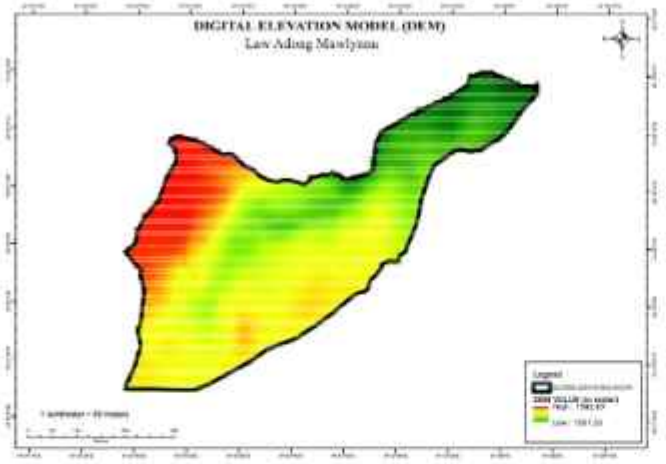


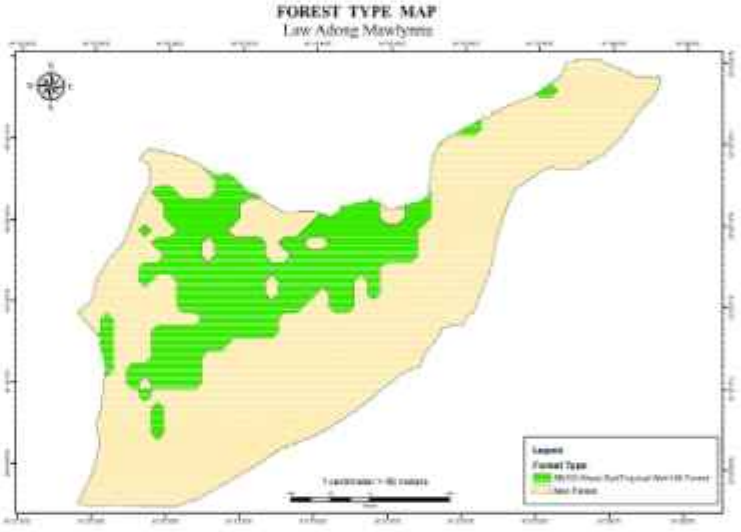


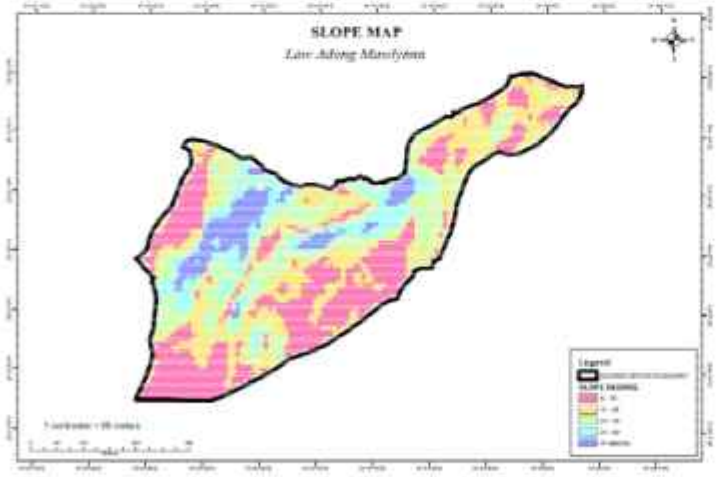

FOREST COVER MAP
Law Adong Mawlyrnu


ROAD MAP
Law Adong Mawlyrnu


ASPECT MAP
Law Adong Mawlyrnu


DIGITAL ELEVATION MODEL (DEM)
Law Adong Mawlynna


FOREST TYPE MAP
Law Adong Mawlynna


SLOPE MAP
Law Adong Mawlynna

3.11.2 Brief History

This grove is in existence from several centuries. It is owned, managed and administered by the *Dorbar* of Mawlynnu (*Weiloi*) Village. In the past, religious rituals were performed in this grove. However, such rituals are no longer performed in this grove. Felling of trees is strictly prohibited. However, wood and firewood required for funeral purposes for bona fide residents of the village are permitted to be extracted from the forest with prior permission from the Village Dorbar.

Biotic pressure such as encroachments, wild fires, hunting, poaching, grazing and the activities of illegal felling of trees were found to be present in this sacred forest.

3.11.3 Geography and Climate

Topography of the grove is hilly in nature with slope varying from 0.40° to 34°. The *Law Adong Mawlynnu* falls in North West, East, South East and South Aspects. Soil texture is sandy loam with loose stone and gravel. Soil consistency is friable. The colour of the soil is brown with medium soil depth.

No soil erosion has been observed in this forest. Three perennial streams namely; Phud Nong Snuin stream, Kyndong Rongpongwang stream and Phud Jakma stream flows through this forest. These streams serve as a source of potable water and irrigation of agriculture fields in adjoining villages. Winter season starts from the end of October and lasts till March of the next year. It receives high rainfall during the monsoon season from April to September. Average temperature varies from 6°C to 26°C.

3.11.4 Forest Type

According to (the Champion and Seth classification, 1968), forests found in the grove are of the ***Type 9/C2 Assam Sub-Tropical Pine Forest.***

3.11.5 Forest cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun Forest cover in the *Law Adong Mawlynnu* is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	9.44	23.82
Open Forest (10% - 40%)	6.10	15.39
Scrub Forest (<10%)	0	0
Non-Forest	24.09	60.79
Total	**39.63**	**100**

3.11.6 Flora and Fauna

About three fourth area of the *Law Adong Mawlynnu* is colony with fine forest mixed with some other species. *Pinus kesiya and Betula alnoides* are respectively the1st and 2nddominant tree species.

3.11.6.1 Floral species

Table 3.11.1: Trees found in *Law Adong Mawlynnu*

Sl No.	Local Name	Botanical Name	Family
1	*Dieng pri/ri*	*Albezzia lucidior*	*Fabaceae*
2	*Dieng jyrtieng/ksuid*	*Alstonia scholaris*	*Apocynaceae*
3	*Dieng latymphu*	*Aralia armata*	*Araliaceae*
4	*Dieng lieng*	*Betula alnoides*	*Betulaceae*
5	*Dieng sohot*	*Castanopsis indica*	*Fagaceae*
6	*Dieng sohotdngiem*	*Castanopsis spp*	*Fagaceae*
7	*Dieng sning*	*Castanopsis tribuloides*	*Fagaceae*
8	*Dieng pyiur*	*Corytopsis himalayana*	*Hamamelidaceae*
9	*Dieng kseh bilat*	*Cryptomeria japonica*	*Cupressaceae*
10	*Dieng sohkhlur*	*Elaeocarpus pyriformis*	*Elaeagnaceae*
11	*Dieng lasaw*	*Eleocarpus robusta*	*Elaeocarpaceae*
12	*Dieng lba*	*Engelhardtia spicata*	*Juglandaceae*
13	*Dieng sohpian*	*Ficus glomerata*	*Moraceae*
14	*Dieng jyrti*	*Glochidion acuminatum*	*Phyllanthaceae*
15	*Dieng sohmehblang*	*Grewia abutilifolia*	*Tiliaceae*
16	*Dieng lalieh*	*Inuala cappa*	*Aquifoliaceae*
17	*Dieng sohsyrtet*	*Itea chinensis*	*Iteaceae*
18	*Dieng sohkynphorshrieh*	*Knema linifolia*	*Myristicaceae*
19	*Dieng jing*	*Lithocarpus fenestrata*	*Fagaceae*
20	*Dieng rai lieh*	*Michelia champaca*	*Magnoliaceae*
21	*Dieng rai-kup*	*Michelia panduana*	*Magnoliaceae*
22	*Dieng sohphie*	*Myrica esculenta*	*Fagaceae*
23	*Dieng sohkhlawshrieh*	*Myristica augustifolia*	*Annonaceae*
24	*Dieng sohbyrkham/sohryngkham*	*Paurthiaia arguta*	*Rosaceae*
25	*Dieng sohlarmaw*	*Photinia integrefolia*	*Rosaceae*
26	*Dieng kseh*	*Pinus kesiya*	*Pinaceae*
27	*Dieng sohjhur/sohshur*	*Pyrus pashia*	*Rosaceae*
28	*Dieng tiewsaw*	*Rhododendron arboreum*	*Ericaceae*
29	*Dieng ngan*	*Schima khasiana*	*Theaceae*
30	*Dieng iong*	*Symplocos chinensis*	*Symplocaceae*
31	*Dieng jamiang*	*Symplocos paniculata*	*Symplocaceae*
32	*Dieng dpei*	*Symplocos theafolia*	*Symplocaceae*
33	*Dieng ksehblei*	*Taxus baccata*	*Taxaceae*
34	*Dieng sohlangksew*	*Viburnum foetidium*	*Viburnaceae*
35	*Dieng sohlangeitksew*	*Viburnum simonsii*	*Adoxaceae*
36	*Dieng shadmoit*	*Wendlandia wallichii*	*Rubiaceae*

Table 3.11.2: Shrubs found in *Law Adong Mawlynnu*

Sl No.	Local Name	Botanical Name	Family
1.	Soh tyrkhum	Acer laevigatum	Sapindaceae
2.	Soh shiah	Rubus ellipticus	Rosaceae
3.	Soh khlor	Elaeagnus pyriformis	Elaeagnaceae
4.	Jalyntem	Polygonum chinense	Polygonaceae
5.	Dieng snammaw/sohlarmaw	Photinia spp	Rosaceae
6.	Kophikhlaw	Caffea khasiana	Rubiaceae
7.	Dieng tyrthia	Cinnamomum pauciflorum	Rubiaceae
8.	Dieng soh pyrsit	Eurya acuminata	Theaceae
9.	La tyngkrong	Macropanax dispermus	Araliaceae
10.	La tyngkien	Rauvolfia densiflora	Apocynaceae.
11.	Sohlangeitksew	Viburnum simonsii	Adoxaceae.
12.	Soh lamut	Agapetes vareigata	Ericaceae
13.	Dieng shadmoit	Wendlndia waliichi	Rubeceae
14.	Dieng sahmehblang	Grewia abutilifolia	Tiliaceae
15.	Dieng jing	Lithocarpus fenestrata	Fagaceae
16.	Dieng tyrnem	Camelia caudula	Theaceae

Table 3.11.3: Herbs found in *Law Adong Mawlynnu*

Sl No.	Local Name	Botanical Name	Family
1.	Slamet	Phrynium spp	Pubinevve
2.	Ja lyngthem	Polygonum chinense	Polygonaceae
3.	Wang khlaw	Esculenta spp	Araceae
4.	Tiew sying maw	Gingiber purpureum	Zingiberaceae
5.	Shynraikhlaw	Alpineaalogus	Gingiberaceae
6.	Wang um	Homolonina aromatica	Araceae
7.	Jajewlieh	Begonia spp	Begoniaceae
8.	Jajew maw	Begonia spp	Begoniaceae
9.	Soh byrthit	Urena lobata	Malvaceae
10.	Tiew rusum	Hedychium coccinium	Zingiberaceae
11.	Soh byrthitrit	Sida rhombijolia	Malvaceae
12.	Soh ngangkhlaw	Solanum torvum	Solanaceae
13.	Khliangsyiar	Centella asiatica	Apiaceae
14.	Soh byrthit bah	Sida acuta	Malvaceae
15.	Soh thud	Osbeckia spp	Melostomaceae
16.	La shing	Curcuma spp	Zingiberaceae
17.	Sying khlaw	Zingiber purpureum	Zingiberaceae
18.	Soh krismas	Sarcandra glabra	Zingiberaceae
19.	Soh byrthitrit	Sida rhombijolia	Chloranthaceae
20.	Sla eitmut	Eupatorium spp	Asteraceae

Table 3.11.4: Climbers found in *Law Adong Mawlynnu*

Sl No.	Local Name	Botanical Name	Family
1.	*Soh shangkhlor/lyngshang*	*Elaeagnus pyriformis*	*Elaeagnaceae*
2.	*Soh nepbah*	*Rubus rugosus*	*Rosaceae*
3.	*Jyrmikynsew*	*Argyreia nervosa*	*Convolvulaceae*
4.	*soh krot*	*Smilax zeylanica*	*Smilacaceae*
5.	*Sla kynda jyrmi*	*Pothos scandens*	*Araceae*
6.	*Sla kynda jyrmi*	*Pothos spp*	*Aralaceae*
7.	*Phan synreh*	*Dioscorea alata*	*Dioscoreaceae*
8.	*Phan jyrmi*	*Stephania glabra*	*Liliaceae*
9.	*Jyrmi stein*	*Lonicera macrantha*	*Caprifoliaceae*
10.	*Jyrmi japan*	*Agevatina adenofora*	*Asteraceae*
11.	*Jyrmi shiah*	*Xanthozylum khasiana*	*Rotaceae*
12.	*Jyrmi khlaw*	*Entoda spp*	*Luguminaceae*

Table 3.11.5: Orchids found in *Law Adong Mawlynnu*

Sl No.	Local Name	Botanical Name	Family
1.	*Tiewdieng*	*Micropera manii*	*Orchideceae*
2.	*Soh khasaw*	*Pleione praecox*	*Orchideceae*
3.	*Tiew smehmasi*	*Dendrobium chrysanthum*	*Orchideceae*
4.	*Soh khaleh*	*Pleione maculata*	*Orchideceae*
5.	*Tiew slaremmaw*	*Rafidopohra lancifolia*	*Orchideceae*
6.	*Tiew pawang lum*	*Anoectochilus setaceus*	*Orchidaceae*
7.	*Talongkhnai*	*Oberonia manii*	*Orchideceae*
8.	*Tlongkhnai*	*Oberonia jenkinsiana*	*Orchideceae*
9.	*Tiew pawanglum*	*Arundina graminifolia*	*Orchideceae*
10.	*Tiew dohmaw*	*Anoectochilus brevilabris*	*Orchideceae*
11.	*Tiew dohmaw*	*Anoectochilus roxburghii*	*Orchideceae*
12.	*Tiew lynksiar*	*Cymbiduim traceyamum*	*Orchideceae*
13.	*Knupmawiang*	*Paphiopedium insigne*	*Orchideceae*
14.	*Syntiew die*	*Bulbophyllum cylindraceum*	*Orchideceae*

Table 3.11.6: Bamboos & Canes found in *Law Adong Mawlynnu*

Sl No.	Local Name	Botanical Name	Family
1.	*Sylli*	*Melocanna baceifera*	*Poaceae*
2.	*Namlang*	*Chimonobambusa khasiana*	*Poaceae*
3.	*Kdait*	*Saccharum spontaneum*	*Poaceae*
4.	*Sohthri*	*Calamus erectus*	*Poaceae*

Table 3.11.7: Creepers found in *Law Adong Mawlynnu*

Sl No.	Local Name	Botanical Name	Family
1.	*Sohnep bah*	*Rubus rogosus*	*Rosaceae*
2.	*TmainKhla*	*Lycopodoum cernuum*	*Lycopodiaceae*
3.	*Sla kyndajyrmi*	*Pothos spp*	*Aralaceae*
4.	*Dieng sohrengblang*	*Strophanthun wallichi*	*Apocynaceae*
5.	*Lapadong*	*Rhaphidophora spp*	*Araleceae*
6.	*Tympewkhlaw*	*Pipper spp*	*Peppereceae*
7.	*Jyrmikynsiew*	*Argyreia nervosa*	*Convolvulaceae*

Table 3.11.8: Grasses found in *Law Adong Mawlynnu*

Sl No.	Local Name	Botanical Name	Family
1.	*Lang tylli*	*Arundinella khasiana*	*Poaceae*
2.	*Lasier*	*Corex spiculata*	*Poaceae*
3.	*Lang trengsning*	*Potentilla polyphylla*	*Poaceae*
4.	*Lang phot*	*Juncus effusus*	*Poaceae*
5.	*Phlangphreit*	*Cymbopogon exsertus*	*Poaceae*

Table 3.11.9: Fern sfound in *Law Adong Mawlynnu*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhangiong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodalio*

3.11.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Adong Kur Mawlynnu Mawksan War* has been carried out so far. However, as per the local residents, presence of several wild animals such as jackal, rabbit, jungle fowls, pangolin, barking deer and various types of birds and reptiles has noted in this forest.

3.11.7 Growing Stock

As per the methodology described in Chapter-II, enumeration was carried out in 20% are of the forest as its area is more than 10 ha. In each sample plot all the trees having girth (over bark) at breast height more than 30 cm were enumerated by measuring their top height (in metres) and the girth at breast height (in centimeters). Data collected during the enumeration were entered in Sacred Grove Description Form and Plot Enumeration Form. During the enumeration total 1,321 trees were found within 40 plots each of 0.2 ha size. These include 505 *Pinus kesiya* (1st dominant), 245 *Betula alnoides* (2nd dominant), 102 *Symplocos theafolia* (3rd dominant) and 469 trees of rest of the species.

Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each species for each of the 13 girth classes starting from 30-40 cm to 151cm and above. Details of the same are given in the Tables 3.11.10 & 3.11.11 below. As may be seen, total growing stock in this forest is 3,828.37 cubic metres.

Table 3.11.10: Species-Wise Distribution of Growing Stock in Different Girth Classes

(cum)

Girth Class wise	*Pinus kesiya* 1st dominant	*Betula alnoides* 2nd dominant	*Symplocost - heafolia* 3rd dominant	Rest of the species	Growing Stock in 40 Sample Plots	Growing Stock in Entire Forest
30-40	2.821	1.786	2.038	4.90	**11.55**	57.91
41-50	8.346	4.561	3.411	10.91	**27.23**	136.58
51-60	21.187	9.944	2.489	21.00	**54.62**	273.98
61-70	39.717	13.565	3.994	22.98	**80.26**	402.58
71-80	51.755	15.579	3.178	22.85	**93.36**	468.32
81-90	65.583	18.416	5.833	30.66	**120.49**	604.41
91-100	76.089	15.851	1.728	15.97	**109.64**	549.97
101-110	58.828	14.496	0	15.60	**88.92**	446.06
111-120	41.433	9.922	1.324	20.06	**72.74**	364.87
121-130	14.29	8.125	1	11.15	**34.57**	173.39
131-140	8.559	3.927	0	5.73	**18.22**	91.38
141-150	7.335	11.122	0	17.70	**36.16**	181.37
151 & above	0	0	3.619	11.84	**15.46**	77.55
Total	**395.943**	**127.294**	**28.614**	**211.35**	**763.20**	**3828.37**

Figure 3.11.1: Girth Class-wise Growing Stock in Entire Forest



Table 3.11.11: Species-wise Distribution of Growing Stock in Different Girth Classes in the Entire Forest

(cum)

Girth Class wise	*Pinus kesiya* 1st dominant	*Betula alnoides* 2nd dominant	*Symplocost - heafolia* 3rd dominant	Rest of the species	Total (for 39.628 ha' area)	%wrt total volume
30-40	14.15	8.96	10.22	24.58	**57.91**	1.51
41-50	41.87	22.88	17.11	54.73	**136.58**	3.56
51-60	106.28	49.88	12.49	105.34	**273.98**	7.15
61-70	199.23	68.04	20.03	115.27	**402.58**	10.51
71-80	259.61	78.15	15.94	114.62	**468.32**	12.22
81-90	328.98	92.38	29.26	153.80	**604.41**	15.78
91-100	381.68	79.51	8.67	80.11	**549.97**	14.35
101-110	295.09	72.71	0.00	78.25	**446.06**	11.64
111-120	207.84	49.77	6.64	100.63	**364.87**	9.52
121-130	71.68	40.76	5.02	55.93	**173.39**	4.53
131-140	42.93	19.70	0.00	28.74	**91.38**	2.38
141-150	36.79	55.79	0.00	88.79	**181.37**	4.73
151 & above	0.00	0.00	18.15	59.39	**77.55**	2.02
Total	**1986.13**	**638.53**	**143.53**	**1060.17**	**3828.37**	
%wrt total volume	51.84	16.67	3.75	27.67		100.00

As may be seen, 51-88% of the total growing stock is contributed by the 1st dominant species (*Pinus kesiya*). The 2nd dominant species (*Betula alonoides*) constitutes 16.68% of the total growing stock. Similarly, the 3rd dominant species (*Symplocos theafolia)* constitutes 3.75% of the total growing stock. A major part of the growing stock *i.e.* 27.69%. is constituted by the rest of the species.

Figure 3.11.2: Girth Class-Wise Distribution of Growing Stock

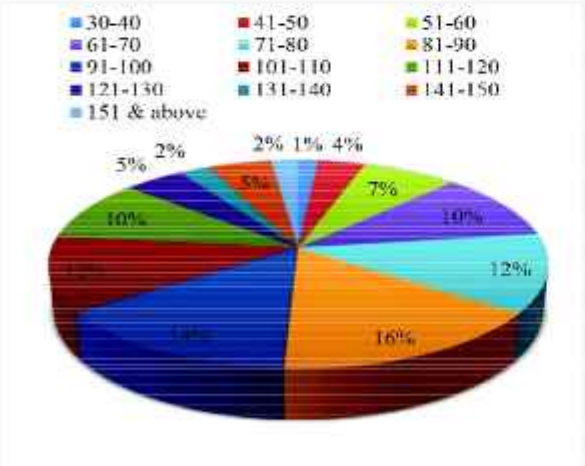


Figure 3.11.3: Species-Wise Distribution of Growing Stock

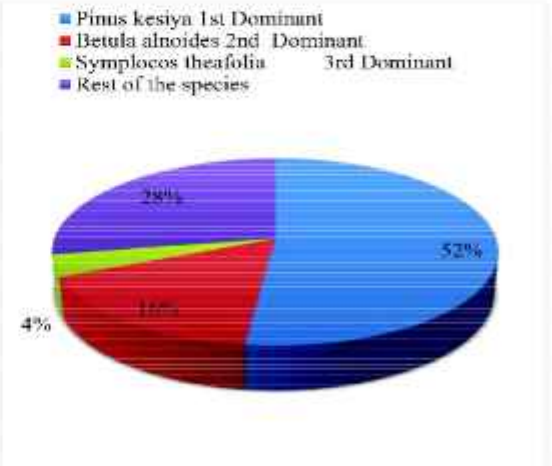


Figure 3.11.4: Girth Class-Wise Distribution of Growing Stock



Figure 3.11.5 Over view of *Law Adong Mawlynnu*



3.11.8 Number of Stems

Species-wise number of stems in each girth class are given in Table 3.11.12 & 3.11.13. As may be seen, maximum numbers of stems are found in lower girth classes *i.e.* from 30-40 cm to 91-100 cm. Number of stems are inversely proportional to mid-diameter of the girth class.

Table 3.11.12: Species-Wise Distribution of Stems in Different Girth Classes in 40 Sample Plots

(number of stems)

Girth Class wise	*Pinus kesiya* 1st dominant	*Betula alnoides* 2nd dominant	*Symplocos theafolia* 3rd dominant	Rest of the species	Total
30-40	18	33	38	90	179
41-50	34	32	25	79	170
51-60	58	39	10	84	191
61-70	80	36	11	59	186
71-80	78	29	6	44	157
81-90	77	26	8	44	155
91-100	72	18	2	18	110
101-110	46	13	0	14	73
111-120	27	7	1	15	50
121-130	8	5	0	7	20
131-140	4	2	0	3	9
141-150	3	5	0	8	16
151 & above	0	0	1	4	5
Total	**505**	**245**	**102**	**469**	**1,321**

Table 3.11.13: Species-Wise Distribution of Stems in Different Girth Classes in the Entire Forest

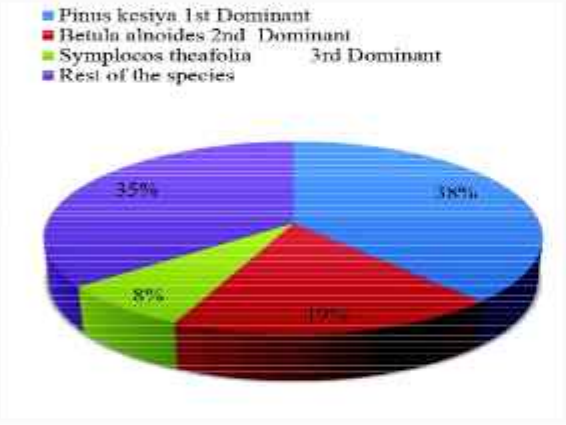
(number of stems)

Girth Class wise	*Pinus kesiya* 1st dominant	*Betula alnoides* 2nd dominant	*Symplocos theafolia* 3rd dominant	Rest of the species	Total
30-40	90	166	191	451	898
41-50	171	161	125	396	853

51-60	291	196	50	421	958
61-70	401	181	55	296	933
71-80	391	145	30	221	788
81-90	386	130	40	221	778
91-100	361	90	10	90	552
101-110	231	65	0	70	366
111-120	135	35	5	75	251
121-130	40	25	0	35	100
131-140	20	10	0	15	45
141-150	15	25	0	40	80
151 & above	0	0	5	20	25
Total	**2,533**	**1,229**	**512**	**2,353**	**6,626**

Figure 3.11.6: Number of Stems in Different Girth Classes

Figure 3.11.7: Species-Wise Distribution of Stems



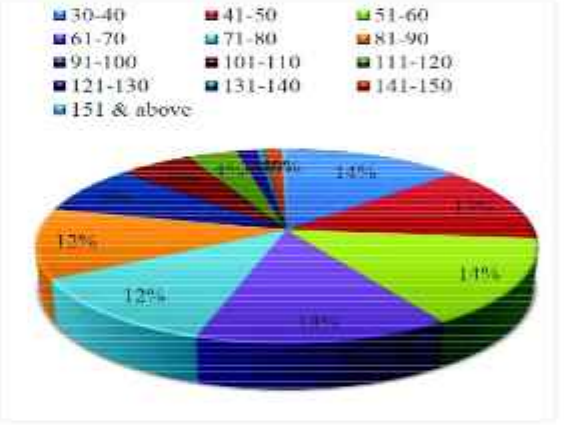


Figure 3.11.8: Number of Stems in Different Girth Classes

Figure 3.11.9: Over view of *Law Adong Mawlynnu*





3.11.9 Prescriptions for Future Management

3.11.9.1 Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Adong Mawlynnu Mawksanwar* has not been registered with the KHADC. The CFO of the KHADC and the Village *Dorbar* of *Mawlynnu* may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Adong Mawlynnu* with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.11.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The Village Dorbar of *Mawlynnu* and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Law Adong Mawlynnu*, as a Community Reserve.

3.11.9.3 Boundary Demarcation

Boundary of the *Law Adong Mawlynnu Mawksanwar*, has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachment. To prevent and to ensure early detection of encroachments, boundary of the *Law Adong Mawlynnu*, wherever it is not constituted by natural features of permanent nature, such as rivers or streams or hill ridges may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.11.9.4 Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India, during a period of 22 years (2002 -2023) no fire incident has occurred in the *Law Adong Mawlynnu*. As per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Adong Mawlynnu Mawksanwar* is moderately vulnerable to forest fire. The entire *Law Adong Mawlynnu*, as per the said information system, is not prone to forest fire. To prevent damage to the *Law Adong Mawlynnu* from accidental forest fires, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Adong Mawlynnu* and engagement of fire watchers during the critical months may be taken.

3.11.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench etc. may be constructed at suitable locations in the *Law Adong Mawlynnu.*

3.11.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Adong Mawlynnu* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath, walking trail, sign board, washrooms *etc.* may be constructed to attract tourists.

3.11.9.7 Restocking of Open Degraded Areas

Efforts should be made to afforest the barren areas by planting trees of native origin and to restock the open degraded patches in the *Law Adong Mawlynnu Mawksanwar* by assisting and promoting natural regeneration of native species.

3.11.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Adong Mawlynnu Mawksanwar* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Adong Mawlynnu Mawksanwar.*

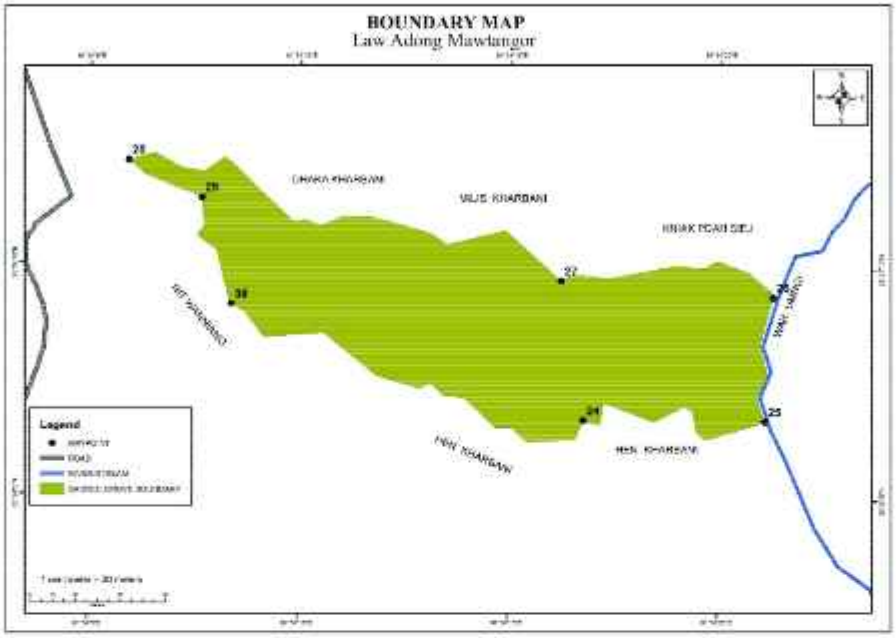
3.11.9.9 Awareness Campaign

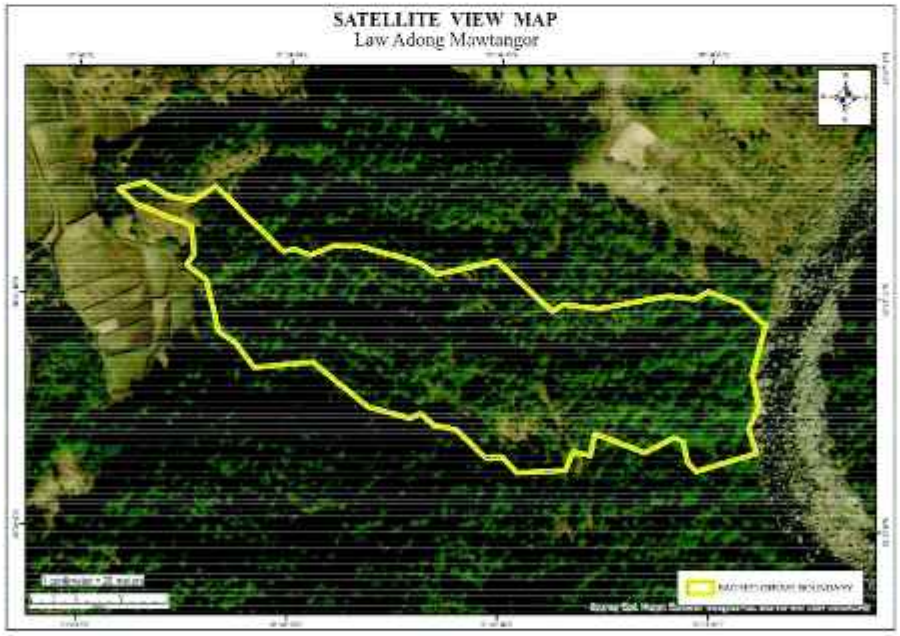
The *Law Adong Mawlynnu* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

3.12. *LAW ADONG MAWTANGOR*

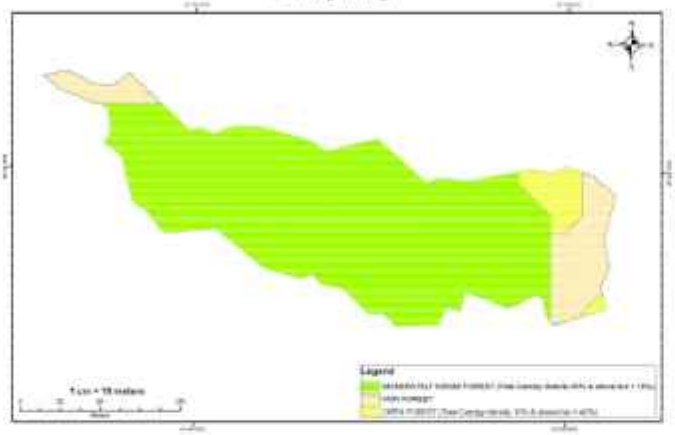
3.12.1 Location

Law *Adong Mawtangor* is situated in East Khasi Hills District of Meghalaya at Pnenbah Mawpait under the Syiemship of Hima Maharam. It has an area of 3.783 ha. It lies between 25° 24' 06" N to 25° 24' 12" N latitude and 91° 34' 06" E to 91° 34' 21" E longitude at an altitude of 1411 m from mean sea level. It is bounded in the North by private land of Smti. Dhaka Kharbani and Shri. Kniak Pdahsiej, in the South by private land of Smti. Hen Kharbani, in the East by private land of Shri. Kniak Pdahsiej and in the West by private land of Net Wanniang. The grove is accessible by road from Shillong to Pnenbah Mawpait, which is about 60 km. To reach the grove from the last point of PWD road, one needs to trek for about 500 meters through private land.

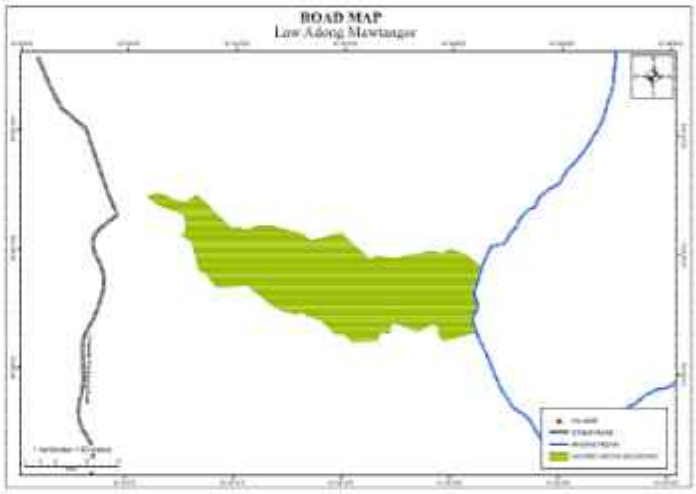

BOUNDARY MAP
Law Adong Mawtangor
Legend
ROAD
RIVER/STREAM
SACRED GROVE BOUNDARY


SATELLITE VIEW MAP
Law Adong Mawtangor

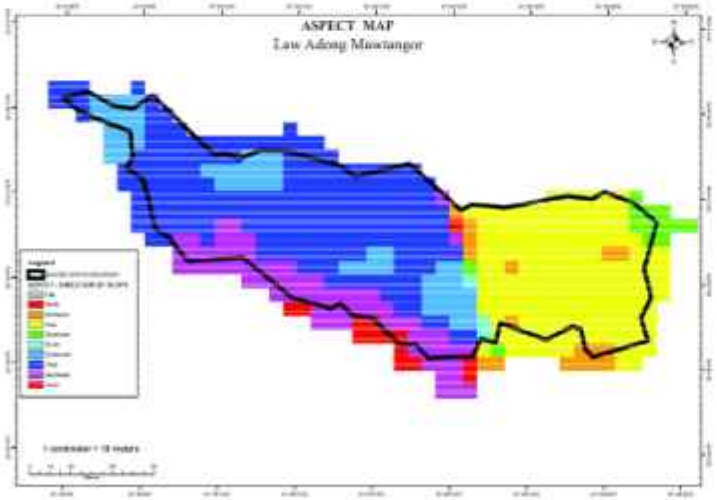
FOREST COVER MAP
Law Adong Mawtanger

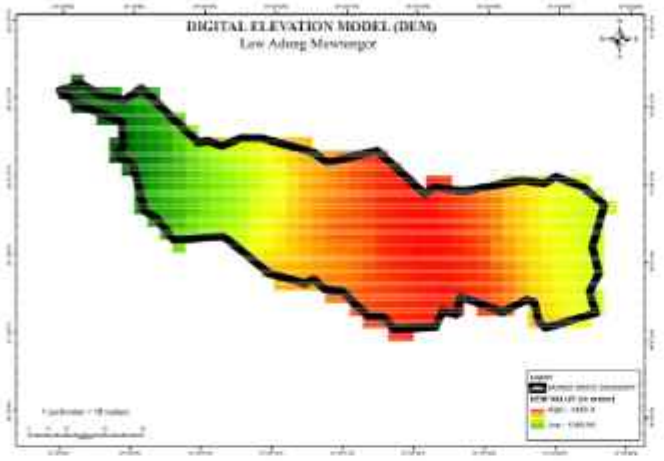


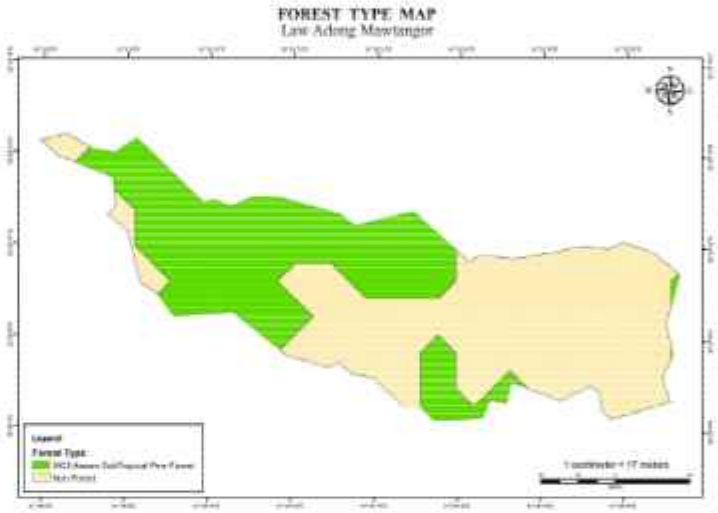
ROAD MAP
Law Adong Mawtanger

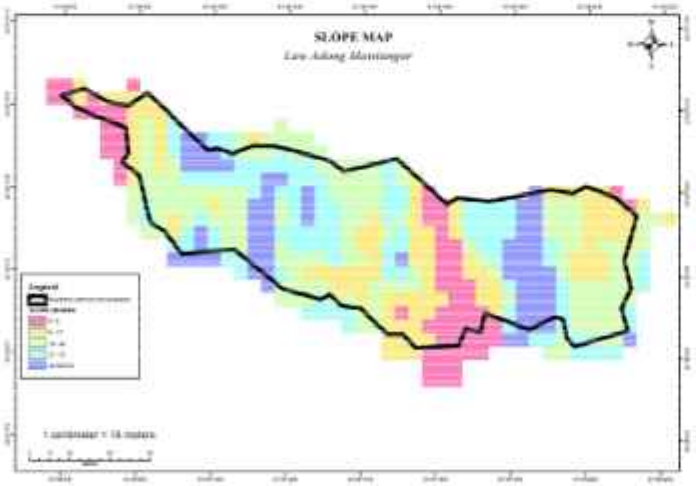


ASPECT MAP
Law Adong Mawtanger




DIGITAL ELEVATION MODEL (DEM)
Law Adong Mawtangor


FOREST TYPE MAP
Law Adong Mawtangor
Legend
Forest Type


SLOPE MAP
Law Adong Mawtangor

3.12.2 Brief History

This forest is in existence for several centuries. However, in the recent years, the village dorbar is expanding the area of the grove by acquiring adjacent private lands, in which afforestation work has been taken up by the Village *Dorbar* from funds under the MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act). Felling of trees is strictly prohibited. It is managed and administered by the *Dorbar* Shnong of *Mawtangor Village*.

Biotic pressure, such as encroachments, wildfires, hunting, poaching, grazing and illegal felling of trees were found to be absent in this sacred forest.

3.12.3 Geography and climate

Topography of the grove is hilly in nature with slope varying from 0.90° to 36°. Major part of the *Law Adong Mawtangor* falls in West and East Aspects and the remaining area falls in South and South East Aspects. Soil texture is sandy-loam with boulders. Soil consistency is slightly compact. Colour of the soil is brown with medium soil depth. Soil erosion is almost negligible. No perennial stream flows through or along boundary of this forest.

Winter season starts from the end of October and lasts till March of the next year. This sacred forest receives high rainfall during the monsoon season from April to September. Average temperature varies from 8°C to 29°C.

3.12.4 Forest Type

According to (the Champion and Seth classification, 1968), forests found in the grove are of the ***Type 9/C2 Assam Sub-Tropical Pine Forest.***

3.12.5 Forest cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun, Forest cover in the *Law Adong Mawtangor* is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	3.14	83.07
Open Forest (10% - 40%)	0.17	4.50
Scrub Forest (<10%)	0	0
Non-Forest	0.47	12.43
Total	**3.78**	**100**

3.12.6 Flora and fauna

The *Law Adong Mawtangor* is home to pine forest mixed with other species. *Pinus kesiya, Castanopsis indica* and *Myrica esculenta* are respectively the 1st, 2nd and 3rd dominant tree species.

3.12.6.1Floral species

Table 3.12.1: Trees found in *Law Adong Mawtangor*

Sl No.	Local Name	Botanical Name	Family
1	Dieng lienglong	Alnus nepalensi	Fabaceae
2	Dieng soh rilong/rilong	Albizzia procera	Fabaceae
3	Dieng sohot	Castanopsis indica	Fagaceae
4	Dieng lymba	Engelhardia spiculata	Juglandaceae
5	Dieng pyrshit/Dieng shit	Eurya accuminata	Pentaphylacaceae
6	Dieng jem	Glochidion velutium	Euphorbiaceae
7	Dieng sohsyrtet	Itea chinensis	Iteaceae
8	Dieng sohsyiang/siang	Ligustrum robustum	Oleaceae
9	Dieng jing	Lithocarpus fenestrata	Fagaceaea
10	Dieng niar	Machilus parviflora	Lauraceae.
11	Dieng laniar	Michelia oblonga	Magnoliaceae
12	Dieng sohniar/niar	Michelia punduana	Magnoliaceae
13	Dieng Shyiap	Minusops alangi	Sapotaceae
14	Dieng sohphie	Myrica esculenta	Myricacea
15	Dieng sohphielya	Myrica nagi	Myricaceae
16	Dieng kseh	Pinus khasiana/kesiya	Pinaceae
17	Dieng sohshur iong	Pyrus pashia	Rosaceae
18	Dieng soh shur	Pyrus pashia	Rosaceae
19	Dieng sai	Quercus dealbata	Fagaceaea
20	Dieng dngiem/lngiem	Quercus spp	Fagaceaea
21	Dieng sohma	Rhus chinensis	Anacardiaceae
22	Dieng kain	Rhus succedanea	Anacardiaceae
23	Dieng ngan	Schima khasiana	Theaceae
24	Dieng pei	Symplocos khasiana	Symplocaceae
25	Dieng soh langksew	Viburnum carilifoliun	Adoxaceae

Table 3.12.2: Shrubs found in *Law Adong Mawtangor*

Sl No.	Local Name	Botanical Name	Family
1.	Soh tyrkhum	Acer laevigatum	Sapindaceae
2.	Soh shiah	Rubus ellipticus	Rasoceae
3.	Soh khlor	Elaeagnus pyriformis	Elaeagnaceae
4.	Jalyntem	Polygonum chinense	Polygonaceae
5.	Dieng snammaw/sohlarmaw	Photinia spp	Rosaceae
6.	Dieng sohsiang	Ligustrum robustum	Oleaceae
7.	Dieng shyiap	Minusops alangi	Sapotaceae
8.	Dieng soh pyrsit	Eurya acuminata	Theaceae
9.	Dieng sai	Quercus dealbata	Fagaceae
10.	Sohlang eitksew	Viburnum simonsii	Adoxaceae

11.	Dieng shadmoit	Wendlndia waliichi	Rubiaceae
12.	Dieng sahmehblang	Grewia abutilifolia	Malvaceae
13.	Dieng jing	Lithocarpus fenestrata	Fagaceae
14.	Dieng tyrnem	Camelia caudula	Theaceae

Table 3.12.3: Herbs found in *Law Adong Mawtangor*

Sl No.	Local Name	Botanical Name	Family
1.	Wang khlaw	Esculenta spp	Araceae
2.	Shynraikhlaw	Alpinea alogus	Gingiberaceae
3.	Wang um	Homalomena aromatica	Araceae
4.	Jajewlieh	Begonia spp	Begoniaceae
5.	Jajew maw	Begonia spp	Begoniaceae
6.	Soh byrthit	Urena lobata	Malvaceae
7.	Soh byrthitrit	Sida rhombijolia	Malvaceae
8.	Soh ngangkhlaw	Solanum torvum	Solanaceae
9.	Khliangsyiar	Centella asiatica	Apiaceae
10.	Soh byrthit bah	Sida acuta	Malvaceae
11.	Soh thud	Osbeckia spp	Melostomaceae
12.	La shing	Curcuma spp	Zingiberaceae
13.	Soh krismas	Sarcandra glabra	Chloranthaceae
14.	Soh byrthitrit	Sida rhombijolia	Malvaceae
15.	Sla eitmut	Eupatorium spp	Asteraceae

Table 3.12.4: Climbers found in *Law Adong Mawtangor*

Sl No.	Local Name	Botanical Name	Family
1.	Soh krot	Smilax zeylanica	Smilacaceae
2.	Phan synreh	Dioscorea alata	Dioscoreaceae
3.	Phan jyrmi	Stephania glabra	Liliaceae
4.	Jyrmi shiah	Xanthozylum khasiana	Rotaceae
5.	Jyrmi khlaw	Entoda spp	Luguminaceae

Table 3.12.5: Orchids found in *Law Adong Mawtangor*

Sl No.	Local Name	Botanical Name	Family
1.	Tiew dieng	Micropera manii	Orchideceae
2.	Soh khasaw	Pleione praecox	Orchideceae
3.	Tiew smehmasi	Dendrobium chrysanthum	Orchideceae
4.	Soh khaleh	Pleione maculata	Orchideceae
5.	Knupmawiang	Paphiopedium insigne	Orchideceae

Table 3.12.6: Creepers found in *Law Adong Mawtangor*

Sl No.	Local Name	Botanical Name	Family
1.	*Sohnep bah*	*Rubus rogosus*	*Rosaceae*
2.	*Tmain khla*	*Lycopodoum cernuum*	*Lycopodiaceae*
3.	*Sla kyndajyrmi*	*Pothos spp*	*Aralaceae*
4.	*Dieng sohrengblang*	*Strophanthun wallichi*	*Apocynaceae*
5.	*Lapadong*	*Rhaphidophora spp*	*Araleceae*
6.	*Tympewkhlaw*	*Pipper spp*	*Peppereceae*
7.	*Jyrmikynsiew*	*Argyreia nervosa*	*Convolvulaceae*

Table 3.12.7: Grasses found in *Law Adong Mawtangor*

Sl No.	Local Name	Botanical Name	Family
1.	*Lang tylli*	*Arundinella khasiana*	*Poaceae*
2.	*Lang snuih*	*Not known*	*Poaceae*
3.	*Lasier*	*Corex spiculata*	*Poaceae*
4.	*Lang trengsning*	*Potentilla polyphylla*	*Poaceae*
5.	*Lang phot*	*Juncus effusus*	*Poaceae*
6.	*Phlangphreit*	*Cymbopogon exsertus*	*Poaceae*

Table 3.12.8: Ferns found in *Law Adong Mawtangor*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhang iong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodalioceae*

3.12.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Adong Mawtangor* has been carried out so far. However, as per the local residents, presence of several wild animals such as jackal, rabbit, jungle fowls, pangolin, barking deer and various types of birds and reptiles has been noted in this forest.

3.12.7 Growing Stock:

As per the methodology described in Chapter-II, enumeration was carried out in 100% of the forest as its area is less than 10 ha. All the trees having girth (over bark) at breast height more than 30 cm were enumerated by measuring the top height (in metres) and the girth at breast height (in centimeters). Data collected during the enumeration were entered in Sacred Grove Description Form and Plot Enumeration Form. During the enumeration total 1,221 tree species were found. These include 696 *Pinus kesiya* (1st dominant), 159 *Castonopsis indica* (2nd dominant), 131 *Myrica esculenta,* (3rd dominant) and 235 trees of rest of the species. Using the Local Volume Equations given in

Chapter –II, girth class wise volume was calculated for each species for each of the 13 girth classes starting from 30-40 cm to 151cm and above. Details of the same are given in the Table 3.12.9 below. As may be seen, total growing stock in this forest is 4,694.96 cubic metres.

Table 3.12.9: Species-Wise Distribution of Growing Stock in Different Girth Classes in the Entire Forest

(cum)

Girth class (cm)	*Pinus kesiya* 1st dominant	*Castanopsis indica* 2nd dominant	*Myrica esculenta* 3rd dominant	Rest of Species	Total Growing Stock	% Total Growing Stock
30-40	20.18	1.73	1.50	4.32	**27.73**	**0.59**
41-50	133.68	5.37	4.50	6.75	**150.30**	**3.20**
51-60	283.13	8.18	5.01	7.13	**303.45**	**6.46**
61-70	564.51	13.90	6.07	11.25	**595.73**	**12.69**
71-80	814.74	8.61	7.73	13.28	**844.36**	**17.98**
81-90	768.67	5.62	2.82	8.78	**785.89**	**16.74**
91-100	735.52	0.83	5.60	5.41	**747.36**	**15.92**
101-110	542.49	0.00	0.00	1.02	**543.51**	**11.58**
111-120	383.51	0.00	9.47	0.00	**392.98**	**8.37**
121-130	179.68	0.00	0.00	0.0	**179.68**	**3.83**
131-140	70.68	0.00	2.04	0.00	**72.72**	**1.55**
141-150	12.64	0.00	0.00	0.0	**12.64**	**0.27**
151 & above	31.26	0.00	7.35	0.00	**38.61**	**0.82**
Total	**4540.69**	**44.24**	**52.09**	**57.94**	**4694.96**	**100.00**
% Total Growing Stock	96.71	0.94	1.11	1.23	100.00	

As may be seen, 96.71% of the total growing stock is contributed by the 1st dominant species (*Pinus kesiya*). The 2nd dominant species (*Castanopsis indica)* constitutes 0.94% of the total growing stock. Similarly, the 3rd dominant species (*Myrica esculenta)* constitutes 1.11% of the total growing stock. 1.23 % of the growing stock constituted by the rest of the species.

Figure 3.12.1: Girth Class-Wise Distribution of Growing Stock

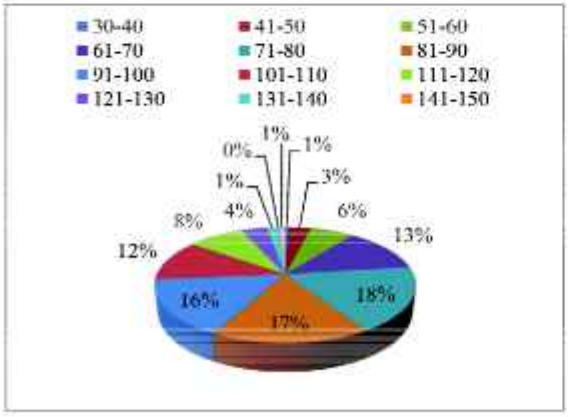


Figure 3.12.2: Species-Wise Distribution of the Growig Stock

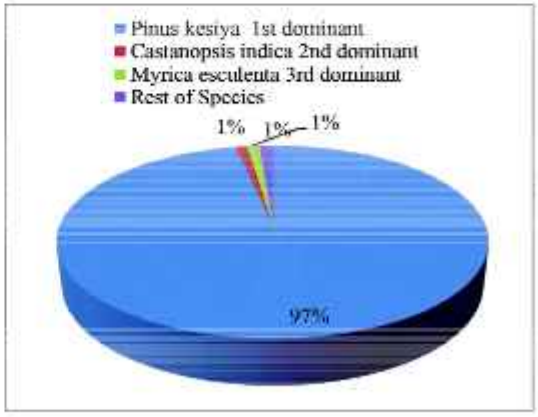


Figure 3.12.2: Girth Class-Wise Distribution of Growing Stock

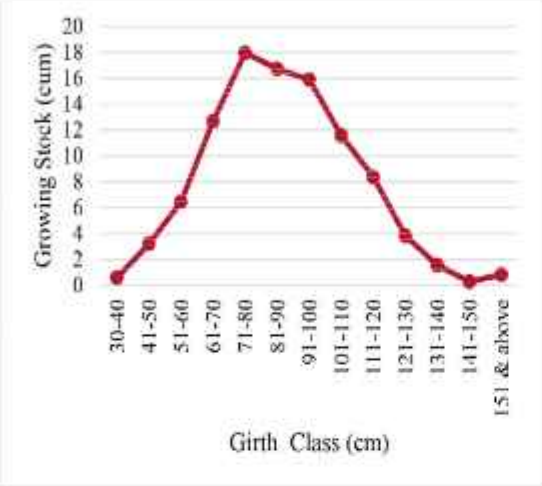


Figure 3.12.3: Over view of *Law Adong Mawtangor*



3.12.8 Number of Stems

Species-wise number of stems in each girth class are given in Table 3.12.10 below. As may be seen, maximum numbers of stems are found in lower girth classes *i.e.* from 30-40 cm to 61-70 cm. Number of stems are inversely proportional to mid-diameter of the girth class.

Table 3.12.10: Species-Wise Number of Stems I Different Girth Classes in the Entire Forest

(number of stems)

Girth class (cm)	*Pinus kesiya* 1st dominant	*Castanopsis indica* 2nd dominant	*Myrica esculenta* 3rd dominant	Rest of the species	Total
30-40	8	30	29	85	**152**
41-50	39	36	32	48	**155**
51-60	66	32	20	29	**147**
61-70	110	36	16	29	**191**
71-80	137	16	14	25	**192**
81-90	112	8	4	12	**136**
91-100	95	1	6	6	**108**
101-110	63	0	0	1	**64**
111-120	40	0	7	0	**47**
121-130	17	0	0	0	**17**
131-140	6	0	1	0	**7**
141-150	1	0	0	0	**1**
151 & above	2	0	2	0	**4**
Total	**696**	**159**	**131**	**235**	**1221**

Figure 3.12.4: Number of Stems in Different Girth Classes

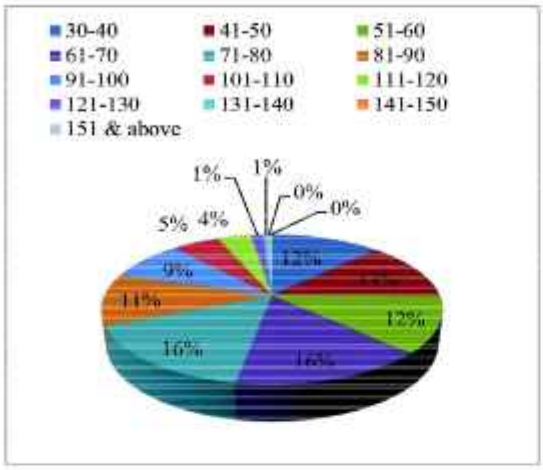


Figure 3.12.5: Species-wise Distribution of Stems

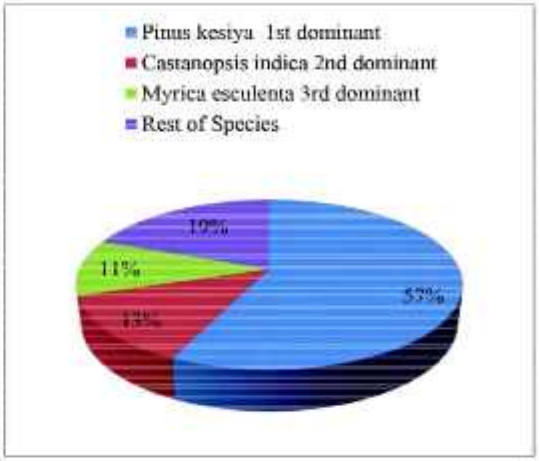


Figure 3.12.4: Number of Stems in Different Girth Classes

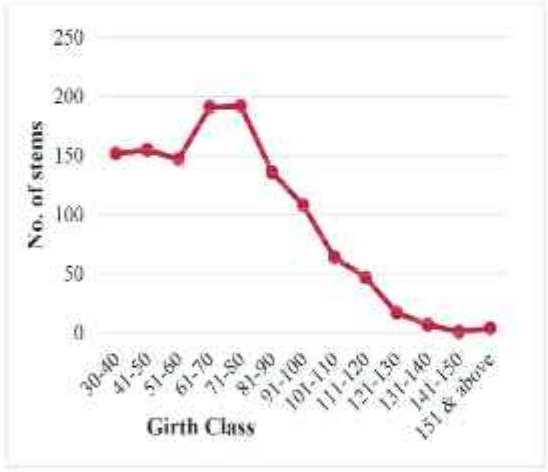


Figure 3.12.5: Inside view of *Law Adong Mawtangor*



3.12.9 Prescriptions for Future Management

3.12.9.1 Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Adong Mawtangor* has not been registered with the KHADC. The CFO of the KHADC and the Village *Dorbar* of *Mawtangor* may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Adong Mawtangor*, with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.12.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The Village *Dorbar* of *Mawtangor* and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Law Adong Mawtangor*, as a Community Reserve.

3.12.9.3 Boundary Demarcation

Boundary of the *Law Adong Mawtangor*, has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachment. To prevent and to ensure early detection of encroachments, boundary of the *Law Adong Mawtangor*, wherever it is not constituted by natural features of permanent nature, such as rivers or streams or hill ridges may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.12.9.4 Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India, during a period of 22 years (2002 -2023) only one fire incident has occurred in the *Law Adong Mawtangor*. As per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Adong Mawtangor* is moderately vulnerable as well as moderately prone to forest fire. To prevent damage to the *Law Adong Mawtangor* from accidental forest fires, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Adong Mawtangor* and engagement of fire watchers during the critical months may be taken.

3.12.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench etc. may be constructed at suitable locations in the *Law Adong Mawtangor.*

3.12.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Adong Mawtangor* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath, walking trail, sign board, washrooms *etc*. may be constructed to attract tourists.

3.12.9.7 Restocking of Open Degraded Areas

Efforts may be made to restock the open degraded patches in the *Law Adong Mawtangor* by assisting and promoting natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.12.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Adong Mawtangor* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Adong Mawtangor*.

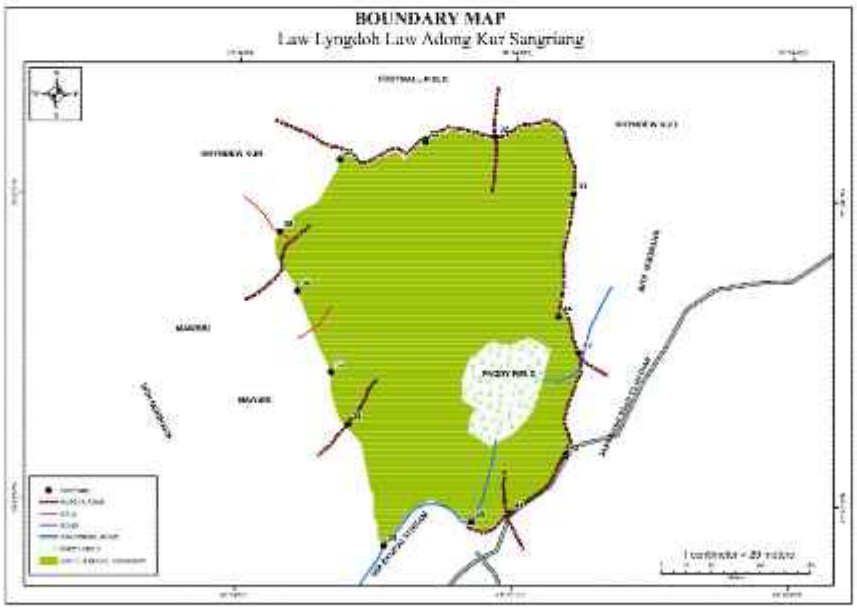
3.12.9.9 Awareness Campaign

The *Law Adong Mawtangor* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

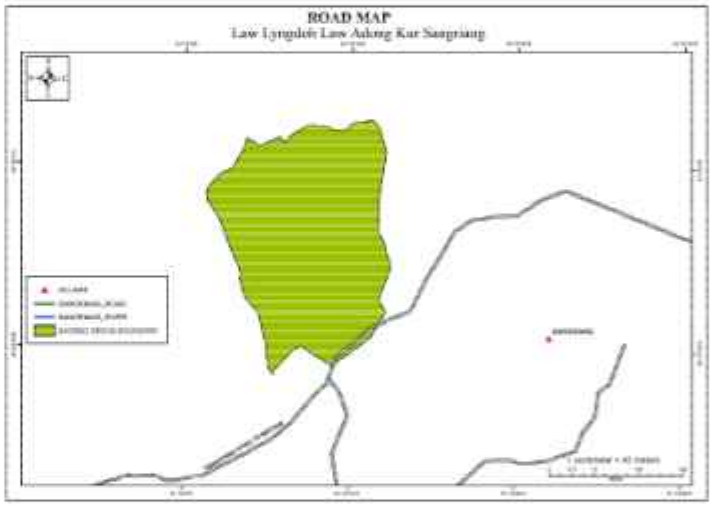
3.13. LAW LYNGDOH LAW ADONG KUR SANGRIANG

3.13.1 Location

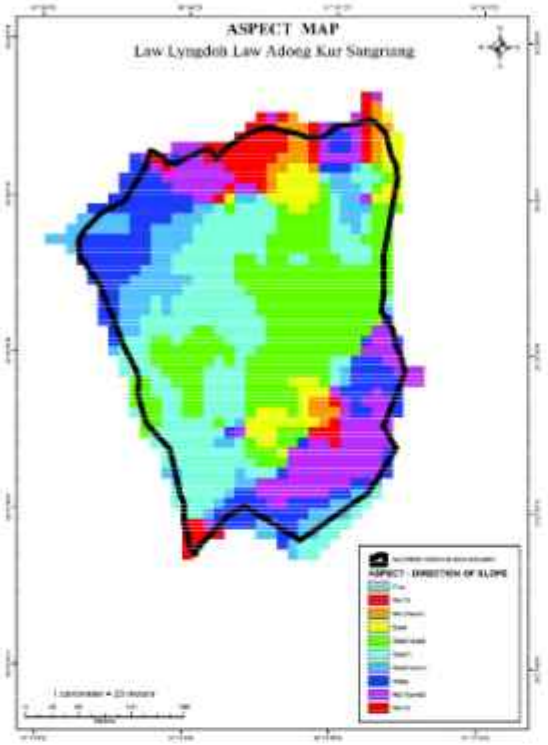
Law Lyngdoh Law Adong Kur Sangriang is situated in West Khasi Hills District of Meghalaya at Sangriang village under the Syiemship of Hima Nongstoin. It has an area of 16.38 ha and lies between 25° 27′ 50" N to 25° 28′ 02" N latitude and 91° 13′ 54" E to 91° 14′ 12" E longitude with an altitude of 1367 m from mean sea level. It is bounded in the North footpath and private land of *Kur Sangriang*, in the South by Naisynri stream and PWD road, in the East by private land of Kur Sangriang and footpath and in the West by private land of Kur *Sangriang* and farm land of Shri. P. Lawren. The grove is accessible by road from Shillong, which is about 112 km from Shillong.

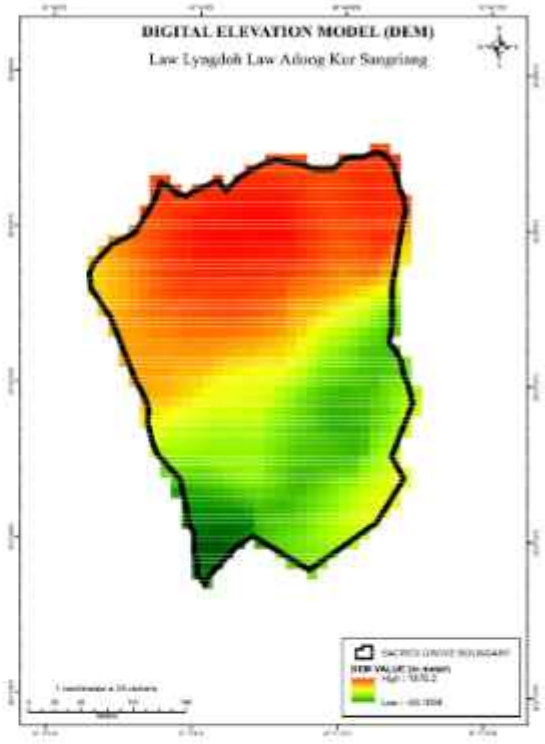


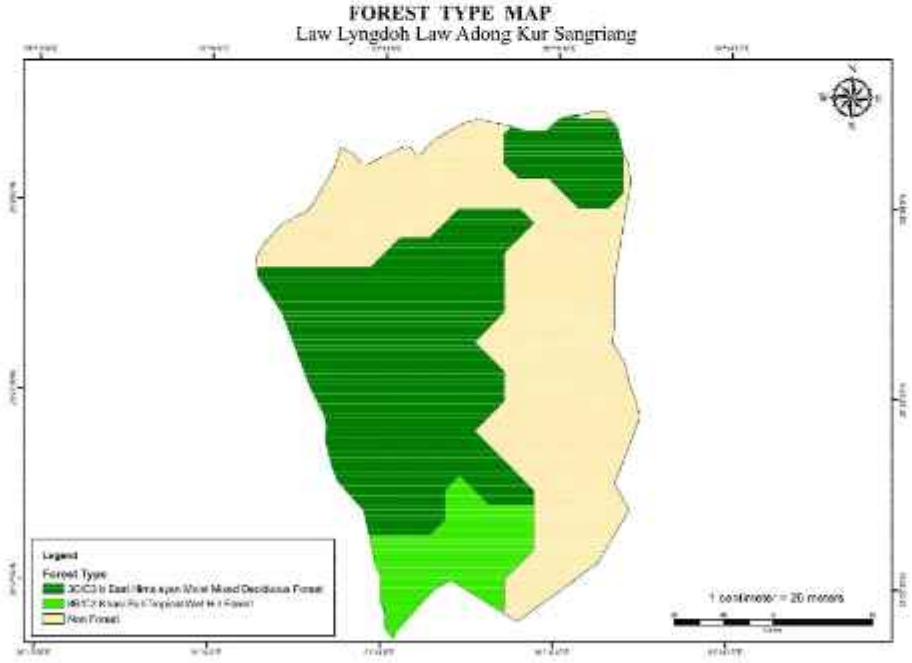

SATELLITE VIEW MAP
Law Lyngdoh Law Adong Kur Sangriang

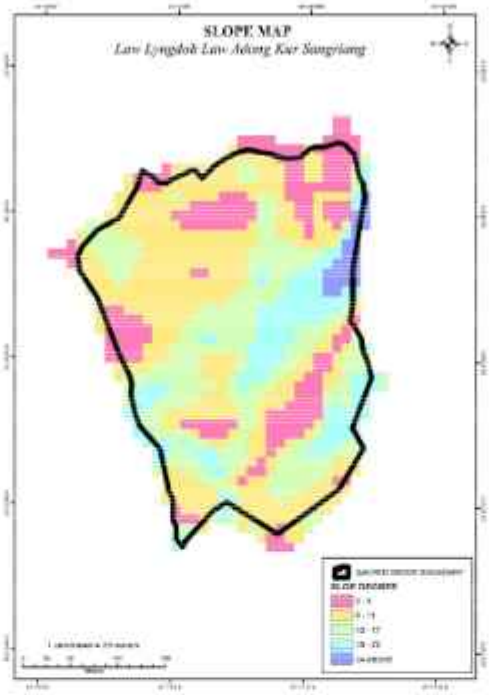

ROAD MAP
Law Lyngdoh Law Adong Kur Sangriang


FOREST COVER MAP
Law Lyngdoh Law Adong Kur Sangriang


ASPECT MAP
Law Lyngdoh Law Adong Kur Sangriang


DIGITAL ELEVATION MODEL (DEM)
Law Lyngdoh Law Adong Kur Sangriang


FOREST TYPE MAP
Law Lyngdoh Law Adong Kur Sangriang
Legend
Forest Type
Non Forest
1 centimeter = 20 meters



3.13.2 Brief History

This Sacred grove was established several centuries ago by the Kur Sangriang. In the past, religious rituals were performed in this grove. However, presently no such rituals are performed in this forest. However, the Kur Sangriang still rever in remembrance of ancestors and for its ecological value. Felling of trees, collection of fire wood, etc. is strictly prohibited.

Biotic pressure such as encroachments, hunting, poaching and illegal felling of trees are found to be absent in this forest. However, wildfire and grazing have been observed in the forest.

3.13.3 Geography and climate

The topography of the grove is gentle rolling in nature with slope varying from 0.90° to 26°. Major part of the *Law Lyngdoh Law Adong Kur Sangriang* falls in West and East Aspects and the remaining area falls in South and South East Aspects. Soil texture is sandy loam with no fragments and friable in consistency. Colour of the soil is brown with shallow soil depth. Soil erosion is almost negligible. *Naisynri* stream flows along southern boundary of the forest.

Winter season starts from end of October and lasts till March of the next year. The sacred grove receives high rainfall during the monsoon season from April to September. Average temperature varies from 7°C to 25°C.

3.13.4 Forest Type

As per the Champion and Seth classification (1968), forests found in the sacred grove are of the ***Type 3C/C3 East Himalayan Moist Mixed Deciduous Forest*** *and* ***8B/C2 Khasi Sub Tropical Wet Hill Forest.***

3.13.5 Forest Cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun Forest cover in the *Law Adong Sangriang* is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	2.546	15.54
Open Forest (10% - 40%)	8.96	54.68
Scrub Forest (<10%)	0	0
Non-Forest	4.88	29.78
Total	**16.386**	**100**

3.13.6 Flora and fauna

The *Law Adong Sangriang* is home to two storeyed dense virgin forest of natural origin. *Zanthoxylum ovaliafolia, Citrus latipes and Castanopsis indica* are respectively the 1st, 2nd, and 3rd dominant tree species. The forest is home to many rare, endangered and endemic plant species.

3.13.6.1 Floral species

Table 3.13.1: Trees found in *Law Lyngdoh Law Adong Kur Sangriang*

Sl No.	Local Name	Botanical Name	Family
1.	*Dieng japew*	*Antidesma acidum*	*Phyllanthaceae*
2.	*Dieng long*	*Bauhinia variegata*	*Fabaceae*
3.	*Dieng lakhiat*	*Callicarpa arborea*	*Verbanaceae*
4.	*Dieng tyrnem*	*Camelia caduca*	*Fagaceae*
5.	*Dieng sohot*	*Castanopsis indica*	*Fagaceae*
6.	*Dieng sning*	*Castanopsis tribuloides*	*Fagaceae*
7.	*Dieng poma*	*Chilkrasia tabularis*	*Meliaceae*
8.	*Dieng pingwait*	*Cinnamomum glanduliferum*	*Lauraceae*
9.	*Dieng sohkynphor*	*Citrus latipes*	*Rutaceae*
10.	*Dieng slabah*	*Delenia indica*	*Dilleniaceae*
11.	*Dieng sohlymbaw*	*Dellinia spp*	*Dilleniaceae*
12.	*Dieng sohkhyllam*	*Elaeocarpus lanceaefolios*	*Elaeocarpaceae*
13.	*Dieng lasaw*	*Elaeocarpus robusta*	*Elaeocarpaceae*
14.	*Dieng sohbyllen/ sohmylleng*	*Emblica spp*	*Myrtaceae*
15.	*Dieng lba*	*Engelhardia spicata*	*Juglandaceae*
16.	*Dieng sohum*	*Eugenia jamboliana*	*Myrtaceae*
17.	*Dieng pyrshit*	*Eurya accuminata*	*Theacea*
18.	*Dieng dud/jri*	*Ficus spp*	*Moraceae*
19.	*Dieng sohtyllang*	*Ilex excelsa*	*Aquifoliaceae*
20.	*Dieng shyieng*	*Ilex venulosa*	*Aquifoliaceae*
21.	*Dieng sohsyrtet*	*Itea chinensis*	*Iteaceae*
22.	*Dieng jing*	*Lithocarpus fenestrata*	*Fagaceae*

23.	*Dieng sohmyriong*	*Maesa indica*	*Primulaceae*
24.	*Dieng tem/stem/ synrih/synrei*	*Morinda augustifolia*	*Rubiaceae*
25.	*Dieng lasi*	*Neocinnamomum caudatumm*	*Lauraceae*
26.	*Dieng snammaw/larmaw*	*Photinia integrifolia*	*Rosaceae*
27.	*Dieng sohshynrud*	*Photinia spp*	*Rosaceae*
28.	*Dieng iapiar*	*Pithecellboiu heterophyllum*	*Fabaceae*
29.	*Dieng sohphoh klong*	*Pyrus communis*	*Rosaceae*
30.	*Dieng sai*	*Quercus dealbata*	*Fagaceae*
31.	*Dieng stap*	*Quercus glauca*	*Fagaceae*
32.	*Dieng shkar*	*Quercus spp*	*Fagaceae*
33.	*Dieng dngiem/lngiem*	*Quercus spp*	*Fagaceae*
34.	*Dieng kain*	*Rhus succedanea*	*Anacardiaceae*
35.	*Dieng jalyngngap*	*Saurania punduana*	*Actinidiaceae*
36.	*Dieng ngan*	*Schima khasiana*	*Theaceae*
37.	*Dieng sohlait*	*Spondias axillaris*	*Anacardiaceae*
38.	*Dieng iong*	*Symplocus chinensis*	*Symplocaceae*
39.	*Dieng yiang/syiang*	*Symplocos paniculata*	*Symplocaceae*
40.	*Dieng risang*	*Symplocos pyrifolia*	*Symplocaceae*
41.	*Dieng dpei*	*Symplocos theaefolia*	*Symplocaceae*
42.	*Dieng kharkhaw/ sohrynkhaw*	*Vaccinium griiithinum*	*Ericaceae*
43.	*Dieng dngiem*	*Viburnium carylifolium*	*Adoxaceae*
44.	*Dieng sohlangksew*	*Viburnum foetidium*	*Adoxaceae*
45.	*Dieng shadmoit*	*Wendlandia wallichii*	*Rubiaceae*
46.	*Dieng shiah*	*Zanthoxylum ovaliafolium*	*Rutaceae*

Table 3.13.2: Shrubs found in *Law Lyngdoh Law Adong Kur Sangriang*

Sl No.	Local Name	Botanical Name	Family
1.	*Soh shiah*	*Zanthoxylum ovalifolium*	*Rosaceae*
2.	*Soh khlor*	*Elaeagnus pyriformis*	*Elaeagnaceae*
3.	*Soh lang*	*Vibernum foetidum*	*Adoxaceae*
4.	*Dieng snammaw/ sohlarmaw*	*Photinia spp*	*Rosaceae*
5.	*Dieng soh pyrsit*	*Eurya acuminata*	*Theaceae*
6.	*La tyngkrong*	*Macropanax dispermus*	*Araliaceae*
7.	*La tyngkien*	*Rauvolfia densiflora*	*Apocynaceae*
8.	*Sohlangeitksew*	*Viburnum simonsii*	*Adoxaceae*
9.	*Soh lamut*	*Agapetes vareigata*	*Ericacceae*
10.	*Dieng shadmoit/ soh sawkba(L)*	*Wendlndia waliichi*	*Rubeceae*
11.	*Dieng sahmehblang*	*Grewia abutilifolia*	*Tilaceae*
12.	*Dieng jing*	*Lithocarpus fenestrata*	*Fagaceae*
13.	*Dieng tyrnem*	*Camelia caudula*	*Fagaceae*
14.	*Dieng sai*	*Quercus dealbata*	*Fagaceae*

Table 3.13.3: Herbs found in *Law Lyngdoh Law Adong Kur Sangriang*

Sl No.	Local Name	Botanical Name	Family
1.	Slamet	Phrynium spp	Pubinevve
2.	Ja lyngthem	Polygonum chinense	Polygonaceae
3.	Wang khlaw	Esculenta spp	Araceae
4.	Tiew sying maw	Gingiber purpureum	Zingiberaceae
5.	Shynraikhlaw	Alpinea alogus	Gingiberaceae
6.	Wang um	Homalomena aromatica	Araceae
7.	Jajewlieh	Begonia spp	Begoniaceae
8.	Jajew maw	Begonia spp	Begoniaceae
9.	Soh byrthit	Urena lobata	Malvaceae
10.	Tiew rusum	Hedychium coccinium	Zingiberaceae
11.	Soh byrthitrit	Sida rhombijolia	Malvaceae
12.	Soh ngangkhlaw	Solanum torvum	Solanaceae
13.	Seinthap/Synrem	Artimisea cina	Asteraceae
14.	Soh byrthit bah	Sida acuta	Malvaceae
15.	Ja lakthem	Osbeckia stellata	Melostomaceae
16.	La shing	Curcuma spp	Zingiberaceae
17.	Sying khlaw	Zingiber purpureum	Zingiberaceae
18.	Soh krismas	Sarcandra glabra	Chloranthaceae
19.	Soh byrthitrit	Sida rhombijolia	Malvaceae
20.	Tiew jasat	Polygonum hydropiper	Polygonaceae

Table 3.13.4: Climbers found in *Law Lyngdoh Law Adong Kur Sangriang*

Sl No.	Local Name	Botanical Name	Family
1.	Shiah soh paru	Rubus ellipticus	Rosaceae
2.	Soh nepbah	Rubus rugosus	Rosaceae
3.	Soh krot	Smilax zeylanica	Smilacaceae
4.	Jyrmi stein	Lonicera macrantha	Caprifoliaceae
5.	Soh kyrsu	Dioscorea alata	Dioscoreaceae
6.	Jyrmi japan	Agevatina adenofora	Asteraceae
7.	Jyrmi shiah	Xanthozylum khasiana	Rotaceae
8.	Jyrmi khlaw	Entoda spp	Luguminaceae

Table 3.13.5: Orchids found in *Law Lyngdoh Law Adong Kur Sangriang*

Sl No.	Local Name	Botanical Name	Family
1.	Tiew dieng	Micropera manii	Orchideceae
2.	Tiew smehmasi	Dendrobium chrysanthum	Orchideceae
3.	Soh khaleh	Pleione maculata	Orchideceae
4.	Tiew slaremmaw	Rafidopohra lancifolia	Orchideceae

5.	*Tiew pawang lum*	*Anoectochilus setaceus*	*Orchidaceae*
6.	*Tlong khnai*	*Oberonia jenkinsiana*	*Orchideceae*
7.	*Tiew pawanglum*	*Arundina graminifolia*	*Orchideceae*
8.	*Tiew dohmaw*	*Anoectochilus brevilabris*	*Orchideceae*
9.	*Tiew dohmaw*	*Anoectochilus roxburghii*	*Orchideceae*
10.	*Tiew lynksiar*	*Cymbiduim traceyamum*	*Orchideceae*
11.	*Knupmawiang*	*Paphiopedium insigne*	*Orchideceae*
12.	*Syntiew die*	*Bulbophyllum cylindraceum*	*Orchideceae*

Table 3.13.6: Bamboo found in *Law Lyngdoh Law Adong Kur Sangriang*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyr-a*	*Schizostachyum capitatum*	*Poaceae*

Table 3.13.7: Creepers found in *Law Lyngdoh Law Adong Kur Sangriang*

Sl No.	Local Name	Botanical Name	Family
1.	*Ja myrdoh*	*Houttuynia cordata*	*Saururaceae*
2.	*Sohnep bah*	*Rubus rogosus*	*Rosaceae*
3.	*Tmain khla*	*Lycopodoum cernuum*	*Lycopodiaceae*
4.	*Sla kyndajyrmi*	*Pothos spp*	*Aralaceae*
5.	*Khliangsyiar/ Bat nebru (L)*	*Centella asiatica*	*Apiaceae*
6.	*Dieng sohrengblang*	*Strophanthun wallichi*	*Apocynaceae*
7.	*Lapadong*	*Rhaphidophora spp*	*Araleceae*
8.	*Tympew khlaw*	*Pipper spp*	*Peppereceae*
9.	*Jyrmi kynsiew*	*Argyreia nervosa*	*Convolvulaceae*

Table 3.13.8: Grasses found in *Law Lyngdoh Law Adong Kur Sangriang*

Sl No.	Local Name	Botanical Name	Family
1.	*Lang tylli*	*Arundinella khasiana*	*Poaceae*
2.	*Phlangtungkhar*	*Ageratina adenophora*	*Cyperaceae*
3.	*Phlangtrew*	*Imperata cylindrica*	*Poaceae*
4.	*Phlangphreit*	*Cymbopogon exsertus*	*Poaceae*

Table 3.13.9: Ferns found in *Law Lyngdoh Law Adong Kur Sangriang*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhang iong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodalio*

3.13.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Adong Sangriang* has been carried out so far. However, as per the local residents, presence of several wild animals such as jackal, rabbit, wild pig, jungle fowls, pangolin and various types of birds and reptiles has been noted in this forest.

3.13.7 Growing Stock

As per the methodology described in Chapter-II, enumeration was carried out in 20% area of the forest as its area is less than 50 ha. In each sample plot all the trees having girth (over bark) at breast height than 30 cm were enumerated by measuring their top height (in metres) and the girth (in centimetres) at breast height. Data collected during the enumeration were entered in Sacred Grove Description Form and Plot Enumeration Form. During the enumeration total 886 trees were found within 40 plots each of 0.2 ha size. These include 241 *Zanthoxylum ovaliafolium,* (1st dominant), 107 *Citrus latipes* (2nd dominant), 90 *Castanopsis indica* and 448 Rest of the species. Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each species for each of the 13 girth classes starting from 30-40 cm to 151cm and above. Details of the same are given in the Table 3.13.10 & 3.13.11 below. As may be seen, total growing stock in this forest is 1428.51 cubic metres.

Table 3.13.10: Species wise Distribution of Growing Stock in Different Girth Classes

(cum)

Girth class (cm)	*Zanthoxylum ovaliafolium* 1st dominant	*Citrus latipes* 2nd dominant	*Castanopis-indica* 3rd dominant	Rest of Species	Total (for 3.276 ha area)	Total (for 16.38 ha area)
30-40	4.58	1.98	0.99	6.38	**13.94**	**69.68**
41-50	9.66	3.10	1.50	15.74	**30.00**	**149.98**
51-60	9.99	5.13	3.45	15.48	**34.05**	**170.26**
61-70	6.79	4.36	4.14	20.10	**35.39**	**176.95**
71-80	7.37	2.59	7.35	17.36	**34.68**	**173.38**
81-90	2.05	3.69	3.41	24.64	**33.78**	**168.90**
91-100	3.60	3.52	4.56	14.73	**26.40**	**132.02**
101-110	3.54	2.34	10.05	11.05	**26.97**	**134.85**
111-120	0.00	2.75	0.00	5.30	**8.04**	**40.22**
121-130	0.00	1.72	4.77	3.27	**9.76**	**48.80**
131-140	0.00	0.00	1.92	3.75	**5.67**	**28.35**
141-150	0.00	0.00	0.00	4.20	**4.20**	**20.99**
151 & above	0.00	0.00	0.00	22.83	**22.83**	**114.15**
Total	**47.58**	**31.17**	**42.13**	**164.82**	**285.70**	**1428.51**

Figure 3.13.1: Girth Class-Wise Growing Stock in Entire Forest



Table 3.13.11: Species-wise Distribution of Growing Stock in Different Girth Classes in the Entire Forest

(cum)

Girth class (cm)	*Zanthoxylum ovaliafolium* 1st dominant	*Citrus latipes* 2nd dominant	*Castanopis-indica* 3rd dominant	Rest of Species	Total Growing Stock	%wrt total volume
30-40	22.92	9.88	4.97	31.91	**69.68**	**5**
41-50	48.30	15.52	7.48	78.70	**149.98**	**10**
51-60	49.96	25.66	17.24	77.41	**170.26**	**12**
61-70	33.95	21.81	20.70	100.50	**176.95**	**12**
71-80	36.85	12.95	36.77	86.82	**173.38**	**12**
81-90	10.23	18.44	17.06	123.18	**168.90**	**12**
91-100	18.01	17.58	22.79	73.65	**132.02**	**9**
101-110	17.70	11.69	50.23	55.25	**134.85**	**9**
111-120	0.00	13.74	0.00	26.48	**40.22**	**3**
121-130	0.00	8.59	23.86	16.35	**48.80**	**3**
131-140	0.00	0.00	9.59	18.76	**28.35**	**2**
141-150	0.00	0.00	0.00	20.99	**20.99**	**1**
151 & above	0.00	0.00	0.00	114.15	**114.15**	**8**
Total	**237.90**	**155.83**	**210.67**	**824.12**	**1428.51**	
%wrt total volume	16.65	10.91	14.75	57.69		100.00

As may be seen, 16.65 % of the total growing stock is contributed by the 1st dominant species (*Zanthoxylum ovaliafolium*). The 2nd dominant species (*Citrus latipes)* is 10.91% of the total growing stock. Similarly, the 3rd dominant species *Castanopsis indica* constitutes 14.75% of the total growing stock. More than half of the growing stock *i.e.* 57.69 is constituted by the rest of the species.

Figure 3.13.2:Girth Class-Wise Distribution of Growing Stock

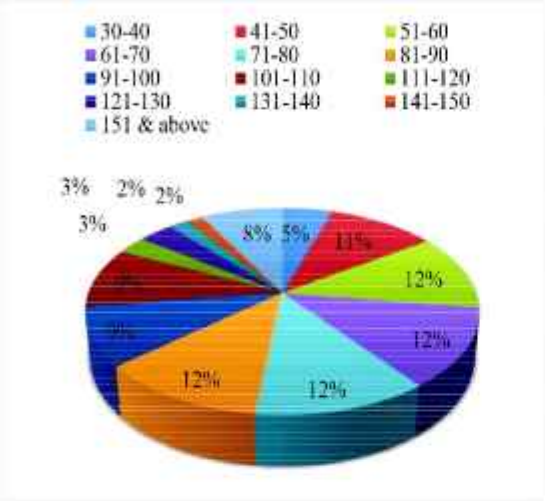


Figure 3.13.3: Species-wise Distribution of Growing Stock



Figure 3.13.4:Girth Class-Wise Distribution of Growing Stock

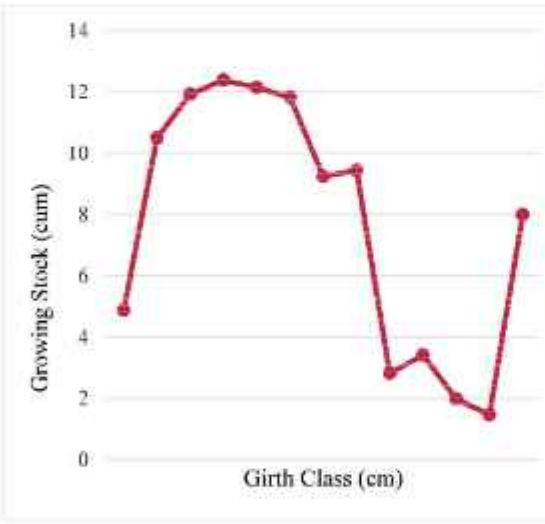


Figure 3.13.5: Over view of *Law Lyngdoh Kur Sangriang*



3.13.8 Number of Stems

Species-wise numbers of stems in each girth class are given in Table: 3.13.12 & 3.13.13 below. As may be seen maximum numbers of stems are found in lower girth classes i.e. from 30-40 cm. Numbers of stems are inversely proportional to mid-diameter of the girth class.

Table 3.13.12: Species-wise Distribution of stems in different Girth Classes in 40 sample plots

(number of stems)

Girth class (cm)	*Zanthoxylum ovaliafolium* 1st dominant	*Citrus latipes* 2nd dominant	*Castanopis indica* 3rd dominant	Rest of the species	Total
30-40	87	33	18	112	250
41-50	70	22	10	111	213
51-60	42	21	14	63	140
61-70	18	12	11	52	93
71-80	14	5	14	33	66
81-90	3	5	5	35	48
91-100	4	4	5	16	29
101-110	3	2	9	10	24
111-120	0	2	0	4	6
121-130	0	1	3	2	6
131-140	0	0	1	2	3
141-150	0	0	0	2	2
151 & above	0	0	0	6	6
Total	**241**	**107**	**90**	**448**	**886**

Table 3.13.13: Species-wise Number of stems in Different Girth Classes in the Entire Forest

(number of stems)

Girth class (cm)	*Zanthoxylum ovaliafolium* 1st dominant	*Citrus latipes* 2nd dominant	*Castanopis indica* 3rd dominant	Rest of the species	Total
30-40	435	165	90	560	**1250**
41-50	350	110	50	555	**1065**
51-60	210	105	70	315	**700**
61-70	90	60	55	260	**465**
71-80	70	25	70	165	**330**
81-90	15	25	25	175	**240**
91-100	20	20	25	80	**145**
101-110	15	10	45	50	**120**
111-120	0	10	0	20	**30**
121-130	0	5	15	10	**30**
131-140	0	0	5	10	**15**
141-150	0	0	0	10	**10**
151 & above	0	0	0	30	**30**
Total	**1205**	**535**	**450**	**2240**	**4430**

Figure 3.13.6: Number of Stems in Different Girth Classes

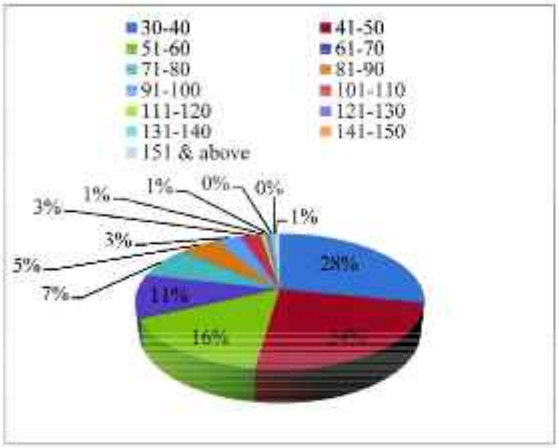


Figure 3.13.7: Species-wise Distribution of Stems

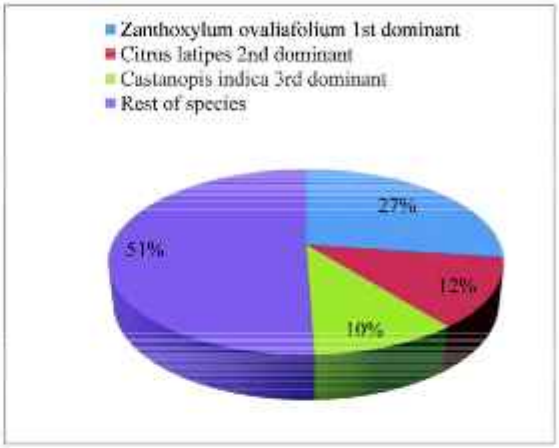


Figure 3.13.8:Girth Class-Wise Distribution of Growing Stock

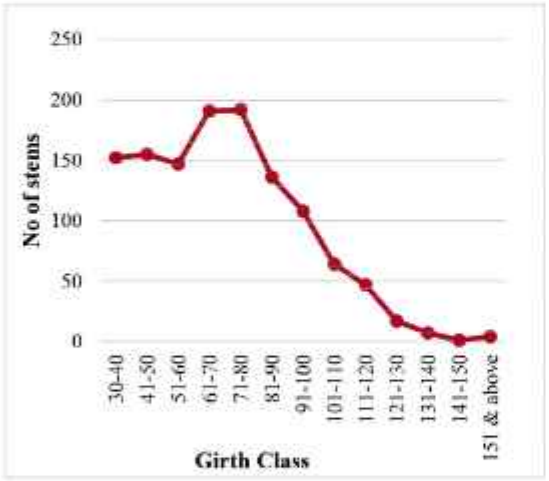


Figure 3.13.9: Inside view of *Law Adong Kur Sangriang*



3.13.9 Prescriptions for Future Management

3.13.9.1Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Lyngdoh Law Adong Sangriang* has not been registered with the KHADC. The CFO of the KHADC and the Village Dorbar of Sangriang may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Lyngdoh Law Adong Sangriang* with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.13.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The Village Dorbar of Sangriang and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Law Lyngdoh Law Adong Sangriang* as a Community Reserve.

3.13.9.3 Boundary Demarcation

Boundary of the *Law Lyngdoh Law Adong Sangriang* has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachments. To prevent and to ensure early detection of encroachments, boundary of the *Law Lyngdoh Law Adong Sangriang*, wherever it is not constituted by natural features of permanent nature, such as rivers or streams or hill ridges may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.13.9.4 Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India, during a period of 22 years (2002 -2023) no fire incident has occurred in the *Law Lyngdoh Law Adong Sangriang*. As per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Lyngdoh Law Adong Sangriang* is moderately vulnerable as well as moderately prone to forest fire. To prevent damage to the *Law Adong Sangriang* from accidental forest fires, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Lyngdoh Law Adong Sangriang* and engagement of fire watchers during the critical months may be taken.

3.13.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench etc. may be constructed at suitable locations in the *Law Lyngdoh Law Adong Sangriang*.

3.13.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Lyngdoh Law Adong Sangriang* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath, walking trail, sign board, washrooms *etc.* may be constructed to attract tourists.

3.13.9.7 Restocking of Open Degraded Areas

Efforts may be made to restock the open degraded patches in the *Law Lyngdoh Law Adong Sangriang* by assisting and promoting natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.13.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Lyngdoh Law Adong Sangriang* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Lyngdoh Law Adong Sangriang*.

3.13.9.9 Awareness Campaign

The *Law Lyngdoh Law Adong Sangriang* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

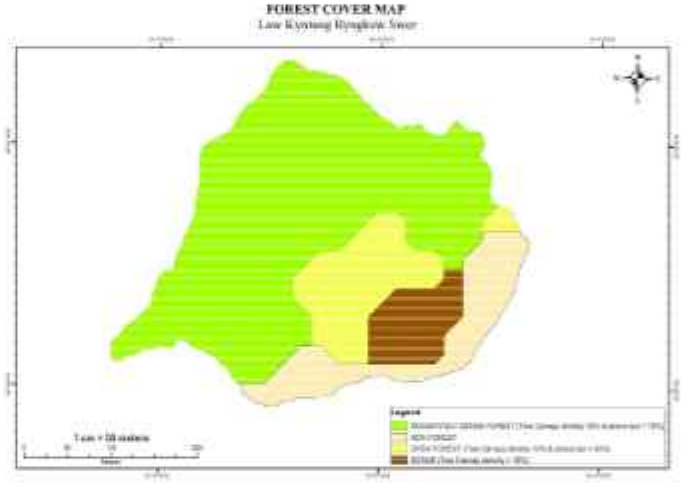
3.14. *LAW KYNTANG RYNGKEW SWER*

3.14.1 Location

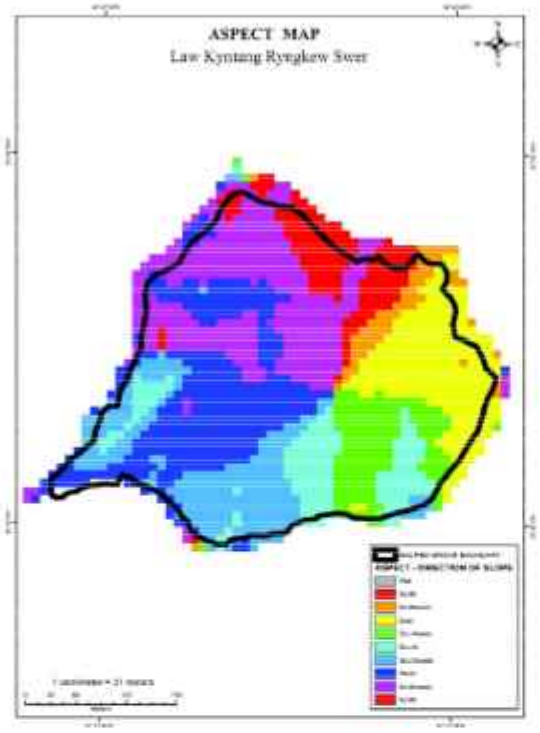
Law kyntang Ryngkew Swer is situated in East Khasi Hills District of Meghalaya at Swer village under the Hima Sohra Syiemship. It covers an area of 11.07 ha and lies between 25° 25′ 00" to 25°25′ 13" N latitude and 91° 47′ 28" to 91° 47′ 47"E Longitude with an altitude of 1,946 m above mean sea level. It is bounded in the North by *Law Adong Tadlatom*, in the East by kacha PWD road, in the South by *Khlaw Raid Swer and in the West by Khlaw Adong Tadlatom*. The grove is accessible by road from Shillong which is about 38 km.

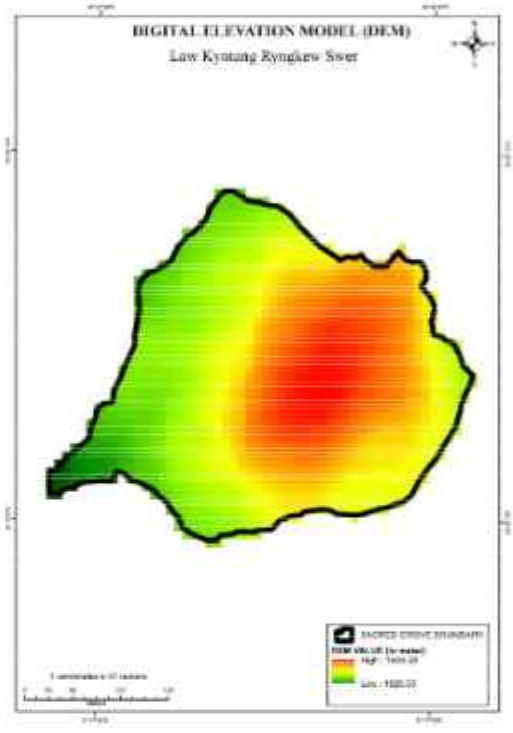


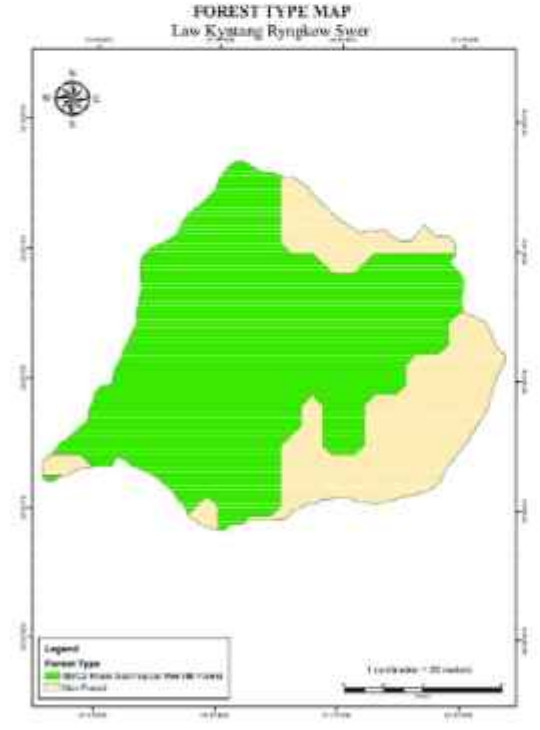

SATELLITE VIEW MAP
Law Kyntang Ryngkew Swer

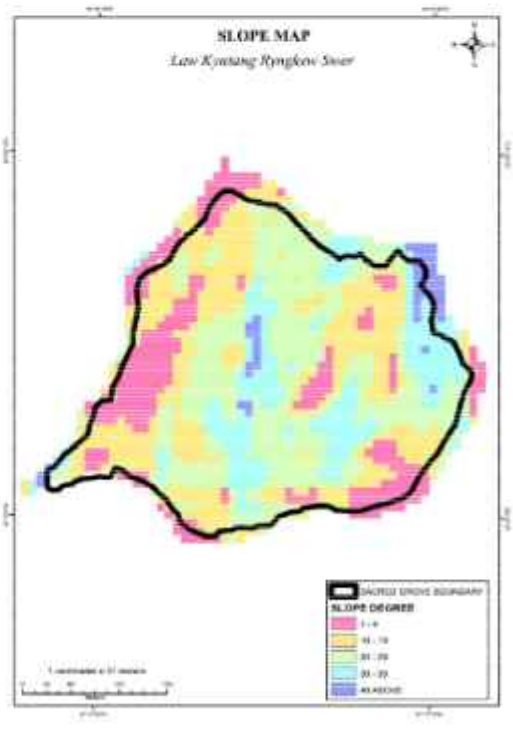

FOREST COVER MAP
Law Kyntang Ryngkew Swer


ROAD MAP
Law Kyntang Ryngkew Swer


ASPECT MAP
Law Kyntang Ryngkew Swer


DIGITAL ELEVATION MODEL (DEM)
Law Kyntang Ryngkew Swer


FOREST TYPE MAP
Law Kyntang Ryngkew Swer


SLOPE MAP
Law Kyntang Ryngkew Swer

3.14.2 Brief History

The *Law Kyntang Ryngkew Swer* is in existence for several centuries. The religious significance of the Sacred Grove is still intact and religious rites are performed by the *Kur Swer* every year. The grove is owned, managed and administered by the village community through the Headman elected by the villagers. Besides its religious importance, the ecological significance of the sacred grove is still upheld by the village. Green felling of trees in the forest is strictly prohibited and punishable under the customs, rules founded by the Village Dorbar.

Biotic pressure such as encroachment, wild fire, hunting, poaching, and illegal felling of trees are found to be absent in this grove, however slight grazing has been observed in this forest.

3.14.3 Geography and Climate:

Topography of the grove is gentle rolling in nature with slope varying from 0.50° to 40°. Major part of the *Law kyntang Ryngkew Swer* falls in South, West, South-West, East, North and North West Aspects. Soil texture is clayey-loam with gravels. Soil consistency is slightly compact. Soil is brown in colour with medium soil depth. No soil erosion has been observed in the forest. No perennial stream flows through the grove. On Southwest the forest is bounded by one seasonal stream.

Winter season starts from end of October and lasts till March of the next year. It receives high rainfall during the monsoon season from April to September. Average temperature varies from 7°C to 25°C.

3.14.4 Forest Type

As per the Champion and Seth classification (1968), forests found in the sacred grove are of the ***Type 8B/C2 Khasi Sub-Tropical Wet Hills Forest.***

3.14.5 Forest cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun, forest cover in the *Law Kyntang Ryngkew Swer* is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	7.80	70.46
Open Forest (10% - 40%)	1.13	10.21
Scrub Forest (<10%)	1.03	9.30
Non-Forest	1.11	10.03
Total	**11.07**	**100**

3.14.6 Flora and Fauna:

The *Law Kyntang Ryngkew Swer* is home to three storeyed moderately dense virgin forest of natural origin. *Rhododendron arborium* and *Symplocos theafolia* are 1st and 2nd dominant tree species. The forest is home to many rare, endangered and endemic plant species.

3.14.6.1 Flora species:

Table 3.14.1: Trees found in *Law Kyntang Ryngkew Swer*

Sl No.	Local Name	Botanical Name	Family
1	Dieng jyrtieng	Alstonia scholaris	Apocynaceae
2	Dieng latymphu	Aralia montana	Araliaceae
3	Dieng lieng	Betula alnoides	Betulaceae
4	Dieng sohpaitrisang	Carpinus viminea	Betulaceae
5	Dieng stap	Castonopsis indica	Fagaceae
6	Dieng tyrdop	Cinnamomum bejolghota	Lauraceae
7	Dieng sohriew	Cioxlacryma-jabi	Poaceae
8	Dieng tyrsimmaw	Debregeasia longifolia	Urticaceae
9	Dieng Sohphohkhasi	Docynia indica	Rosaceae
10	Dieng sohkhyllam	Elaeocarpus lanceaefolios	Elaeocarpaceae
11	Dieng lymba	Engelhardia spicata	Juglandaceae
12	Dieng painkhar	Erythroxylum kuntheanum	Erythroxylaceae
13	Dieng pyrshit	Eurya accuminata	Theaceae
14	Dieng doh	Ex-Bucklandiapopulnea	Hamamelidaceae
15	Dieng sohbyrsiat	Ficus spp	Moraceae
16	Dieng sohmeblang	Grewia abutilifolia	Tiliaceae
17	Dieng Jakrai	Ilex griffithii	Aquifoliaceae
18	Dieng sohshyieng	Ilex venulosa	Aquifoliaceae
19	Dieng sohsyrtet	Itea chinensis	Iteaceae
20	Dieng sohpaiat	Ligustrum lucidium	Oleaceae
21	Dieng syiang	Ligustrum robustus	Oleaceae
22	Dieng jing	Lithocurpus fenestrata	Fagaceae
23	Dieng sohrang	Litsea ameissneri	Lauraceae
24	Dieng railieh	Michelia champaca	Magnoliaceae
25	Dieng sohniar	Michelia punduanaoblonga	Magnoliaceae
26	Dieng sohphie	Myrica esculenta	Fagaceae
27	Dieng sohliya	Myrica indica	Fagaceae
28	Dieng tyllongrangsei	Pantapanox racemasmum	Araliaceae
29	Dieng sohlarmaw/snammaw	Photinia integrifolia	Rosaceae
30	Dieng kseh	Pinus khasiana/kesiya	Pinaceae
31	Dieng ksehkashmir	Pinus roxburghii	Pinaceae
32	Dieng sohshur	Pyrus pashia	Rosaceae
33	Dieng tyrniang	Quercus spp	Fagaceae
34	Dieng lambyrkaw	Quercus spp	Fagaceae
35	Dieng tiewsaw	Rhododendron arborium	Ericaceae
36	Dieng jamynrei	Salix tetrasperma	Salicaceae
37	Dieng jalngap	Saurauia punduana	Actinidiaceae
38	Dieng lympied	Saurauia roxburghii	Actinidiaceae
39	Dieng Tluhsyieng	Sterculia spp	Sterculiaceae.
40	Dieng Tluh	Sterculia villosa	Sterculiaceae.
41	Dieng jamiiang	Symplocos paniculata	Symplocaceae
42	Dieng peilieh	Symplocos theoefolia	Symplocaceae
43	Dieng shyrtieng	Unknown	Not listed
44	Dieng Sohlangeitksew	Viburnum foeticlum	Viburnaceae

Table 3.14.2: Shrubs found in *Law Kyntang Ryngkew Swer*

Sl No.	Local Name	Botanical Name	Family
1.	*Lajarem lieh*	*Clerodendrum viscosum*	*Verbenaceae*
2.	*Dieng sohniangriangblei*	*Citrus spp*	*Rutaceae*
3.	*Dieng lasisia*	*Cinnamomum spp*	*Lauraceae*
4.	*Dieng smaw*	*Photinia spp*	*Rosaseae*
5.	*Dieng sohtait*	*Spondias spp*	*Anacardiaceae*
6.	*Dieng soh pyrsit*	*Eurya acuminata*	*Theaceae*
7.	*Dieng sohjabuit*	*Phlogacanthus thyrsiflorus*	*Acanthaceae*
8.	*Jarem iong*	*Clerodendrum colebrookianum*	*Verbenaceae*
9.	*Synsar*	*Thysanolaena maxima*	*Poaceae*
10.	*Kait khlaw*	*Musa acuminata*	*Musacaea*
11.	*Dieng rnong*	*Mahonia pycnophylla*	*Berberidaceae*
12.	*Soh lang*	*Viburnum foetidum*	*Caprifoliaceae*
13.	*Soh byrthit*	*Urena lobota*	*Malvaceae*
14.	*Dieng shadmoit*	*Wendlndia waliichi*	*Rubeceae*
15.	*Dieng sahmehblang*	*Grewia abutilifolia*	*Tiliaceae*
16.	*Dieng jamiiang*	*Symplocos paniculata*	*Symplocaceae*
17.	*Dieng jing*	*Lithocarpus fenestrata*	*Fagaceae*
18.	*Dieng tyrnem*	*Camelia caudula*	*Theaceae*

Table 3.14.3: Herbs found in *Law Kyntang Ryngkew Swer*

Sl No.	Local Name	Botanical Name	Family
1.	*Slamet*	*Phrynium*	*Pubinevve*
2.	*Kynbationg*	*Ageratina*	*Adenophora*
3.	*Wang khlaw*	*Esculenta spp*	*Araceae*
4.	*Sla lamet*	*Phrynum spp*	*Not listed*
5.	*Shynrai khlaw*	*Alpinea alogus*	*Gingiberaceae*
6.	*Shynrai khlaw*	*Alpinia spp*	*Gingiberaceae*
7.	*Jajew lieh*	*Begonia spp*	*Begoniaceae*
8.	*Jajew maw*	*Begonia spp*	*Begoniaceae*
9.	*Soh byrthit*	*Urena lobata*	*Malvaceae*
10.	*Soh pangkhlieh*	*Lantana camara*	*Verbenaceae*
11.	*Tiew latdoh*	*Hedychium gracile*	*Zingiberaceae*
12.	*Soh ngangkhlaw*	*Solanum torvum*	*Solanaceae*
13.	*Khliang syiar*	*Centella asiatica*	*Apiaceae*
14.	*Kdaitumjew*	*Polygonum glabrum*	*Polygonaceae*
15.	*Long niang*	*Potentilla gracilis*	*Rosaceae*
16.	*La shing*	*Curcuma spp*	*Zingiberaceae*
17.	*Sying khlaw*	*Zingiber purpureum*	*Zingiberaceae*
18.	*Soh krismas*	*Sarcandra glabra*	*Zingiberaceae*
19.	*Soh byrthit rit*	*Sida rhombijolia*	*Chloranthaceae*

Table 3.14.4: Climbers found in *Law Kyntang Ryngkew Swer*

Sl No.	Local Name	Botanical Name	Family
1.	*Dieng longkhasaw (Jyrmi)*	*Not listed*	*Not listed*
2.	*Jyrmi sohthied*	*Not listed*	*Not listed*
3.	*Pew shrieh*	*Hedera nepalensis*	*Araliaceae*
4.	*Soh shangkhlor*	*Elaeagnus pyriformis*	*Elaeagnaceae*
5.	*Sla kyndajyrmi*	*Pothos scandens*	*Araceae*
6.	*Jyrmi niangsohpet*	*Asparagus filicinus*	*Asparagaceae*
7.	*Dieng sohmatan/sohpdong*	*Stephania glabra*	*Menispermaceae*
8.	*Sla kynda jyrmi*	*Pothos spp*	*Aralaceae*
9.	*Phan synreh*	*Dioscorea alata*	*Dioscoreaceae*
10.	*Dieng sohrengblang*	*Strophanthun wallichi*	*Apocynaceae*
11.	*Lapadong*	*Rhaphidophora spp*	*Araleceae*
12.	*Soh shangkhlor*	*Elaeagnus pyriformis*	*Elaeagnaceae*
13.	*Phan jyrmi*	*Stephania glabra*	*Liliaceae*
14.	*Tympew khlaw*	*Pipper spp*	*Peppereceae*
15.	*Loapla*	*Rhaphidophora decursiva*	*Araceae*
16.	*Soh krot*	*Smilax zeylanica*	*smilacaceae*

Table 3.14.5: Orchids found in *Law Kyntang Ryngkew Swer*

Sl No.	Local Name	Botanical Name	Family
1.	*Dieng tiewkait*	*Anaphalis adnata*	*Orchidaceae*
2.	*Dieng tiewmationg*	*Dendrobium chrysanthum,*	*Orchidaceae*
3.	*Dieng lyngskaw*	*Dendrobium densiflorum*	*Orchidaceae*
4.	*Dieng klong ramsong*	*Cymbidium longifolium*	*Orchidaceae*
5.	*Talong khnai*	*Oberonia obcordata*	*Orchideceae*
6.	*Tlong khnai*	*Oberonia jenkinsiana*	*Orchideceae*
7.	*Tiew pawanglum*	*Arundina graminifolia*	*Orchideceae*
8.	*Tiew dohmaw*	*Anoectochilus brevilabris*	*Orchideceae*
9.	*Tiew dohmaw*	*Anoectochilus roxburghii*	*Orchideceae*
10.	*Dieng tiewdieng*	*Aeschynanthus spp*	*Orchideceae*
11.	*Dieng tiewdieng*	*Micropera manii*	*Orchideceae*
12.	*Dieng tiewdieng*	*Dendrobium aphyllum*	*Orchideceae*
13.	*Knupmawiang*	*Paphiopedium insigne*	*Orchideceae*
14.	*Tiew mationg*	*Dendrobium chrysanthum*	*Orchideceae*
15.	*Syntiew die*	*Bulbophyllum cylindraceum*	*Orchideceae*

Table3.14.6: Creepers found in *Law Kyntang Ryngkew Swer*

Sl No.	Local Name	Botanical Name	Family
1.	*Kynbatsohmynkea*	*Cardamine debilis*	*Cruciferae*
2.	*Sohned bah*	*Rubus rogosus*	*Rosaceae*
3.	*Tmain khla*	*Lycopodoum cernuum*	*Lycopodiaceae*
4.	*Sla kyndajyrmi*	*Pothos spp*	*Aralaceae*
5.	*Phan synreh*	*Dioscorea alata*	*Dioscoreaceae*
6.	*Dieng sohrengblang*	*Strophanthun wallichi*	*Apocynaceae*
7.	*Lapadong*	*Rhaphidophora spp*	*Araleceae*
8.	*Soh shangkhlor*	*Elaeagnus pyriformis*	*Elaeagnaceae*
9.	*Pew shrieh*	*Hedera nepalensis*	*Araliaceae*
10.	*Tympewkhlaw*	*Pipper spp*	*Pepperecеae*
11.	*Loapla*	*Rhaphidophora decursiva*	*Araceae*
12.	*Jyrmikynsiew*	*Argyreia nervosa*	*Convolvulaceae*

Table3.14.7: Grasses found in *Law Kyntang Ryngkew Swer*

Sl No.	Local Name	Botanical Name	Family
1.	*Lang tylli*	*Arundinella khasiana*	*Poaceae*
2.	*Phlangtynsok*	*Ponium maximum*	*Poaceae*
3.	*Phlangphreit*	*Cymbopogon exsertus*	*Poaceae*
4.	*Lasier*	*Corex spiculata*	*Poaceae*
5.	*Lang trengsning*	*Potentilla polyphylla*	*Poaceae*
6.	*Lang phot*	*Juncus effusus*	*Poaceae*
7.	*Synsar*	*Thysanolaena maxima*	*Poaceae*

Table 3.14.8: Ferns found in *Law Kyntang Ryngkew Swer*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhang iong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodalio*

3.14.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Kyntang Ryngkew Swer* has been carried out so far. However, as per the local residents, presence of several wild animals such asjungle fowls, barking deer, wild bear, jackal and numerous species of amphibian, reptile, bird and mammal have been noted in this forest.

3.14.7 Growing Stock

As per the methodology described in Chapter-II, enumeration was carried out in 20% area of the forest as its area is more than 10 ha. In each sample plot all the trees having girth (over bark) at breast height more than 30 cm were enumerated by measuring their top height (in meters) and the girth (in centimetres) at breast height. Data collected during the enumeration were entered in Sacred Grove Description Form and Plot Ennumeration Form. During the enumeration total 1,881 trees were found within 11 plots, each of 0.2 ha size, these include 518 *Rhododendron arborium* (1st dominant), 183 *Symplocos theafolia* (2nd dominant), 179 *Myrica nagi* (3rd dominant) and 1,001 *Rest of Species*. Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each species for each of the 13 girth classes starting from 30-40 cm to 151 cm and above. Details of the same are given in the table: 3.14.9 & 3.14.10 below. As may be seen, the total growing stock in this forest is 2805.99 cubic metres.

Table 3.14.9: Species wise Distribution of Growing Stock in Different Girth Classes

(cum)

Girth Class Vise	*Rhododendron arborium* 1st Dominant	*Symplocos theoefolia* 2nd Dominant	*Myrica nagi* 3rd Dominant	Rest of the species	Total (for 2.2 ha area)	Total (for 11.07ha' area)
30-40	2.90	3.29	2.67	13.56	**22.420**	112.81
41-50	7.96	7.26	6.33	28.09	**49.640**	249.78
51-60	8.67	7.98	7.44	43.53	**67.620**	340.25
61-70	7.37	5.56	11.74	49.00	**73.670**	370.69
71-80	5.84	4.430	7.340	45.33	**62.940**	316.70
81-90	4.72	4.33	5.79	42.62	**57.460**	289.13
91-100	2.3	3.7	0.89	23.95	**30.840**	155.18
101-110	2.73	3.31	2.36	38.22	**46.620**	234.58
111-120	1.96	1.42	0	19.97	**23.350**	117.49
121-130	0	4.83	0	14.91	**19.740**	99.33
131-140	0.61	0	1.86	11.19	**13.660**	68.73
141-150	2.85	0	0	15.69	**18.540**	93.29
151 & above	4.15	0	0	67.00	**71.150**	358.01
Total	**52.06**	**46.11**	**46.42**	**413.060**	**557.650**	**2805.99**

Figure 3.14.1 Girth class-wise Growing Stock in Entire Forest



Table 3.14.10: Species-wise Distribution od Growing Stock in Different Girth Classes in the Entire

(cum)

Girth Class Vise	*Rhododendron arborium* 1st Dominant	*Symplocos theoefolia* 2nd Dominant	*Myrica nagi* 3rd Dominant	Rest of the species	Total (for 11.07ha' area)	%wrt total volume
30-40	14.59	16.55	13.43	68.23	**112.81**	4.02
41-50	40.05	36.53	31.85	141.34	**249.78**	8.90
51-60	43.63	40.15	37.44	219.04	**340.25**	12.13
61-70	37.08	27.98	59.07	246.56	**370.69**	13.22
71-80	29.39	22.29	36.93	228.09	**316.70**	11.29
81-90	23.75	21.79	29.13	214.46	**289.13**	10.31
91-100	11.57	18.62	4.48	120.51	**155.18**	5.53
101-110	13.74	16.66	11.88	192.32	**234.58**	8.36
111-120	9.86	7.15	0.00	100.49	**117.49**	4.19
121-130	0.00	24.30	0.00	75.02	**99.33**	3.54
131-140	3.07	0.00	9.36	56.31	**68.73**	2.45
141-150	14.34	0.00	0.00	78.95	**93.29**	3.33
151 & above	20.88	0.00	0.00	337.13	**358.01**	12.76
Total	**261.96**	**232.02**	**233.58**	**2078.44**	**2805.99**	
%wrt total volume	9.34	8.27	8.33	74.10		100

As may be seen, 9.34 % of the total growing stock is contributed by the 1st dominant species (*Rhododendron arborium).* The 2nd dominant species (*Symplocos theoefolia*) constitutes 8.27% of the total growing stock, Similarly, the 3rd dominant species *(Myrica nagi*) constitute 8.32 %, of the total growing stock. A major part of the growing stock i.e. 74.07 % is constituted by the rest of the species.

Figure 3.14.2:Girth Class-wise distribution of the Growing Stock

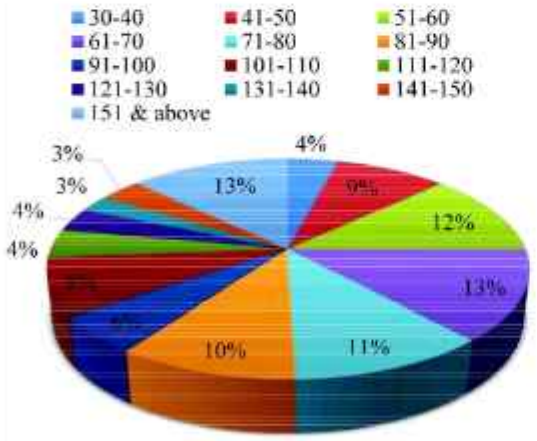


Figure 3.14.3: Species-wise Distribution of Growing Stock

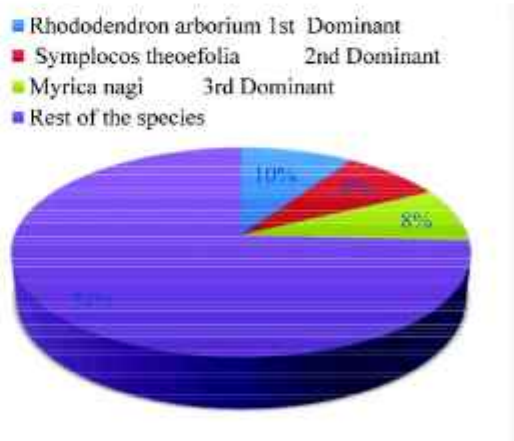


Figure 3.14.4:Girth Class-wise distribution of the Growing Stock

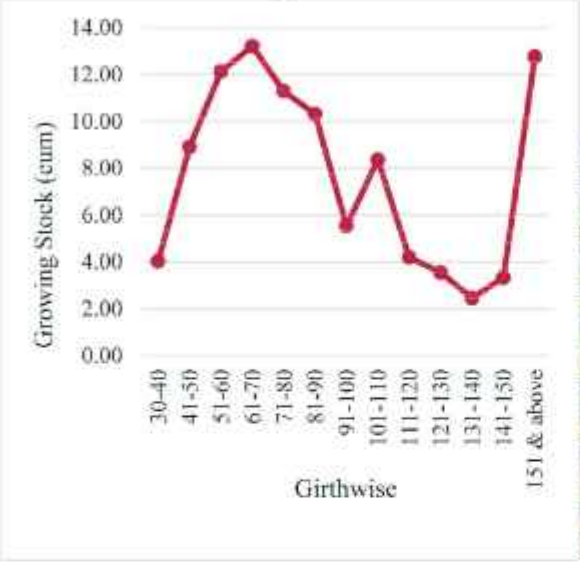


Figure 3.14.5:Over view *of Law Kyntang Ryngkew Swer*



3.14.8 Number of Stems:

Species-wise number of stems in each girth class are given in table: 3.14.11 & 3.14.12 below. As may be seen maximum numbers of stems are found in lower girth classes i.e. from 30-40 cm to 91-100 cm. Number of stems are inversely proportional to mid-diameter of the girth class

Table 3.14.11:Species-wise Distribution of stems in different Girth Classes in 11 sample plots

(number of stems)

Girth Class wise	*Rhododendron arborium* 1st Dominant	*Symplocos theoefolia* 2nd Dominant	*Myrica nagi* 3rd Dominant	Rest of the species	Total
30-40	171	58	49	243	521
41-50	137	52	44	196	429
51-60	88	33	29	171	321
61-70	49	15	31	131	226
71-80	28	8	14	86	136
81-90	18	6	8	60	92
91-100	7	4	1	26	38
101-110	7	3	2	34	46
111-120	4	1	0	14	19
121-130	0	3	0	9	12
131-140	1	0	1	6	8
141-150	4	0	0	7	11
151 & above	4	0	0	18	22
Total	**518**	**183**	**179**	**1001**	**1881**

Table 3.14.12:Species-wise Number of Stems in Different Girth Classes in the entire Forest

(number of stems)

Girth Class wise	*Rhododendron arborium* 1st Dominant	*Symplocos theoefolia* 2nd Dominant	*Myrica nagi* 3rd Dominant	Rest of the species	Total
30-40	860	292	247	1223	2622
41-50	689	262	221	986	2159
51-60	443	166	146	860	1615
61-70	247	75	156	659	1137
71-80	141	40	70	433	684
81-90	91	30	40	302	463
91-100	35	20	5	131	191
101-110	35	15	10	171	231
111-120	20	5	0	70	96
121-130	0	15	0	45	60
131-140	5	0	5	30	40
141-150	20	0	0	35	55
151 & above	20	0	0	91	111
Total	2606	921	901	5037	9465

Figure 3.14.6:Number of Stems in Different Girth Classes

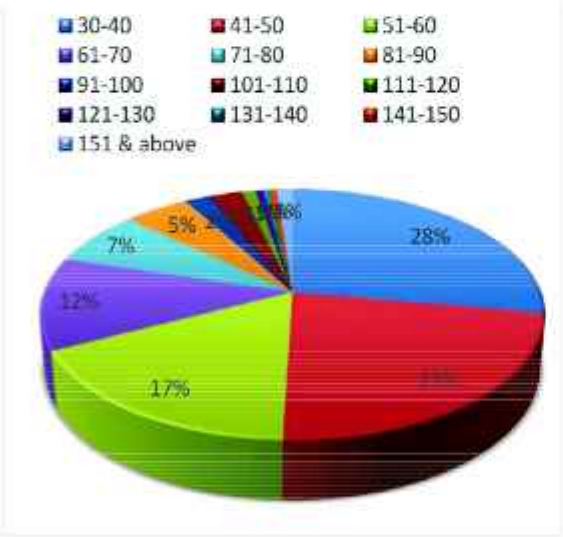
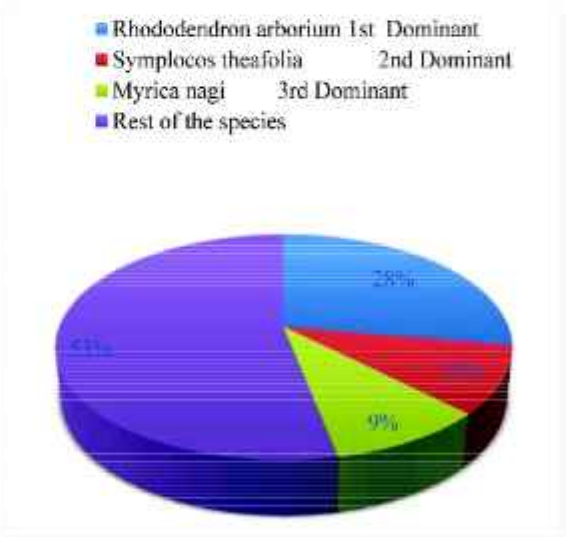


Figure 3.14.7: Species-wise Distribution Stems



igure 3.14.8: Number of Stems in Different Girth Classes



Figure 3.14.9:Inside view *Law Kyntang Ryngkew Swer*



3.14.9 Prescriptions for Future Management

3.14.9.1Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Kyntang Ryngkew Swer* has not been registered with the KHADC. The CFO of the KHADC and the Village Dorbar of *Ryngkew Swer* may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Kyntang Ryngkew Swer* with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.14.9.2Notification as Community Reserve

Section 38 C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The Dorbar of *Ryngkew Swer* and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Law Kyntang Ryngkew Swer* as a Community Reserve.

3.14.9.3Boundary Demarcation

Boundary of the *Law Kyntang Ryngkew Swer* has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachment. To prevent and to ensure early detection of encroachments, boundary of the *Law Kyntang Ryngkew Swer*, wherever it is not constituted by natural features of permanent nature, such as rivers or streams or hill ridges may be

demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.14.9.4 Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India, during a period of 22 years (2002 -2023) no fire incident has occurred in the *Law Kyntang Ryngkew Swer*. As per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the Law Kyntang Ryngkew Swer is moderately vbulnerable to forest fire. However, as per the said information system, a major part of the *Law Kyntang Ryngkew Swer* is not prone to forest fire. However to prevent damage to the *Law Kyntang Ryngkew Swer* from accidental forest fires, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Kyntang Ryngkew Swer* and engagement of fire watchers during the critical months may be taken.

3.14.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench etc. may be constructed at suitable locations in the *Law Kyntang Ryngkew Swer*

3.14.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Kyntang Ryngkew Swer* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath, walking trail, sign board, washrooms *etc.* may be constructed to attract tourists.

3.14.9.7 Restocking of Open Degraded Areas

Efforts may be made to restock the open degraded patches in the *Law Kyntang Ryngkew Swer* by assisting and promoting natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.14.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Kyntang Ryngkew Swer* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Kyntang Ryngkew Swer*.

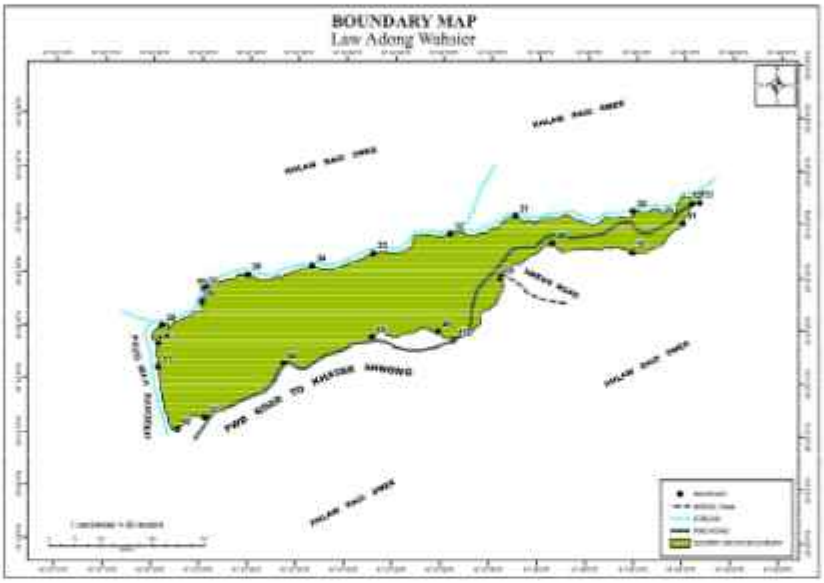
3.14.9.9 Awareness Campaign

The *Law Kyntang Ryngkew Swer* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

3.15. *LAW ADONG WAHSIER*

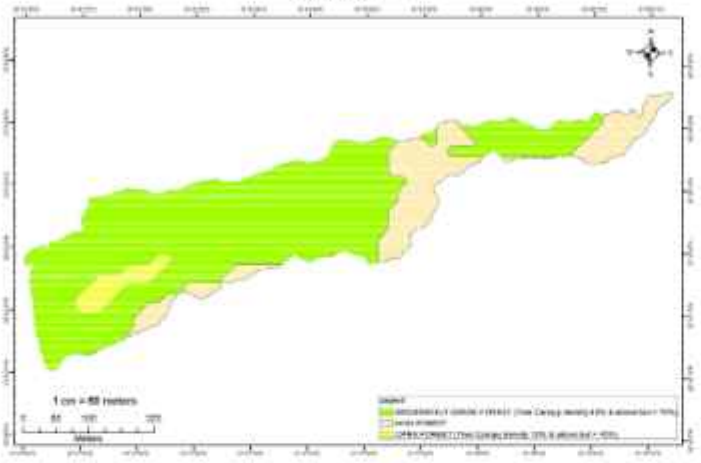
3.15.1 Location

Law Adong Wahsier is located in East Khasi Hills District of Meghalaya at Swer village under the Hima Sohra Syiemship. It covers an area of 34.69 ha and lies between 25° 24' 11" to 25° 24' 35" N latitude and 91° 47' 24" to 91° 48' 15" E Longitude with an altitude of 1,749 m above mean sea level. It is bounded in the North by *Khlaw Raid Swer Phudwah*, East by *Khlaw Raid Swer*, in the South by *Khatar shnong* PWD road and in the West by *Phudwah Rangbeit*. The forest is accessible by road from Shillong which is about 43 km.

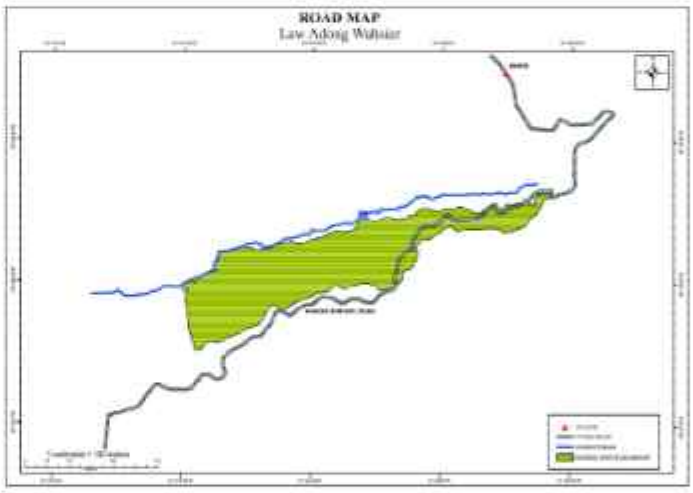




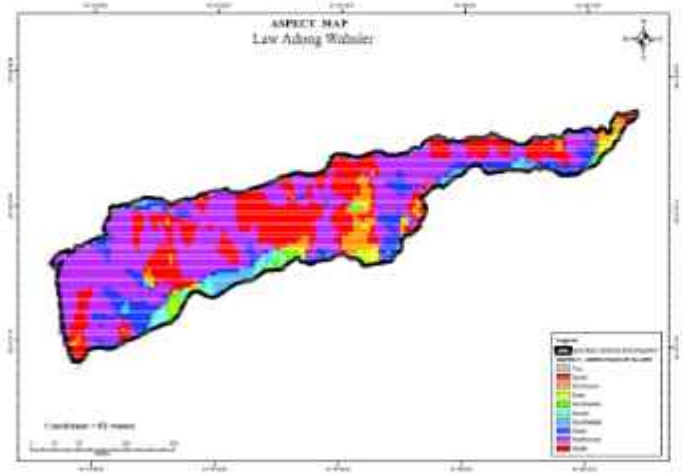
FOREST COVER MAP
Law Adong Wahsier

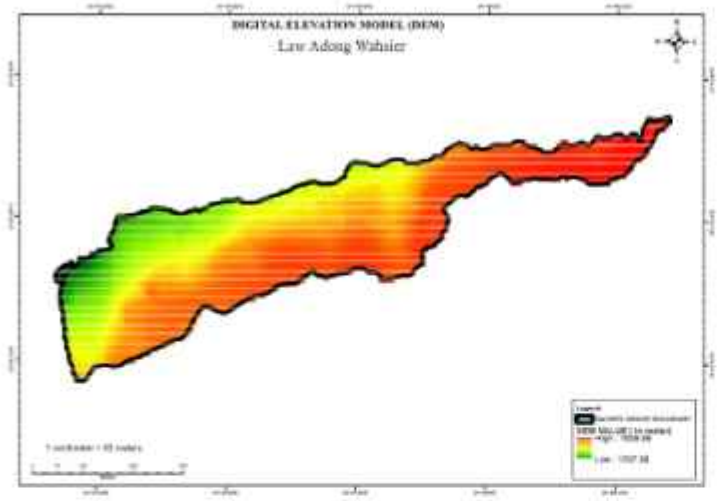


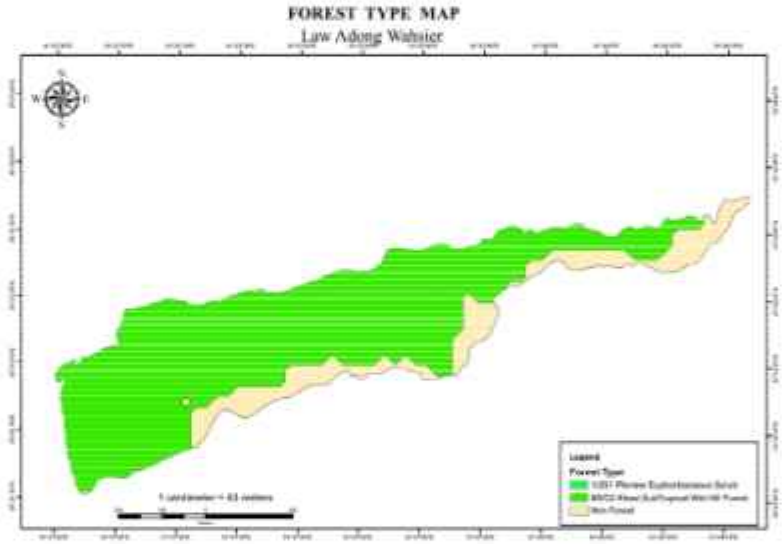
ROAD MAP
Law Adong Wahsier



ASPECT MAP
Law Adong Wahsier



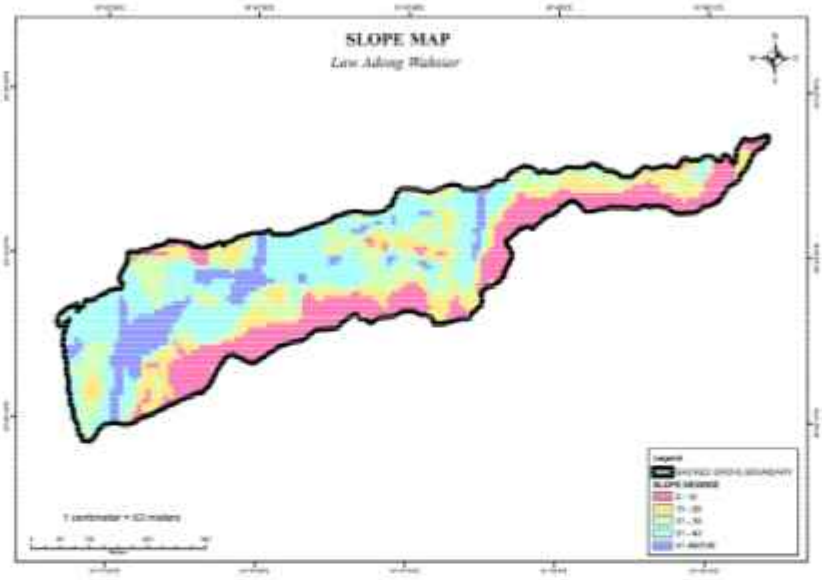




3.15.2 Brief History

The *Law Adong Wahsier* is in existence for several centuries. The religious significance of the Sacred Grove has declined over the years. The grove is owned, managed and administered by the village community under the supervision and control of the Headman elected by the villagers. The ecological significance of the sacred grove is still upheld by the village. Conservation and preservation of the forest is therefore part and parcel of the village Administration and Management. Green felling of trees is strictly prohibited and punishable under the rules framed by the village Dorbar.

The forest is free from biotic pressure such as encroachment, wild fire, hunting, poaching, and illegal felling of trees. However, slight grazing has been observed in this sacred grove.



3.15.3 Geography and Climate

Topography of the grove is hilly in nature with slope varying from 0.20° to 63°. Major part of the *Law Adong Wahsier* falls in North West and North Aspects. The remaining area falls in East, West and South West Aspects. Soil texture is loamy with loose stone. Soil consistency is slightly compact. Soil is black in colour with medium depth. Three perennial streams are located in and around of this forest. Phudwah Rangbeit stream constitutes western boundary and Phudwah stream constitutes its northern boundary. Phudwah Khnanglur stream originates from this forest.

Winter season starts from end of October and lasts till March of the next year. It receives high rainfall during the monsoon season from April to September. Average temperature varies from 7°C to 25°C.

3.15.4 Forest Type:

As per the Champion and Seth classification (1968), forests found in the sacred grove are of the ***Type 8B/C2 Khasi Sub-Tropical Wet Hill Forest.***

3.15.5 Forest Cover:

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun, forest cover in the *Law Adong Wahsier at Swer* is as below:

Forest Cover	**Area (ha.)**	**% of total Area**
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	26.48	76.33
Open Forest (10% - 40%)	1.60	4.62
Scrub Forest (<10%)	0	0
Non-Forest	6.61	19.05
Total	**34.69**	**100**

3.15.6 Flora and Fauna:

The *Law Adong Wahsier at Swer* is home to three-storeyed dense virgin forest of natural origin. *Lithocarpus ferestrata, Litsaea meissneri and Itea chinensis* are respectively the 1st, 2nd and 3rd dominant. The forest is home to many rare, endangered and endemic plants species.

3.15.6.1 Flora species:

Table 3.15.1: Trees found in Law *Adong Wahsier*

Sl No.	Botanical Name	Local Name	Family
1.	*Alstonia scholaris*	*Dieng jyrtieng*	*Apocynaceae*
2.	*Aralia armata*	*Dieng latymphu*	*Araliaceae*
3.	*Betula alnoides*	*Dieng lieng*	*Belutaceae*
4.	*Camelia caduca*	*Dieng tyrnem*	*Fagaceae*
5.	*Carpinus viminea*	*Dieng sohpaitrisang*	*Belutaceae*
6.	*Castanopsis armata*	*Dieng sning*	*Fagaceae*
7.	*Castanopsis indica*	*Dieng sohot*	*Fagaceae*
8.	*Cinnamomum bejolghota*	*Dieng latyrdop*	*Lauraceae*
9.	*Cinnamomum pauciflorum*	*Dieng torthia/tyrthia*	*Lauraceae*
10.	*Coixla crymajobi*	*Dieng lasohriew*	*Poaceae*
11.	*Citrus latipes*	*Dieng sohkynphor*	*Rutaceae*
12.	*Corylopsis himalayana*	*Dieng piur*	*Hamamelidaceae.*
13.	*Debregeasi longifolia*	*Dieng tyrsimmaw*	*Urticaceae*
14.	*Diospyros lanceifolia*	*Dieng thang*	*Ebenaceae.*
15.	*Docynia indica*	*Dieng sohphohkhasi*	*Rosaceae*
16.	*Elaeagnus pyriformis*	*Dieng sohkhlur*	*Elaeagnaceae*
17.	*Elaeocarpus lanceaefolios*	*Dieng sohkhyllam*	*Elaeocarpaceae*
18.	*Elaeocarpus robusta*	*Dieng lasaw*	*Elaeocarpaceae*
19.	*Engelhardia spicata*	*Dieng lymba*	*Juglandaceae*
20.	*Eugenia aquea*	*Dieng sohlwa*	*Myrtaceae*
21.	*Eugenia jambolana*	*Dieng sohum*	*Myrtaceae*
22.	*Eurya acuminata*	*Dieng sohpyrsit*	*Theaceae*
23.	*Ex-Bucklandia populnea*	*Dieng doh*	*Hamamelidaceae*
24.	*Ficus hispida*	*Dieng sohshiat/sohlapong*	*Moraceae*
25.	*Garcinia anomala*	*Dieng sohkwang*	*Clusiaceae*
26.	*Grewia abutilifolia*	*Dieng sohmeblang*	*Tiliaceae*
27.	*Ilex venulosa*	*Dieng lalieh/shyieng*	*Aquifoliaceae*
28.	*Ilex spp*	*Dieng sohlarmaw*	*Aquifoliaceae*
29.	*Itea chinensis*	*Dieng sohsyrtet*	*Iteaceae*
30.	*Lithocarpus fenestrata*	*Dieng jing*	*Fagaceae*

31.	*Litsaea meissneri*	*Dieng sohrang*	*Anacardiaceae*
32.	*Macaranga denticulata*	*Dieng lakhar*	*Euphorbiaceae*
33.	*Macaranga spp*	*Dieng thalapmasi*	*Euphorbiaceae*
34.	*Macropanax undulatus*	*Dieng jarasi/laronsei*	*Araliaceae*
35.	*Meliosma pinnata*	*Dieng krot*	*Sabiaceae*
36.	*Michelia punduana*	*Dieng sohniar*	*Magnoliaceae*
37.	*Morinda augustifolia*	*Dieng synrei/stem*	*Rubiaceae*
38.	*Myrica esculenta*	*Dieng sohphie*	*Myricaceae*
39.	*Myrica indica*	*Dieng sohliya*	*Myricaceae*
40.	*Photinia integrifolia*	*Dieng sohlarmaw*	*Rosaceae*
41.	*Pinus khasiana/kesiya*	*Dieng kseh*	*Pinaceae*
42.	*Pithecellboiu heterophylum*	*Dieng iapiar*	*Fabaceae.*
43.	*Pittosporum nepaulense*	*Dieng jalu*	*Pittosporaceae*
44.	*Pyrus pashia*	*Dieng sohshur*	*Rosaceae*
45.	*Quercus dealbata*	*Dieng sai*	*Fagaceae*
46.	*Quercus spp*	*Dieng tyrniang/lambyrkaw*	*Fagaceae*
47.	*Rhododendron arboreum*	*Dieng tiewsaw*	*Ericaceae*
48.	*Rhus chinensis*	*Dieng sohma*	*Anacardiaceae*
49.	*Saurauia punduana*	*Dieng jalngap*	*Actinidiaceae*
50.	*Saurauia roxburghii*	*Dieng lympied*	*Actinidiaceae*
51.	*Schefflera wallichiana*	*Dieng latyngkieng*	*Araliaceae.*
52.	*Schima khasiana*	*Dieng ngan*	*Theaceae*
53.	*Smilax glabra*	*Dieng krot*	*Smilacaceae*
54.	*Stercularia spp*	*Dieng tluhsyieng*	*Malvaceae*
55.	*Symplocos khasiana*	*Dieng pei*	*Symplocaceae*
56.	*Symplocos perifolia*	*Dieng pei lieh*	*Symplocaceae*
57.	*Symplocos paniculate*	*Dieng jamiiang*	*Symplocaceae*
58.	*Symplocos theoefolia*	*Dieng pei iong*	*Symplocaceae*
59.	*Vaccinium grifitheanum*	*Dieng sohryngkham*	*Ericaceae*
60.	*Wendlandia wallichii*	*Dieng shadmoit*	*Rubiaceae*

Table 3.15.2: Shrubs found in *Law Adong Wahsier*

Sl No.	Local Name	Botanical Name	Family
1.	*Lajaremlieh*	*Clerodendrum viscosum*	*Verbenaceae*
2.	*Dieng sohniangriangblei*	*Citrus spp*	*Rutaceae*
3.	*Dieng lasisia*	*Cinnamomum spp*	*Lauraceae*
4.	*Dieng smaw*	*Photinia spp*	*Rosaceae*
5.	*Dieng sohtait*	*Spondias spp*	*Anacardiaceae*
6.	*Dieng eitmiang*	*Viburnum spp*	*Adoxaceae*
7.	*Dieng soh pyrsit*	*Eurya acuminata*	*Theaceae*
8.	*Dieng sohjabuit*	*Phlogacanthus thyrsiflorus*	*Acanthaceae*
9.	*Jarem iong*	*Clerodendrum colebrookianum*	*Verbenaceae*

10.	Synsar	Thysanolaena maxima	Poaceae
11.	Kait khlaw	Musa acuminata	Musacaea
12.	Dieng rnong	Mahonia pycnophylla	Berberidaceae
13.	Soh lang	Viburnum foetidum	Caprifoliaceae
14.	Soh byrthit	Urena lobota	Malvaceae
15.	Dieng shadmoit	Wendlndia waliichi	Rubeceae
16.	Dieng sahmehblang	Grewia abutilifolia	Malvaceae
17.	Dieng jamiiang	Symplocos paniculata	Symplocaceae
18.	Dieng jing	Lithocarpus fenestrata	Fagaceae
19.	Dieng tyrnem	Camelia caudula	Theaceae

Table 3.15.3: Herbs found in *Law Adong Wahsier*

Sl No.	Local Name	Botanical Name	Family
1.	Slamet	Phrynium spp	Pubinevve
2.	Kynbationg	Ageratina spp	Adenophora
3.	Wang khlaw	Esculenta spp	Araceae
4.	Sla lamet	Phrynium spp	Marantaceae
5.	Shynraikhlaw	Alpinea alogus	Gingiberaceae
6.	Jajewlieh	Begonia spp	Begoniaceae
7.	Jajew maw	Begonia spp	Begoniaceae
8.	Soh byrthit	Urena lobata	Malvaceae
9.	Soh pangkhlieh	Lantana camara	Verbanaceae
10.	Tiew latdoh	Hedychium gracile	Zingiberaceae
11.	Soh ngangkhlaw	Solanum torvum	Solanaceae
12.	Khliang syiar	Centella asiatica	Apiaceae
13.	Kdaitumjew	Polygonum glabrum	Polygonaceae
14.	Long niang	Potentilla gracilis	Rosaceae
15.	La shing	Curcuma spp	Zingiberaceae
16.	Sying khlaw	Zingiber purpureum	Zingiberaceae
17.	Soh krismas	Sarcandra glabra	Chloranthaceae
18.	Soh byrthitrit	Sida rhombijolia	Rosaceae
19.	Tiew sying maw	Gingiber purpureum	Zingiberaceae
20.	Phud wang	Colocasia spp	Araceae
21.	Wang um	Hamolomina aromatica	Araceae

Table 3.15.4: Climbers found in *Law Adong Wahsier*

Sl No.	Local Name	Botanical Name	Family
1.	*Pew shrieh*	*Hedera nepalensis*	*Araliaceae*
2.	*Sla kyndajyrmi*	*Pothos scandens*	*Araceae*
3.	*Dieng sohmatan/sohpdong*	*Stephania glabra*	*Menispermaceae*
4.	*Pew shrieh*	*Hedera nepalensis*	*Araliaceae*
5.	*Jyrmi niangsohpet*	*Asparagus filicinus*	*Asparagaceae*
6.	*Dieng sohmatan/sohpdong*	*Stephania glabra*	*Menispermaceae*
7.	*Sla kyndajyrmi*	*Pothosspp*	*Aralaceae*
8.	*Phan synreh*	*Dioscorea alata*	*Dioscoreaceae*
9.	*Dieng sohrengblang*	*Strophanthun wallichi*	*Apocynaceae*
10.	*Lapadong*	*Rhaphidophora spp*	*Araleceae*
11.	*Soh shangkhlor*	*Elaeagnus pyriformis*	*Elaeagnaceae*
12.	*Phan jyrmi*	*Stephania glabra*	*Liliaceae*
13.	*Tympewkhlaw*	*Pipper spp*	*Peppereceae*
14.	*Loapla*	*Rhaphidophora decursiva*	*Araceae*
15.	*Soh krot*	*Smilax zeylanica*	*smilacaceae*

Table 3.15.5: Orchids found in *Law Adong Wahsier*

Sl No.	Local Name	Botanical Name	Family
1.	*Dieng tiewkait*	*Anaphalis adnata*	*Orchidaceae*
2.	*Dieng tiewmationg*	*Dendrobium chrysanthum,*	*Orchidaceae*
3.	*Dieng lyngskaw*	*Dendrobium densiflorum*	*Orchidaceae*
4.	*Dieng klong ramsong*	*Cymbidium longifolium*	*Orchidaceae*
5.	*Talong khnai*	*Oberonia obcordata*	*Orchideceae*
6.	*Tlong khnai*	*Oberoniajen kinsiana*	*Orchideceae*
7.	*Tiew pawanglum*	*Arundina graminifolia*	*Orchideceae*
8.	*Tiew dohmaw*	*Anoectochilus brevilabris*	*Orchideceae*
9.	*Tiew dohmaw*	*Anoectochilus roxburghii*	*Orchideceae*
10.	*Dieng tiewdieng*	*Aeschynanthus spp*	*Orchideceae*
11.	*Dieng tiewdieng*	*Micropera manii*	*Orchideceae*
12.	*Dieng tiewdieng*	*Dendrobium aphyllum*	*Orchideceae*
13.	*Knupmawiang*	*Paphiopedium insigne*	*Orchideceae*
14.	*Tiew mationg*	*Dendrobium chrysanthum*	*Orchideceae*
15.	*Syntiew die*	*Bulbophyllum cylindraceum*	*Orchideceae*

Table 3.15.4: Climbers found in *Law Adong Wahsier*

Sl No.	Local Name	Botanical Name	Family
1.	*Kynbatsohmynkea*	*Cardamine debilis*	*Cruciferae*
2.	*Sohned bah*	*Rubus rogosus*	*Rosaceae*
3.	*Tmain Khla*	*Lycopodoum cernuum*	*Lycopodiaceae*
4.	*Sohned bah*	*Rubus rogosus*	*Rosaceae*
5.	*Sla kyndajyrmi*	*Pothos spp*	*Aralaceae*
6.	*Phan synreh*	*Dioscorea alata*	*Dioscoreaceae*
7.	*Dieng sohrengblang*	*Strophanthun wallichi*	*Apocynaceae*
8.	*Lapadong*	*Rhaphidophora spp*	*Araleceae*
9.	*Soh shangkhlor*	*Elaeagnus pyriformis*	*Elaeagnaceae*
10.	*Pew shrieh*	*Hedera nepalensis*	*Araliaceae*
11.	*Tympewkhlaw*	*Pipper spp*	*Peppereceae*
12.	*Jyrmikynsiew*	*Argyreia nervosa*	*Convolvulaceae*

Table 3.15.7: Grasses found in *Law Adong Wahsier*

Sl No.	Local Name	Botanical Name	Family
1.	*Lang tylli*	*Arundinella khasiana*	*Poaceae*
2.	*Phlangtynsok*	*Ponium maximum*	*Poaceae*
3.	*Phlangphreit*	*Cymbopogon exsertus*	*Poaceae*
4.	*Lasier*	*Corex spiculata*	*Poaceae*
5.	*Synsar*	*Thysanolaena maxima*	*Poaceae*

Table 3.15.8: Ferns found in *Law Adong Wahsier*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhang iong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodalio*
5.	*Tyrkhang*	*Diplazium esculentum*	*Athyriaceae*

Table 3.15.9: Bamboos & Canes found in *Law Adong Wahsier*

Sl No.	Local Name	Botanical Name	Family
1.	*Sylli*	*Melocama baicifera*	*Bambooceae*
2.	*Thri saw*	*Calamus leptospadex*	*Arecaceae*
3.	*Soh thri*	*Calamus erectus*	*Arecaceae*
4.	*Dieng thri*	*Areca wallichi*	*Arecaceae*
5.	*Shken*	*Bambusa pallida*	*Poaceae*

3.15.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Adong Wahsier* has been carried out so far. However, as per the local residents, presence of several wild animals such jungle fowls, barking deer, wild boars and numerous Aves, reptiles & amphibian species has been noted in this forest.

3.15.7 Growing Stock

As per the methodology described in Chapter-II, enumeration was carried out in 20% area of the forest as its area is more than 10 ha. In each sample plot all the trees having girth (over bark) at breast height more than 30 cm were enumerated by measuring their top height (in meters) and the girth (in centimetres) at breast height. Data collection during the enumeration were entered in Sacred Grove Description Form and Plot Enumeration Form. During the enumeration total 5,680 trees were found within 34 plots each of 0.2 ha size These include 895 *Lithocurpus fenestrata* (1st dominant), 566 *Ilex venulosa* (2nd dominant), 544 *Litsaea meissneri* (3rd dominant), and 3,675 trees of *the rest of the species*. Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each species for each of the 13 girth classes starting from 30-40 cm to 151 cm and above. Details of the same are given in Table: 3.15.10 & 3.15.11 below. As may be seen, total growing stock in this forest 8022.91 cubic metres.

Table 3.15.10:Species-wise Distribution of Growing Stock in different Girth Class

(cum)

Girth class (cm)	*Lithocarpus fenestrata* 1st dominant	*Ilex venulosa* 2nd dominant	*Litsaea meissneri* 3rd dominant	Rest of species	Growing stock in 34 sample plot	Growing stock in Entire Forest
30-40	15.14	15.69	5.38	58.01	94.22	471.64
41-50	32.78	31.96	14.34	111.31	190.39	953.03
51-60	39.56	41.7	19.97	128.56	229.80	1150.31
61-70	43.42	31.43	36.30	135.06	246.22	1232.50
71-80	27.80	21.39	38.65	112.00	199.84	1000.34
81-90	19.27	19.19	43.28	84.83	166.57	833.81
91-100	12.74	8.02	20.69	69.16	110.61	553.68
101-110	6.64	7.96	16.18	56.38	87.16	436.31
111-120	1.45	3.8	16.33	46.77	68.35	342.12
121-130	3.14	3.33	11.10	48.70	66.27	331.71
131-140	3.96	1.89	1.98	36.17	43.99	220.22
141-150	4.36	0	6.70	17.92	28.98	145.05
151 & above	6.30	5.52		58.54	70.36	352.19
Total	**216.55**	**191.88**	**230.89**	**963.41**	**1602.73**	**8022.91**

Figure 3.15.1: Girth class-wise Growing Stock in Entire Forest

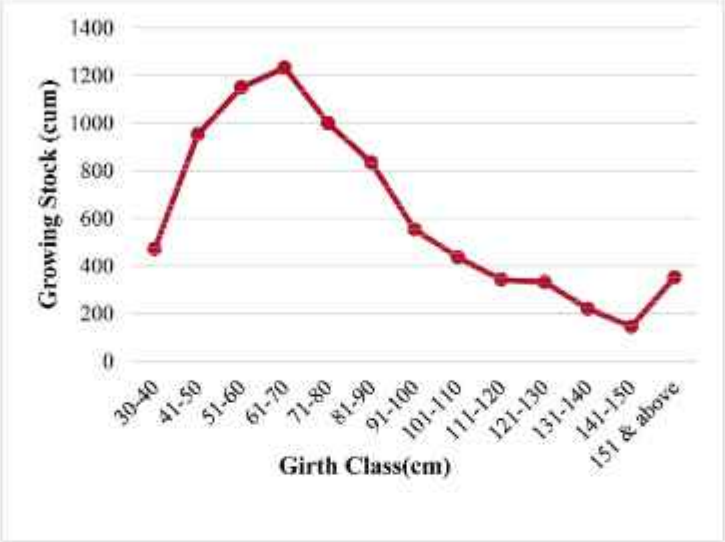


Table 3.15.11: Species-wise Distribution of Growing Stock in different Girth Classes in the Entire Forest

(cum)

Girth class (cm)	*Lithocarpus fenestrata* 1st dominant	*Ilex venulosa* 2nd dominant	*Litsaea meissneri* 3rd dominant	Rest of species	Total (for 34.69 ha^{2} area)	%wrt total volume
30-40	75.79	78.54	26.93	290.38	**471.64**	**6**
41-50	164.08	159.98	71.77	557.19	**953.03**	**12**
51-60	198.04	208.74	99.98	643.54	**1150.31**	**14**
61-70	217.37	157.33	181.72	676.08	**1232.50**	**15**
71-80	139.16	107.07	193.46	560.65	**1000.34**	**12**
81-90	96.48	96.06	216.63	424.64	**833.81**	**10**
91-100	63.75	40.15	103.58	346.20	**553.68**	**7**
101-110	33.25	39.85	80.98	282.23	**436.31**	**5**
111-120	7.26	19.02	81.72	234.12	**342.12**	**4**
121-130	15.70	16.67	55.56	243.78	**331.71**	**4**
131-140	19.80	9.46	9.90	181.06	**220.22**	**3**
141-150	21.80	0.00	33.55	89.70	**145.05**	**2**
151 & above	31.52	27.63	0.00	293.04	**352.19**	**4**
Total	**1084.00**	**960.51**	**1155.79**	**4822.61**	**8022.91**	
%wrt total volume	**13.47**	**11.93**	**14.36**	**59.92**		**100**

As may be seen,13.47% of the total growing stock is contributed by the 1st dominant species (*Lithocarpus fenestrata).* The 2nd dominant species (*Ilex venulosa*) constitutes 11.93% of the total growing stock. Similarly, the 3rd dominant species *(Litsaea meissneri)* constitutes 14.68 %, of the total growing stock. A major part of the growing stock i.e. 59.92 % is constituted by the rest of the species.

Figure 3.15.2:Girth Class wise Distribution of Growing Stock

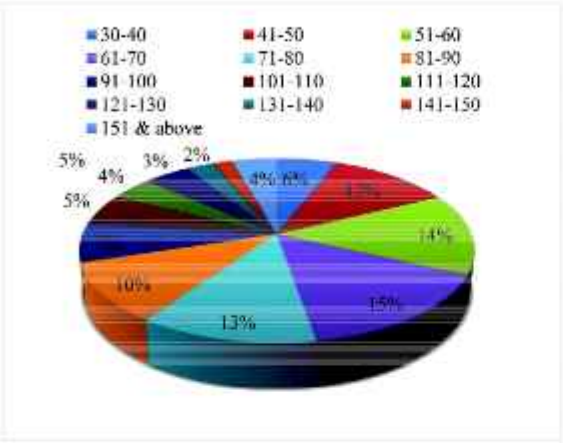


Figure 3.15.3: Species-wise Distribution of Growing Stock

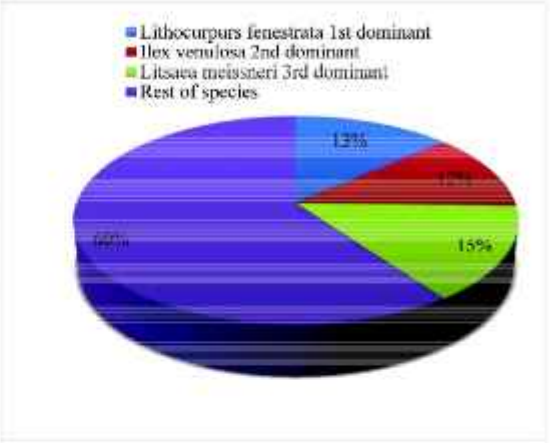


Figure 3.15.4:Girth Class wise Distribution of Growing Stock



Figure 3.15.5: Over view Law Adong *Wahsier*



3.15.8 Number of Stems

Species-wise number of stems in each girth class are given in table: 3.15.12 & 3.15.13 below. As may be seen maximum numbers of stems are found in lower girth classes i.e. from 30-40 cm to 91-100 cm. Number of stems are inversely proportional to mid-diameter of the girth class

Table 3.15.12: Species-wise Distribution of stems in Different Girth Classes in 34 Sample plots

(number of Stems)

Girth class (cm)	*Lithocarpus fenestrata* 1st dominant	*Ilex venulosa* 2nd dominant	*Litsaea meissneri* 3rd dominant	Rest of the species	Total
30-40	284	94	276	1123	1777
41-50	230	105	158	875	1368
51-60	158	79	71	617	925

61-70	114	95	26	413	648
71-80	53	73	5	249	380
81-90	27	60	3	145	235
91-100	14	23	1	86	124
101-110	6	14	0	57	77
111-120	1	12	1	36	50
121-130	2	7	2	30	41
131-140	2	1	1	19	23
141-150	2	3	0	8	13
151 & above	2	0	0	17	19
Total	**895**	**566**	**544**	**3675**	**5680**

Table 3.15.13: Species-wise No. of stems in Different Girth Classes in the Entire Forest

(number of stems)

Girth class (cm)	*Lithocarpus fenestrata* 1st dominant	*Ilex venulosa* 2nd dominant	*Litsaea meissneri* 3rd dominant	Rest of the species	Total
30-40	1422	471	1382	5621	8895
41-50	1151	526	791	4380	6848
51-60	791	395	355	3089	4630
61-70	571	476	130	2067	3244
71-80	265	365	25	1246	1902
81-90	135	300	15	726	1176
91-100	70	115	5	430	621
101-110	30	70	0	285	385
111-120	5	60	5	180	250
121-130	10	35	10	150	205
131-140	10	5	5	95	115
141-150	10	15	0	40	65
151 & above	10	0	0	85	95
Total	**4480**	**2833**	**2723**	**18396**	**28433**

Figure 3.15.2: Girth Class wise Distribution of Growing Stock

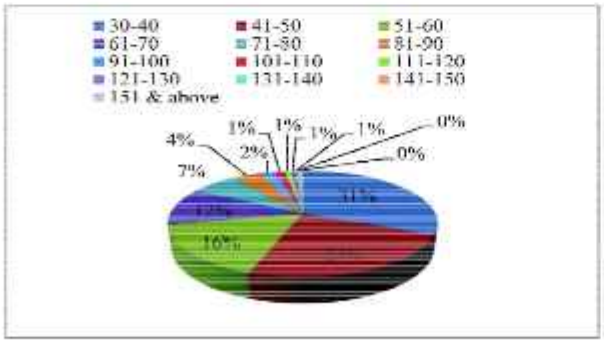


Figure 3.15.3: Species-wise Distribution of Growing Stock

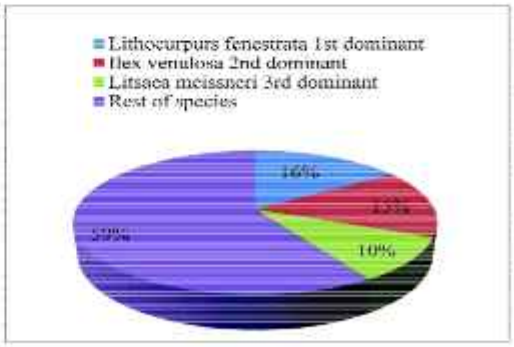


Figure 3.15.4:Girth Class wise Distribution of Growing Stock



Figure 3.15.5: Over view *Law Adong Wahsier*



3.15.9 Prescriptions for Future Management

3.15.9.1 Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Adong Wahsier* has not been registered with the KHADC. The CFO of the KHADC and the Village Dorbar of Wahsier may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Adong Wahsier* with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.15.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The Dorbar of Wahsier Sirdarship and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Law Adong Wahsier* as a Community Reserve.

3.15.9.3 Boundary Demarcation

Boundary of the *Law Adong Wahsier* has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachment. To prevent and to ensure early detection of

encroachments, boundary of the *Law Adong Wahsier*, wherever it is not constituted by natural features of permanent nature, such as rivers or streams or hill ridges may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.15.9.4 Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India, during a period of 22 years (2002 -2023) no fire incident has occurred in the *Law Adong Wahsier*. As per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Adong Wahsier* is moderately vulnerable to forest fires. However, as per the said information system, a major part of the *Law Adong Wahsier* is not prone to forest fire. To prevent damage to the *Law Adong Wahsier* from accidental forest fires, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Adong Wahsier* and engagement of fire watchers during the critical months may be taken.

3.15.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench etc. may be constructed at suitable locations in the *Law Adong Wahsier*

3.15.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Adong Wahsier* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath, walking trail, sign board, washrooms *etc.* may be constructed to attract tourists.

3.15.9.7 Restocking of Open Degraded Areas

Efforts may be made to restock the open degraded patches in the *Law Adong Wahsier* by assisting and promoting natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.15.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Adong Wahsier* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Adong Wahsier*.

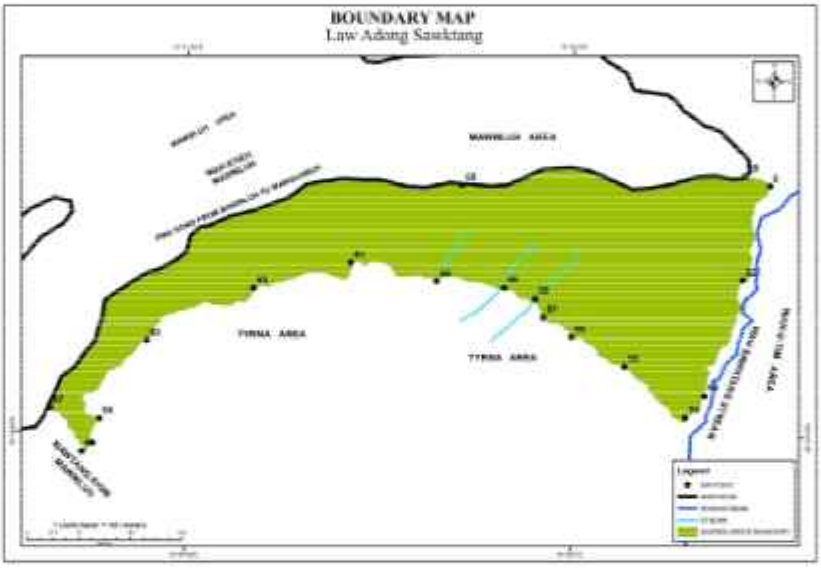
3.15.9.9 Awareness Campaign

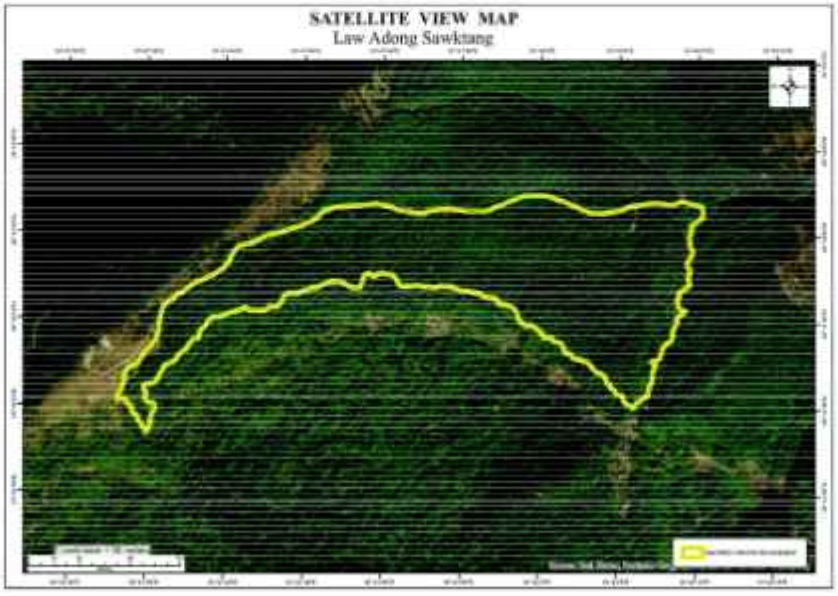
The *Law Adong Wahsier* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

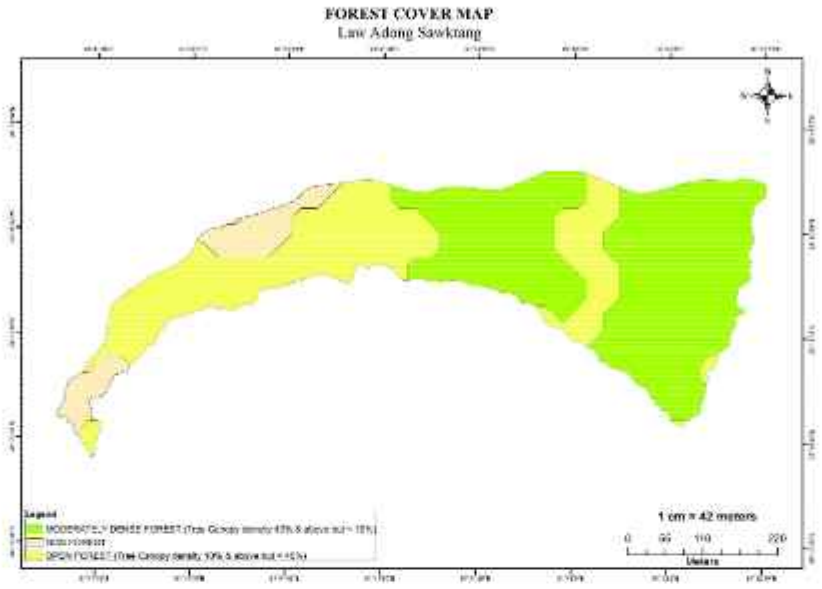
3.16. *LAW ADONG SAWKTANG*

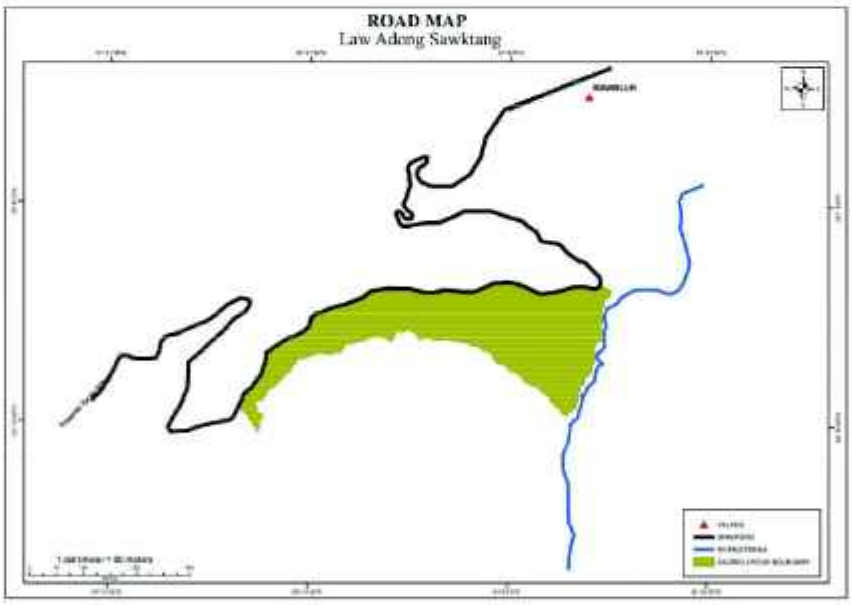
3.16.1 Location

Law Adong Sawktang is situated in East Khasi Hills District of Meghalaya at Mawmluh village under the Mawmluh Sirdarship. It covers an area of 18.526 ha. It lies between 25° 14' 39" to 25° 14' 52" N latitude and 91° 41' 33" to 91° 42' 10" E Longitude with an altitude of 1108 m above mean sea level. It is bounded in the North by PWD road (from Mawmluh to Mawshamok), in the East by Wah Sawktang stream, in the South by Tyrna area and in the West by PWD road (from Mawmluh to Mawshamok). The forest is accessible by road from Shillong to Mawmluh which is about 58 km.





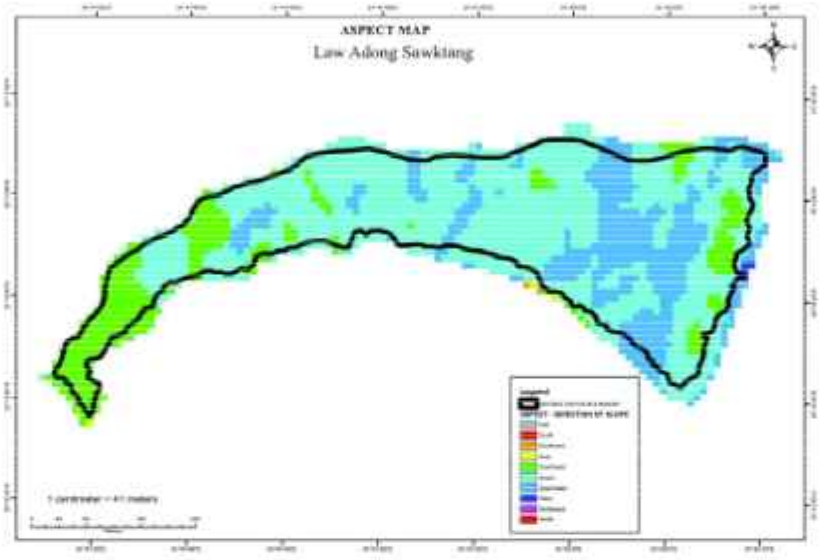


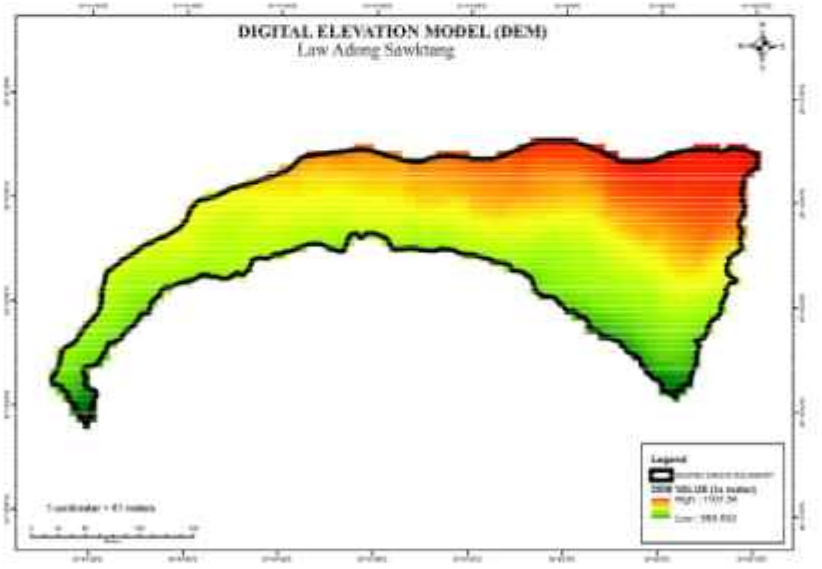


3.16.2 Brief History

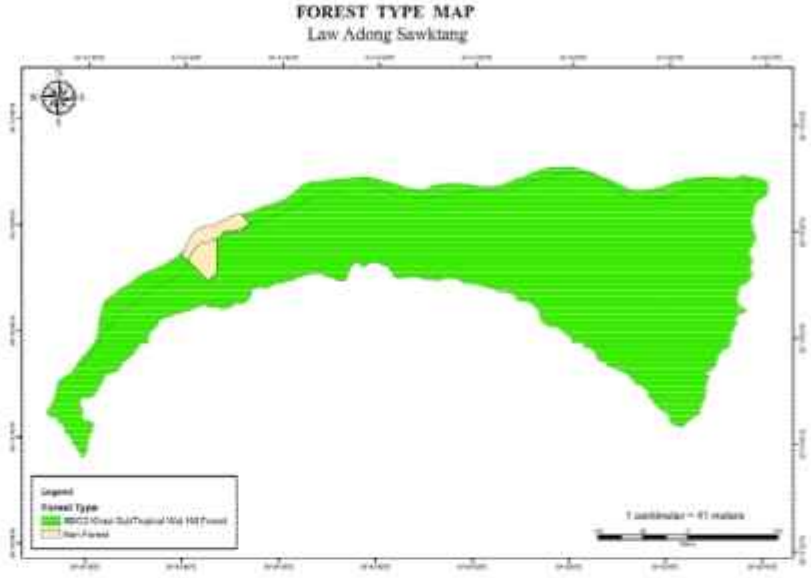
Law Adong Sawktang is in existence since time immemorial. Presently there is very little religious significance of this forest. The forest is owned, managed and administered by the Sirdarship of Mawmluh under the supervision and control by the Sirdar elected by the villagers. The ecological significant of the sacred grove is still upheld by the village. The scenic beauty of the locale provides a fillip to the ecological richness of the forest. The rich biological diversity and the beauty of the

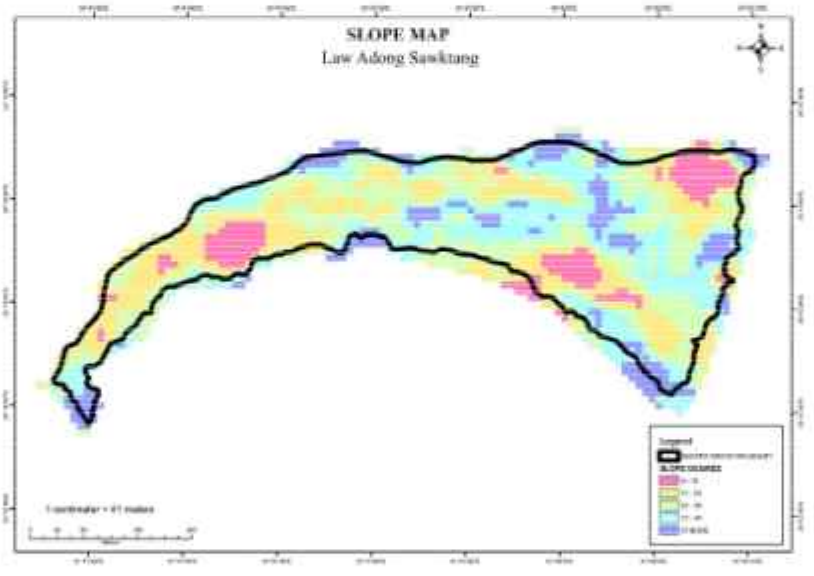
locale will give an impetus to the eco-tourism. Felling of green trees is strictly prohibited and punishable under the customary rules framed by the village Dorbar.





Incidences of wildfire has occurred in this area. Biotic pressures such encroachment are reported to be absent. Encroachment, wild fire, hunting & poaching, grazing and illegal felling of trees are prohibited.





3.16.3 Geography and Climate

Topography of the *Law Adong Sawktang* is hilly in nature with slope varying from 0.30° to 42°. Major part of the *Law Adong Sawktang* falls in South and South West Aspects. Small area in this forest falls in South East Aspect. The soil texture is sandy-loam with boulder and gravel fragments. Soil consistency is slightly compact. The colour of the soil is brown and soil depth is shallow. Numerous seasonal streams flow from this forest.

Winter season starts from end of October and lasts till March of the next year. It receives high rainfall during the monsoon season from April to September. Average temperature varies from 7°C to 25°C.

3.16.4 Forest Type

As per the Champion and Seth classification (1968), forests found in the sacred grove are of the ***Type Sub 8B/C2 Khasi Sub-tropical Wet Hill Forest***.

3.16.5 Forest Cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun, forest cover in the *Law Adong Sawktang* is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)		
Moderately Dense Forest (40 %-70 %)	9.53	51.46
Open Forest (10% - 40%)	6.64	35.85
Scrub Forest (<10%)		
Non-Forest	2.35	12.69
Total	**18.52**	**100**

3.16.6 Flora and Fauna

The *Law Adong Sawktang* is home to three storeyed dense virgin forest of natural origin. *Elaeocarpus robusta* species and *Lithocarpus fenestratrus* as 1st and 2nd dominant tree species. The forest is home to many rare, endangered and endemic plant species.

3.16.6.1 Flora species

Table 3.16.1: Trees found in *Law Adong Sawktang*

Sl No.	Local Name	Botanical Name	Family
1	*Dieng tyrkhum*	*Acer laevijatum*	*Fabaceae*
2	*Dieng sohriew*	*Albizzia procera*	*Fabaceae*
3	*Dieng jyrtieng*	*Alstonia scholaris*	*Apocynaceae*
4	*Dieng latymphu*	*Aralia montana*	*Araliaceae*
5	*Dieng lieng*	*Betula alnoides*	*Belutaceae*
6	*Dieng tyrnem*	*Camelia caduca*	*Fagaceae*
7	*Dieng tlai*	*Caryota urens*	*Arecaceae*
8	*Dieng sning*	*Castanopsis armata*	*Fagaceae*
9	*Dieng sning*	*Castanopsis hystric*	*Fagaceae*
10	*Dieng sohpaitrisang*	*Carpinus viminea*	*Betulaceae*
11	*Dieng patuia*	*Castanopsis spp*	*Fagaceae*
12	*Dieng torthia*	*Cinnamomum pauciflorum*	*Lauraceae*
13	*Dieng latyrdop*	*Cinnamomum vejolghota*	*Lauraceae*
14	*Dieng jajew*	*Cissus ripens*	*Vitaceae*
15	*Dieng sohrang*	*Drimys carpusracemosus*	*Anacardiaceae*

16	Dieng sohkhyllam	Elaeocarpus lanceaefolios	Elaeocarpaceae
17	Dieng lasaw	Elaeocarpus robusta	Elaeocarpaceae
18	Dieng lymba	Engelhardia spicata	Juglandaceae
19	Dieng sohliwa	Eugenia aquea	Myrtaceae
20	Dieng sohum	Eugenia jambolana	Myrtaceae
21	Dieng shit	Eurya accuminata	Theaceae
22	Dieng mih dud	Ficus spp	Moraceae
23	Dieng jri	Ficus spp	Moraceae
24	Dieng sohlwang	Garcinia anomla	Clusiaceae
25	Dieng sohmehblang	Grewia abitilifolia	Tilacaea
26	Dieng jalamut	Hypericum patuluana	Hypericaceae
27	Dieng jakrai	Ilex griffithii	Aquifoliaceae
28	Dieng sohshyieng	Ilex venolosa	Aquifoliaceae
29	Dieng sohsyrtet	Itea chinensis	Iteaceae
30	Dieng lapyllon/myllon	Itea macrophylla	Iteaceae
31	Dieng sohshrieh/sohkynphorshrieh	Knema linifolia	Myristicaceae
32	Dieng sohpaiat	Ligustrum lucidium	Oleaceae
33	Dieng ri	Lithocarpus fenestrata	Fagaceae
34	Dieng lakhar	Macaranga denticulata	Euphoribiaceae
35	Dieng thyllapmasi	Macaranga spp	Euphoribiaceae
36	Dieng sohiong	Mahonia ccanthifolia	Berberidaceae
37	Dieng laniar	Michelia oblonga	Magnoliaceae
38	Dieng sohphie	Myrica esculenta	Myricaceae
39	Dieng shlan	Pandanus american	Pandanaceae
40	Dieng tyllongrangsei	Pantapanax racemasmum	Araliaceae
41	Dieng sasia	Pasania fenestratus	Fagaceae
42	Dieng sohlarmaw/snam maw	Photinia integrifolia	Rosaceae
43	Dieng ngan	Schima khasiana	Theaceae
44	Dieng rmiew/ryniew	Sterculia velosa	Sterculiaceae
45	Dieng iong	Symplocos chinensis	Symplocaceae
46	Dieng shira	Vaccinium serretum	Ericaceae
47	Dieng sohphlang	Walsura robusta	Meliaceae
48	Dieng shadmoit	Wendlandia wallichiii	Rubiaceae
49	Dieng shiah	Zanthoxylum ovalifolium	Rutaceae

Table 3.16.2: Shrubs found in *Law Adong Sawktang*

Sl No.	Local Name	Botanical Name	Family
1.	Dieng tyrnem	Camelia caudula	Theaceae
2.	Soh shiah	Zanthoxylum ovalifolium	Rosaceae
3.	Shylla	Caryota densifloram	Arecaceae
4.	Dieng pyrshit	Eurya acuminata	Pentaphylacaceae
5.	Dieng shadmoid	Wendlandia wallichii	Rubiaceae

6.	Dieng thri	Areca wallichii	Arecaceae
7.	Soh eitblang	Elaeocarpus prunifolius	Elaeocarpaceae
8.	Dieng sohlarmaw	Photinia integrifolia	Rosaceae
9.	Dieng lasan	Itea macrophylla	Iteaceae
10.	Dieng jakhi	Strobilanthus spp	Acanthaceae
11.	Dieng tyrnemkynthei	Lagerstroemia spp	Lythraceae
12.	Dieng shlan	Pandanus odoratissimus	Pandanaceae
13.	Soh lwa	Eugenia aquae	Myrtaceae
14.	Soh tynriew	Calamus erectus	Arecaceae
15.	Dieng sohlang	Viburnum spp	Adoxaceae
16.	Dieng slashira	Vaccinium serretum	Ericaceae
17.	Dieng sohlaper	Wild areca nut	Arecaceae

Table 3.16.3: Herbs found in *Law Adong Sawktang*

Sl No.	Local Name	Botanical Name	Family
1.	Soh byrthit	Urena lobota	Malvaceae
2.	Sla lamut	Phrynium plecentrum	Marantaceae
3.	Wang khlaw	Esculenta spp	Araceae
4.	Sla lamet	Phrynium pubinerve	Morantaceae
5.	Shynraikhlaw	Alpinia spp	Gingiberaceae
6.	Sla waitlam	Asplenium nidus	Aspliniaceae
7.	Soh trunshiah	Ananus spp	Bromiliaceae
8.	Phud wang	Colocasia spp	Araceae
9.	Soh pangkhlieh	Lantana camara	Verbenaceae
10.	Tiew latdoh	Hedychium gracile	Zingiberaceae
11.	Soh ngangkhlaw	Solanum torvum	Solanaceae
12.	Khliangsyiar	Centella asiatica	Apiaceae
13.	Kdaitumjew	Polygonum glabrum	Polygonaceae
14.	Long niang	Potentilla gracilis	Zingiberaceae
15.	La shing	Curcuma spp	Zingiberaceae
16.	Sying khlaw	Zingiber purpureum	Zingiberaceae
17.	Soh krismas	Sarcandra glabra	Chloranthaceae

Table 3.16.4: Climbers & Creepers found in *Law Adong Sawktang*

Sl No.	Local Name	Botanical Name	Family
1.	Sla kynda jyrmi	Pothos spp	Aralaceae
2.	Phan synreh	Dioscorea alata	Dioscoreaceae
3.	Dieng sohrengblang	Strophanthun wallichi	Apocynaceae
4.	Lapadong	Rhaphidophora spp	Araleceae
5.	Soh shangkhlor	Elaeagnus pyriformis	Elaeagnaceae
6.	Pew shrieh	Hedera nepalensis	Araliaceae

7.	*Tympew khlaw*	*Pipper spp*	*Peppereceae*
8.	*Loapla*	*Rhaphidophor adecursiva*	*Araceae*
9.	*Jyrmi kynsiew*	*Argyreia nervosa*	*Convolvulaceae*
10.	*Soh krot*	*Smilax zeylanica*	*Smilacaceae*
11.	*Tmainkhla*	*Lycopodiella cernua*	*Lycopodiaceae*

Table 3.16.5: Orchids found in *Law Adong Sawktang*

Sl No.	Local Name	Botanical Name	Family
1.	*Talong khnai*	*Oberonia obcordata*	*Orchideceae*
2.	*Tlong khnai*	*Oberonia mannii*	*Orchideceae*
3.	*Tiew pawanglum*	*Arundina graminifolia*	*Orchideceae*
4.	*Tiew dohmaw*	*Anoectochilus brevilabris*	*Orchideceae*
5.	*Tiew dohmaw*	*Anoectochilus roxburghii*	*Orchideceae*
6.	*Dieng tiewdieng*	*Aeschynanthus spp*	*Orchideceae*
7.	*Dieng tiewdieng*	*Micropera manii*	*Orchideceae*
8.	*Dieng tiewdieng*	*Dendrobium aphyllum*	*Orchideceae*
9.	*Knupmawiang*	*Paphiopedium insigne*	*Orchideceae*
10.	*Tiew mationg*	*Dendrobium chrysanthum*	*Orchideceae*

Table 3.16.6: Bamboos & Canes found in *Law Adong Sawktang*

Sl No.	Local Name	Botanical Name	Family
1.	*Slasohthri*	*Calamus ratang*	*Aracaceae*
2.	*Spit/spar*	*Chimonobambusa callosa*	*Poaceae*
3.	*Sylli*	*Melocama baicifera*	*Poaceae*
4.	*Skhen*	*Bambusa palida*	*Poaceae*
5.	*Thri saw*	*Calamus leptospadex*	*Aracaceae*
6.	*Soh thri*	*Calamus erectus*	*Aracaceae*

Table 3.16.7: Grasses found in *Law Adong Sawktang*

Sl No.	Local Name	Botanical Name	Family
1.	*Lang tylli*	*Arundinella khasiana*	*Poaceae*
2.	*Phlangtynsok*	*Ponium maximum*	*Poaceae*
3.	*Phlangphreit*	*Cymbopogon exsertus*	*Poaceae*

Table 3.16.8: Ferns found in *Law Adong Sawktang*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhang iong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodalioceae*

3.16.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Adong Sawktang* has been carried out so far. However, as per the local residents, presence of several wild animals such asjungle fowls, wild boars, jackals, barking deer, pangolins, wild bears, and numerous species of birds, reptiles and various types of birds and reptiles has occurred in this forest.

3.16.7 Growing Stock

As per the methodology described in Chapter-II, enumeration was carried out in 20% area of the forest and its area is more than 10 ha. In each sample plot all the trees, having girth (over bark) at breast height more than 30 cm, is enumerated by measuring the top height (in meters) and the girth (in centimetres) at breast height. Data collected during the enumeration was entered in Sacred Groves Description Form and Plot Enumeration Form. During the enumeration total 3,581 trees were found within 18 plots, each of 0.2 ha size. These include of 373 *Elaeocarpus robusta* (1st dominant), 306 *Lithocarpus fenestrata* (2nd dominant), 304 *Castanopsis hystrix* (3rd dominant), 2,598 *rest of species*. Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each tree species of the 13 girth classes starting from 30-40 cm to 151 cm and above. Details of the same are given in the Table: 3.16.9 & 3.16.10 below. As may be seen, total growing stock in this forest is 38092.33 cubic metres.

Table 3.16.9: Species-wise Distribution of Growing stock in Different Girth classes

(cum)

Girth class (cm)	*Elaeocarpus robusta* 1st dominant	*Lithoscarpus fenestrata* 2nd dominant	*Castanopis hystrix* 3rd dominant	Rest of species	Total (for 3.70 ha aea)	Total (for 18.52 ha area)
30-40	8.529	6.914	4.002	1362.18	**1381.63**	**6915.59**
41-50	13.011	10.293	11.949	1412.55	**1447.8**	**7246.84**
51-60	13.487	14.294	18.517	1084.70	**1131**	**5661.10**
61-70	11.497	5.227	14.129	982.33	**1013.18**	**5071.39**
71-80	6.154	5.675	9.052	678.94	**699.821**	**3502.89**
81-90	7.488	6.821	4.201	495.08	**513.59**	**2570.73**
91-100	2.704	9.513	2.541	615.63	**630.388**	**3155.35**
101-110	3.587	2.36	3.311	226.61	**235.868**	**1180.61**
111-120	5.296	1.348	0.00	145.08	**151.724**	**759.44**
121-130	0.00	0.00	0.00	121.51	**121.51**	**608.21**
131-140	0.00	0.00	0.00	158.81	**158.81**	**794.91**
141-150	2.068	0.00	0.00	21.72	**23.788**	**119.07**
151 & above	0.00	0.00	0.00	101.13	**101.13**	**506.20**
Total	**73.821**	**62.445**	**67.702**	**7406.27**	**7610.24**	**38092.33**

Figure 3.16.1: Girth class wise Growing Stock in Entire Forest



Table 3.16.10: Species-wise Distribution of Growing Stock in Different Girth classes in the Entire Forest

(cum)

Girth class (cm)	*Elaeocarpus robusta* 1st dominant	*Lithoscarpus fenestrata* 2nd dominant	*Castanopis hystrix* 3rd dominant	Rest of species	Total (for 18.526 ha' area)	%wrt total volume
30-40	42.69	34.61	20.03	6818.26	**6915.59**	18
41-50	65.13	51.52	59.81	7070.39	**7246.84**	19
51-60	67.51	71.55	92.69	5429.36	**5661.10**	15
61-70	57.55	26.16	70.72	4916.96	**5071.39**	13
71-80	30.80	28.41	45.31	3398.37	**3502.89**	9
81-90	37.48	34.14	21.03	2478.08	**2570.73**	7
91-100	13.53	47.62	12.72	3081.48	**3155.35**	8
101-110	17.95	11.81	16.57	1134.27	**1180.61**	3
111-120	26.51	6.75	0.00	726.18	**759.44**	2
121-130	0.00	0.00	0.00	608.21	**608.21**	2
131-140	0.00	0.00	0.00	794.91	**794.91**	2
141-150	10.35	0.00	0.00	108.72	**119.07**	0
151 & above	0.00	0.00	0.00	506.20	**506.20**	1
Total	**369.50**	**312.56**	**338.88**	**37071.38**	**38092.33**	**100**
% wrt total volume	**0.97**	**0.82**	**0.89**	**97.32**	**100**	

As may be seen, 0.97% of the total growing stock is contributed by the 1st dominant species (*Elaeocarpus robusta*). The 2nd dominant species (*Lithoscarpus fenestrata*) constitutes 0.82 % of the total growing stock. Similarly, the 3rd dominant species *(Castanopis hystric)* constitutes 0.89 %of the total growing stock. A major part of the growing stock i.e.97.32 % is constituted by the rest of the species.

Figure 3.16.2 : Girth Class wise Distribution of Growing Stock

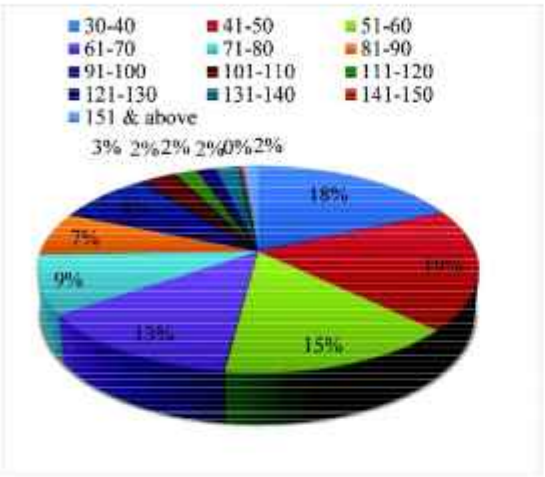


Figure 3.16.3: Species-wise Distribution of Growing Stock

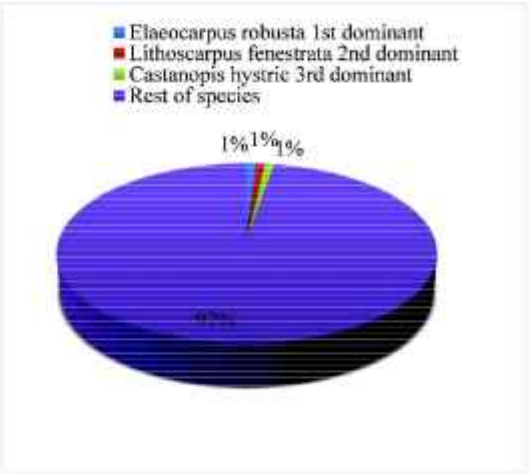


Figure 3.16.4:Girth Class wise Distribution of Growing Stock



Figure 3.16.5: Over view Law Adong Sawktang



3.16.8 Number of Stems

Species-wise number of stems in each girth class and are given in the Tables 3.16.11 & 3.16.12 below. As may be seen, maximum numbers of stems are found in lower girth classes *i.e.* from 30-40 cm to 71-80 cm. Number of stems are inversely proportional to mid-diameter of the girth class.

Table 3.16.11: Species wise Distribution of stems in Different Girth classes in 18 sample plots

(number of stems)

Girth class (cm)	*Elaeocarpus robusta* 1st dominant	*Lithoscarpus fenestrata* 2nd dominant	*Castanopis hystrix* 3rd dominant	Rest of the species	Total
30-40	162	124	77	1086	**1449**
41-50	93	74	85	671	**923**
51-60	53	60	75	336	**524**
61-70	31	14	38	217	**300**
71-80	12	11	17	114	**154**
81-90	11	10	6	64	**91**
91-100	3	10	3	63	**79**
101-110	3	2	3	19	**27**
111-120	4	1	0	10	**15**
121-130	0	0	0	7	**7**
131-140	0	0	0	8	**8**
141-150	1	0	0	1	**2**
151 & above	0	0	0	2	**2**
Total	**373**	**306**	**304**	**2598**	**3581**

Table 3.16.12: Species wise No. of stems in Different Girth Classes in the Entire Forest

(number of stems)

Girth class (cm)	*Elaeocarpus robusta* 1st dominant	*Lithoscarpus fenestrata* 2nd dominant	*Castanopis hystrix* 3rd dominant	Rest of the species	Total
30-40	811	621	385	5436	**7253**
41-50	466	370	425	3359	**4620**
51-60	265	300	375	1682	**2623**
61-70	155	70	190	1086	**1502**
71-80	60	55	85	571	**771**
81-90	55	50	30	320	**455**
91-100	15	50	15	315	**395**
101-110	15	10	15	95	**135**
111-120	20	5	0	50	**75**
121-130	0	0	0	35	**35**
131-140	0	0	0	40	**40**
141-150	5	0	0	5	**10**
151 & above	0	0	0	10	**10**
Total	**1867**	**1532**	**1522**	**13004**	**17924**

Figure 3.16.6:Number of stems in Different Girth Classes

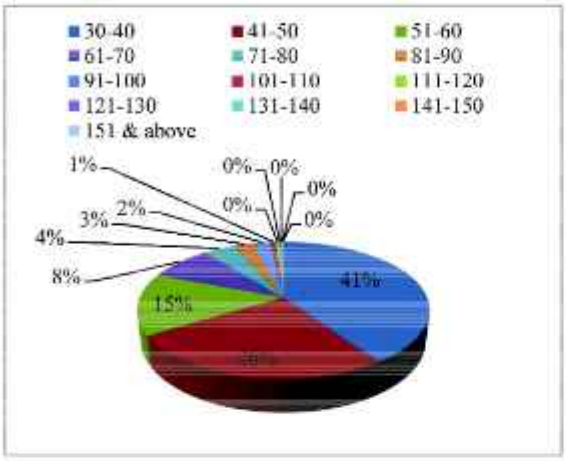


Figure 3.16.7: Species-wise Distribution of stems

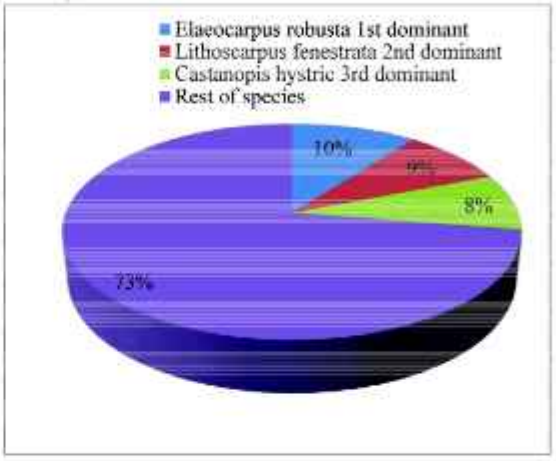


Figure 3.16.8 Figure

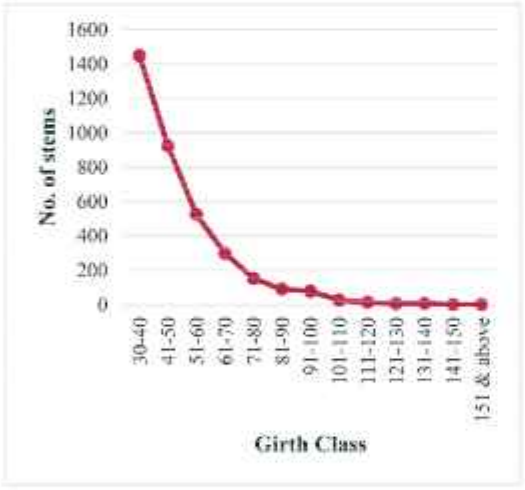


Figure 3.16.9: Over view Law Adong Sawktang



3.16.9 Prescriptions for Future Management

3.16.9.1Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Adong Sawktang* has not been registered with the KHADC. The CFO of the KHADC and the Village Dorbar of Sawktang may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Adong Sawktang* with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.16.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The Dorbar of *Sawktang* and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Law Adong Sawktang* as a Community Reserve.

3.16.9.3 Boundary Demarcation

Boundary of the *Law Adong Sawktang* has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachment. To prevent and to ensure early detection of encroachments, boundary of the *Law Adong Sawktang*, wherever it is not constituted by natural features of permanent nature, such as rivers or streams or hill ridges may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.16.9.4 Fire Protection

As per the Forest Fire Alert System maintained by the Forest Survey of India, during a period of 22 years (2002 -2023) no fire incident has occurred in the *Law Adong Sawktang*. As per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Adong Sawktang* is highly vulnerable to forest fires. However, as per the said information system, a major part of the *Law Adong Sawktang* is not prone to forest fire. To prevent damage to the *Law Adong Sawktang* from accidental forest fires, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Adong Sawktang* and engagement of fire watchers during the critical months may be taken.

3.16.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench etc. may be constructed at suitable locations in the *Law Adong Sawktang*

3.16.9.6 Creation of Eco-Tourism Facilities

Law Adong Sawktang is blessed with a scenic beauty, pleasant climate, rich biological diversity and abode of numerous caves. To create awareness about its rich biodiversity and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath, walking trail, sign board, washrooms *etc.* may be constructed to attract tourists.

3.16.9.7 Restocking of Open Degraded Areas

Efforts may be made to restock the open degraded patches in the *Law Adong Sawktang* by assisting and promoting natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.16.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Adong Sawktang* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Adong Sawktang*.

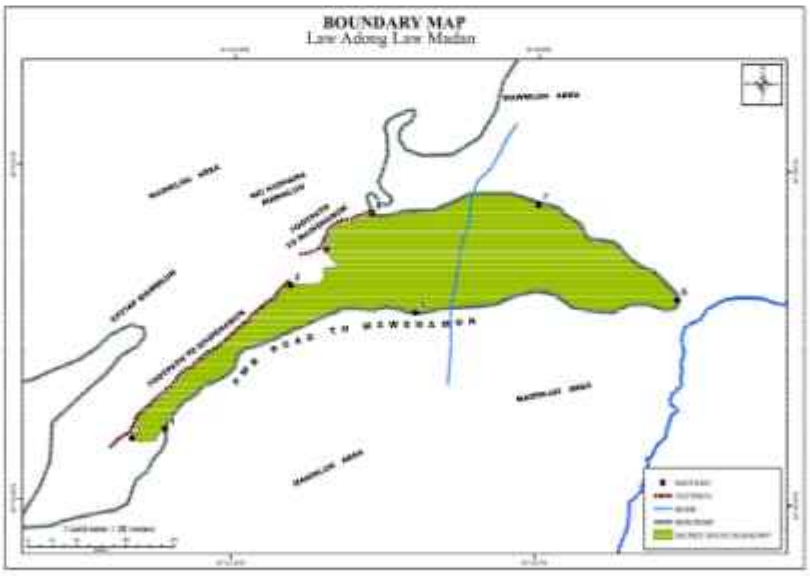
3.16.9.9 Awareness Campaign

The *Law Adong Sawktang* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

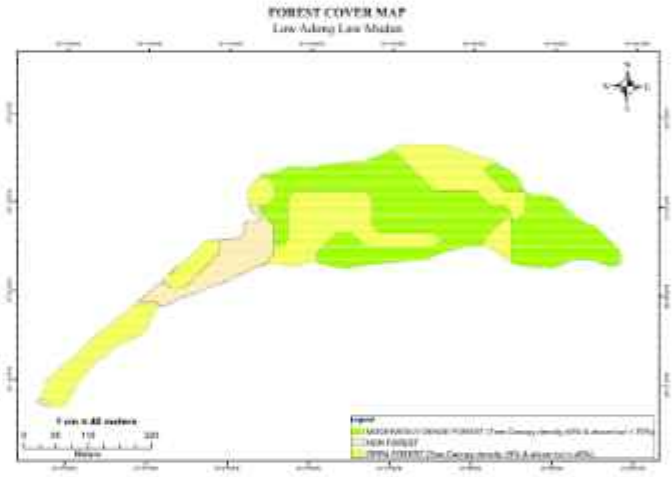
3.17. *LAW ADONG LAW MADAN*

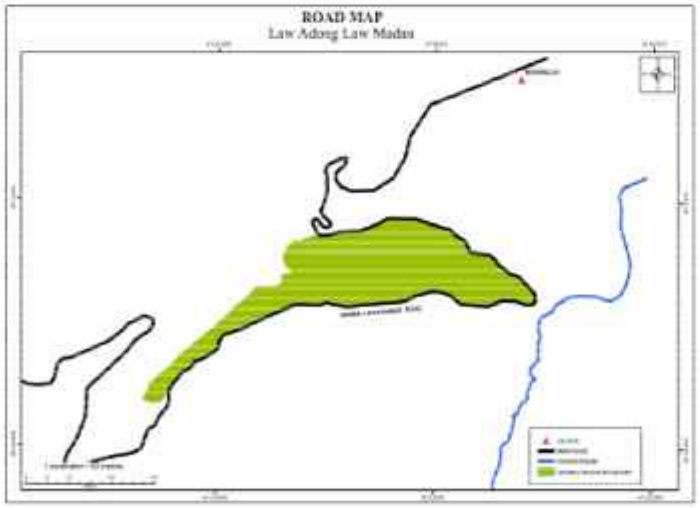
3.17.1 Location

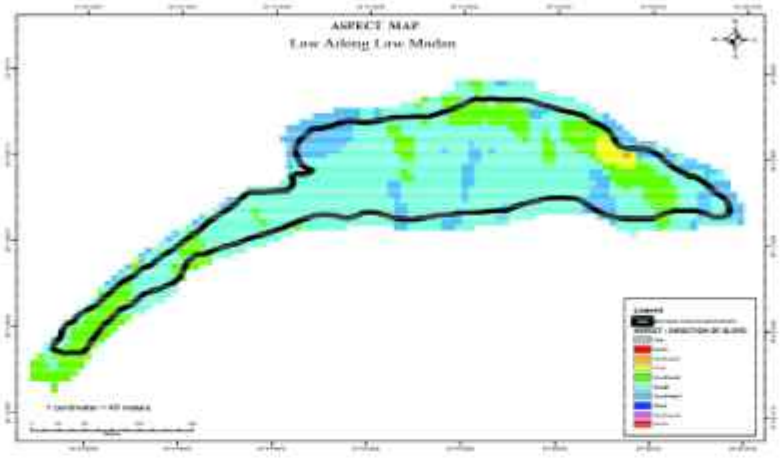
Law Adong Law Madan is situated in East Khasi Hills District of Meghalaya at Mawmluh village under the Mawmluh Sirdarship. It covers an area of 11.68 ha. It lies between 25° 14′ 44" to 25° 14′ 59" N latitude and 91° 41′ 34" to 91° 42′ 09" E Longitude with an altitude of 1,148 m above mean sea level. It is bounded by the Mawmluh-Mawshamok PWD road on the Northern, Eastern and Southern side, and in the West by footpath to Mawshamok. The forest is accessible by road from Shillong which is about 58 km.

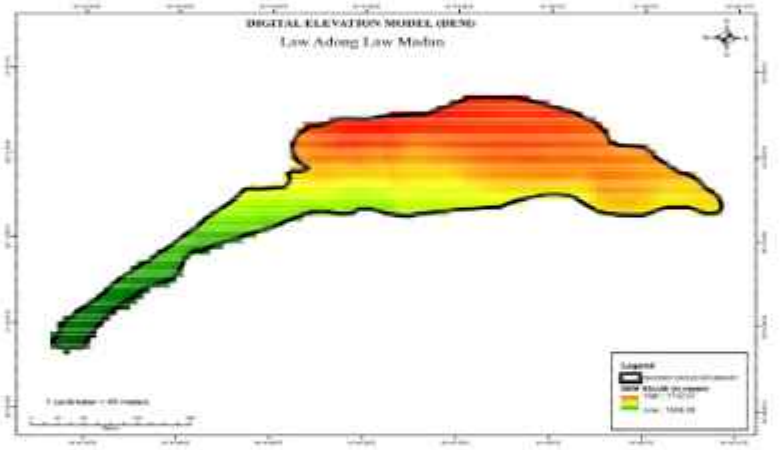



SATELLITE VIEW MAP
Law Adong Law Madan


FOREST COVER MAP
Law Adong Law Madan


ROAD MAP
Law Adong Law Madan

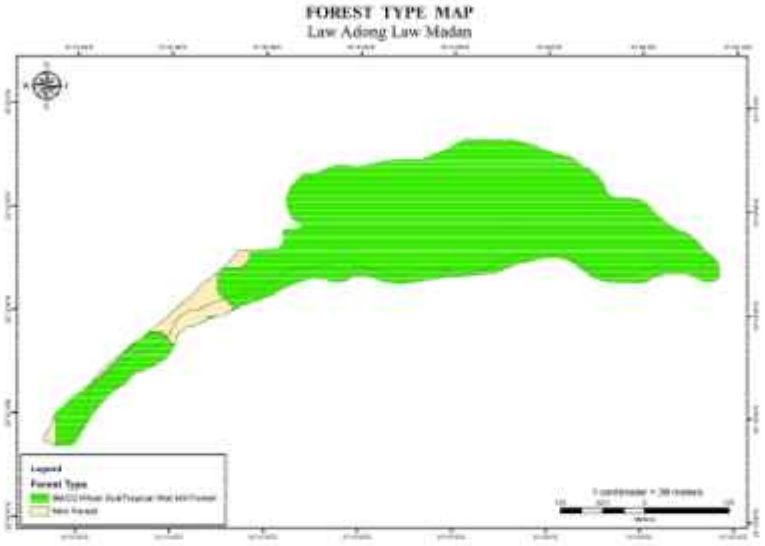


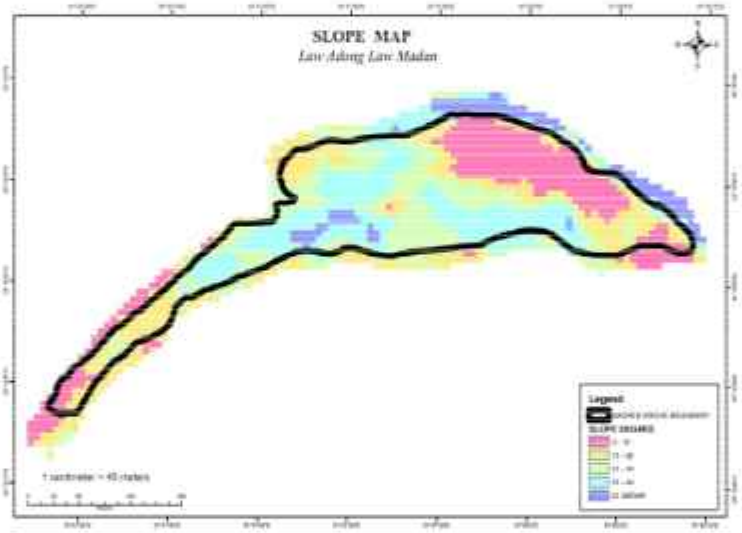


3.17.2 Brief History

This forest is in existence since time immemorial. Presently the forest has very little religious significant. The forest is still revered by the local residents. The forest is owned, managed and administered by the Sirdarship under the supervision and control of Sirdar elected by the villagers. The ecological significant of the forest is still upheld by the village and thus this forest is a refuge for numerous mammals, birds, reptiles and amphibians. During the enumeration exercise, within *Law Adong Wahshyngiar* which lies adjacent to this forest, one group of the enumerators sighted a barking deer. The scenic beauty of the locale provides a fillip to the ecological richness of the forest. Therefore, the combination of *Law Adong Law Madan*'s rich biological diversity and the beauty of the locale will give an impetus to the eco-tourism. Green felling of timber is strictly prohibited and punishable under the customery rules framed by the village Dorbar.

Incidences of wildfire have been reported from this forest. Biotic pressures such as poaching and encroachment were reported to be absent. Encroachment, wild fire, hunting & poaching, grazing and illegal felling of trees in this forest are prohibited.





3.17.3 Geography and Climate

Topography of the grove is hilly in nature with slope varying from 0.70° to 49°. Major part of the *Law Adong Law Madan* falls in South and South West Aspects. Small area in this forest falls in South East and East Aspects. Soil texture is Sandy-loam with loose stone. Soil consistency is slightly compact. Colour of the soil is black and soil depth is shallow ranging from 15 cm to 30 cm. No soil erosion has been observed in this forest. No perennial stream flows through this forest. However, several seasonal streams flow though this Forest. All these streams flow southwards.

Winter season starts from end of October and lasts till March of the next year. It receives high rainfall during the monsoon season from April to September. Average temperature varies from 11°C to 20°C.

3.17.4 Forest Type

As per the Champion and Seth classification (1968), forests found in the *Law Adong Law Madan* grove are of the ***Type 8B/C2 Khasi Sub-Tropical Wet Hill Forest.***

3.17.5 Forest Cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun, forest cover in the *Law Adong Law Madan* is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	5.82	49.83
Open Forest (10% - 40%)	4.72	40.41
Scrub Forest (<10%)	0	0
Non-Forest	1.14	9.76
Total	**11.68**	**100**

3.17.6 Flora and Fauna

The *Law Adong Law Madan* is home to two storeyed virgin forest of natural origin. *Castanopsis armata* and *Elaeocarpus lanceefolios* are 1st and 2nd dominant tree species. The forest is home to many rare, endangered and endemic plant species.

3.17.6.1: Flora species

Table 3.17.1: Trees found in *Law Adong Law Madan*

Sl No.	Local Name	Botanical Name	Family
1	*Dieng ri*	*Albizia lucidior*	*Fabaceae*
2	*Dieng jyrtieng*	*Alstonia scholaris*	*Apocynaceae*
3	*Dieng latymphu*	*Aralia armata*	*Araliaceae*
4	*Dieng lieng*	*Betula alnoides*	*Betulaceae*
5	*Dieng sning*	*Castanopsis armata*	*Fagaceae*
6	*Dieng sohotpatuia*	*Castanopsis hystrix*	*Fagaceae*
7	*Dieng stap*	*Castanopsis indica*	*Fagaceae*
8	*Dieng patuia*	*Castanopsis spp*	*Fagaceae*
9	*Dieng rang*	*Cesea riavarieca*	*Flacourtiaceae*
10	*Dieng torthia*	*Cinnamomum pauciflorum*	*Lauraceae*
11	*Dieng jajew*	*Cissus ripens*	*Vitaceae*
12	*Dieng sohrang*	*Drimycarpus racemosus*	*Anacardiaceae*
13	*Dieng sohkhyllam*	*Elaeocarpus lanceaefolios*	*Elaeocarpaceae*
14	*Dieng lasaw*	*Elaeocarpus robusta*	*Elaeocarpaceae*
15	*Dieng sohum*	*Eugenia jambolana*	*Myrtaceae*
16	*Dieng pyrsit*	*Eurya acuminata*	*Theaceae*
17	*Dieng thylliangbah*	*Ficus lamponga*	*Moraceae*
18	*Dieng snammaw*	*Photinia integrefolia*	*Rosaceae*
19	*Dieng sohkwang*	*Garcinia anomala*	*Guttiferae*

20	Dieng jakrai/sohkhawkrai	Ilex graffithii	Aquifoliaceae
21	Dieng sohshyieng	Ilex venulosa	Aquifoliaceae
22	Dieng sohsyrtet	Itea chinensis	Iteaceae
23	Dieng lapyllon/myllon	Itea macrophylla	Iteaceae
24	Dieng sohshrieh/sohkynphorshrieh	Knema linifolia	Myristicaceae
25	Dieng sohpaiat	Ligustrum lucidium	Oleaceae
26	Dieng jing	Lithocarpus fenestrata	Fagaceae
27	Dieng sohrang	Litsaea meissneri	Anacardiaceae
28	Dieng lakhar	Macaranga denticulate	Euphoribiaceae
29	Dieng thyllap	Macaranga spp	Euphoribiaceae
30	Dieng sohiong	Mahonia ccanthifolia	Magnoliaceae
31	Dieng laniar	Michelia oblonga	Magnoliaceae
32	Dieng railieh	Michelia champaca	Magnoliaceae
33	Dieng sohniar	Michelia punduana	Magnoliaceae
34	Dieng sohphie	Myrica esculenta	Myricaceae
35	Dieng shlan	Pandanus odoratissimus	Pandanaceae
37	Dieng ngan	Schima khasiana	Theaceae
38	Dieng rmiew/ryniew	Sterculia velosa	Sterculiaceae
39	Dieng pei	Symplocos khasiana/theoefolia	Symplocaceae
40	Dieng shira	Vaccinium serretum	Ericaceae
41	Dieng sohphlang	Walsura robusta	Meliaceae
42	Dieng shadmoit	Wendlandia wallichiii	Rubiaceae

Table 3.17.2: Shrubs found in *Law Adong Law Madan*

Sl No.	Local Name	Botanical Name	Family
1.	Dieng jamynrei	Maesa indica	Myrsinaceae
2.	Dieng duma	Vernuniavalka meriafolia	Pharvanaceae
3.	Synsar	Thysaemolia myscina	Poaceae
4.	Dieng shlan	Pandanus odoratissimus	Dieng shlan
5.	Jalynden	Polyganum spp	Polygonaceae
6.	Dieng pyrshit	Eurya accuminata	Pentaphylacaceae
7.	Dieng shynraiblei	Hedichium spp	Gingiberaceae
8.	Dieng japungdieng	Not known	Verbanaceae
9.	Dieng tyrnem	Camelia caduca	Fagaceae
10.	Soh ngangrit	Ardisia solanum	Solanaceae
11.	Dieng sohumshynrang	Goniathalamuss esquipedales	Annonaceae
12.	Not listed	Clerodendrom spp	Verbaneceae
13.	Dieng shadmuit	Wendlndia waliichi	Rubeceae
14.	Dieng jakhi	Plogacanthus thyrsifolia	Acantheceae
15.	Not known	Myceromilum spp	Meliaceae
16.	Dieng soh matan	Raindia griffithii	Rubiaceae
17.	Dieng pyrshit	Eurya javanicum	Pentaphylacaceae

18.	Soh byrthit	Urena lobota	Malvaceae
19.	Dieng shylla	Caryota densifloram	Arecaceae
20.	Dieng sohlaper	Wild areca nut	Arecaceae
21.	Dieng latyngkong	Prunus undulata	Rosaceae
22.	Dieng sohlarmaw	Photinia	Rosaceae

Table 3.17.3: Herbs found in *Law Adong Law Madan*

Sl No.	Local Name	Botanical Name	Family
1.	Soh trunshiah	Ananus spp	Bromiliaceae
2.	Phud wang	Colocasia spp	Araceae
3.	Soh pangkhlieh	Lantana camara	Verbenaceae
4.	Tiew latdoh	Hedychium gracile	Zingiberaceae
5.	Soh ngangkhlaw	Solanum torvum	Solanaceae
6.	Khliangsyiar	Centella asiatica	Apiaceae
7.	Kdaitumjew	Polygonum glabrum	Polygonaceae
8.	Long niang	Potentilla gracilis	Zingiberaceae
9.	La shing	Curcuma spp	Zingiberaceae
10.	Sying khlaw	Zingiber purpureum	Zingiberaceae
11.	Soh krismas	Sarcandra glabra	Chlaranthaceae

Table 3.17.4: Climbers found in *Law Adong Law Madan*

Sl No.	Local Name	Botanical Name	Family
1.	Sla kynda jyrmi	Pothos spp	Aralaceae
2.	Phan synreh	Dioscorea alata	Dioscoreaceae
3.	Dieng sohrengblang	Strophanthun wallichi	Apocynaceae
4.	Lapadong	Rhaphidophora spp	Araleceae
5.	Soh shangkhlor	Elaeagnus pyriformis	Elaeagnaceae
6.	Pew shrieh	Hedera nepalensis	Araliaceae
7.	Tympew khlaw	Pipper spp	Peppereceae
8.	Loapla	Rhaphidophor adecursiva	Araceae
9.	Jyrmi kynsiew	Argyreia nervosa	Convolvulaceae
10.	Soh krot	Smilax zeylanica	Smilacaceae
11.	Tmain khla	Lycopodiella cernua	Lycopodiaceae

Table 3.17.5: Orchids found in *Law Adong Law Madan*

Sl No.	Local Name	Botanical Name	Family
1.	Talong khnai	Oberonia obcordata	Orchideceae
2.	Tlong khnai	Oberonia mannii	Orchideceae
3.	Tiew pawanglum	Arundina graminifolia	Orchideceae

Table 3.17.5: Orchids found in *Law Adong Law Madan*

4.	*Tiew dohmaw*	*Anoectochilus brevilabris*	*Orchideceae*
5.	*Tiew dohmaw*	*Anoectochilus roxburghii*	*Orchideceae*
6.	*Dieng tiewdieng*	*Aeschynanthus spp*	*Orchideceae*
7.	*Dieng tiewdieng*	*Micropera manii*	*Orchideceae*
8.	*Dieng tiewdieng*	*Dendrobium aphyllum*	*Orchideceae*
9.	*Knupmawiang*	*Paphiopedium insigne*	*Orchideceae*
10.	*Tiew mationg*	*Dendrobium chrysanthum*	*Orchideceae*

Table 3.17.6: Bamboo & Cane found in *Law Adong Law Madan*

Sl No.	Local Name	Botanical Name	Family
1.	*Slasohthri*	*Calamus ratang*	*Arecaceae*

Table 3.17.7: Grasses found in Law Adong Lawmadan

Sl No.	Local Name	Botanical Name	Family
1.	*Lang tylli*	*Arundinella khasiana*	*Poaceae*
2.	*Phlangtynsok*	*Ponium maximum*	*Poaceae*
3.	*Phlangphreit*	*Cymbopogon exsertus*	*Poaceae*
4.	*Lasier*	*Corex spiculata*	*Poaceae*

Table 3.17.8: Ferns found in *Law Adong Law Madan*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhang iong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodalio*

3.13.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Adong Law Madan* has been carried out so far. However, as per the local residents, presence of several wild animals such as jungle fowls, barking deer, wild boars, wild bears, pangolin and species of amphibian, birds, reptiles and mammals have been reported in this forest.

3.17.7 Growing Stock

As per the methodology described in Chapter-II, enumeration was carried out in 20% area of the forest as its area is more than 10 ha. In each sample plot all the trees having girth (over bark) at breast height more than 30 cm were enumerated by measuring their top height (in meters) and the girth (in centimetres) at breast height. As per the data collected during the enumeration 1,702 trees

were found within 12 plots, each of 0.2 ha size These include 291 *Castanopsisi armata* (1st dominant), 222 *Elaeocarpus lanceaefolios* (2nd dominant), 114 *Elaeocarpus robusta* (3rd dominant) and 1075 trees of *rest of species*. Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each species for each of the 13 girth classes starting from 30-40 cm to 151 cm and above. Details of the same are given in table 3.17.9 & 3.17.10 below. As may be seen, total growing stock in this forest is 3,156.08 cubic metres.

Table3.17.9: Species wise Distribution of Growing stock in Different Girth Classes

(cum)

Girth class (cm)	*Castanopsis armata* 1st dominant	*Elaeocarpus lanceaefolios* 2nd dominant	*Elaeocarpus robusta* 3rd dominant	Rest of species	Growing stock in 12 sample plots	Growing stock in Entire Forest
30-40	6.47	51.93	41.98	26.61	126.99	741.62
41-50	11.48	52.87	31.02	38.16	133.53	779.79
51-60	8.57	36.13	10.76	35.93	91.39	533.72
61-70	12.49	32.31	6.59	27.09	78.48	458.31
71-80	6.71	24.75	7.14	17.70	56.31	328.82
81-90	3.01	3.85	2.58	10.12	19.56	114.24
91-100	0.00	6.90	0.00	10.07	16.97	99.12
101-110	1.09	0.00	1.44	3.45	5.98	34.90
111-120	0.00	0.00	0.00	0.00	0.00	0.00
121-130	0.00	0.00	0.00	0.00	0.00	0.00
131-140	0.00	0.00	0.00	0.00	0.00	0.00
141-150	0.00	0.00	0.00	0.00	0.00	0.00
151 & above	0.00	0.00	0.00	11.23	11.23	65.57
Total	**49.81**	**208.75**	**101.51**	**180.36**	**540.43**	**3156.08**

As may be seen, 9.22%, of the total growing stock is contributed by the 1st dominant species *(Castanopsis armata)*. The 2nd dominant species *(Elaeocarpus lanceaefolios)* constitutes 38.63 %, of the total growing stock. Similarly, the 3rd dominant species *(Elaeocarpus robusta)* constitutesis 18.68 % of the total growing stock. A major part of the growing stock i.e. 33.37% constituted by the rest of the species.

Figure 3.17.1: Girth Class-Wise Growing Stock in Entire Forest



Table 3.17.10: Species wise Distribution of Growing Stock in Different Girth Classes in the Entire Forest

(cum)

Girth class (cm)	*Castanopsis armata* 1st dominant	*Elaeocarpus lanceaefolios* 2nd dominant	*Elaeocarpus robusta* 3rd dominant	Rest of species	Total (for 11.68 ha' area)	%wrt total volume
30-40	32.44	260.30	210.45	133.39	**636.59**	**23.50**
41-50	57.53	265.04	155.49	191.29	**669.35**	**24.71**
51-60	42.98	181.12	53.92	180.11	**458.13**	**16.91**
61-70	62.59	161.97	33.04	135.80	**393.40**	**14.52**
71-80	33.66	124.08	35.79	88.73	**282.25**	**10.42**
81-90	15.06	19.31	12.94	50.74	**98.06**	**3.62**
91-100	0.00	34.60	0.00	50.47	**85.08**	**3.14**
101-110	5.45	0.00	7.22	17.28	**29.96**	**1.11**
111-120	0.00	0.00	0.00	0.00	**0.00**	**0.00**
121-130	0.00	0.00	0.00	0.00	**0.00**	**0.00**
131-140	0.00	0.00	0.00	0.00	**0.00**	**0.00**
141-150	0.00	0.00	0.00	0.00	**0.00**	**0.00**
151 & above	0.00	0.00	0.00	56.28	**56.28**	**2.08**
Total	**249.71**	**1046.41**	**508.86**	**904.10**	**2709.08**	**100.00**
%wrt total volume	**9.22**	**38.63**	**18.78**	**33.37**	**100.00**	

3.17.8 Number of Stems:

Species-wise number of stems in each girth class are given in Tables 3.17.11 & 3.17.12 below. As may be seen maximum numbers of stems are found in lower girth classes i.e. from 30-40 cm to 91-100 cm. Number of stems are inversely proportional to mid-diameter of the girth class

Figure 3.17.2:Girth Class wise Distribution of Growing Stock

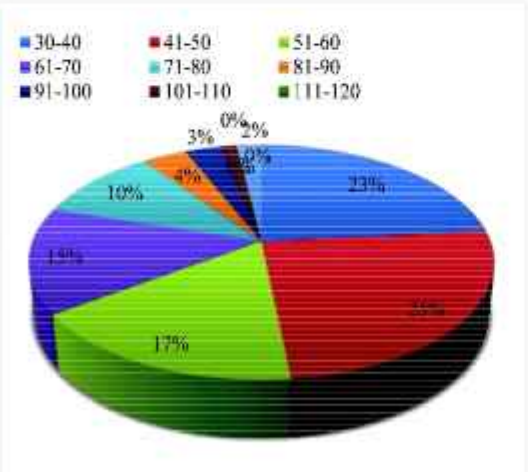


Figure 3.17.3: Species-wise Distribution of Growing Stock

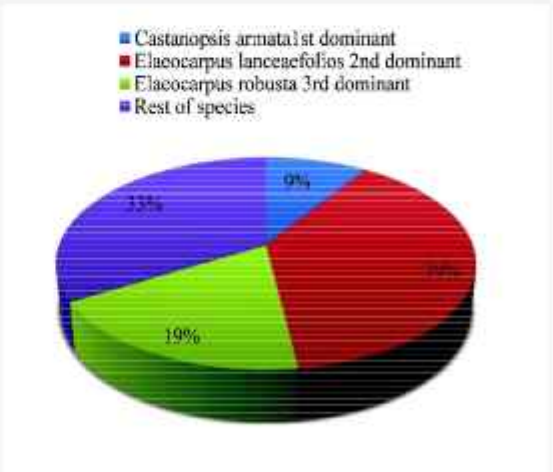


Figure 3.17.4:Girth Class wise Distribution of Growing Stock

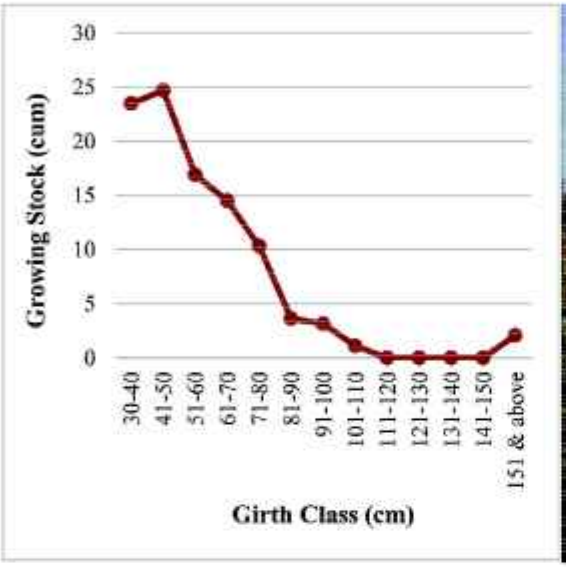


Figure 3.17.5: Over view *Law Adong, Law Madan*



Table 3.17.11: Species-wise Distribution of stems in Different Girth Classes in 12 sample plots

(numbers of stems)

Girth class (cm)	*Castanopsis-armata* 1st dominant	*Elaeocarpus lanceaefolios* 2nd dominant	*Elaeocarpus robusta* 3rd dominant	Rest of the species	Total
30-40	122	66	53	520	**761**
41-50	82	60	35	273	**450**
51-60	35	37	11	144	**227**
61-70	34	30	6	71	**141**
71-80	13	21	6	34	**74**
81-90	4	3	2	15	**24**
91-100	0	5	0	11	**16**
101-110	1	0	1	3	**5**
111-120	0	0	0	0	**0**
121-130	0	0	0	0	**0**
131-140	0	0	0	0	**0**
141-150	0	0	0	0	**0**
151 & above	0	0	0	4	**4**
Total	**291**	**222**	**114**	**1075**	**1702**

Table 3.17.12: Species-wise of stems in Different Girth Classes in the Entire Forest

(numbers of stems)

Girth class (cm)	*Castanopsis armata* 1st dominant	*Elaeocarpus lanceaefolios* 2nd dominant	*Elaeocarpus robusta* 3rd dominant	Rest of the species	Total
30-40	612	331	266	2607	**3815**
41-50	411	301	175	1369	**2256**
51-60	175	185	55	722	**1138**
61-70	170	150	30	356	**707**
71-80	65	105	30	170	**371**
81-90	20	15	10	75	**120**
91-100	0	25	0	55	**80**
101-110	0	0	5	15	**20**
111-120	0	0	0	0	**0**
121-130	0	0	0	0	**0**
131-140	0	0	0	0	**0**
141-150	0	0	0	0	**0**
151 & above	0	0	0	20	**20**
Total	**1454**	**1113**	**571**	**5389**	**8527**

Figure 3.17.6:Number of stems in different Girth Classes

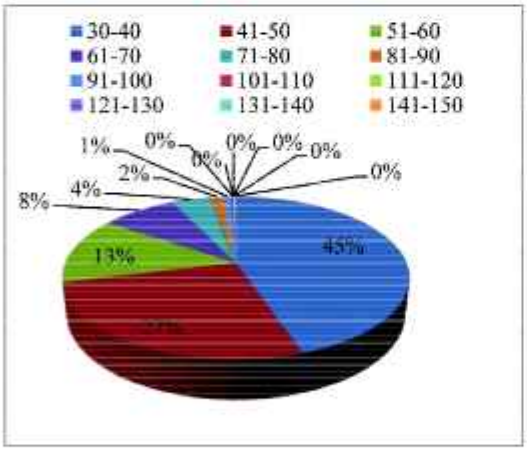


Figure 3.17.7: Species-wise Distribution of stems

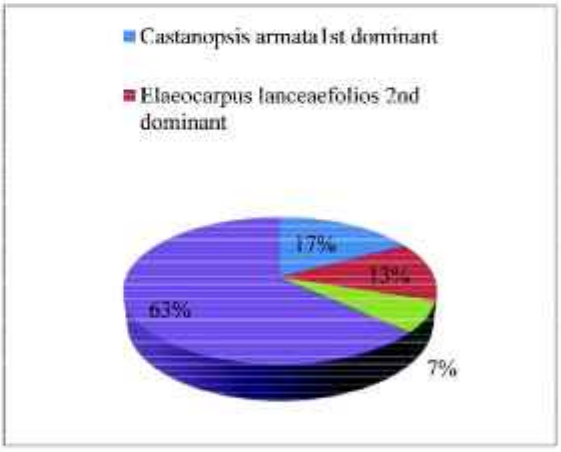


Figure 3.17.8:Number of stems in different Girth Classes

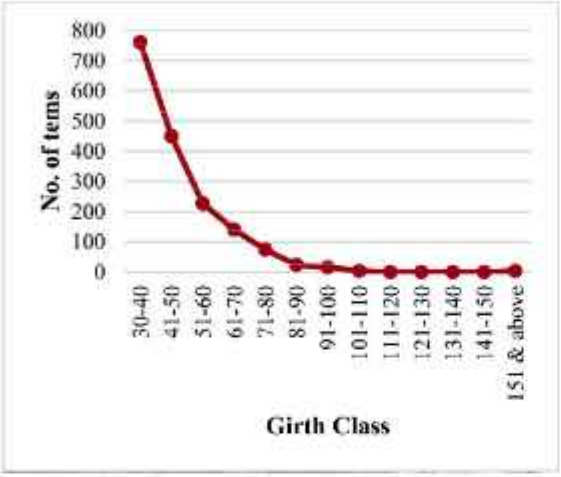


Figure 3.17.9: Inside view *Law Adong Law Madan*



3.17.9 Prescriptions for Future Management

3.17.9.1Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Adong Law Madan* has not been registered with the KHADC. The CFO of the KHADC and the Mawmluh Sirdarship may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Adong Law Madan* with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.17.9.2Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The Dorbar of Mawmluh Sirdarship and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Law Adong Law Madan* as a Community Reserve.

3.17.9.3Boundary Demarcation

Boundary of the *Law Adong Law Madan* has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachment. To prevent and to ensure early detection of encroachments, boundary of the *Law Adong Law Madan*, wherever it is not constituted by natural features of permanent nature, such as rivers or streams or hill ridges may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.17.9.4Fire Protection

As per the Forest Fire Alert System maintained by the Forest Survey of India, during a period of 22 years (2002 -2023) no fire incident has occurred in the *Law Adong Law Madan*. As per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Adong Law Madan* is moderately vulnerable to forest fires. However, as per the said information system, a major part of *Law Adong Law Madan* is not prone to forest fire. To prevent damage to the *Law Adong Law Madan* from accidental forest fires, measures such as creation and periodic cleaning of fire lines along the periphery and at critical locations within the *Law Adong Law Madan* and engagement of fire watchers during the critical months may be taken.

3.17.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench etc. may be constructed at suitable locations in the *Law Adong Law Madan*

3.17.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Adong Law Madan* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath, walking trail, sign board, washrooms *etc.* may be constructed to attract tourists. *Law Adong Law Madan* is a habitat for numerous species of butterflies, amphibian, reptiles, bird and mammals. In butterfly and bird watching can be promoted as an eco-tourism activity. As the *Law Adong Law Madan* is located in the vicinity of similar Community Forests such as *Law Adong Wahshyngiar, Law Adong Mawkulai,* and *Law Adong Mawsawa,* eco-tourism development activities can be planned in a holistic manner.

3.17.9.7 Restocking of Open Degraded Areas

Efforts may be made to restock the open degraded patches in *Law Adong Law Madan* by assisting and promoting natural regeneration of native species. Areas which can not be naturally regenerated may be afforested by planting seedlings of native species.

3.17.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Adong Law Madan* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Adong Law Madan.*

3.17.9.9 Awareness Campaign

The *Law Adong Law Madan* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

3.18. *LAW LYNGDOH RAID WAHKHEN*

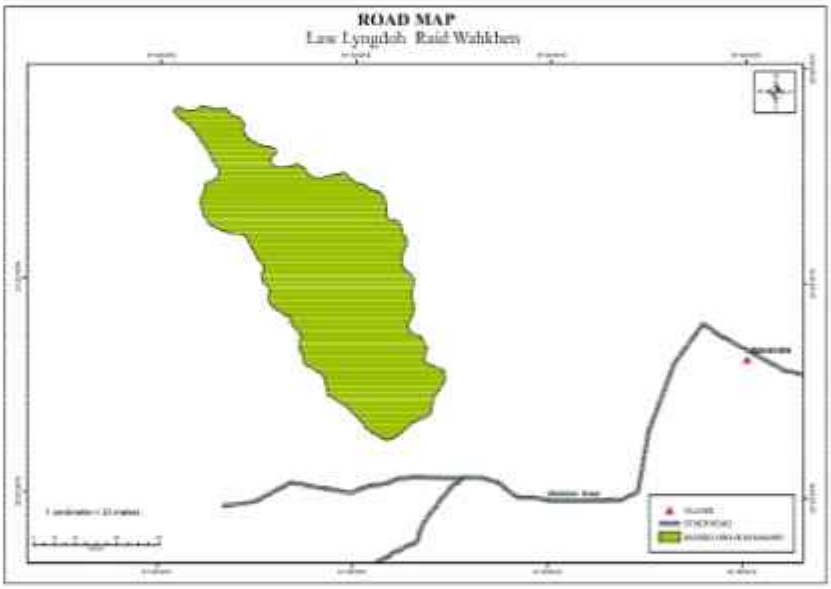
3.18.1 Location

Law Lyngdoh Raid Wahkhen is located in East Khasi Hills District of Meghalaya at Wahkhen village under the Hima Khyrim Syiemship. It covers an area of 1.9701 ha and lies between 25° 20´36" to 25° 20´ 43" N latitude and 91° 50´ 31" to 91° 50´ 37" E Longitude with an altitude of 766 m above mean sea level. It is bounded in the North by private land of one Shri Lapang Tyngsong and Wah Umthli, East by Wah Umthli and land of one Shri K.Khongli, South by land of Catholic Church and land of one Shri Syiem Bilon Tyngsong and in the West by land of P. Shabong, T. Shabong and W.Tyngsong. The grove is accessible by road from Shillong which is about 48.4 km away and followed by a foot trek of 1 Km.



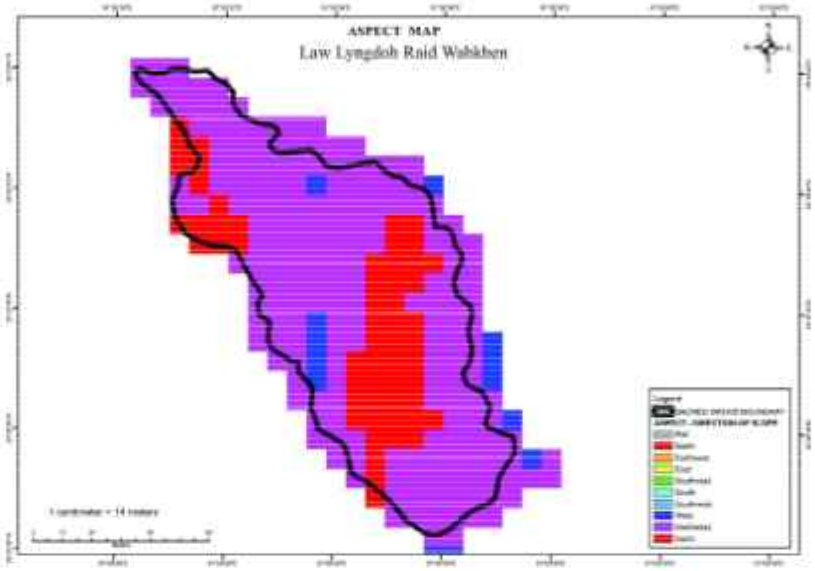


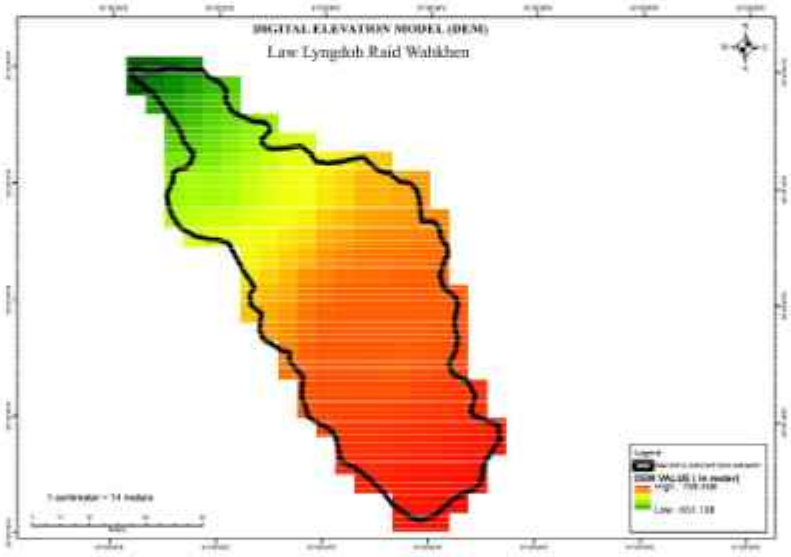




3.18.2 Brief History

Law Lyngdoh Raid Wahkhen is in existence for several decades. Religious rituals are still performed in this forest. Thus, while entering thisgrove leather shoes, leather accessories are not allowed. As religious significance this grove has not diminished, offering and prayer are still being practiced in the form of animal sacrifice. Due to its religious significance, the grove is considered to belong various deities, thus entry and exit is strictly regulated. Even plucking of twigs and branches and up-rooting of any flora is strictly prohibited.

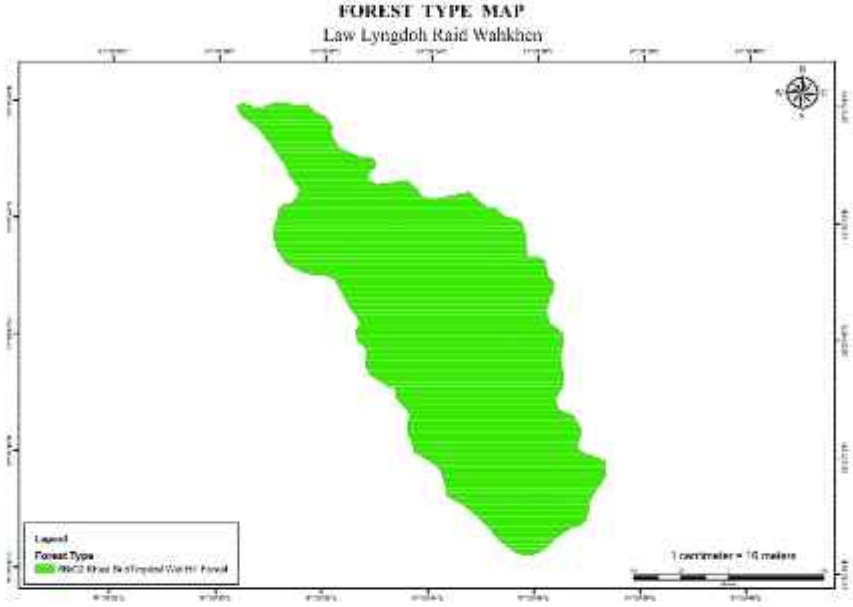


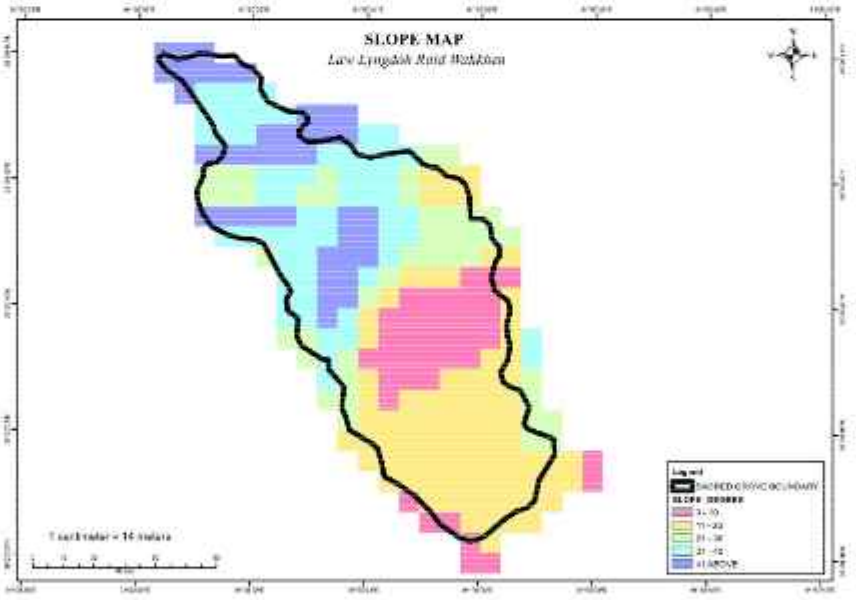


Biotic pressures such as encroachment, hunting, poaching and illegal felling of trees are absent in this forest.

3.18.3 Geography and Climate

Topography of the grove is hilly in nature with slope varying from 0.3° to 44°. Major part of the *Law Lyngdoh Raid Wahkhen* falls in North West and North Aspects. Small area in this forest falls in North and West Aspects. Soil texture is loamy with no coarse fragments. Soil consistency is slightly compact. Soil is black in colour and soil depth is shallow ranging from 15 cm to 30 cm. One perennial stream namely; Wah Umthli flows through this forest.





Winter season starts from end of October and lasts till March of the next year. It receives very high rainfall during the monsoon season from April to September.

3.18.4 Forest Type

As per the Champion and Seth classification (1968), forests found in the forest are of the ***Type 8B/C2 Khasi Sub-Tropical Wet Hill Forest.***

3.18.5 Forest Cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun, forest cover in the *Law Lyngdoh Raid Wahkhen* is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	1.90	96.46
Open Forest (10% - 40%)	0.07	3.55
Scrub Forest (<10%)	0	0
Non-Forest	0	0
Total	**1.97**	**100**

3.18.6 Flora and Fauna

The *Law Lyngdoh Raid Wahkhen* is home to forest of natural origin. *Schima khasiana* and *Callicarpa arborea* are respectively 1st and 2nd dominant tree species. The forest is home to many rare, endangered and endemic plant species.

3.18.6.1: Flora species:

Table 3.18.1: Trees found in *Law Lyngdoh Raid Wahkhen*

Sl No.	Botanical Name	Local Name	Family
1.	*Albizzia lebek*	*Dieng kreit*	*Fabaceae*
2.	*Albizzia stipulata*	*Dieng phyllut*	*Fabaceae*
3.	*Aphanamixis polystachya*	*Dieng rynta/rata*	*Meliaceae*
4.	*Aralia armata*	*Dieng latymphu*	*Belutaceae*
5.	*Artocarpus chaplacha*	*Dieng sohphan*	*Moraceae*
6.	*Betula alnoides*	*Dieng lieng*	*Belutaceae*
7.	*Butea monosperma*	*Dieng lapalam/lapasam*	*Fabaceae*
8.	*Callicarpa arborea*	*Dieng lakhiat*	*Lamiaceae*
9.	*Caryota urens*	*Dieng tlai*	*Arecaceae*
10.	*Castanopsis armata*	*Dieng siar*	*Fagaceae*
11.	*Castanopsis tribuloides*	*Dieng sniang/diengsning*	*Fagaceae*
12.	*Castonopsis armata*	*Dieng sning*	*Fagaceae*
13.	*Castonopsis indica*	*Dieng sniang/ diengsning*	*Fagaceae*
14.	*Diospyros lancifolia*	*Dieng thang*	*Aricaceae*
15.	*Elaeocarpus robusta*	*Dieng lasaw*	*Elaeocarpaceae*
16.	*Elaeocarpus robusta*	*Dieng jhursaw/lasaw*	*Elaeocarpaceae*
17.	*Engelhardtia spicata*	*Dieng lba*	*Juglandaceae*
18.	*Eurya japonica*	*Dieng shit*	*Theaceae*
19.	*Ficus cunia*	*Dieng thylliang/sohthylliang*	*Moraceae*
20.	*Ficus hispida*	*Dieng sohlapong*	*Moraceae*
21.	*Ficus nerifolia*	*Dieng thablang/samehblang*	*Moraceae*
22.	*Ficus spp*	*Dieng tyngjop*	*Moraceae*

23.	*Ficus spp*	*Dieng sohjyllop*	*Moraceae*
24.	*Heteropanax fragrans*	*Dieng sohkynpew/sohtyngpiew*	*Araliaceae*
25.	*Holarrhena antidysenterica*	*Dieng pingkhar/diengpangknai*	*Apocynaceae*
26.	*Ilex velonosa*	*Dieng sohshyieng*	*Aquifoliaceae*
27.	*Itea chinensis*	*Dieng sohsyrtet*	*Iteaceae*
28.	*Knema augustifolia*	*Dieng lyngsnam/langsnam*	*Myristicaceae*
29.	*Ligustrum robustum*	*Dieng sohshriang/sohsiang*	*Oleaceae*
30.	*Lithocarpus tribuloides*	*Dieng sning*	*Fagaceae*
31.	*Macaranga denticulata*	*Dieng lakhar*	*Euphorbiaceae*
32.	*Morinda augustifolia*	*Dieng synrei/ dieng stem*	*Rubiaceae*
33.	*Oreocnide integrifolia*	*Dieng tieng*	*Urticaceae*
34.	*Panta panoxracemum*	*Dieng tyllongrynsi*	*Pantapanaceae*
35.	*Pithecellboiuhe terophylum*	*Dieng iapiar*	*Fagaceae*
36.	*Premna bengalensis*	*Dieng lieh*	*Lamiaceae*
37.	*Quercus glauca*	*Dieng syrtap*	*Fagaceae*
38.	*Quercus serrata*	*Dieng wah*	*Fagaceae*
39.	*Rhus succedanea*	*Dieng ngan*	*Anacardiaceae*
40.	*Sauropus androgynus*	*Dieng sohkynpit/sohlapit*	*Phylanthaceae*
41.	*Schima khasiana*	*Dieng ngan*	*Theaceae*
42.	*Sterculia velosa*	*Dieng mriew/ryniew*	*Malvaceae*
43.	*Symplocos chinensis*	*Dieng tyniong/iong*	*Symplocaceae*
44.	*Toona celiata*	*Dieng bti/ Dieng nepbe*	*Meliaceae*
45.	*Wendlandia tinctoria*	*Dieng shatniat/shadmoit*	*Rubiaceae*

Table 3.18.2: Shrubs found in *Law Lyngdoh Raid Wahkhen*

Sl No.	Local Name	Botanical Name	Family
1.	*Dieng shatnait/shatmoit*	*Wendlandia wallichi*	*Rubiaceae*
2.	*Dieng sohtait*	*Cyanotis vaga*	*Commelinaceae*
3.	*Dieng eitmiang*	*Sida spp*	*Malvaceae*
4.	*La jaremlieh*	*Clerodendrum viscosum*	*Verbenaceae*
5.	*Dieng jamyrait*	*Gaultheria fragranitissima*	*Ericaceae*
6.	*Dieng sohtylu*	*Daphne papyraceae*	*Thymelaceae*
7.	*Dieng soh pyrsit*	*Eurya acuminata*	*Theaceae*
8.	*Dieng sohjabuit*	*Phlogacanthus thyrsiflorus*	*Acanthaceae*
9.	*Jarem iong*	*Clerodendrum colebrookianum*	*Verbenaceae*
10.	*Synsar*	*Thysanolaena maxima*	*Poaceae*
11.	*Dieng rnong*	*Mahonia pycnophylla*	*Berberidaceae*
12.	*Soh lang*	*Viburnum foetidum*	*Caprifoliaceae*

Table 3.18.3: Herbs found in *Law Lyngdoh Raid Wahkhen*

Sl No.	Local Name	Botanical Name	Family
1.	*Slamet*	*Phrynium spp*	*Pubinevve*
2.	*Jajew khlaw*	*Begonia roxburghii*	*Begoniaceae*
3.	*Wang khlaw*	*Esculenta spp.*	*Araceae*
4.	*Phud wang*	*Colocasia spp.*	*Araceae*
5.	*Synrai khlaw*	*Alpinia spp.*	*Gingiberaceae*
6.	*Sla waitlam*	*Asplenium nidus*	*Aspliniaceae*
7.	*Sohtrunshiah*	*Ananus spp.*	*Bromiliaceae*
8.	*Kdaitumjew*	*Polygonum glabrum*	*Polygonaceae*
9.	*Soh tynriew*	*Calamus erectus*	*Arecaceae*
10.	*Longniang*	*Potentilla gracilis*	*Rosaceae*
11.	*Jajew maw*	*Begonia spp*	*Begoniaceae*

Table 3.18.4: Climbers found in *Law Lyngdoh Raid Wahkhen*

Sl No.	Local Name	Botanical Name	Family
1.	*Phan synreh*	*Dioscorea alata*	*Dioscoreaceae*
2.	*Jyrmikhlaw*	*Mucuna macrocarpa*	*Leguminaceae*
3.	*Jyrmisohthied*	*Not known*	*Not known*
4.	*Pew shrieh*	*Hedera nepalensis*	*Araliaceae*
5.	*Soh shangkhlor*	*Elaeagnus pyriformis*	*Elaeagnaceae*
6.	*Sla kyndajyrmi*	*Pothos scandens*	*Araceae*
7.	*Loapla*	*Rhaphidophoradecursiva*	*Araceae*
8.	*Dieng sohmatan/sohpdong*	*Stephania glabra*	*Menispermaceae*

Table 3.18.5: Orchids found in *Law Lyngdoh Raid Wahkhen*

Sl No.	Local Name	Botanical Name	Family
1.	*Tiew talong khnai*	*Oberonia obcordata*	*Orchidaceae*
2.	*Dieng tiewmat iong*	*Dendrobium chrysanthum,*	*Orchidaceae*
3.	*Tiew talong khnai*	*Oberonia mannii*	*Orchidaceae*
4.	*Knupmawiang*	*Paphiopedium insigne*	*Orchidaceae*
5.	*Tiew dohmaw*	*Anoectochilus roxburghii*	*Orchidaceae*
6.	*Tiewdieng*	*Dendrobium aphylum*	*Orchidaceae*

Table 3.18.6: Bamboos & Canesfound in *Law Lyngdoh Raid Wahkhen*

Sl No.	Local Name	Botanical Name	Family
1.	*Siejsylli*	*Melocanna baccifera*	*Poaceae*
2.	*Sla Sohthri*	*Calamus rotang*	*Arecaeae*
3.	*Sohthri*	*Calamus erectus*	*Arecaeae*

Table 3.18.7: Creepers found in *Law Lyngdoh Raid Wahkhen*

Sl No.	Local Name	Botanical Name	Family
1.	*Kynbatsohmynkea*	*Cardamine debilis*	*Cruciferae*
2.	*Sohned bah*	*Rubus rogosus*	*Rosaceae*
3.	*Jyrmijapan*	*Chromolaena odorata*	*Asteraceae*

3.18.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Lyngdoh Raid Wahkhen* has been carried out so far. However, as per the local residents, presence of several wild animals, amphibians, reptile, bird and mammal have been reported in this forest.

3.18.7 Growing Stock

As per the methodology described in Chapter-II, enumeration was carried out in 100% area of the forest as its area is less than 10 ha. All the trees, having girth (over bark) at breast height more than 30 cm, were enumerated by measuring the top height (in meters) and the girth (in centimetres) at breast height. Data collected during the enumeration were entered in Sacred Groves Description Form and Plot Enumeration Form. During the enumeration within the grove, data was collected for 226 trees consisting of 33 *Schima khasiana* (1st dominant), 26 *Callicarpa arborea* (2nd dominant), 26 *Lithocarpus tribuloides* (3rd dominant), and 141 *rest of species*. Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each species for each of the 13 girth classes starting from 30-40 cm to 151 cm and above. Details of the same are given in the Table 3.18.9 below. As may be seen, total growing stock in this forest is 102.27 cubic metres.

Table 3.18.9: Species wise Distribution of Growing stock in Different Girth Classes in the Entire Forest

(cum)

Girth class (cm)	*Schima khasiana* 1st dominant	*Callicarpa arborea* 2nd dominant	*Lithocarpus tribuloides* 3rd dominant	Rest of species	*Total Growing Stock*	*% of total Growing stock*
30-40	0.539		0.13	1.51	**2.18**	**2.13**
41-50	0.27	0.01	0.37	4.16	**4.81**	**4.71**
51-60	1.55	0.22	1.72	4.08	**7.57**	**7.40**
61-70	1.66	0.47	2.38	7.58	**12.09**	**11.82**
71-80	2.22	0.25	2.69	6.99	**12.15**	**11.88**
81-90	1.06	0.12	1.98	6.20	**9.37**	**9.16**
91-100	2.10	0.18	0.00	3.40	**5.67**	**5.55**
101-110	1.82	0.45	0.00	3.43	**5.69**	**5.57**
111-120	0.00	0.25	0.00	9.32	**9.57**	**9.36**
121-130	1.26	0.00	0.00	1.66	**2.92**	**2.86**
131-140	0.00	0.00	0.00	3.99	**3.99**	**3.90**
141-150	0.00	0.00	0.00	4.67	**4.67**	**4.57**
151 & above	0.00	0.00	0.00	21.58	**21.58**	**21.11**
Total	**12.48**	**1.94**	**9.27**	**78.57**	**102.27**	**100.00**
% of Total Growing stock	12.21	1.90	9.07	76.83	100.00	

As may be seen, 12.21%, of the total growing stock is contributed by the 1st dominant species (*Schima khasiana)*. The 2nd dominant species *Callicarpa arborea* constitutes 1.90% of the total growing stock. Similarly, the 3rd dominant species *Lithocarpus tribuloides* is 9.07 % of the total growing stock. A major part of the growing stock *i.e.* 76.83 % is constituted by the rest of the species.

Figure 3.18.1: Girth class-wise Distribution of Growing stock

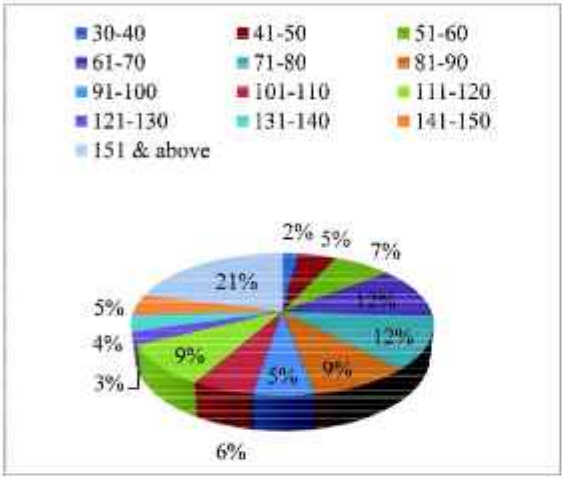


Figure 3.18.2: Species-wise Distribution of Growing stock

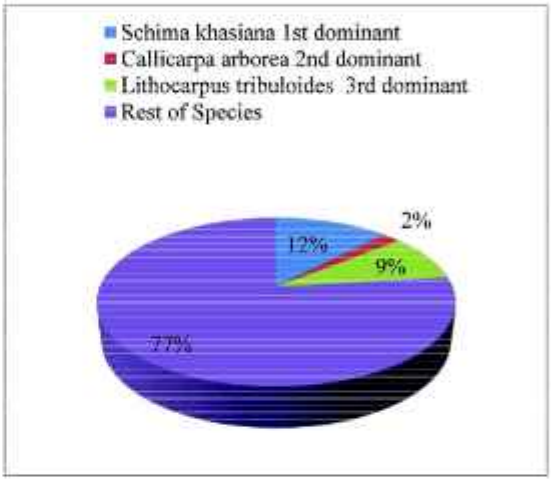


Figure 3.18.3:Girth class-wise Distribution of Growing stock

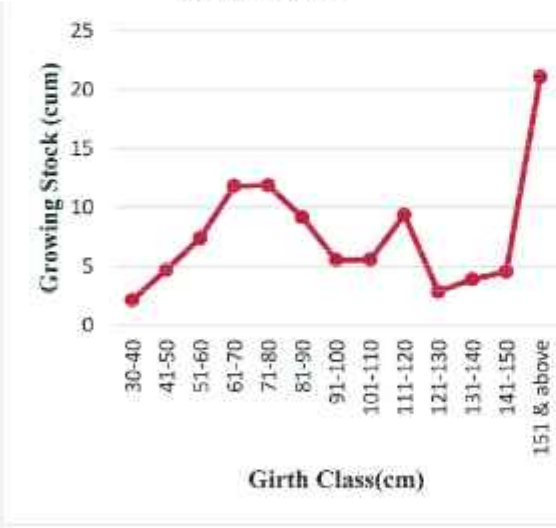


Figure 3.18.4: Over view *of Law Lyngdoh Raid Wahkhen*



3.18.8 Number of Stems

Species-wise number of stems in each girth class are given in Table 3.18.10 below. As may be seen maximum numbers of stems are found in lower girth classes i.e. from 30-40 cm to 71-80 cm. Number of stems are inversely proportional to mid-diameter of the girth class.

Table 3.18.10: Species-wise Distribution of stems in Different Girth Classes in the Entire Forest

(numbers of stems)

Girth class (cm)	*Schima khasiana* 1st dominant	*Callicarpa arborea* 2nd dominant	*Lithocarpus-tribuloides* 3rd dominant	Rest of the species	Total
30-40	6	-	2	27	**35**
41-50	2	2	3	29	**36**
51-60	7	8	7	17	**39**
61-70	5	8	6	21	**40**
71-80	5	3	5	13	**26**
81-90	2	1	3	9	**15**
91-100	3	1	-	4	**8**
101-110	2	2	-	3	**7**
111-120	-	1	-	7	**8**
121-130	1	-	-	1	**2**
131-140	-	-	-	2	**2**
141-150	-	-	-	2	**2**
151 & above	-	-	-	6	**6**
Total	**33**	**26**	**26**	**141**	**226**

Figure 3.18.5:Number of Stems in Different Girth Classes

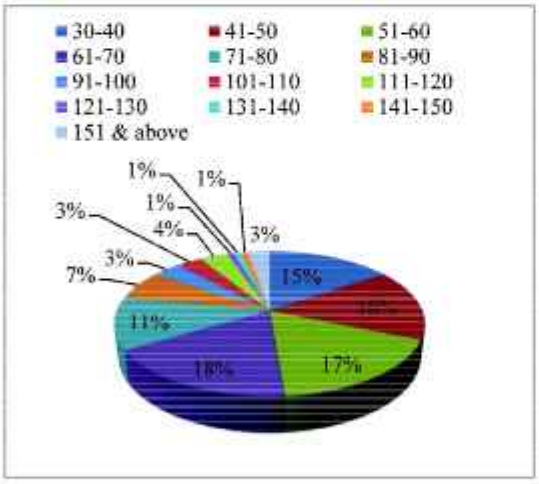


Figure 3.18.6: Species-wise Distribution of Stems



Figure 3.18.7:Number of Stems in Different Girth Classes



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Boundary of the *Law Lyngdoh Raid Wahkhen* has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachment. To prevent and to ensure early detection of encroachments, boundary of the *Law Lyngdoh Raid Wahkhen*, wherever it is not constituted by natural features of permanent nature, such as rivers or streams or hill ridges may be

demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.18.9.4Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India, during a period of 22 years (2002 -2023) no fire incident has occurred in the *Law Lyngdoh Raid Wahkhen*. As per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Lyngdoh Raid Wahkhen* is moderately or highly vulnerable to forest fires. However, as per the said information system, a major part of *Law Lyngdoh Raid Wahkhen* is not prone to forest fire. To prevent damage to the Law Adong Law Madan from accidental forest fires, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Lyngdoh Raid Wahkhen* and engagement of fire watchers during the critical months may be taken.

3.18.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

Wah Umthli is the only streamwhich flows through the *Law Lyngdoh Raid Wahkhen*. To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench, may be constructed at suitable locations in the *Law Lyngdoh Raid Wahkhen*

3.18.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Lyngdoh Raid Wahkhen* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath, walking trail, sign board, washrooms *etc*. may be constructed to attract tourists.

3.18.9.7 Restocking of Open Degraded Areas

Efforts may be made to restock the open degraded patches in *Law Lyngdoh Raid Wahkhen* by assisting and promoting natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.18.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Lyngdoh Raid Wahkhen* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Lyngdoh Raid Wahkhen*.

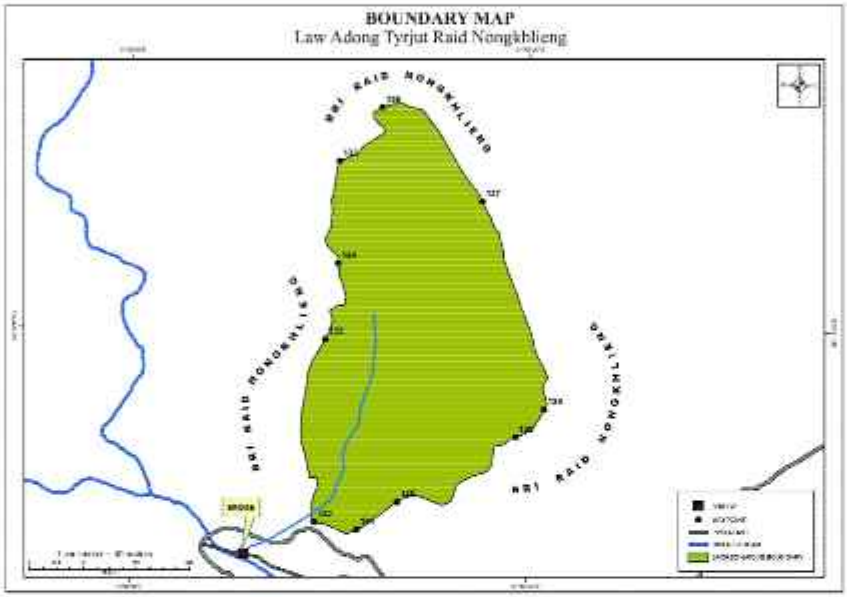
3.18.9.9 Awareness Campaign

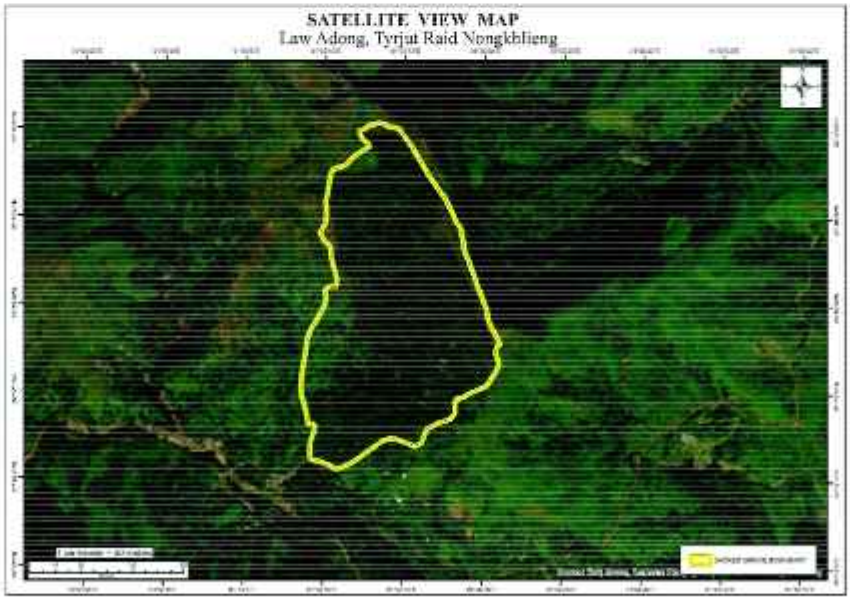
The *Law Lyngdoh Raid Wahkhen* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

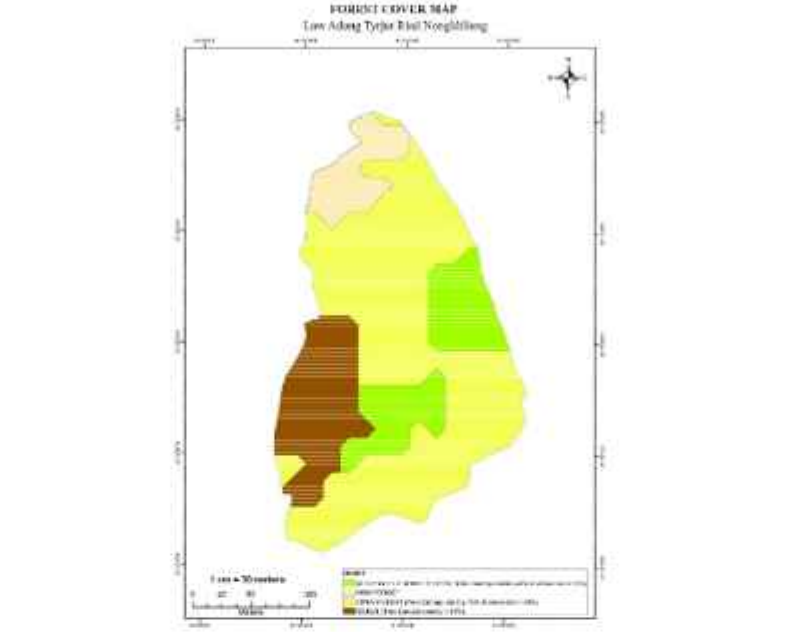
3.19. *LAW ADONG TYRJUT RAID NONGKHLIENG*

3.19.1 Location

Law Adong Tyrjut is situated in East Khasi Hills District of Meghalaya at Nongmadan village under the Syiemship of Hima Khyrim. It covers an area of 13.5282 ha. It lies between 25° 19′ 10" to 25° 19′ 31" N latitude and 91° 55′ 9" to 91° 55′ 20" E Longitude with an altitude of 1,312 m above mean sea level (Msl). It is bounded in the North East by Bri Raid Nongkhlieng in the South by Border Road and to the west by the Bri Raid Nongkhlieng. It is about 52 km from Shillong.



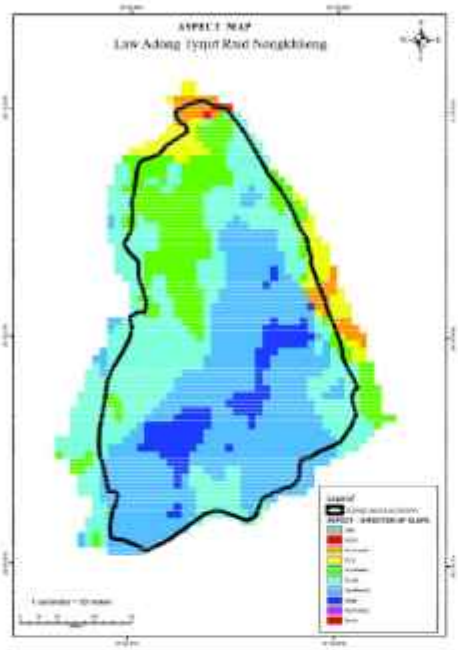


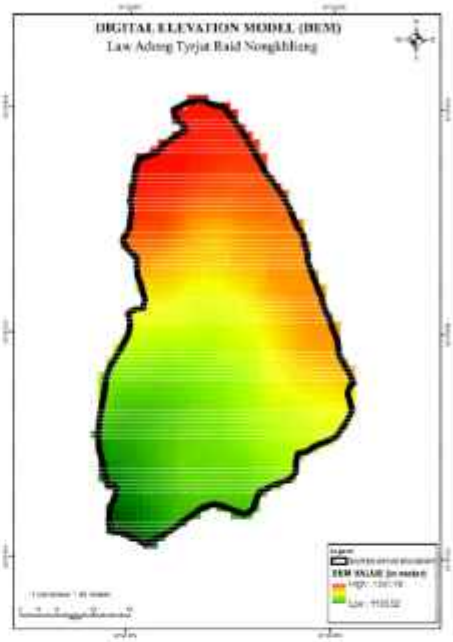




3.19.2 Brief History

Law Adong Tyrjut Raid Nongkhlieng is in existence for several decades. In the past, religious rituals were performed in this grove. However, presently no such rituals are performed. However villagers are still preserving this forest for environmental and social purposes. Sometimes trees from this forest are used to help families of the village which may require timber for re-construction of their houses in case of any natural calamities. Felling of trees is strictly prohibited without prior permission from the Dorbar.





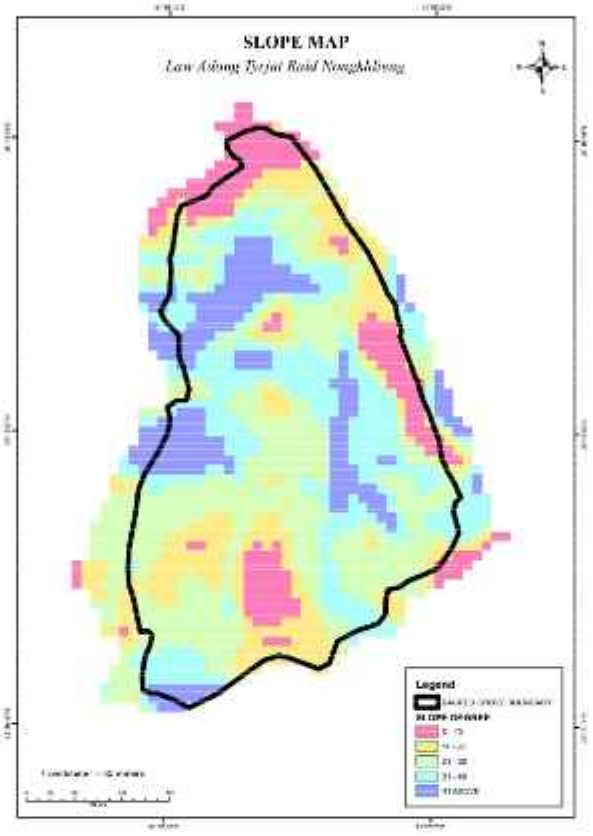


Biotic pressure such as encroachments, hunting, poaching and illegal felling of trees are found to be absent in this forest.

3.19.3 Geography and Climate

Topography of the grove is hilly in nature with slope varying from 0.80° to 39°. Major part of the *Law Adong Tyrjut Raid Nongkhlieng* falls in South and South West Aspects. Small area in this forest falls in East and South East Aspects. Soil texture is loamy with no coarse fragments. Soil consistency is slightly compact. Colour of the soil is brown and soil is quite deep. No soil erosion has

been observed in this forest. Winter season starts from end of October and lasts till March of the next year. It receives high rainfall during the monsoon season from April to September. Average temperature varies from 7°C to 23°C.



3.19.4 Forest Type

As per the Champion and Seth classification (1968), forests found in the Law Adong Tyrjut Raid Nongkhlieng are of the ***Type 8B/C2 Khasi Sub-Tropical Wet Hill Forest.***

3.19.5 Forest Cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun, forest cover in the *Law Adong Tyrjut Raid Nongkhlieng* is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	2.11	15.61
Open Forest (10% - 40%)	8.07	59.69
Scrub Forest (<10%)	2.24	16.57
Non-Forest	1.10	8.13
Total	**13.52**	**100**

3.19.6 Flora and Fauna

The *Law Adong Tyrjut Raid Nongkhlieng* is home to virgin forest of natural origin. *Schima khasiana and Castanopsis indica* are respectively the 1st and 2nd dominant tree species.

3.19.6.1 Flora species

Table 3.19.1: Trees found in *Law Adong Tyrjut Raid Nongkhlieng*

Sl No.	Botanical Name	Local Name	Family
1.	*Aesculas assomica*	*Dieng sohsarat*	*Sapindaceae*
2.	*Albizzia lucidor*	*Dieng ri*	*Fabaceae*
3.	*Albizia stipulata*	*Dieng phyllut*	*Fabaceae*
4.	*Albizziz odoratissima*	*Dieng saw*	*Fabaceae*
5.	*Albizziz procera*	*Dieng liewlong/rilong*	*Fabaceae*
6.	*Alstonia scholaris*	*Dieng jyrtieng*	*Apocynaceae*
7.	*Aralia armata*	*Dieng latymphu*	*Araliaceae*
8.	*Artocarpus integrifolia*	*Dieng sohlah/sohphan*	*Moraceae*
9.	*Betula alnoides*	*Dieng lieng*	*Betulaceae*
10.	*Garcinia pinnata*	*Dieng sohpnah*	*Clusiaceae*
11.	*Caryota urens*	*Dieng tlai*	*Arecacea*
12.	*Castanopsis indica*	*Dieng sohot*	*Fagaceae*
13.	*Cinnamomum bejolghota*	*Dieng tyrdop*	*Lauraceae*
14.	*Cinnamomum pauciflorum*	*Dieng torthia/tyrthia*	*Lauraceae*
15.	*Cinnamomum spp*	*Dieng tyrdop*	*Lauraceae*
16.	*Cinnamomum vegolghata*	*Dieng sohsniang*	*Lauraceae*
17.	*Citrus latipes*	*Dieng sohkynphor*	*Rutaceae*
18.	*Dellinia spp*	*Dieng sohmasar*	*Dilleniaceae*
19.	*Dellinia spp*	*Dieng jyrngiem*	*Dilleniaceae*
20.	*Dellinia spp*	*Dieng narjaju*	*Dilleniaceae*
21.	*Drimycarpus racemosus*	*Dieng sohrang/sohbrah*	*Anacardiaceae*
22.	*Elaeocarpus lanceaefolios*	*Dieng sohkhyllam*	*Elaeocarpaceae*
23.	*Elaeocarpus robusta*	*Dieng saw*	*Elaeocarpaceae*
24.	*Engelhardtia spicata*	*Dieng lba*	*Juglandaceae*
25.	*Erythrina spp*	*Dieng sondkhi*	*Fabaceae*
26.	*Eugenia jambolana*	*Dieng sohum*	*Myrtaceae*
27.	*Eurya japonica*	*Dieng pyrshit*	*Theaceae*
28.	*Glochidions phaerogynum*	*Dieng sohumriphin*	*Phyllanthaceae*
29.	*Grewia cerylifolium*	*Dieng sohmeblang*	*Tiliaceae*
30.	*Ilex griffithii*	*Dieng jakrai*	*Aquifoliaceae*
31.	*Ilex sulcata*	*Dieng jali*	*Aquifoliaceae*
32.	*Ilex venulosa*	*Dieng shyieng*	*Aquifoliaceae*
33.	*Ilex venulosa*	*Dieng lalieh*	*Aquifoliaceae*

34.	*Ilex venulosa*	*Dieng sohbrai/sohrang*	*Aquifoliaceae*
35.	*Itea chinensis*	*Dieng sohsyrtet*	*Iteaceae*
36.	*Lannea coromandelica*	*Dieng sohkynthei*	*Anacardiaceae*
37.	*Lithocarpus tribuloides*	*Dieng sning*	*Fagaceae*
38.	*Macaranga denticulate*	*Dieng lakhar*	*Euphorbiaceae*
39.	*Machilus parviflora*	*Dieng niarum*	*Lauraceae*
40.	*Meliosma pinnata*	*Dieng krot*	*Sabiaceae*
41.	*Myrica esculenta*	*Dieng sohphie*	*Myricaceae*
42.	*Myrica indica*	*Dieng sohliya*	*Myricaceae*
43.	*Phoebe lanceolate*	*Dieng sohniar*	*Lauraceae*
44.	*Photinia integrifolia*	*Dieng sohlarmaw*	*Rosaceae*
45.	*Pittosporum nepaulense*	*Dieng jali/jalu*	*Pittosporaceae*
46.	*Premna bengalensis*	*Dieng lalieh*	*Verbenaceae*
47.	*Pterospermum acerifolium*	*Dieng khor/khoh*	*Malvaceae*
48.	*Photinia integrifolia*	*Dieng sohlarmaw*	*Rosaceae*
49.	*Quercus spp*	*Dieng tyrsaw*	*Fagaceae*
50.	*Rhus succedanea*	*Dieng kain*	*Anacardiaceae*
51.	*Sapendus mukorosii*	*Dieng khongrah/sohpairah*	*Sapindaceae*
52.	*Schefflera wallichiana*	*Dieng latyngkieng*	*Araliaceae*
53.	*Schima khasiana*	*Dieng ngan*	*Theaceae*
54.	*Symplocos theaefolia*	*Dieng dpei*	*Symplocaceae*
55.	*Verninia volkamurifolia*	*Dieng japu*	*Asteraceae*
56.	*Viburnum spp*	*Dieng sohlang*	*Caprifoliaceae*
57.	*Viburnum spp*	*Dieng langkdiar*	*Caprifoliaceae*
58.	*Viburnum spp*	*Dieng lang*	*Caprifoliaceae*
59.	*Viburnum spp*	*Dieng sohlangkdier*	*Caprifoliaceae*
60.	*Walsura robusta*	*Dieng sohphlang*	*Meliaceae*
61.	*Wendlandia spp*	*Dieng shatniat*	*Rubiaceae*

Table 3.19.2: Shrubs found in *Law Adong Tyrjut Raid Nongkhlieng*

Sl No.	Local Name	Botanical Name	Family
1.	*Dieng shatnait/shatmoit*	*Wendlandia wallichi*	*Rubiaceae*
2.	*Dieng sohtait*	*Cyanotis vaga*	*Commelinaceae*
3.	*Dieng eitmiang*	*Sida spp.*	*Malvaceae*
4.	*La jaremlieh*	*Clerodendrum viscosum*	*Verbenaceae*
5.	*Dieng jamyrait*	*Gaultheria fragranitissima*	*Ericaceae*
6.	*Dieng sohtylu*	*Daphne papyraceae*	*Thymelaceae*
7.	*Dieng sohum*	*Eugenia jambolona*	*Myrtacea*
8.	*Dieng slamluh*	*Flacourtia jangomas*	*Salicaceae*
9.	*Dieng soh pyrsit*	*Eurya acuminata*	*Theaceae*
10.	*Dieng sohjabuit*	*Phlogacanthus thyrsiflorus*	*Acanthaceae*
11.	*Jarem iong*	*Clerodendrum colebrookianum*	*Verbenaceae*

12.	Synsar	Thysanolaena maxima	Poaceae
13.	Dieng dpei	Symplocos khasiana	Symplocaceae
14.	Dieng rnong	Mahonia pycnophylla	Berberidaceae
15.	Soh lang	Viburnum foetidum	Caprifoliaceae
16.	Dieng tyrsaw	Quercus spp.	Fagaceae

Table 3.19.3: Herbs found in *Law Adong Tyrjut Raid Nongkhlieng*

Sl No.	Local Name	Botanical Name	Family
1.	Slamet	Phrynium spp	Pubinevve
2.	Jajew khlaw	Begonia roxburghii	Begoniaceae
3.	Wang khlaw	Esculenta spp.	Araceae
4.	Phud wang	Colocasia spp.	Araceae
5.	Synraikhlaw	Alpinia spp.	Gingiberaceae
6.	Sla waitlam	Asplenium nidus	Aspliniaceae
7.	Sohtrunshiah	Ananus spp.	Bromiliaceae
8.	Kdaitumjew	Polygonum glabrum	Polygonaceae
9.	Soh tynriew	Calamus erectus	Aricaceae
10.	Longniang	Potentilla gracilis	Zingiberaceae
11.	Jajew maw	Begonia spp.	Begoniaceae
12.	Soh byrhtit	Sida acuta	Malvaceae
13.	Sohthut	Osbeckia spp.	Melostomaceae

Table 3.19.4: Climbers found in *Law Adong Tyrjut Raid Nongkhlieng*

Sl No.	Local Name	Botanical Name	Family
1.	Phan synreh	Dioscorea alata	Dioscoreaceae
2.	Jyrmikhlaw	Mucuna macrocarpa	Leguminaceae
3.	Jyrmisohthied	Not listed	Not listed
4.	Pew shrieh	Hedera nepalensis	Araliaceae
5.	Soh shangkhlor	Elaeagnus pyriformis	Elaeagnaceae
6.	Sla kyndajyrmi	Pothos scandens	Araceae
7.	Loapla	Rhaphidophora decursiva	Araceae
8.	Dieng sohmatan/sohpdong	Stephania glabra	Menispermaceae

Table 3.19.5: Orchids found in *Law Adong Tyrjut Raid Nongkhlieng*

Sl No.	Local Name	Botanical Name	Family
1.	Tiew talongkhnai	Oberoniaob cordata	Orchidaceae
2.	Dieng tiewmationg	Dendrobium chrysanthum,	Orchidaceae
3.	Tiew talongkhnai	Oberonia mannii	Orchidaceae
4.	Knupmawiang	Paphiopedium insigne	Orchidaceae
5.	Tiew dohmaw	Anoectochilus roxburghii	Orchidaceae
6.	Tiewdieng	Dendrobium aphylum	Orchidaceae

Table 3.19.6 : Bamboos & Canes found in *Law Adong Tyrjut Raid Nongkhlieng*

Sl No.	Local Name	Botanical Name	Family
1.	*Siejsylli*	*Melocanna baccifera*	*Poaceae*
2.	*Sla Sohthri*	*Calamus rotang*	*Aracaceae*
3.	*Sohthri*	*Calamus erectus*	*Aracaceae*

3.19.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Adong Tyrjut Raid Nongkhlieng* has been carried out so far. However, as per the local residents, presence of several wild animals have been reported in this forest.

3.19.7 Growing Stock

As per the methodology described in Chapter-II, enumeration was carried out in 20% area of the forest as its area is more than 10 ha. In each sample plots all the trees, having girth (over bark) at breast height more than 30 cm, were enumerated by measuring the top height (in meters) and the girth (in centimetres) at breast height. Data collected during the enumeration was entered in Sacred Groves Description Form and Plot Enumeration Form. During the enumeration within the grove, data was collected for 1,203 trees were found within 14 sample plots each of 0.2 ha size.These include 161 *Schima khasiana* (1st dominant), 95 *Castanopsis indica* (2nd dominant), 92 *Quercus spp* (3rd dominant), and 877 *Rest of Species*. Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each for each of the 13 girth classes starting from 30-40 cm to 151 cm and above. Details of the same are given in the Table: 3.19.7 & 3.19.8 below. As may be seen, total growing stock in this forest is 6724.20 cubic metres.

Table 3.19.7: Species wise Distribution of Growing stock in Different Girth Classes

(cum)

Girth class (cm)	*Schima khasiana* 1st dominant	*Castanopsis indica* 2nd dominant	*Quercus spp* 3rd dominant	Rest of species	Growing Stock in 14 sample plots	Growing stock in Entire Forest
30-40	6.20	0.05	0.19	8.62	**15.06**	**75.41**
41-50	29.38	0.86	0.94	30.56	**61.74**	**309.16**
51-60	33.00	3.16	2.10	33.23	**71.49**	**357.98**
61-70	50.70	5.01	1.92	55.07	**112.70**	**564.33**
71-80	97.79	11.01	4.56	48.58	**161.94**	**810.90**
81-90	110.84	6.99	4.32	34.01	**156.16**	**781.96**
91-100	134.93	10.70	3.61	39.72	**188.96**	**946.20**
101-110	97.73	8.01	2.00	23.64	**131.38**	**657.87**
111-120	97.32	4.22	4.61	19.34	**125.49**	**628.38**
121-130	51.09	3.16	0.97	14.56	**69.78**	**349.42**
131-140	57.41	7.79	1.27	11.25	**77.72**	**389.18**
141-150				15.60	**15.60**	**78.12**
151 & above	94.08	28.70	7.72	24.33	**154.83**	**775.30**
Total	**860.47**	**89.66**	**34.21**	**358.51**	**1342.85**	**6724.20**

Figure 3.19.1: Girth class wise Growing stock in Entire Forest



Table3.19.8: Species-wise Distribution of Growing stock in Different Girth classes in the entire Forest

(cum)

Girth class (cm)	*Schima khasiana* 1st dominant	*Castanopsis indica* 2nd dominant	*Quercus spp* 3rd dominant	Rest of species	Total (for 13.5282 ha' area)	%wrt total volume
30-40	31.05	0.25	0.95	43.16	**75.41**	**1.12**
41-50	147.12	4.31	4.71	153.03	**309.16**	**4.60**
51-60	165.24	15.82	10.52	166.40	**357.98**	**5.32**
61-70	253.88	25.09	9.61	275.76	**564.33**	**8.39**
71-80	489.67	55.13	22.83	243.26	**810.90**	**12.06**
81-90	555.02	35.00	21.63	170.30	**781.96**	**11.63**
91-100	675.65	53.58	18.08	198.89	**946.20**	**14.07**
101-110	489.37	40.11	10.01	118.38	**657.87**	**9.78**
111-120	487.32	21.13	23.08	96.84	**628.38**	**9.35**
121-130	255.83	15.82	4.86	72.91	**349.42**	**5.20**
131-140	287.48	39.01	6.36	56.33	**389.18**	**5.79**
141-150	0.00	0.00	0.00	78.12	**78.12**	**1.16**
151 & above	471.10	143.71	38.66	121.83	**775.30**	**11.53**
Total	**4308.72**	**448.96**	**171.30**	**1795.21**	**6724.20**	**100.00**
%wrt total volume	**64.08**	**6.68**	**2.55**	**26.70**	**100.00**	

As may be seen, 63.98% of the total growing stock is contributed by the 1st dominant species (*Schima khasiana.)* The 2nd dominant species (*Castanopsis indica*) constitutes 6.67% of the total growing stock. Similarly, the 3rd dominant species *(Quercus spp)* constitutes 2.54 % of the total growing stock. A substantial part of the growing stock *i.e.* 26.66 % is constituted by the rest of the species.

3.19.8 Number of Stems

Species-wise number of stems in each girth class are given in table: 3.19.9 & 3.19.10 below. As may be seen maximum number of stems are found in lower girth classes *i.e.* from 30-40 cm to 91-100 cm. Number of stems are inversely proportional to mid-diameter of the girth class

Figure 3.19.2:Girth class-wise Distribution of Growing stock

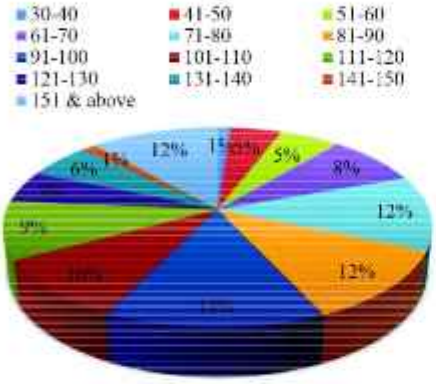


Figure 3.19.3: Species-wise Distribution of Growing stock

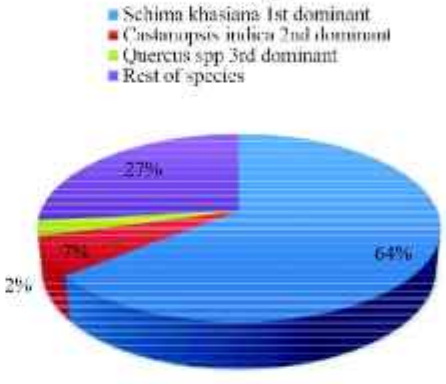


Figure 3.19.4:Girth class-wise Distribution of Growing stock



Figure 3.19.5: Over view of *Law Adong Tyrjut Raid*



Table 3.19.9: Species-wise Distribution of stems in Different Girth Classes in 14 sample plots

(numbers of stems)

Girth class (cm)	*Schima khasiana* 1st dominant	*Castanopsis indica* 2nd dominant	*Quercus spp* 3rd dominant	Rest of species	Total
30-40	6	1	6	134	**147**
41-50	17	6	14	213	**250**
51-60	13	12	17	136	**178**

61-70	14	13	9	143	**179**
71-80	21	21	15	93	**150**
81-90	18	10	10	48	**86**
91-100	18	12	7	44	**81**
101-110	11	7	3	21	**42**
111-120	9	3	5	14	**31**
121-130	4	2	1	9	**16**
131-140	4	4	1	6	**15**
141-150	0	0	0	7	**7**
151 & above	4	4	4	9	**21**
Total	**139**	**95**	**92**	**877**	**1203**

Table 3.19.10: Species-wise Number of stems in Different Girth Classes in the Entire Forest

(numbers of stems)

Girth class (cm)	*Schima khasiana* 1st dominant	*Castanopsis indica* 2nd dominant	*Quercus spp* 3rd dominant	Rest of species	Total
30-40	30	5	30	671	**736**
41-50	85	30	70	1067	**1252**
51-60	65	60	85	681	**891**
61-70	70	65	45	716	**896**
71-80	105	105	75	466	**751**
81-90	90	50	50	240	**431**
91-100	90	60	35	220	**406**
101-110	55	35	15	105	**210**
111-120	45	15	25	70	**155**
121-130	20	10	5	45	**80**
131-140	20	20	5	30	**75**
141-150	0	0	0	35	**35**
151 & above	20	20	20	45	**105**
Total	**696**	**476**	**461**	**4391**	**6024**

Figure 3.19.6:Number of stems in Different Girth classes

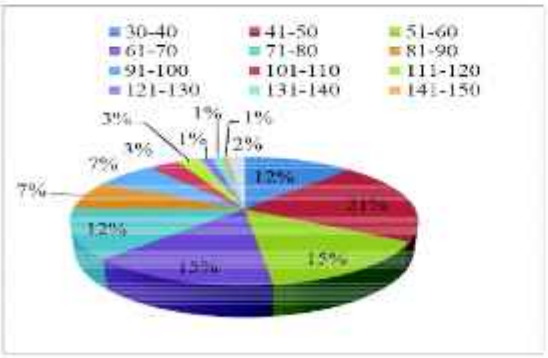


Figure 3.19.7: Species-wise Distribution of Stems

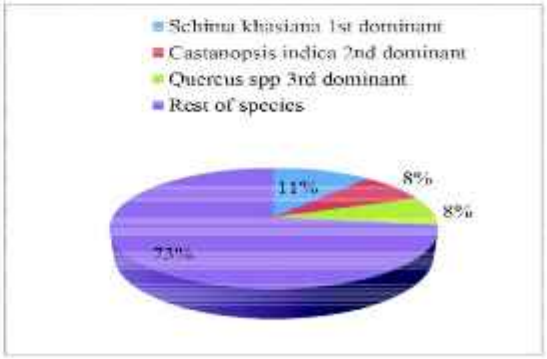


Figure 3.19.8:Number of stems in Different Girth classes



Figure 3.19.9: Inside view of *Law Adong Tyrjut Raid*



3.19.9 Prescriptions for Future Management

3.19.9.1Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC).Though these rules came into force about 63 years ago, the *Law Adong Tyrjut Raid Nongkhlieng* has not been registered with the KHADC. The CFO of the KHADC and the Village Dorbar of Raid Nongkhlieng may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Adong Tyrjut Raid Nongkhlieng* with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.19.9.2Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The Dorbar of *Raid Nongkhlieng* and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Law Adong Tyrjut Raid Nongkhlieng* as a Community Reserve.

3.19.9.3Boundary Demarcation

Boundary of the *Law Adong Tyrjut Raid Nongkhlieng* has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachments. To prevent and to ensure early detection of encroachments, boundary of the *Law Adong Tyrjut Raid Nongkhlieng*,

wherever it is not constituted by natural features of permanent nature, such as rivers or streams or hill ridges may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.19.9.4Fire Protection

As per the Forest Fire Alert System maintained by the Forest Survey of India, during a period of 22 years (2002 -2023) only one fire incident has occurred in the *Law Adong Tyrjut Raid Nongkhlieng*. As per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Adong Tyrjut Raid Nongkhlieng* is highly vulnerable to forest fires. Similarly, as per the said information system, a major part of the *Law Adong Tyrjut Raid Nongkhlieng* is moderately prone to forest fire. To prevent damage to the *Law Adong Tyrjut Raid Nongkhlieng* from accidental forest fires, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Adong Tyrjut Raid Nongkhlieng* and engagement of fire watchers during the critical months may be taken.

3.19.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench, may be constructed at suitable locations in the *Law Adong Tyrjut Raid Nongkhlieng*

3.19.9.6Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Adong Tyrjut Raid Nongkhlieng* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath, walking trail, sign board, washrooms *etc.* may be constructed to attract tourists.

3.19.9.7 Restocking of Open Degraded Areas

Efforts may be made to restock the open degraded patches in *Law Adong Tyrjut Raid Nongkhlieng* by assisting and promoting natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.19.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Adong Tyrjut Raid Nongkhlieng* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Adong Tyrjut Raid Nongkhlieng*.

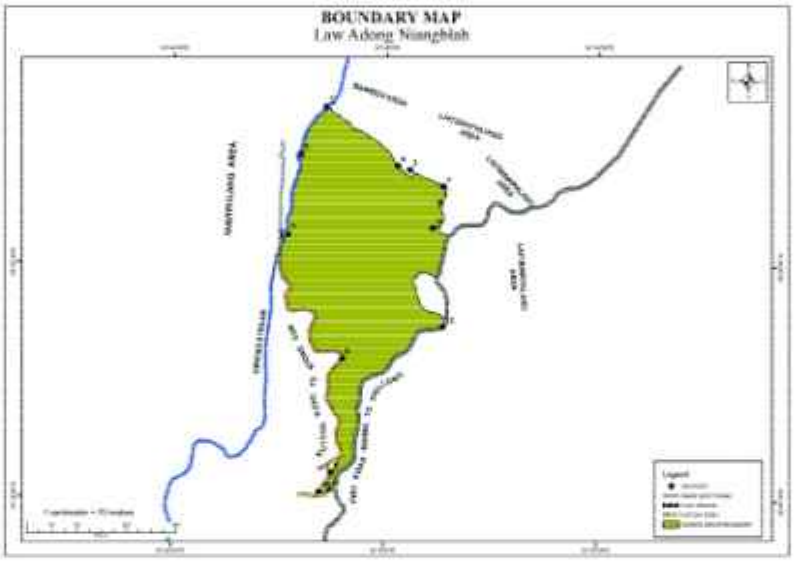
3.19.9.9 Awareness Campaign

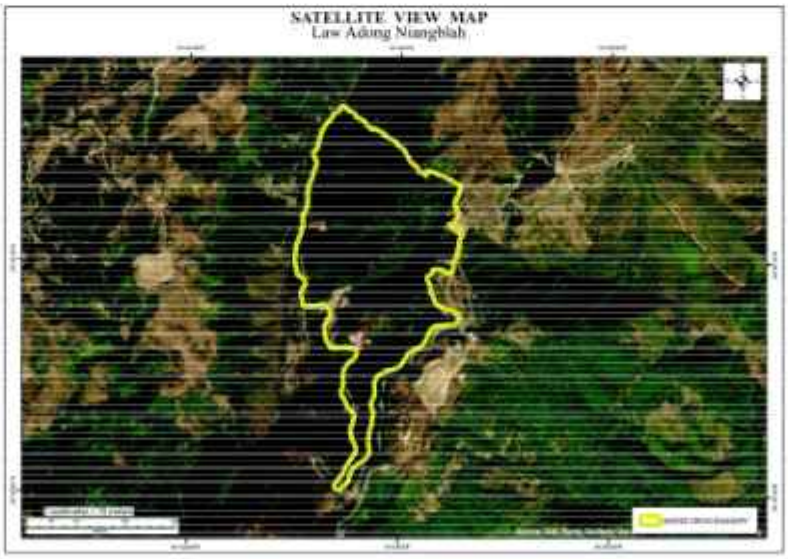
The *Law Adong Tyrjut Raid Nongkhlieng* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

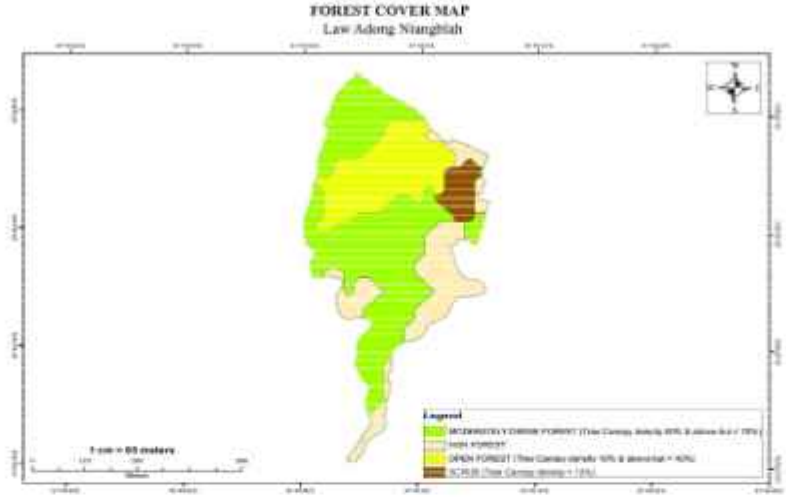
3.20. *LAW ADONG NIANGBLAH*

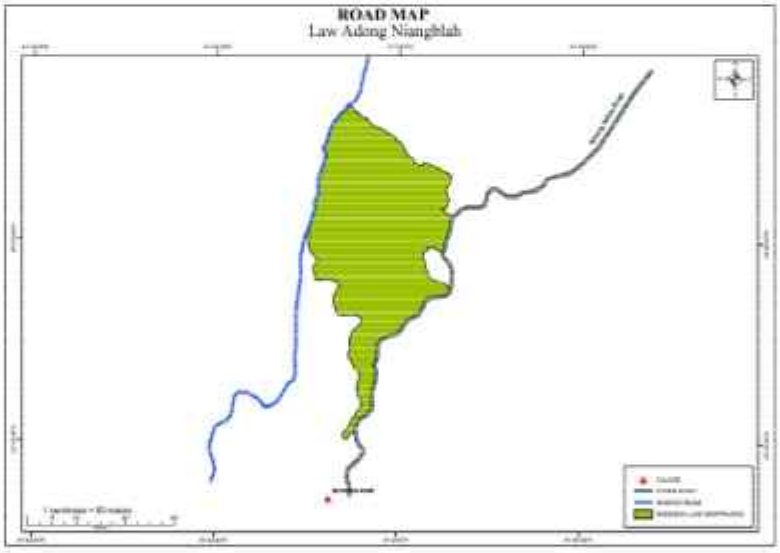
3.20.1 Location

Law Adong Niangblah is located in East Khasi Hills District at *Lad Mawphlang*, under the Syiemship of Hima Sohra Syiemship. It covers an area of 22.009 ha and lies between 91° 44′ 51" E to 91° 45′ 06" E Longitude and 25° 22′ 21" N to 25° 22′ 53" N latitude with an altitude of 1,725 m from mean sea level. The forest is bounded in the North by Mawbeh-Laitsohplieng areas, to the South East by Shillong-Sohra Highway and in the West by David Scott Trail and khatcha road. The grove is accessible by road from Shillong till lad Mawphlang. It is about 40 km from Shillong.



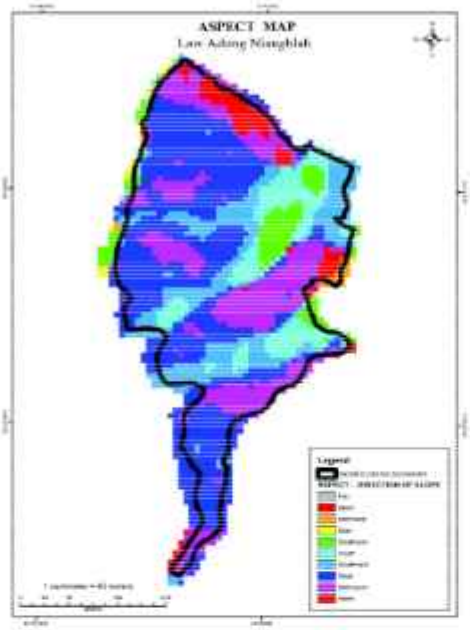


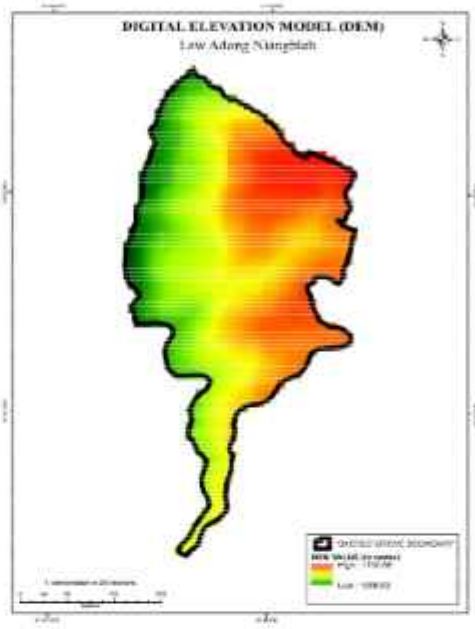


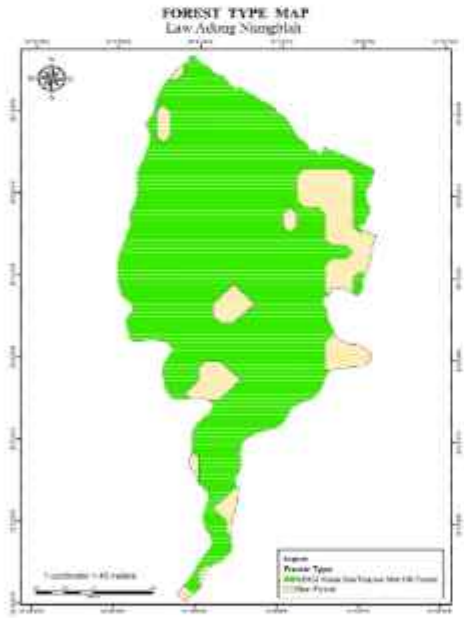


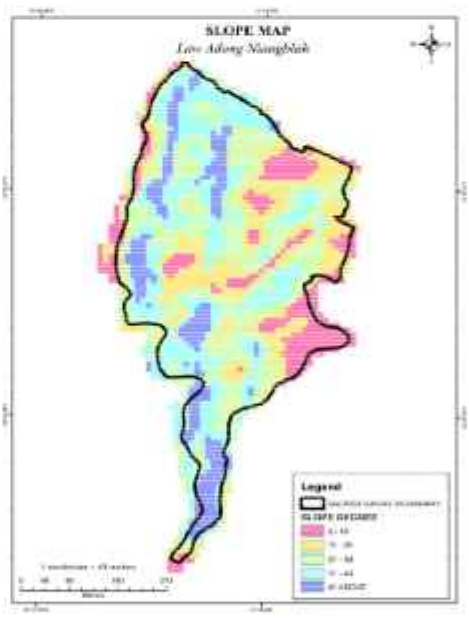
3.20.2 Brief History

The Sacred Grove is owned, managed and administered by Ladmawphlang village through the headmen of the village. There are no records available to establish its origin. However, as informed by the village elders, *Law Adong Niangblah* is in existence for several centuries. In the past, religious rites were performed in this grove. However, presently no such rituals are performed in this forest as the local residents have embraced Christianity. The villagers still preserve this sacred forest for the environmental benefits. Sometimes trees from this forest are used to help families of the village which may require timber for re-construction of their houses in case of any natural calamities.









The Law Adong Niangblah is found to be free from biotic pressure such as encroachments, hunting, poaching and illegal felling of trees.

3.20.3 Geography and Climate

The Topography of the grove is hilly in nature with slope varying from 0.20° to 51°. *Law Adong Niangblah* falls in South, South West, West, North West and South East Aspects. The soil

texture is sandy loam. Soil consistency is slightly compact. Colour of the soil is black with medium humus and soil depth is moderate. Mild soil erosion has been observed in this forest. Umiong stream flows along Western boundary of this forest.

Winter season starts from end of October and lasts till March of the next year. It receives high rainfall during the monsoon season from April to September. Average temperature varies from 7°C to 23°C.

3.20.4 Forest Type

As per the Champion and Seth classification (1968), forests found in the sacred grove are of the ***Type 8B/C2 Khasi Sub-Tropical Wet Hill Forest.***

3.20.5 Forest Cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun, forest cover in the *Law Adong Niangblah* is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	11.51	52.32
Open Forest (10% - 40%)	5.21	23.68
Scrub Forest (<10%)	1.14	5.18
Non-Forest	4.14	18.82
Total	**22.00**	**100**

3.20.6 Flora and Fauna

The *Law Adong Niangblah* is home to virgin forest of natural origin. *Lithocarpus fenestrate and Castanopsis hystrix are 1st and 2nd* dominant tree species. The *Law Adong Niangblah* is home to many rare, endangeredand endemic plant species.

3.20.6.1 Flora species

Table 3.20.1: Trees found in *Law Adong Niangblah*

Sl No.	Local Name	Botanical Name	Family
1.	*Dieng latymphu*	*Aralia armata*	*Araliaceae*
2.	*Dieng lieng*	*Betula alnoides*	*Betulaceae*
3.	*Dieng paitrisang*	*Capinus vinvinea*	*Betulaceae*
4.	*Dieng sning*	*Castanopsis armata*	*Fagaceae*
5.	*Dieng stap*	*Castanopsis hystrix*	*Fagaceae*
6.	*Dieng tyrthia*	*Cinnamomum pauciflorea*	*Lauraceae*
7.	*Dieng sohphoh*	*Docynia indica*	*Rosaceae*
8.	*Dieng sohrang*	*Drimycarpus racemusus*	*Anacardiaceae*
9.	*Dieng sohkhyllam*	*Elaeocarpus lancefolia*	*Elaeocarpaceae*
10.	*Dieng lasaw*	*Elaeocarpus robusta*	*Elaeocarpaceae*
11.	*Dieng lba*	*Engelhartdia spicata*	*Juglandaceae*
12.	*Dieng sohum*	*Eugenia jambolina*	*Myrtaceae*

13.	Dieng pyrshit	Eurya japonica	Pentaphylacaceae
14.	Dieng doh	Exbucklandia populnea	Hamamelidaceae
15.	Dieng sohmehblang	Grewia abutilifolia	Tiliaceae
16.	Dieng lalieh	Inuala cappa	Asteraceae
17.	Dieng sohsyrted	Itea chinensis	Iteaceae
18.	Dieng sohkynphorshrieh	Knemalini folia	Iteaceae
19.	Dieng sohpaiat	Ligustrum licidium	Oleaceae
20.	Dieng jing	Lithocarpus fenestrata	Fagaceae
21.	Dieng ri	Lithocarpus jenistrata	Fagaceae
22.	Dieng krot	Meliosma pinata	Sabiaceae
23.	Dieng sngit	Meliosma wallichii	Sabiaceae
24.	Dieng rai	Michelia champaca	Magnoliaceae
25.	Dieng sohniar	Michelia punduana	Magnoliaceae
26.	Dieng sohphie	Myrica esculenta	Myricaceae
27.	Dieng sohliya	Myrica indica	Myricaceae
28.	Dieng sohlarmaw/ snammaw	Photinia integrifolia	Rosaceae
29.	Dieng kseh	Pinus khasiana/kesiya	Pinaceae
30.	Dieng sohjalu	Pittosporum nepaulense	Pittosporaceae
31.	Dieng tyrkhum	Prunus undulata	Rosaceae
32.	Dieng sohshur	Pyrus khasiana	Rosaceae
33.	Dieng tiewsaw	Rhododendrum arborea	Ericaceae
34.	Dieng sohma	Rhus chinensis	Anacardiaceae
35.	Dieng jalngap	Sauracia punduana	Actinidiaceae
36.	Dieng ngan	Schima khasiana	Theaceae
37.	Dieng pei	Symplocos khasiana	Symplocaceae
38.	Dieng shadmoit	Wendlandia wallichii	Rubiaceae

Table 3.20.2: Shrubs found in *Law Adong Niangblah*

Sl No.	Local Name	Botanical Name	Family
1.	Soh tyrkhum	Acer laevigatum	Sapindaceae
2.	Dieng smaw/sohlarmaw	Photinia spp	Rosaceae
3.	Dieng soh pyrsit	Eurya acuminata	Pentaphylacaceae
4.	La tyngkien	Rauvolfia densiflora	Apocynaceae
5.	Sohlangeitksew	Viburnum simonsii	Adoxaceae
6.	Soh lang	Viburnum foetidum	Caprifoliaceae
7.	Soh byrthit	Urena lobota	Malvaceae
8.	Dieng shadmoit	Wendlndia waliichi	Rubeceae
9.	Dieng sahmehblang	Grewia abutilifolia	Malvaceae
10.	Dieng jamiiang	Symplocos paniculata	Symplocaceae
11.	Dieng jing	Lithocarpus fenestrata	Fagaceae
12.	Dieng tyrnem	Camelia caudula	Theaceae

Table 3.20.3: Herbs found in *Law Adong Niangblah*

Sl No.	Local Name	Botanical Name	Family
1.	*Slamet*	*Phrynium spp*	*Pubinevve*
2.	*Wang khlaw*	*Esculenta spp*	*Araceae*
3.	*Shynraikhlaw*	*Alpinea alogus*	*Gingiberaceae*
4.	*Jajewlieh*	*Begonia spp*	*Begoniaceae*
5.	*Jajew maw*	*Begonia spp*	*Begoniaceae*
6.	*Soh byrthit*	*Urena lobata*	*Malvaceae*
7.	*Soh pangkhlieh*	*Lantana camara*	*Verbanaceae*
8.	*Soh ngangkhlaw*	*Solanum torvum*	*Solanaceae*
9.	*Khliangsyiar*	*Centella asiatica*	*Apiaceae*
10.	*La shing*	*Curcuma spp*	*Zingiberaceae*
11.	*Sying khlaw*	*Zingiber purpureum*	*Zingiberaceae*
12.	*Soh krismas*	*Sarcandra glabra*	*Chloranthaceae*
13.	*Soh byrthitrit*	*Sida rhombijolia*	*Malvaceae*
14.	*Sla eitmut*	*Eupatorium spp*	*Asteraceae*

Table 3.20.4: Climbers found in *Law Adong Niangblah*

Sl No.	Local Name	Botanical Name	Family
1.	*Soh shangkhlor/lyngshang*	*Elaeagnus pyriformis*	*Elaeagnaceae*
2.	*Jyrmikynsew*	*Argyreia nervosa*	*Convolvulaceae*
3.	*soh krot*	*Smilax zeylanica*	*Smilacaceae*
4.	*Sla kyndajyrmi*	*Pothos scandens*	*Araceae*
5.	*Dieng sohmatan/sohpdong*	*Stephania glabra*	*Menispermaceae*
6.	*Sla kyndajyrmi*	*Pothos spp*	*Aralaceae*
7.	*Phan synreh*	*Dioscorea alata*	*Dioscoraceae*
8.	*Phan jyrmi*	*Stephania glabra*	*Liliaceae*

Table 3.20.5: Orchids found in *Law Adong Niangblah*

Sl No.	Local Name	Botanical Name	Family
1.	*Dieng tiewdieng*	*Micropera manii*	*Orchideceae*
2.	*Dieng tiewdieng*	*Dendrobium aphyllum*	*Orchideceae*
3.	*Tiew smehmasi*	*Dendrobium chrysanthum*	*Orchideceae*
4.	*Dieng tiewmationg*	*Dendrobium chrysanthum,*	*Orchidaceae*
5.	*Dieng lyngskaw*	*Dendrobium densiflorum*	*Orchidaceae*
6.	*Dieng klong ramsong*	*Cymbidium longifolium*	*Orchidaceae*
7.	*Talongkhnai*	*Oberonia manii*	*Orchideceae*
8.	*Tlongkhnai*	*Oberonia jenkinsiana*	*Orchideceae*
9.	*Tiew pawanglum*	*Arundina graminifolia*	*Orchideceae*

10.	*Tiew dohmaw*	*Anoectochilus brevilabris*	*Orchideceae*
11.	*Tiew dohmaw*	*Anoectochilus roxburghii*	*Orchideceae*
12.	*Knupmawiang*	*Paphiopedium insigne*	*Orchideceae*
13.	*Syntiew die*	*Bulbophyllum cylindraceum*	*Orchideceae*

Table 3.20.6: Bamboos found in *Law Adong Niangblah*

Sl No.	Local Name	Botanical Name	Family
1.	*Sylli*	*Melocanna baceifera*	*Poaceae*
2.	*Namlang*	*Chimonobambusa khasiana*	*Poaceae*

Table 3.20.7: Creepers found in *Law Adong Niangblah*

Sl No.	Local Name	Botanical Name	Family
1.	*Sohned bah*	*Rubus rogosus*	*Rosaceae*
2.	*TmainKhla*	*Lycopodoum cernuum*	*Lycopodiaceae*
3.	*Sla kyndajyrmi*	*Pothos spp*	*Aralaceae*
4.	*Dieng sohrengblang*	*Strophanthun wallichi*	*Apocynaceae*
5.	*Lapadong*	*Rhaphidophora spp*	*Araleceae*
6.	*Tympewkhlaw*	*Pipper spp*	*Peppereceae*
7.	*Jyrmikynsiew*	*Argyreia nervosa*	*Convolvulaceae*

Table 3.20.8: Grasses found in *Law Adong Niangblah*

Sl No.	Local Name	Botanical Name	Family
1.	*Lang tylli*	*Arundinella khasiana*	*Poaceae*
2.	*Lasier*	*Corex spiculata*	*Poaceae*
3.	*Lang trengsning*	*Potentilla polyphylla*	*Poaceae*
4.	*Lang phot*	*Juncus effusus*	*Poaceae*
5.	*Synsar*	*Thysanolaena maxima*	*Poaceae*

Table 3.20.9: Fern found in *Law Adong Niangblah*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhang iong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodalio*

3.20.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Adong Niangblah* has been carried out so far. However, as per the local residents, presence of several wild animals such as jungle fowls, jackals and some vertebrates and invertebrates has occurred in this forest.

3.20.7 Growing Stock

As per the methodology described in Chapter-II, enumeration was carried out in 20% area of the forest as its area is more than 10 ha. In each sample plots all the trees, having girth (over bark) at breast height more than 30 cm, were enumerated by measuring the top height (in meters) and the girth (in centimetres) at breast height. Data collected during the enumeration were entered in Sacred Groves Description Form and Plot Enumeration Form. During the enumeration within the grove, data were collected for 2,149 trees were found within 22 sample plots each of 0.2 ha size.These includes 482 *Lithocarpus fenestrata* (1stdominant), 436 *Castanopsis hystrix* (2nddominant), 142 *Schima khasiana* (3rddominant) and 1,089 trees of *Rest of Species*. Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each tree species for each of the 13 girth classes starting from 30-40 cm to 151 cm and above. Details of the same are given in Table 3.20.10 & 3.20.11 below. As may be seen, total growing stock in this forest is 2338.28 cubic metres.

Table 3.20.10: Species-wise Distribution of Growing Stock in different Girth Classes

(cum)

Girth class (cm)	*Lithocarpus fenestrata* 1st dominant	*Castanopsis hystrix* 2nd dominant	*Schima khasiana* 3rd dominant	Rest of species	Growing stock in 22 Sample plots	Growing stock in Entire Forest
30-40	12.03	8.35	2.31	25.53	**48.22**	**241.12**
41-50	12.99	10.27	5.15	36.12	**64.53**	**322.63**
51-60	13.02	12.81	6.41	26.60	**58.84**	**294.19**
61-70	10.63	13.46	5.54	22.02	**51.65**	**258.25**
71-80	5.34	15.16	5.93	18.87	**45.30**	**226.50**
81-90	6.75	19.05	8.15	12.15	**46.09**	**230.47**
91-100	1.77	18.09	3.69	11.94	**35.48**	**177.42**
101-110	3.18	13.75	4.61	10.95	**32.49**	**162.43**
111-120	2.57	13.62	1.10	5.40	**22.69**	**113.46**
121-130	1.75	12.90	0.00	4.77	**19.41**	**97.07**
131-140	0.00	7.88	0.00	13.11	**20.99**	**104.96**
141-150	0.00	2.22	0.00	0.00	**2.22**	**11.12**
151 & above	0.00	12.17	0.00	7.57	**19.74**	**98.69**
Total	**70.01**	**159.72**	**42.89**	**195.03**	**467.66**	**2338.28**

As may be seen, 14.97% of the total growing stock is contributed by the 1st dominant species (*Lithocarpus fenestrata).*The 2nd dominant species (*Castanopsis hystrix*) constitutes 34.15 % of the total growing stock. Similarly, the 3rd dominant species *(Schima khasiana)* constitutes 9.17% of the total growing stock. The remaining 41.70% of the growing stock is constituted by the rest of the species.

Figure 3.20.1 Girth Class-wise Growing Stock in Entire Forest

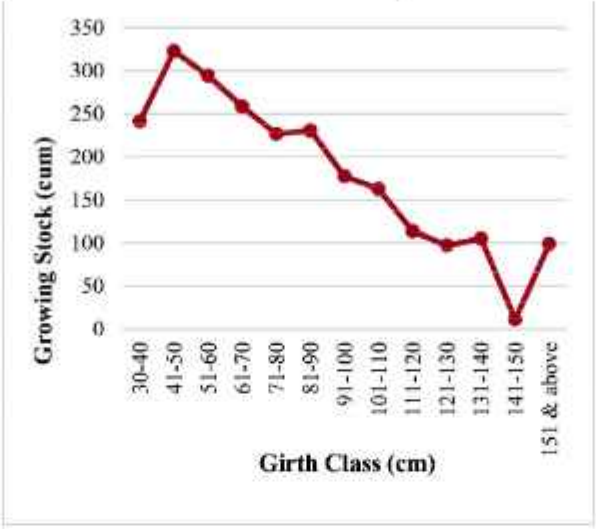


Table 3.20.11: Species wise Distribution of Growing Stock in Different Girth Classes in the Entire Forest

(cum)

Girth class (cm)	*Lithocarpus fenestrata* 1st dominant	*Castanopsis hystrix* 2nd dominant	*Schima khasiana* 3rd dominant	Rest of species	Total (for 22.009 ha' area)	%wrt total volume
30-40	60.15	41.77	11.56	127.65	241.12	**10.31**
41-50	64.94	51.34	25.76	180.60	322.63	**13.80**
51-60	65.08	64.07	32.05	133.00	294.19	**12.58**
61-70	53.14	67.31	27.71	110.10	258.25	**11.04**
71-80	26.72	75.80	29.63	94.35	226.50	**9.69**
81-90	33.74	95.23	40.76	60.75	230.47	**9.86**
91-100	8.84	90.44	18.44	59.70	177.42	**7.59**
101-110	15.88	68.75	23.06	54.75	162.43	**6.95**
111-120	12.87	68.09	5.51	27.00	113.46	**4.85**
121-130	8.73	64.48	0.00	23.86	97.07	**4.15**
131-140	0.00	39.41	0.00	65.56	104.96	**4.49**
141-150	0.00	11.12	0.00	0.00	11.12	**0.48**
151 & above	0.00	60.83	0.00	37.86	98.69	**4.22**
Total	350.07	798.59	214.46	975.17	2338.28	
%wrt total volume	**14.97**	**34.15**	**9.17**	**41.70**		**100**

3.20.8 Number of Stems

Species-wise number of stems in each girth class are given in Tables 3.20.12 & 3.20.13 below. As may be seen, maximum numbers of stems are found in lower girth classes i.e. from 30-40 cm to 51-60 cm. Number of stems are inversely proportional to mid-diameter of the girth class

Figure 3.20.2:Girth class-wise Distribution of the growing stock

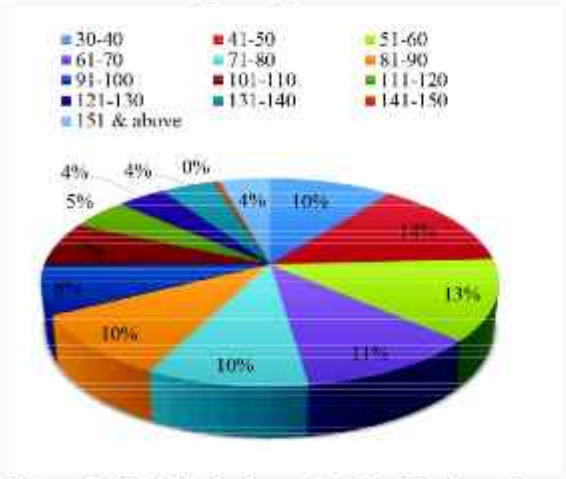


Figure 3.20.3: Species-wise Distribution of Growing stock

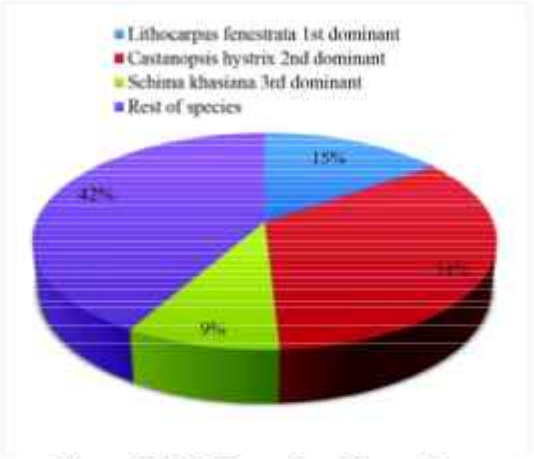


Figure 3.20.4:Girth class-wise Distribution of the growing stock



Figure 3.20.5: Over view of Law *Adong Niangblah*

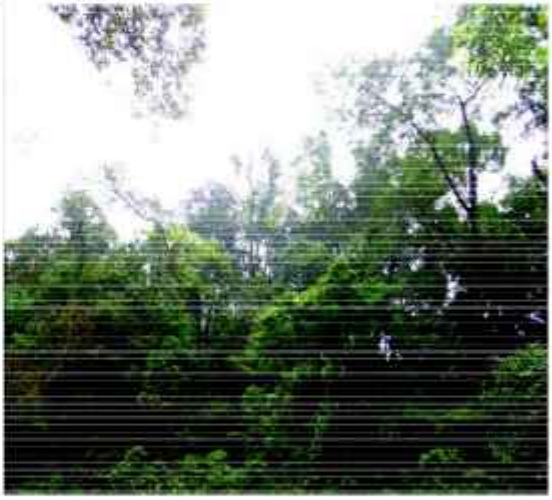


Table 3.20.12: Species-wise Distribution of stems in Different Girth Classes in 22 sample plots

(numbers of stems)

Girth class (cm)	*Lithocarpus fenestrata* 1st dominant	*Castanopsis hystrix* 2nd dominant	*Schima khasiana* 3rd dominant	Rest of species	Total
30-40	275	165	27	571	1038
41-50	98	73	33	260	464
51-60	54	50	27	107	238
61-70	27	34	17	58	136
71-80	10	28	13	36	87
81-90	10	27	14	17	68

91-100	2	20	5	14	41
101-110	3	12	5	10	30
111-120	2	10	1	4	17
121-130	1	8	0	3	12
131-140	0	4	0	7	11
141-150	0	1	0	0	1
151 & above	0	4	0	2	6
Total	**482**	**436**	**142**	**1,089**	**2,149**

Table 3.20.13: Species wise Number of stems in Different Girth in the Entire Forest

(numbers of stems)

Girth class (cm)	*Lithocarpus-fenestrata* 1st dominant	*Castanopsis-hystrix* 2nd dominant	*Schima khasiana* 3rd dominant	Rest of species	Total
30-40	1375	825	135	2855	**5190**
41-50	490	365	165	1300	**2320**
51-60	270	250	135	535	**1190**
61-70	135	170	85	290	**680**
71-80	50	140	65	180	**435**
81-90	50	135	70	85	**340**
91-100	10	100	25	70	**205**
101-110	15	60	25	50	**150**
111-120	10	50	5	20	**85**
121-130	5	40	0	15	**60**
131-140	0	20	0	35	**55**
141-150	0	5	0	0	**5**
151 & above	0	20	0	10	**30**
Total	**2,410**	**2,180**	**710**	**5,445**	**10,745**

Figure 3.20.6: Number of stems in Different Girth Classes

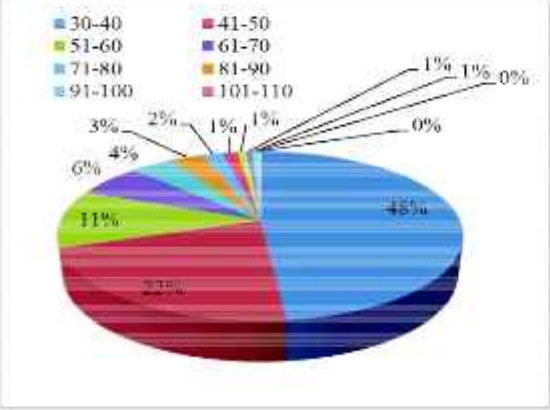


Figure 3.20.7: Species-wise Distribution of Stems



3.20.9 Prescriptions for Future Management

3.20.9.1 Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Adong Niangblah* has not been registered with the KHADC. The CFO of the KHADC and the Village Dorbar of *Lad Mawphlang* may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Adong Niangblah* with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

Figure 3.20.6: Number of stems in Different Girth Classes



Figure 3.20.7: Inside view of *Law Adong Niangblah*



3.20.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The Dorbar of *Lad Mawphlang Village* and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Law Adong Niangbla h*as a Community Reserve.

3.20.9.3 Boundary Demarcation

Boundary of the *Law Adong Niangblah* has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachments. To prevent and to ensure early

detection of encroachments, boundary of the *Law Adong Niangblah*, wherever it is not constituted by natural features of permanent nature, such as rivers or streams or hill ridges may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.20.9.4Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India, during a period of 22 years (2002 -2023) no fire incident has occurred in the *Law Adong Niangblah*. As per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Adong Niangblah* is highly vulnerable to forest fires. Similarly, as per the said information system, a major part of the *Law Adong Niangblah* is moderately prone to forest fire. To prevent damage to the *Law Adong Niangblah* from accidental forest fires, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Adong Niangblah* and engagement of fire watchers during the critical months may be taken.

3.20.9.5Construction of Soil Moisture Conservation and Water Harvesting Structures

One perennial stream is located along boundary of this *Law Adong Niangblah*. To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench etc. may be constructed at suitable locations in the *Law Adong Niangblah*.

3.20.9.6Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Adong Niangblah* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath, walking trail, sign board, washrooms *etc*. may be constructed to attract tourists.

3.20.9.7 Restocking of Open Degraded Areas

Efforts may be made to restock the open degraded patches in *Law Adong Niangblah* by assisting and promoting natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.20.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Adong Niangblah* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Adong Niangblah*.

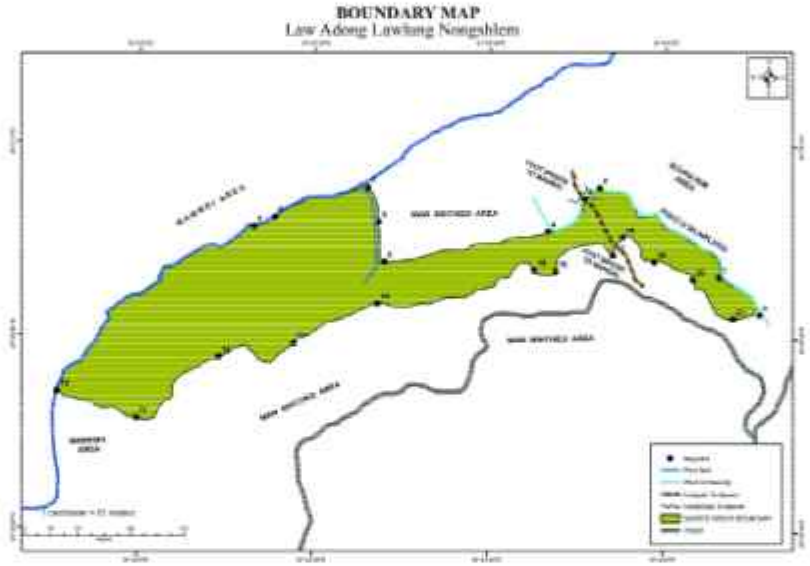
3.20.9.9 Awareness Campaign

The *Law Adong Niangblah* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

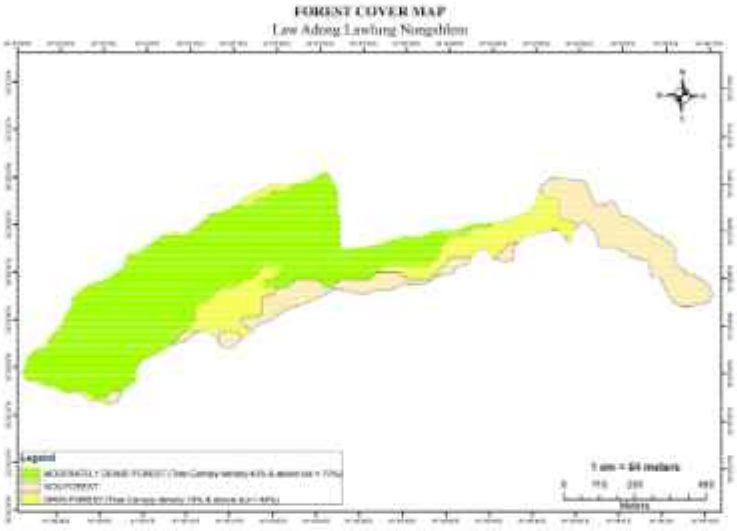
3.21. *LAW ADONG LAWLUNG NONGSHLEM*

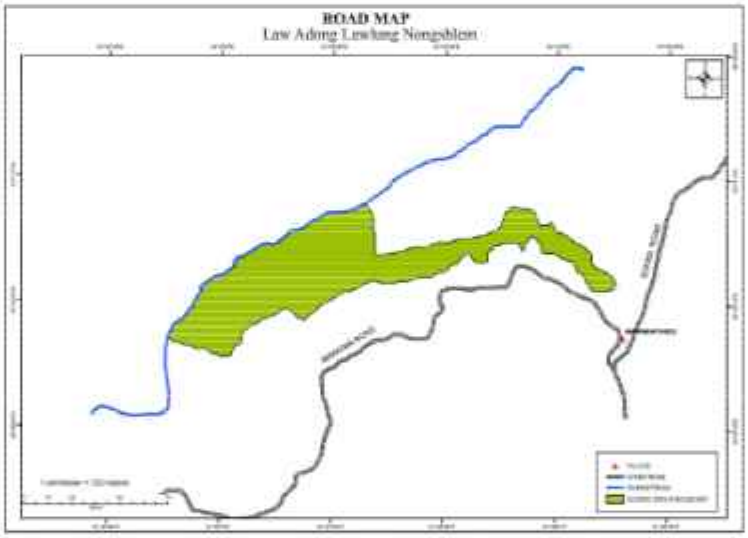
3.21.1 Location

Law Adong Lawlung Nongshlem is situated in East Khasi Hills District at Mawmihthied village, under the Syiemship of Hima Sohra Syiemship. It covers an area of 43.94 ha and lies between 91° 42´ 58" E to 91° 44´ 12" E Longitude and 25° 20´ 34" N to 25° 20´ 56" N latitude with an altitude of 1669 m from mean sea level. The forest is bounded in the North East by Phudum Lawlung and Mawmihthied area to the North and South by Mawmihthied area and Mawkma area, and to the West by Umiong stream. The grove is accessible by road from Shillong to Sohra. It is about 48 km from Shillong.



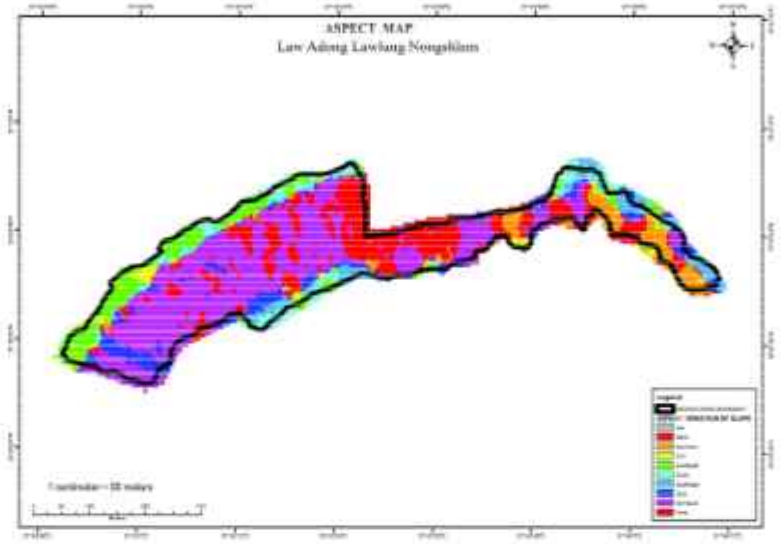


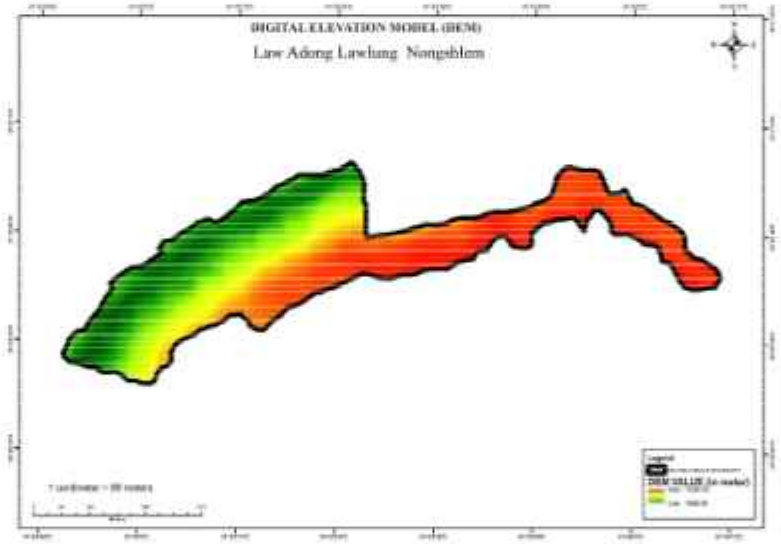




3.21.2 Brief History

There are no records available to establish origin of the *Law Adong Lawlung Nongshlem*. However, as informed by the village elders, *Law Adong Lawlung Nongshlem* is in existence for several centuries. It is managed and administered by the village Dorbar through headmen of the village. In the past, religious rites were performed in this grove. However, presently no such rituals are performed in this forest as the local residents have embraced Christianity. The villagers still preserve this sacred forest for the environmental benefits. Sometimes trees from this forest are used to help families of the village which may require timber for re-construction of their houses in case of any natural calamities. Biotic pressure such as encroachments, hunting, poaching and illegal felling of trees are found to be absent in this forest.



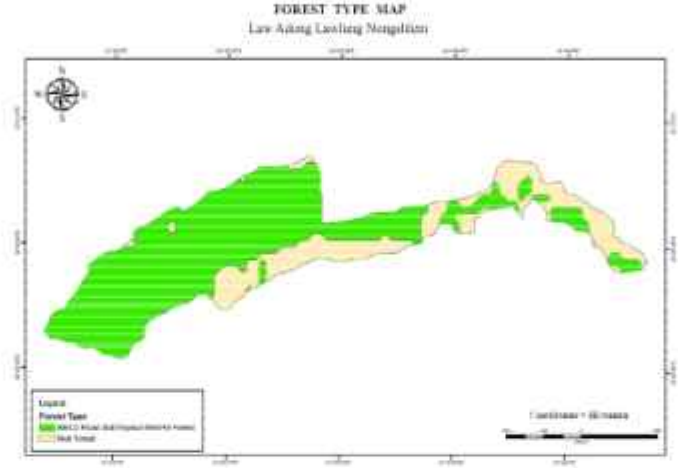


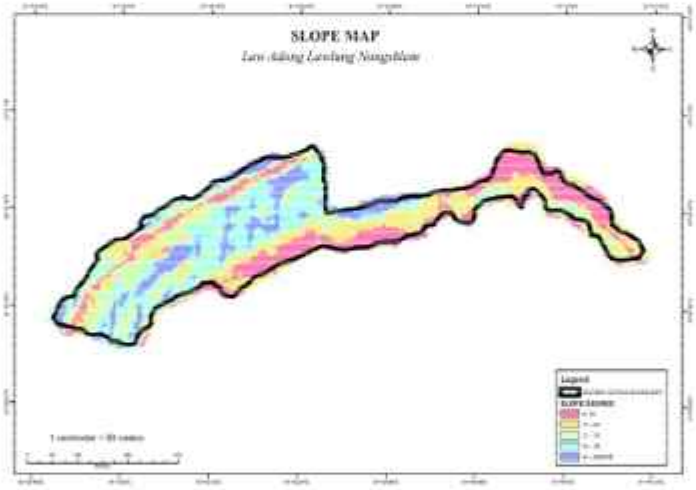
3.21.3 Geography and Climate

The topography of the grove is hilly in nature with slope varying from as low as 0.40° to as high as 57°. *Law Adong Lawlung Nongshlem* falls in North West, North, South, South East and East Aspects. Soil texture is loam with loose stone.Soil consistency is slightly compact. Colour of the soil is black and soil depth is moderate. Negligible soil erosion has been observed in this Forest. *Umiong* stream constitutes western boundary of the Forest and *Phudumlawlung* stream constitutes its eastern boundary. Winter season starts from end of October and lasts till March of the next year. It receives high rainfall during the monsoon season from April to September. Average temperature varies from 7°C to 23°C.

3.21.4 Forest Type

As per the Champion and Seth classification (1968), forests found in the sacred grove are of the ***Type 8B/C2 Khasi Sub-Tropical Wet Hill Forest.***





3.21.5 Forest Cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun forest cover in the *Law Adong Lawlung Nongshlem* is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	29.08	66.18
Open Forest (10% - 40%)	6.39	14.54
Scrub Forest (<10%)	0	0
Non-Forest	8.47	19.28
Total	**43.94**	**100**

3.21.6 Flora and Fauna

The *Law Adong Lawlung Nongshlem* is home to virgin forest of natural origin. *Castanopsis hystrix and Pinus kesiya* are respectively the *1st and 2nd dominant tree species.* The forest is home to many rare, endangered and endemic plant species.

1.21.6.1.1 Flora species

Table 3.21.1: Trees found in *Law Adong Lawlung Nongshlem*

Sl No.	Local Name	Botanical Name	Family
1	*Dieng ri*	*Albizia lucidior*	*Fabaceae*
2	*Dieng jyrting*	*Alstonia scholaris*	*Apocynaceae*
3	*Dieng latymphu*	*Aralia armata*	*Araliaceae*
4	*Dieng lieng*	*Betula alnoides*	*Betulaceae*
5	*Dieng sohpaitrisang*	*Carpinus viminea*	*Betulaceae*
6	*Dieng sning*	*Castanopsisarmata*	*Fagaceae*
7	*Dieng stap*	*Castanopsis hystrix*	*Fagaceae*
8	*Dieng sohot*	*Castanopsis indica*	*Fagaceae*
9	*Dieng tyrthia*	*Cinnamomum pauciflorum*	*Lauraceae*
10	*Dieng sohriew*	*Cioxlacryma-jabi*	*Poaceae*
11	*Dieng jalu*	*Citrus assamensis*	*Rutaceae*
12	*Dieng sohkhyllam*	*Elaeocarpus lanceaefolios*	*Elaeocarpaceae*
13	*Dieng lasaw*	*Elaeocarpus robusta*	*Juglandaceae*
14	*Dieng lba*	*Engelhardia spicata*	*Juglandaceae*
15	*Dieng sohum*	*Eugenia jambolana*	*Myrtaceae*
16	*Dieng pyrshit*	*Eurya acuminata*	*Theaceae*
17	*Dieng doh*	*Exbucklandia populnea*	*Hamamelidaceae*
18	*Dieng sohmehblang*	*Grewia abutilifolia*	*Tiliaceae*
19	*Dieng sohshyieng*	*Ilex venulosa*	*Aquifoliaceae*
20	*Dieng lalieh*	*Inula cappa*	*Aquifoliaceae*
21	*Dieng sohsyrtet*	*Itea chinensis*	*Iteaceae*
22	*Dieng jing*	*Lithocarpus fenestrata*	*Fagaceae*
23	*Dieng Krot*	*Meliosma pinnata*	*Sabiaceae*
24	*Dieng rai*	*Michelia champaca*	*Magnoliaceae*
25	*Dieng sohphie*	*Myrica esculenta*	*Fagaceae*
26	*Dieng sohliya*	*Myrica indica*	*Myricaceae*
27	*Dieng sohlarmaw*	*Photinia integrifolia*	*Rosaceae*
28	*Dieng kseh*	*Pinus kesiya*	*Pinaceae*
29	*Dieng sohshur/sohjhur*	*Pyrus pashia*	*Rosaceae*
30	*Dieng sohnamdngiem*	*Quercus spp*	*Fagaceae*
31	*Dieng sohma*	*Rhus chinensis*	*Anacardiaceae*
32	*Dieng jakrai*	*Rhynchotechum ellipticum*	*Gesneriaceae*
33	*Dieng ngan*	*Schima khasiana*	*Theaceae*
34	*Dieng pei*	*Symplocos theoefolia*	*Symplocaceae*
35	*Dieng sohlangksew*	*Viburnum foeticdum*	*Viburnaceae*
36	*Dieng Sohlangeitksew*	*Viburnum simosii*	*Adoxaceae*
37	*Dieng shadmoit*	*Wendlandia tinctoria*	*Rubiaceae*

Table 3.21.2: Shrubs found in *Law Adong Lawlung Nongshlem*

Sl No.	Local Name	Botanical Name	Family
1.	Soh tyrkhum	Acer laevigatum	Sapindaceae
2.	Soh shiah	Rubus ellipticus	Rosaceae
3.	Jalyntem	Polygonum chinense	Polygonaceae
4.	Dieng smaw/sohlarmaw	Photinia spp	Not known
5.	Sohmluh	Not known	Not known
6.	Dieng soh pyrsit	Eurya acuminata	Theaceae
7.	La tyngkien	Rauvolfiadensiflora	Apocynaceae.
8.	Sohlangeitksew	Viburnum simonsii	Adoxaceae.
9.	Soh lang	Viburnum foetidum	Caprifoliaceae
10.	Soh byrthit	Urena lobota	Malvaceae
11.	Dieng shadmoit	Wendlndia waliichi	Rubeceae
12.	Dieng sahmehblang	Grewia abutilifolia	Tiliaceae
13.	Dieng jamiiang	Symplocos paniculata	Symplocaceae
14.	Dieng jing	Lithocarpus fenestrata	Fagaceae
15.	Dieng tyrnem	Camelia caudula	Theaceae

Table 3.21.3: List of Herbs found in *Law Adong Lawlung Nongshlem*

Sl No.	Local Name	Botanical Name	Family
1.	Slamet	Phrynium spp	Pubinevve
2.	Wang khlaw	Esculenta spp	Araceae
3.	Shynraikhlaw	Alpinea alogus	Gingiberaceae
4.	Jajewlieh	Begonia spp	Begoniaceae
5.	Jajew maw	Begonia spp	Begoniaceae
6.	Soh byrthit	Urena lobata	Malvaceae
7.	Soh pangkhlieh	Lantana camara	Verbenaceae
8.	Soh ngangkhlaw	Solanum torvum	Solanaceae
9.	Khliangsyiar	Centella asiatica	Apiaceae
10.	La shing	Curcuma spp	Zingiberaceae
11.	Sying khlaw	Zingiber purpureum	Zingiberaceae
12.	Soh krismas	Sarcandra glabra	Zingiberaceae
13.	Soh byrthitrit	Sida rhombijolia	Chloranthaceae
14.	Sla eitmut	Eupatorium spp	Asteraceae

Table 3.21.4: Climbers found in *Law Adong Lawlung Nongshlem*

Sl No.	Local Name	Botanical Name	Family
1.	Soh shangkhlor/lyngshang	Elaeagnus pyriformis	Elaeagnaceae
2.	Jyrmi kynsew	Argyreia nervosa	Convolvulaceae
3.	Soh krot	Smilax zeylanica	Smilacaceae

4.	Sla kyndajyrmi	Pothos scandens	Araceae
5.	Dieng sohmatan/sohpdong	Stephania glabra	Menispermaceae
6.	Sla kyndajyrmi	Pothos spp	Aralaceae
7.	Phan synreh	Dioscorea alata	Dioscoreaceae
8.	Phan jyrmi	Stephania glabra	Liliaceae

Table 3.21.5: Orchids found in *Law Adong Lawlung Nongshlem*

Sl No.	Local Name	Botanical Name	Family
1.	Dieng tiewdieng	Micropera manii	Orchideceae
2.	Dieng tiewdieng	Dendrobium aphyllum	Orchideceae
3.	Tiew smehmasi	Dendrobium chrysanthum	Orchideceae
4.	Dieng tiewmationg	Dendrobium chrysanthum,	Orchidaceae
5.	Dieng lyngskaw	Dendrobium densiflorum	Orchidaceae
6.	Dieng klong ramsong	Cymbidium longifolium	Orchidaceae
7.	Talongkhnai	Oberonia manii	Orchideceae
8.	Tlongkhnai	Oberonia jenkinsiana	Orchideceae
9.	Tiew pawanglum	Arundina graminifolia	Orchideceae
10.	Tiew dohmaw	Anoectochilus brevilabris	Orchideceae
11.	Tiew dohmaw	Anoectochilus roxburghii	Orchideceae
12.	Tiew lynksiar	Cymbiduim traceyamum	Orchideceae
13.	Knupmawiang	Paphiopedium insigne	Orchideceae
14.	Syntiew die	Bulbophyllum cylindraceum	Orchideceae

Table 3.21.6: Bamboos & Canes found in *Law Adong Lawlung Nongshlem*

Sl No.	Local Name	Botanical Name	Family
1.	Sylli	Melocanna baceifera	Poaceae
2.	Namlang	Chimonobambusa khasiana	Poaceae
3.	Spit/spar	Chimonobambusa spp	Poaceae
4.	Sla sohthri	Calamus rotang	Poaceae
5.	Sohthri	Calamus erectus	Poaceae

Table 3.21.7: Creeper found in *Law Adong Lawlung Nongshlem*

Sl No.	Local Name	Botanical Name	Family
1.	Sohned bah	Rubus rogosus	Rosaceae
2.	Tmain Khla	Lycopodoum cernuum	Lycopodiaceae
3.	Sla kyndajyrmi	Pothosspp	Aralaceae
4.	Dieng sohrengblang	Strophanthun wallichi	Apocynaceae
5.	Lapadong	Rhaphidophora spp	Araleceae
6.	Tympewkhlaw	Pipper spp	Peppereceae
7.	Jyrmikynsiew	Argyreia nervosa	Convolvulaceae

Table 3.21.8: Grasss found in *Law Adong LawlungNongshlem*

Sl No.	Local Name	Botanical Name	Family
1.	*Lang tylli*	*Arundinella khasiana*	*Poaceae*
2.	*Lang snuih*	*Not known*	*Not known*
3.	*Lasier*	*Corex spiculata*	*Poaceae*
4.	*Lang trengsning*	*Potentilla polyphylla*	*Poaceae*
5.	*Lang phot*	*Juncus effusus*	*Poaceae*
6.	*Synsar*	*Thysanolaena maxima*	*Poaceae*

Table 3.21.9: Fern found in *Law Adong LawlungNongshlem*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhang iong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodalio*

3.21.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Adong Lawlung Nongshlem* has been carried out so far. However, as per the local residents, presence of several wild animals and birds has been noted in this forest.

3.21.7 Growing Stock

As per the methodology described in Chapter-II, enumeration was carried out in20% area of the forest as its area is more than 10 ha. In each sample plots all the trees, having girth (over bark) at breast height more than 30 cm, were enumerated by measuring the top height (in meters) and the girth (in centimetres) at breast height. Data collected during the enumeration were entered in Sacred Groves Description Form and Plot Enumeration Form. During the enumeration within the grove, data was collected for 1,066 trees were found within 44 sample plots each of 0.2 ha size. These includes 293 *Castanopsis hystrix* (1stdominant), 86 *Pinus kesiya* (2nddominant), 69 *Myrica esculenta* (3rddominant), 618 *rest of species*. Using the Local Volume Equations given in Chapter –II, girth classes wise volume was calculated for each tree species for each of the 13 girth classes starting from 30-40 cm to 151 cm and above. Details of the same are given in the Table: 3.21.10 & 3.21.11 below. As may be seen, total growing stock in this forest is 642.03 cubic metres.

Table 3.21.10: Species wise Distribution of Growing Stock in Different Girth Classes

(cum)

Girth Class wise	*Castanopsis hystrix* 1st Dominant	*Pinus kesiya* 2nd Dominant	*Myrica esculenta* 3nd Dominant	Rest of species	Growing stock in 44 Sample Plots	Growing stock in Entire Forest (cum)
30-40	11.529	0.358	0.63	20.388	**32.905**	166.189
41-50	4.374	1.251	3.29	12.974	**21.889**	110.552
51-60	0.937	1.576	3.17	5.343	**11.026**	55.688

61-70	0.404	5.606	1.14	0.737	**7.887**	39.834
71-80	0	3.732	5.060	2.643	**11.435**	57.753
81-90	0.663	8.488	1.36	2.011	**12.522**	63.243
91-100	0	4.604	1.79	0.915	**7.309**	36.915
101-110	0	0.865	2.38	1.066	**4.311**	21.773
111-120	1.275	2.179	1.48	0.000	**4.934**	24.920
121-130	1.746	0	1.8	1.608	**5.154**	26.031
131-140	5.494	0	0	0	**5.494**	27.748
141-150	0	0	0	2.255	**2.255**	11.389
151 & above	0	0	0	0.000	**0.000**	0.000
Total	**26.422**	**28.659**	**22.1**	**49.940**	**127.121**	**642.03**

Figure 3.21.1 Girth class-wise Growing stock in Entire Forest

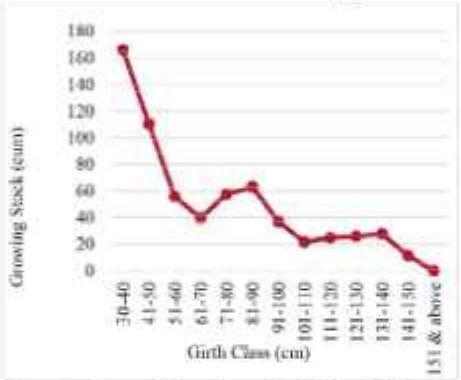


Table 3.21.11: Species-wise Distribution of Growing Stock in Different girth Classes in the Entire Forest

(cum)

Girth Class wise	*Castanopsis hystrix* 1st Dominant	*Pinus kesiya* 2nd Dominant	*Myrica esculenta* 3rd Dominant	Rest of species	Total (for 43.94 ha' area)	%wrt total volume
30-40	58.23	1.81	3.18	102.97	**166.19**	26
41-50	22.09	6.32	16.62	65.53	**110.55**	17
51-60	4.73	7.96	16.01	26.99	**55.69**	9
61-70	2.04	28.31	5.76	3.72	**39.83**	6
71-80	0.00	18.85	25.56	13.35	**57.75**	9
81-90	3.35	42.87	6.87	10.16	**63.24**	10
91-100	0.00	23.25	9.04	4.62	**36.91**	6
101-110	0.00	4.37	12.02	5.38	**21.77**	3
111-120	6.44	11.01	7.47	0.00	**24.92**	4
121-130	8.82	0.00	9.09	8.12	**26.03**	4
131-140	27.75	0.00	0.00	0.00	**27.75**	4
141-150	0.00	0.00	0.00	11.39	**11.39**	2
151 & above	0.00	0.00	0.00	0.00	**0.00**	0
Total	**133.45**	**144.74**	**111.62**	**252.23**	**642.03**	
%wrt total volume	20.79	22.55	17.39	39.29		100

As may be seen, 20.78 % of the total growing stock is contributed by the 1st dominant species (*Castanopsis hystrix)*. The 2nd dominant species (*Pinus kesiya*) constitutes 22.54 % of the total growing stock. Similarly, the 3rd dominant species *(Myrica esculanta)* constitutes 17.39% of the total growing stock. The remaining 39.29% of the growing stock is constituted by the rest of the species.

Figure 3.21.2: Girth class-wise Distribution of the growing stock

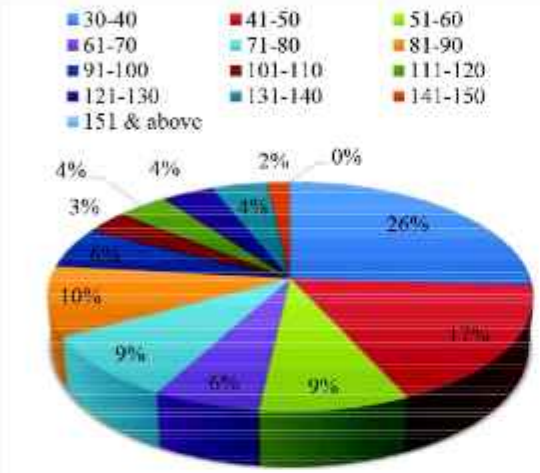


Figure 3.21.3: Species-wise Distribution of Growing stock

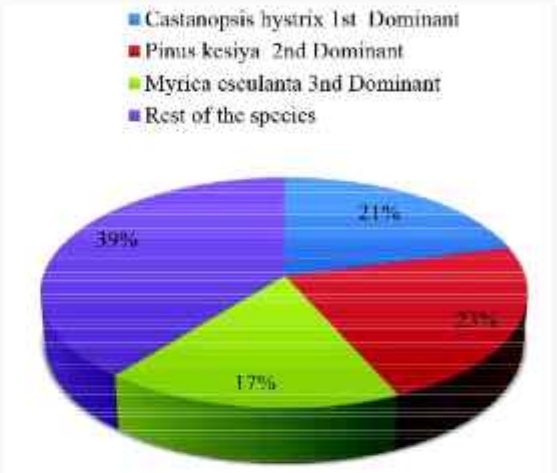


Figure 3.21.4:Girth class-wise Distribution of the growing stock

Figure 3.21.5: Over view *of Law Adong Lawlung Nongshlem*





3.21.8 Number of Stems:

Species-wise number of stems in each girth class are given in Table 3.21.12 & 3.21.13 below. As may be seen maximum numbers of stems are found in lower girth classes i.e. from 30-40 cm to 51-60 cm. Number of stems are inversely proportional to mid-diameter of the girth class

Table 3.21.12: Species-wise Distribution of stems in Different Girth Classes in 44 sample plots

(numbers of stems)

Girth Class wise	*Castanopsishy-strix* 1st Dominant	*Pinus kesiya* 2nd Dominant	*Myrica esculenta* 3nd Dominant	Rest of species	Total
30-40	249	12	15	484	760
41-50	33	13	21	99	166
51-60	4	9	13	21	47
61-70	1	19	3	2	25
71-80	0	9	9	5	23
81-90	1	15	2	3	21
91-100	0	6	2	1	9
101-110	0	1	2	1	4
111-120	1	2	1	0	4
121-130	1	0	1	1	3
131-140	3	0	0	0	3
141-150	0	0	0	1	1
151 & above	0	0	0	0	0
Total	**293**	**86**	**69**	**618**	**1066**

Table 3.21.13: Species-wise Number of stems in Different Girth Classes in the Entire Forest

(numbers of stems)

Girth Class wise	*Castanopsis hystrix* 1st Dominant	*Pinus kesiya* 2nd Dominant	*Myrica esculenta* 3nd Dominant	Rest of species	Total
30-40	1258	61	76	2444	3838
41-50	167	66	106	500	838
51-60	20	45	66	106	237
61-70	5	96	15	10	126
71-80	0	45	45	25	116
81-90	5	76	10	15	106
91-100	0	30	10	5	45
101-110	0	5	10	5	20
111-120	5	10	5	0	20
121-130	5	0	5	5	15
131-140	15	0	0	0	15
141-150	0	0	0	5	5
151 & above	0	0	0	0	0
Total	1480	434	348	3121	5384

Figure 3.21.6:Number of Stems in Different Girth Classes

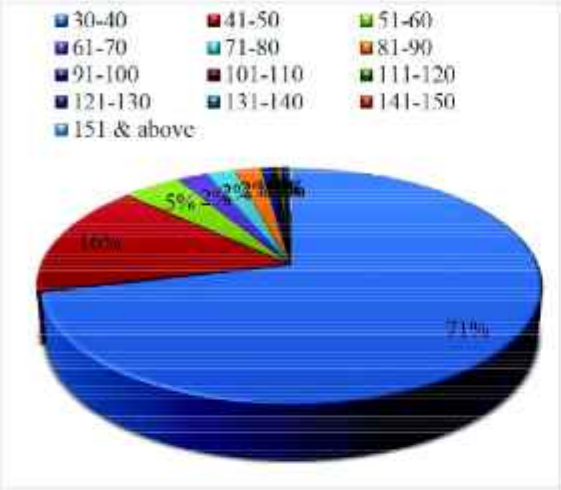


Figure 3.21.7: Species-wise Distribution of Stems

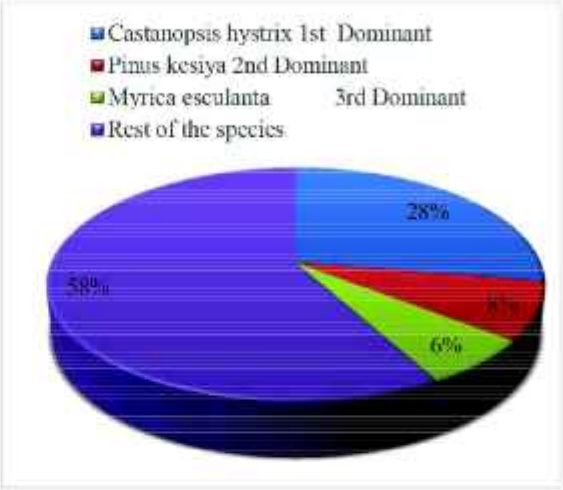


Figure 3.21.8:Number of Stems in Different Girth Classes

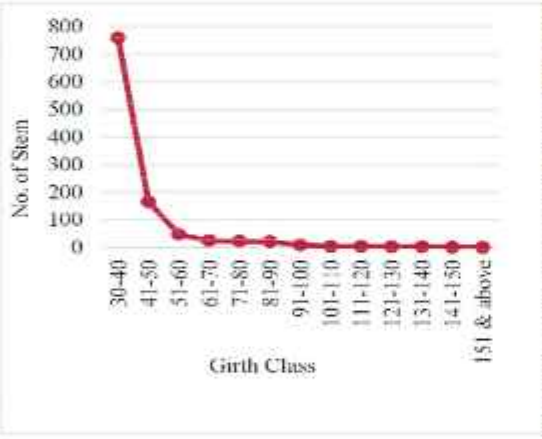


Figure 3.21.9: Inside view of *Law Adong Lawlung Nongshlem*



3.21.9 Prescriptions for Future Management

3.21.9.1Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Adong Lawlung Nongshlem* has not been registered with the KHADC. The CFO of the KHADC and the Village Dorbar of *Mawmihthied Village* may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Adong Lawlung Nongshlem* with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.21.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The Dorbar of *Mawmihthied Village* and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Law Adong Lawlung Nongshlem* as a Community Reserve.

3.21.9.3 Boundary Demarcation

Boundary of the *Law Adong Lawlung Nongshlem* has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachment. To prevent and to ensure early detection of encroachments, boundary of the *Law Adong Lawlung Nongshlem*, wherever it is not constituted by natural features of permanent nature, such as rivers or streams or hill ridges may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.21.9.4 Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India, during a period of 22 years (2002 -2023) only one fire incident has occurred in the *Law Adong Lawlung Nongshlem*. As per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Adong Lawlung Nongshlem* is moderately vulnerable to forest fire. However, as per the said information system, a major part of the *Law Adong Lawlung Nongshlem* is not prone to forest fire. To prevent damage to the *Law Adong Lawlung Nongshlem* from accidental forest fire, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Adong Lawlung Nongshlem* and engagement of fire watchers during the critical months may be taken.

3.21.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

Two perennial streams namely; *Umiong* stream and *Phudum Lawlung* are located in and around the *Law Adong Lawlung Nongshlem*. Construction of check dams at appropriate locations across these streams may improve moisture regime of the area. To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench, may be constructed at suitable locations in the *Law Adong Lawlung Nongshlem*

3.21.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Adong Lawlung Nongshlem* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath, walking trail, sign board, washrooms *etc.* may be constructed to attract tourists.

3.21.9.7 Restocking of Open Degraded Areas

Efforts may be made to restock the open degraded patches in *Law Adong Lawlung Nongshlem* by assisting and promoting natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.21.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Adong Lawlung Nongshlem* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Adong Lawlung Nongshlem*.

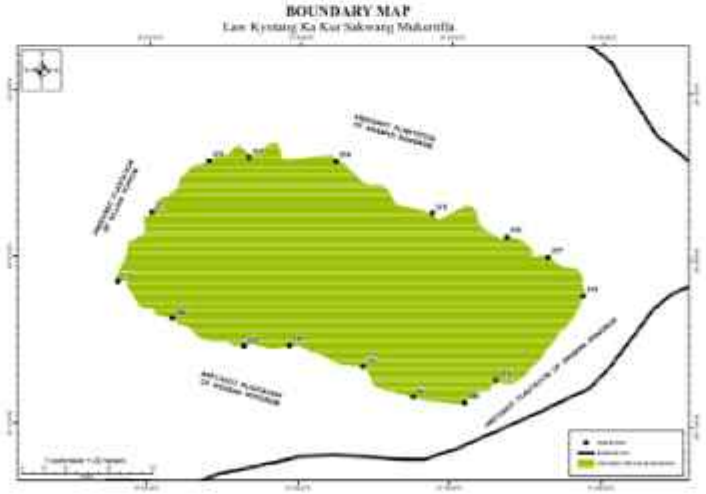
3.21.9.9 Awareness Campaign

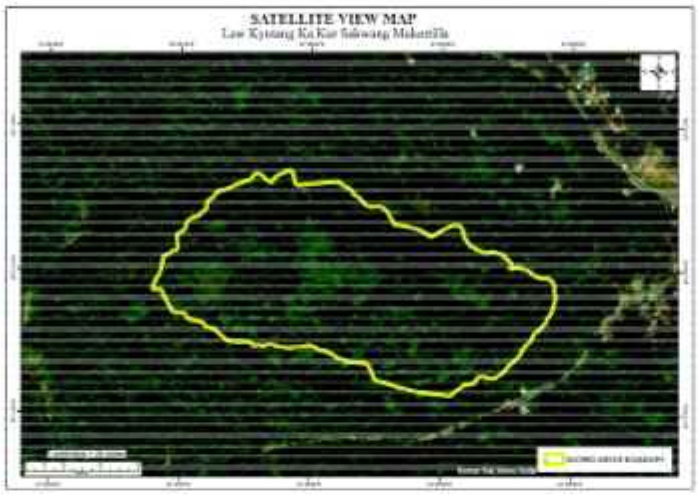
The *Law Adong Lawlung Nongshlem* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

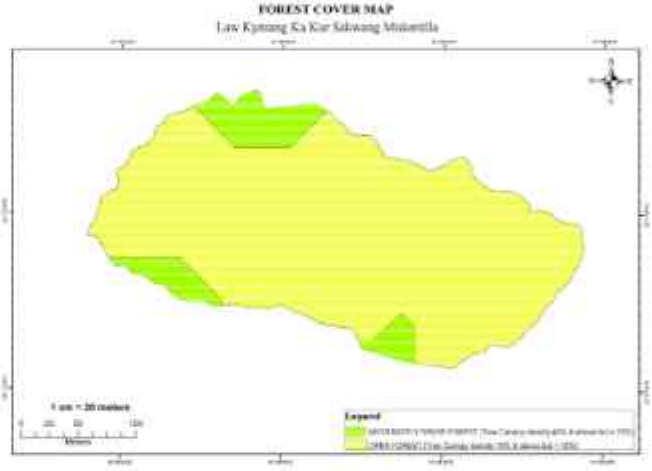
3.22. *LAW KYNTANG KA KUR SAKWANG MUKERTILLA*

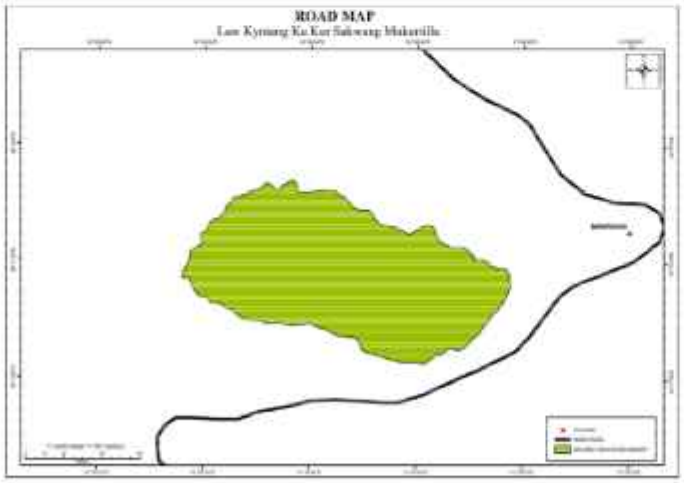
3.22.1 Location

Law Kyntang Ka Kur Sakwang Mukertilla is located in East Khasi Hills District of Meghalaya at Sohlong village under the Syiemship of Hima Khyrim. It covers an area of 6.26057 ha. It lies between 25° 11′ 51" to 25° 11′ 58" N latitude and 91° 59′ 34" to 92° 59′ 49" E Longitude with an altitude of 332 m above mean sea level. It is bounded in the North one Shri Akaman Nongrum, in the South and East by farm land of one Shri Akaman Nongrum and to the west bounded by farm land of one Smt. Silian Pohtam. It is about 78 km from Shillong via Pynursla road.




SATELLITE VIEW MAP
Law Kyntang Ka Kur Sakwang Mukartilla

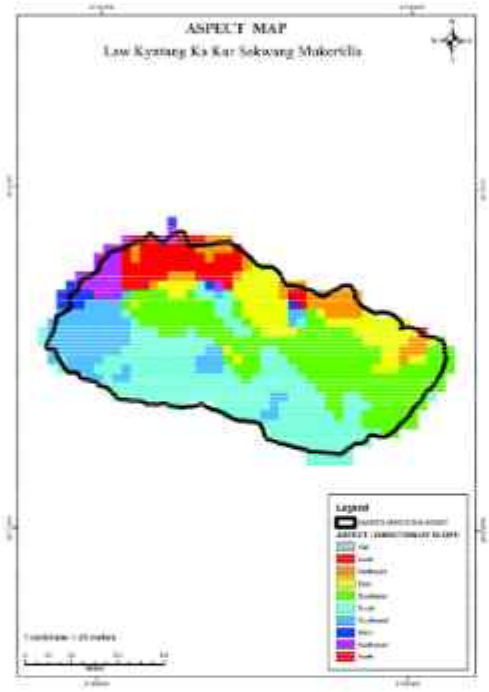

FOREST COVER MAP
Law Kyntang Ka Kur Sakwang Mukartilla

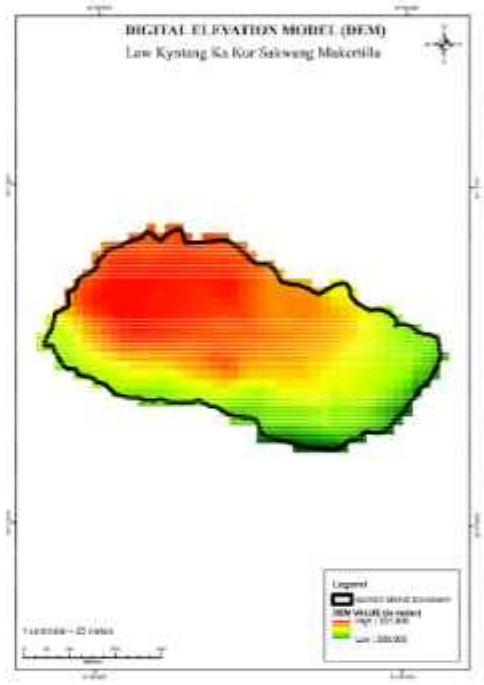

ROAD MAP
Law Kyntang Ka Kur Sakwang Mukartilla

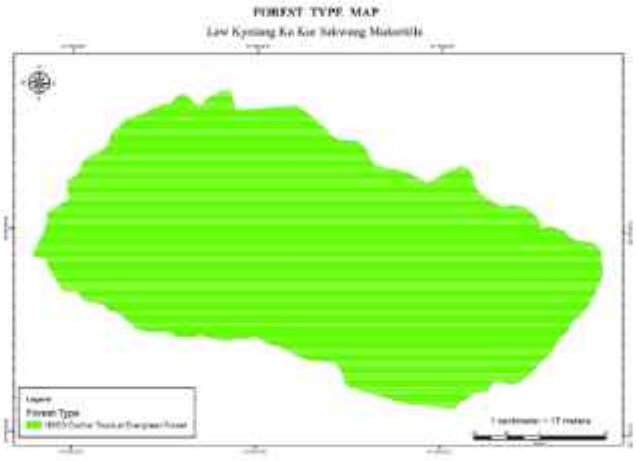
3.22.2 Brief History

Law Kyntang ka kur Sakwang Mukertilla has been in existence for several decades. In the past, religious rituals were performed in this grove and the forest was protected for religious needs of the clan. However, presently no such rituals are performed in this forest. The forest is owned, managed and administered by the clans through clan elder. Green felling of trees is strictly prohibited under the rules framed by the *Kur*.

Biotic pressure such as encroachments, hunting, poaching and illegal felling of trees are found to be absent in this forest.

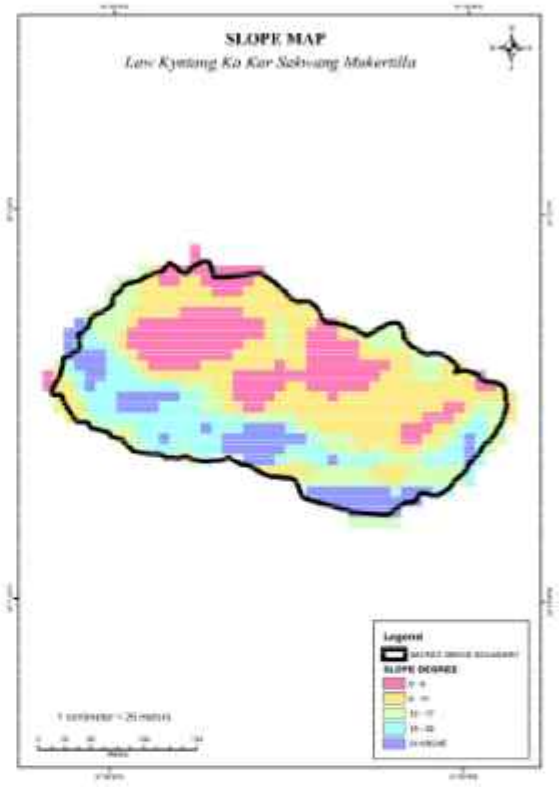






3.22.3 Geography and Climate

Topography of the grove is hilly in nature with slope varying from as low as 0.7° to 23°. Major area of the *Law Kyntang Ka Kur Sakwang Mukertilla* falls in South West, South East and East Aspects. Smaller area of this forest falls in North West and North Aspects. Soil texture is loamy with no coarse fragments. Soil consistency is slightly compact. Colour of the soil is brown and soil is quite deeper. No soil erosion has been observed in this forest.



Winter season starts from end of October and lasts till March of the next year. It receives high rainfall during the monsoon season from April to September. Average temperature varies from 7°C to 23°C.

3.22.4 Forest Type

As per the Champion and Seth classification (1968), forests found in the sacred grove are of the ***Type 1B/C3 Cachar Tropical Evergreen Forest.***

3.22.5 Forest Cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun, forest cover in the *Law Kyntang ka kur Sakwang Mukertilla* is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	0.64	10.22
Open Forest (10% - 40%)	5.62	89.78
Scrub Forest (<10%)	0	0
Non-Forest	0	0
Total	**6.26**	**100**

3.22.6 Flora and Fauna

The *Law Kyntang ka kur Sakwang Mukertilla* is home to virgin forest of natural origin. *Artocarpus integrefolia* and *Cinnamomum bejolghota* are respectively the 1st and 2nd dominant tree species. The forest is home to many rare, endangered and endemic plant species.

3.22.6.1 Flora species

Table 3.22.1: Trees found in *Law Kyntang Ka Kur Sakwang Mukertilla*

Sl No.	Local Name	Botanical Name	Family
1.	*Dieng tyrkhum*	*Acer laveigatum*	*Sapindaceal*
2.	*Dieng kreit*	*Albizia lebbeck*	*Fabaceae*
3.	*Dieng saw*	*Albizzia odoratissima*	*Fabaceae*
4.	*Dieng rteng*	*Alstonia scholaris*	*Apocynaceae*
5.	*Dieng latymphu*	*Aralia armata*	*Araliaceae*
6.	*Dieng sohphan*	*Artocarpus integrefolia*	*Moraceae*
7.	*Dieng lymbaw*	*Artocarpus lakoocha*	*Moraceae*
8.	*Dieng kya*	*Bombax ceiba*	*Malvaceae*
9.	*Dieng jalong*	*Bauhinia variegata*	*Fabaceae*
10.	*Dieng lakhiat*	*Callicarpa arborea*	*Verbanaceae*
11.	*Dieng tlai*	*Caryota urens*	*Arecacea*
12.	*Dieng patuia*	*Castonopsis spp*	*Fagaceae*
13.	*Dieng sning*	*Castonopsis tribuloides*	*Fagaceae*
14.	*Dieng shini*	*Celtris tetrandira*	*Cannabaceae*
15.	*Dieng rang*	*Cesearia varieca*	*Saliaceae*
16.	*Dieng latyrpod*	*Cinnamomum bejolghota*	*Lauraceae*
17.	*Dieng tyrthia*	*Cinnamomum pauciflorum*	*Lauraceae*
18.	*Dieng tymbur*	*Cordia spp*	*Boraginaceae*
19.	*Dieng kaswah/swah*	*Cyperus eragrostis*	*Cyperaceae*
20.	*Dieng thangiong*	*Diospyros lanceifolia*	*Ebanaceae*
21.	*Dieng bai*	*Duabanga sonneratioides*	*Lythraceae*
22.	*Dieng song*	*Erythrina indica*	*Leguminoceae*
23.	*Dieng sohlwa*	*Eugenia aquae*	*Myrtaceae*
24.	*Dieng sohum*	*Eugenia jambolana*	*Myrtaceae*
25.	*Dieng shohryngkoh*	*Fagraeaceilanica*	*Gentianaceae*
26.	*Dieng jri*	*Ficus bengalensis*	*Moraceae*
27.	*Dieng sohthylliang*	*Ficus lamponga*	*Moraceae*
28.	*Dieng sohjyllop*	*Ficus spp*	*Moraceae*
29.	*Dieng laphiang*	*Gmelina arborea*	*Lamiaceae*
30.	*Dieng shyieng*	*Ilex venulosa*	*Aquifoliaceae*
31.	*Dieng sohsyrtet*	*Itea chinensis*	*Iteaceae*
32.	*Dieng rasnam*	*Knema augustifolia*	*Myristicaceae*
33.	*Dieng er/ther*	*Lagerstroemia spaciosa*	*Lythraceae*
34.	*Dieng lakhar*	*Macaranga denticulate*	*Euphorbiaceae*
35.	*Dieng phaniaw*	*Michelia spp*	*Magnoliaceae*
36.	*Dieng synrai*	*Morinda augustifolia*	*Rubiaceae*
37.	*Dieng mylliat*	*Morus macroura*	*Moraceae*
38.	*Dieng pdem*	*Persea petiolaris*	*Lauraceae*
39.	*Dieng tyrkham*	*Prunus undalata*	*Rosaceae*

40.	Dieng kain	Rhus succedanea	Anacardiaceae
41.	Dieng ngan	Schima khasiana	Theaceae
42.	Dieng tluh	Sterculia villosa	Malvaceae
43.	Dieng taro	Tetrameles nudiflora	Malvaceae
44.	Dieng bti	Toona ciliata	Meliaceae
45.	Dieng lyngkta	Trema orientalis	Cannabaceae
46.	Dieng sohlang	Viburnum spp	Adoxaceae
47.	Dieng sohphlang	Walsura robusta	Meliaceae
48.	Dieng shiah	Zanthoxylum ovaliafolium	Rutaceae

Table 3.22.2: Shrubs found in *Law Kyntang ka Kur Sakwang Mukertilla*

Sl No.	Local Name	Botanical Name	Family
1.	Dieng sohtait	Cyanotis vaga	Commelinaceae
2.	Dieng eitmiang	Sida spp.	Malvaceae
3.	La jaremlieh	Clerodendrum viscosum	Verbenaceae
4.	Dieng jamyrait	Gaultheria fragranitissima	Ericaceae
5.	Dieng sohtylu	Daphne papyraceae	Thymelaceae
6.	Dieng jalong	Bauhinia variegata	Fabaceae
7.	Dieng sohum	Eugenia jambolona	Myrtaceae
8.	Dieng soh pyrsit	Eurya acuminata	Theaceae
9.	Dieng sohjabuit	Phlogacanthus thyrsiflorus	Acanthaceae
10.	Jarem iong	Clerodendrum colebrookianum	Verbenaceae
11.	Synsar	Thysanolaena maxima	Poaceae
12.	Dieng rnong	Mahonia pycnophylla	Berberidaceae
13.	Soh lang	Viburnum foetidum	Caprifoliaceae

Table 3.22.2: Shrubs found in *Law Kyntang ka Kur Sakwang Mukertilla*

Sl No.	Local Name	Botanical Name	Family
1.	Sying khlaw	Zingiber purpureum	Zingiberaceae
2.	Jajewkhlaw	Begonia roxburghii	Begoniaceae
3.	Sohbyrthit	Urena lobata	Malvaceae
4.	Wangkhlaw	Colocasia esculenta	Araceae
5.	Phud wang	Cololasia spp	Araceae
6.	Bat eroplain	Inula cappa	Asteraceae
7.	Sla lamet	Phyrnium pubinerve	Marantaceae
8.	Shynraikhlaw	Alpinia allughas	Zingiberaceae

Table 3.22.4: Climbers found in *Law Kyntang ka Kur Sakwang Mukertilla*

Sl No.	Local Name	Botanical Name	Family
1.	*Bat refugee*	*Mikania micrantha*	*Astheraceae*
2.	*Iongkhasaw (Jyrmi)*	*Not known*	*Not known*
3.	*Soh shangkhlor*	*Elaeagnus pyriformis*	*Elaeagnaceae*
4.	*Pew shrieh*	*Hedera nepalensis*	*Araliaceae*
5.	*Sla kyndajyrmi*	*Pothos scandens*	*Araceae*
6.	*Loapla*	*Rhaphidophora decursiva*	*Araceae*
7.	*Dieng sohmatan/sohpdong*	*Stephania glabra*	*Menispermaceae*

Table 3.22.5: Orchids found in *Law Kyntang ka Kur Sakwang Mukertilla*

Sl No.	Local Name	Botanical Name	Family
1.	*Tiew dieng*	*Micropera manii*	*Orchadeceae*
2.	*Tiew dieng*	*Dendrobium aphyllum*	*Orchadeceae*

Table 3.22.5: Orchids found in *Law Kyntang ka Kur Sakwang Mukertilla*

Sl No.	Local Name	Botanical Name	Family
1.	*Shken*	*Dendrocalamus hamiltonii*	*Poaceae*

3.22.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Kyntang ka kur Sakwang Mukertilla* has been carried out so far. However, as per the local residents, presence of several wild animals has observed in this forest.

3.22.7 Growing Stock

As per the methodology described in Chapter-II, enumeration was carried out in 100% area of the forest as its area is less than 10 ha. All the trees, having girth (over bark) at breast height more than 30 cm, were enumerated by measuring the top height (in meters) and the girth (in centimetres) at breast height. Data collected during the enumeration were entered in Sacred Groves Description Form and Plot Enumeration Form. During the enumeration within the grove, data were collected for 658 trees were found. These includes 123 *Artocarpus integrefolia* (1st dominant), 102 *Cinnamomum bejolghota* (2nd dominant), 97 *Caryotaurens* (3rd dominant) 295 are *rest of species*. Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each species for each of the 13 girth classes starting from 30-40 cm to 151 cm and above. Details of the same are given in Table 3.22.7 below. As may be seen, total growing stock in this forest is 522.81 cubic metres.

Table 3.22.7: Species-wise distribution of Growing Stock in Different Girth Classes in the Entire Forest *(cum)*

Girth Class wise	*Artocarpus integrefolia* 1st dominant	*Cinnamomum bejolghota* 2nd dominant	*Caryotaurens* 3rd dominant	Rest of species	*Total Growing stock*	*% of Total Growing Stock*
30-40	0.14	0.12	0.05	2.37	**2.68**	**0.51**
41-50	0.45	0.29	0.59	4.99	**6.32**	**1.21**
51-60	1.58	1.59	2.99	7.06	**13.22**	**2.53**
61-70	2.99	1.77	5.04	9.24	**19.04**	**3.64**
71-80	11.46	3.09	8.99	15.47	**39.01**	**7.46**
81-90	15.33	8.67	14.17	25.53	**63.70**	**12.18**
91-100	21.27	8.98	19.43	38.71	**88.39**	**16.91**
101-110	13.70	4.15	6.78	16.45	**41.08**	**7.86**
111-120	15.05	5.49	0.00	27.54	**48.08**	**9.20**
121-130	6.74	4.87	0.00	8.26	**19.87**	**3.80**
131-140	9.62	4.40	0.00	11.61	**25.63**	**4.90**
141-150	2.29	1.93	4.20	4.5	**12.92**	**2.47**
151 & above	13.91	4.95	3.23	120.78	**142.87**	**27.33**
Total	**114.53**	**50.30**	**65.47**	**292.51**	**522.81**	**100.00**
% of Total Growing Stock	21.91	9.62	12.52	55.95	100.00	

As may be seen, 21.91% of the total growing stock is contributed by the 1st dominant species (*Artocarpus integrefolia*). The 2nd dominant species (*Cinnamomum bejolghota*) constitutes 9.62% of the total growing stock. Similarly, the 3rd dominant species *(Caryotaurens) constitutes* 12.52 % of the total growing stock. More than half of the growing stock i.e. 55.95 % constituted by the rest of the species.

Figure 3.22.1:Girth class-wise Distribution of the Growing Stock

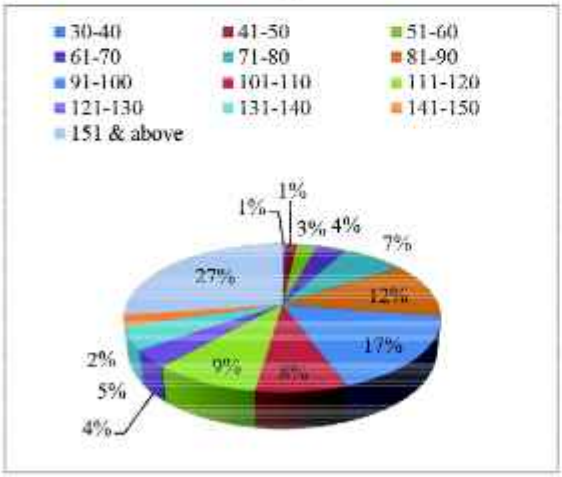


Figure 3.22.2: Species-wise Distribution of Growing Stock

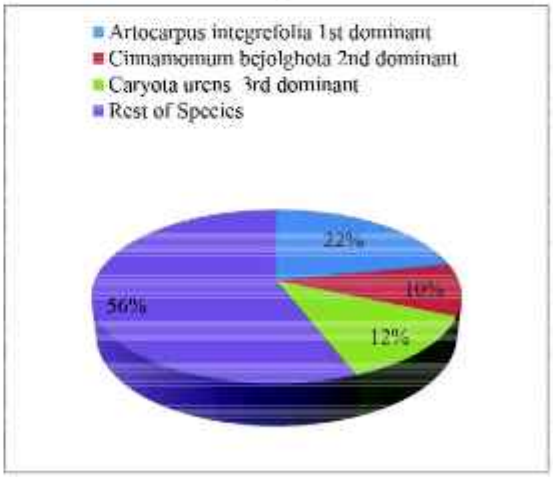


Figure 3.22.3:Girth class-wise Distribution of the Growing Stock



Figure 3.22.4: Over view of Law *Kyntang ka kur Sakwang Mukertilla*



3.22.8 Number of Stems

Species-wise number of stems in each girth class are given in Table 3.22.8 below. As may be seen maximum numbers of stems are found in lower girth classes i.e. from 30-40 cm to 91-100 cm. Number of stems are inversely proportional to mid-diameter of the girth class

Table 3.22.8: Species-wise Number of Stems in different Girth Classes in the Entire Forest

(numbers of stems)

Girth Class wise	*Artocarpus integrefolia* 1st dominant	*Cinnamomum bejolghota* 2nd dominant	*Caryotaurens* 3rd dominant	Rest of species	Total
30-40	4	2	1	37	**44**
41-50	3	4	4	33	**44**
51-60	6	14	12	27	**59**
61-70	7	10	12	24	**53**
71-80	21	12	17	29	**79**
81-90	21	21	20	34	**96**
91-100	23	17	22	43	**105**
101-110	12	6	6	14	**38**
111-120	11	6	0	20	**37**
121-130	4	4	0	5	**13**
131-140	5	3	0	6	**14**
141-150	1	1	2	2	**6**
151 & above	5	2	1	21	**29**
Total	**123**	**102**	**97**	**295**	**617**

Figure 3.22.5:Number of Stem in Different Girth Classes

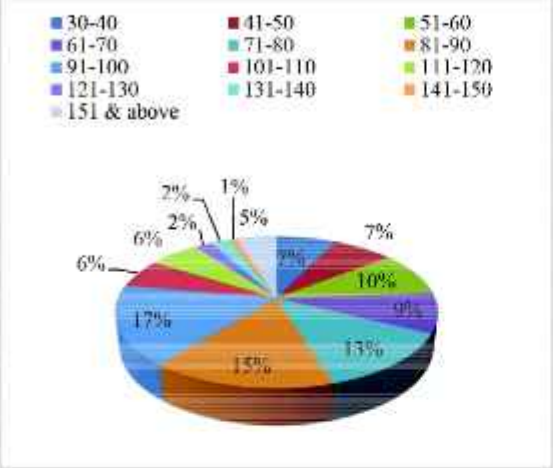


Figure 3.22.6: Species-wise Distribution of Stems

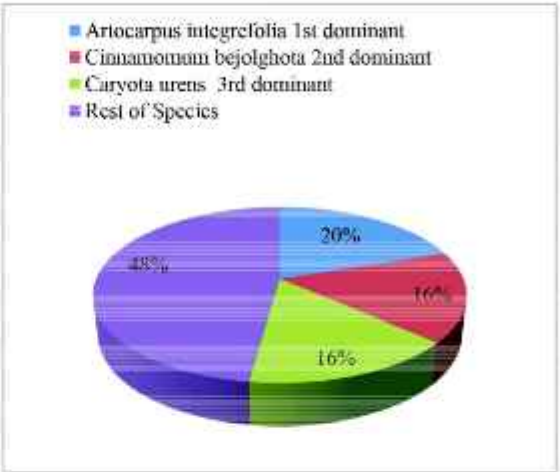


Figure 3.22.7: Number of Stem in Different Girth Classes



Figure 3.22.8: Inside view of *Law Kyntang ka kur Sakwang Mukertilla*



3.22.9 Prescriptions for Future Management

3.22.9.1Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Kyntang ka kur Sakwang Mukertilla* has not been registered with the KHADC. The CFO of the KHADC and the representative of *Sakwang clan* may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Law Kyntang ka kur Sakwang Mukertilla* with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.22.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The representatives of *Sakwang Clan* and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Law Kyntang ka kur Sakwang Mukertilla* as a Community Reserve.

3.22.9.3 Boundary Demarcation

Boundary of the *Law Kyntang ka kur Sakwang Mukertilla* has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachment. To prevent and to ensure early detection of encroachments, boundary of the *Law Kyntang ka kur Sakwang Mukertilla*, wherever it is not constituted by natural features of permanent nature, such as rivers or streams or hill ridges may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.22.9.4 Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India, during a period of 22 years (2002 -2023) no fire incident has occurred in the *Law Kyntang ka kur Sakwang Mukertilla*. As per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Law Kyntang ka kur Sakwang Mukertilla* is moderately to highly vulnerable to forest fire. However, as per the said information system, a major part of the *Law Kyntang ka kur Sakwang Mukertilla* is not prone to forest fire. To prevent damage to the *Law Kyntang ka kur Sakwang Mukertilla* from accidental forest fire, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Law Kyntang ka kur Sakwang Mukertilla* and engagement of fire watchers during the critical months may be taken.

3.22.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench etc. may be constructed at suitable locations in the *Law Kyntang ka kur Sakwang Mukertilla*

3.22.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Law Kyntang ka kur Sakwang Mukertilla* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath, walking trail, sign board, washrooms *etc.* may be constructed to attract tourists.

3.22.9.7 Restocking of Open Degraded Areas

Efforts may be made to restock the open degraded patches in *Law Kyntang ka kur Sakwang Mukertilla* by assisting and promoting natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.22.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Law Kyntang ka kur Sakwang Mukertilla* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Law Kyntang ka kur Sakwang Mukertilla.*

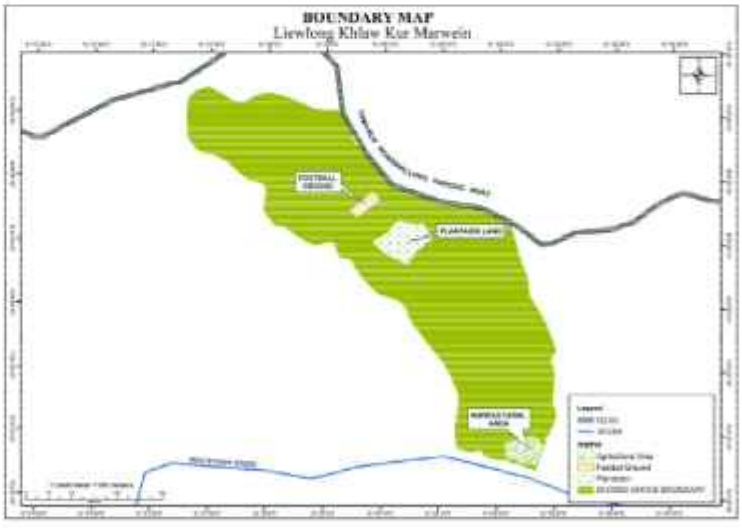
3.22.9.9 Awareness Campaign

The *Law Kyntang ka kur Sakwang Mukertilla* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

3.23. *LIEWLONG KHLAW KUR MARWEIN*

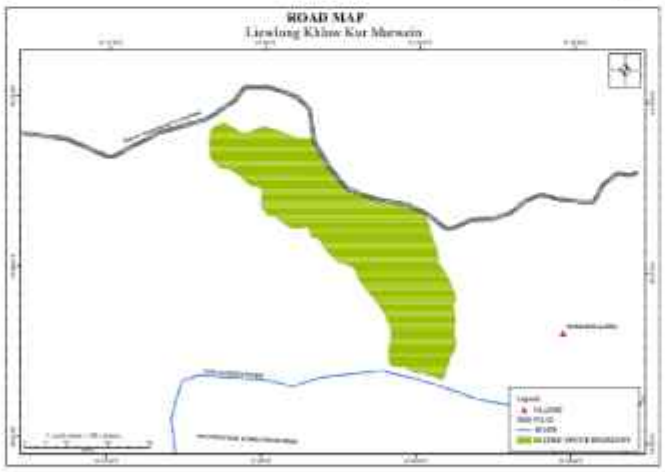
3.23.1 Location

Liewlong Khlaw Kur Marwein is a clan protected forest which is located in Eastern West Khasi Hills District of Meghalaya at Umkrem village under the aegis of *Dorbar Kur Marwein*. It covers an area of 52.032 ha. It lies between 25° 29´ 08" to 25° 29´ 36" N latitude and 91° 27´ 53" to 91° 28´ 26" E Longitude with an altitude of 1615 m above mean sea level. It is bounded in the North by road to Laitkseh and farm land of Smti. E. Marwein, in the East by wood land and farm land of Smti. Balansimora, in the South by *Wah Kynshi* river and in the West by Twahmawlier footpath and Twah Maweitkhli. The forest is accessible by road from Shillong to Umkrem which is about 80 km from Shillong and one need to walk on foot for about 500 m from the nearest road head.





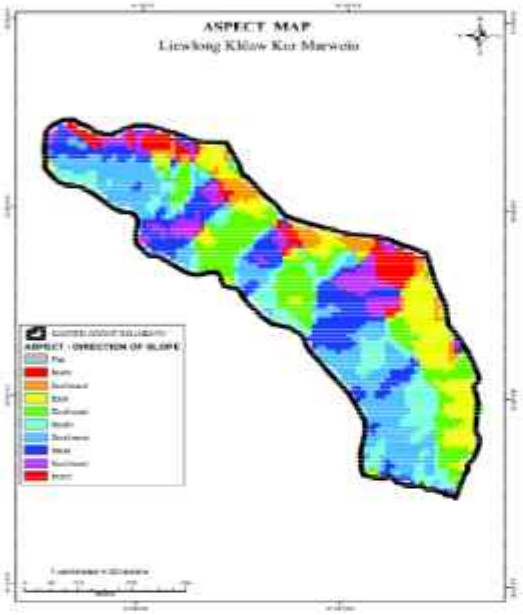


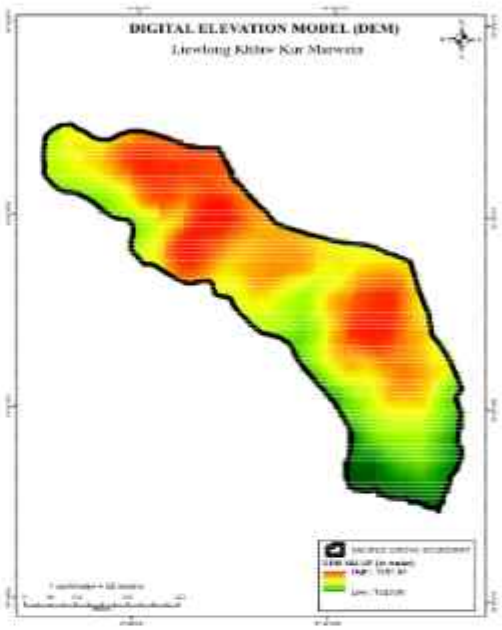


3.23.2 Brief History

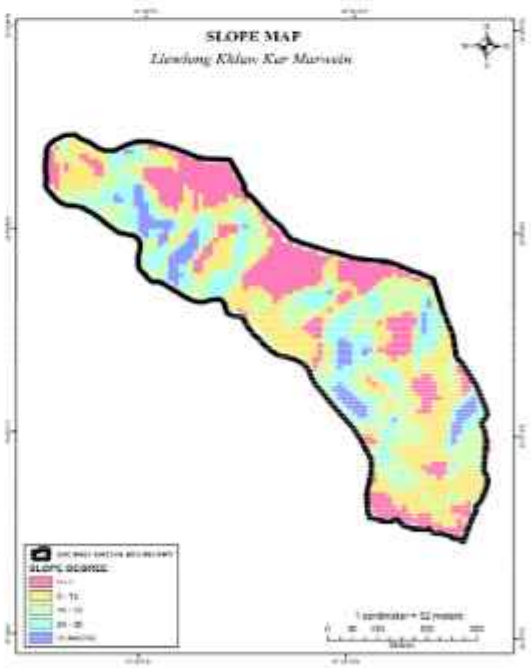
Liewlong Khlaw Kur Marwein is in existence for several centuries, as informed by the village elders it was initiated by the *kur Marwein*. In the past, religious rituals were performed in this grove

and the forest was protected for religious needs of the clan. However, presently no religious rituals are in this forest. This forest is however still revered. The forest is managed and administered by the clan under the supervision of the clan elders. Green felling of trees is strictly prohibited and punishable under the rule framed by the *kur* (clan) Dorbar. Biotic pressure such as wildfire and grazing have been observed in this forest.









3.23.3 Geography and Climate:

Topography of the grove is hilly in nature with slope varying from as low as 0.40° to 34°. Major area of the *Liewlong Khlaw Kur Marwein* falls in South, South West, South East, East and North West Aspects. Smaller area of this Forest falls in North Aspect. Soil texture is sandy loam with loose stone. Soil consistency is slightly compact. Colour of the soil is black and soil depth is around 15 cm.

Wah Kynshi river forms southern boundary and *Sawahmaweitkhli* stream which ultimately drains into the *Wah Kynshi* forms western boundary of this forest. Numerous seasonal streams are located in and around this forest.Winter season starts from end of October and lasts till March of the next year. It receives high rainfall during the monsoon season from April to September. Average temperature varies from 7°C to 23°C.

3.23.4 Forest Type

As per the Champion and Seth classification (1968), forests found in the sacred grove are of the ***Type 9/C2 Assam Sub-Tropical Pine Forest.***

3.23.5 Forest cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun Forest cover in the *Liewlong Khlaw Kur Marwein* at Umkrem is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	0	0
Open Forest (10% - 40%)	7.02	13.50
Scrub Forest (<10%)	15.3	29.40
Non-Forest	29.712	57.10
Total	**52.032**	**100**

3.23.6 Flora and Fauna

A small area of the *Liewlong Khlaw Kur Marwein* at Umkrem is colonized by pine trees. *Pinus kesiya* and *Alnus nepalensis* are respectively the 1st and 2nd dominant tree species.

3.23.6.1 Flora species

Table 3.23.1: Trees found in *Liewlong Khlaw Kur Marwein*

Sl No.	Botanical Name	Local Name	Family
1	*Alnus nepalensis*	*Dieng liengiong*	*Betulaceae*
2	*Pinus khasiana*	*Dieng kseh*	*Pinaceae*

Table 3.23.2: Shrubs found in *Liewlong Khlaw Kur Marwein*

Sl No.	Local Name	Botanical Name	Family
1	*La tyrdop*	*Cinnamomum bejolghota*	*Lauraceae*
2	*Soh langdngiem*	*Viburnum caryllifolium*	*Adoxaceae*
3	*Dieng sohum*	*Eugenia jambolana*	*Myrtaceae*
4	*Dieng rangkrew*	*Not known*	*Rubiaceae*
5	*Soh pangkhlieh*	*Lantana camara*	*Verbanaceae*

Table 3.23.3: Herbs found in *Liewlong Khlaw Kur Marwein*

Sl No.	Local Name	Botanical Name	Family
1.	Ja lyngthem	Polygonum chinense	Polygonaceae
2.	Tiew la kot	Carculagu recurba	Carculaguceae
3.	Soh bsein	Arisaema tortuosuar	Melostomaceae
4.	Tiew phlang	Finibristylis aestivalis	Cyperaceae
5.	Tiew jasat	Polygonum hydropiper	Polygonaceae
6.	Jajew maw	Begonia spp	Begoniaceae
7.	Soh byrthit	Urena lobata	Malvaceae
8.	Soh byrthitrit	Sida rhombijolia	Malvaceae
9.	Soh ngangkhlaw	Solanum torvum	Solanaceae
10.	Khliang syiar	Centella asiatica	Apiaceae
11.	Soh byrthit bah	Sida acuta	Malvaceae
12.	La shing	Curcuma spp	Zingiberaceae
13.	Sying khlaw	Zingiber purpureum	Zingiberaceae
14.	Soh krismas	Sarcandra glabra	Chloranthaceae
15.	Sla eitmut	Eupatorium spp	Asteraceae

Table 3.23.4:Climbers found in *Liewlong Khlaw Kur Marwein*

Sl No.	Local Name	Botanical Name	Family
1.	Soh krot	Smilax zeylanica	Smilacaceae
2.	Jyrmi stein	Lonicera macrantha	Caprifoliaceae
3.	Soh pdung	Vaccinium serratum	Vaccinaceae
4.	Jyrmishiah	Xanthozylum khasiana	Rotaceae
5.	Jyrmi khlaw	Entoda spp	Luguminaceae
6.	Jyrmi tiewkulap	Not known	Rosaceae
7.	Soh kyrsu	Dioscorea alata	Dioscoreaceae
8.	Shiah sohparu	Robus ellipticus	Rosaceae
9.	Tiew shiah	Rosa involucrate	Rosaceae

Table 3.23.5: Orchids found in *Liewlong Khlaw Kur Marwein*

Sl No.	Local Name	Botanical Name	Family
1.	Tiew dieng	Micropera manii	Orchideceae
2.	Syntiew die	Bulbophyllum cylindraceum	Orchideceae
3.	Tiew mat iong	Dendrobium chrysanthum	Orchideceae
4.	Tiew slaremmaw	Rafidopohra lancifolia	Orchideceae

Table 3.23.6: Creeper found in *Liewlong Khlaw Kur Marwein*

Sl No.	Local Name	Botanical Name	Family
1.	Tmain Khla	Lycopodoum cernuum	Lycopodiaceae

Table 3.23.7: Grasses found in *Liewlong Khlaw Kur Marwein*

Sl No.	Local Name	Botanical Name	Family
1.	*Lang tylli*	*Arundinella khasiana*	*Poaceae*
2.	*Phlang tungkhar*	*Ageratena adenophora*	*Cyperaceae*
3.	*Lasier*	*Corex spiculata*	*Poaceae*
4.	*Lang phot*	*Juncus effusus*	*Poaceae*
5.	*Phlang phreit*	*Cymbopogon exsertus*	*Poaceae*

Table 3.23.8: Ferns found in *Liewlong Khlaw Kur Marwein*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhang iong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodalio*

3.23.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Liewlong Khlaw Kur Marwein*at Umkrem has been carried out so far. However, as per the local residents, presence of several wild animals such as jackal, rabbit, jungle fowls, pangolin, barking deer and various types of birds and reptiles has occurred in this forest.

3.23.7 Growing Stock

As per the methodology described in Chapter-II, enumeration was carried out in 10% area of the forest as its area is more than 50 ha. In each sample plot all the trees having girth (over bark) at breast height more than 30 cm were enumerated by measuring their top height (in meters) and the girth (in centimetres) at breast height. Data collected during the enumeration were entered in Sacred Description Form and Plot Enumeration Form. During the enumeration total 493 trees were found within 26 plots, each of 0.2 ha size. These include *Pinus kesiya* (1st dominant) and *Alnus nepalensis* (2nd dominant). Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each of the 13 girth classes starting from 30-40 cm to 151 cm and above. Details of the sane are given in the Tables 3.23.10 & 3.23.11 below. As may be seen, total growing stock in this forest is 848.52 cubic metres.

Table 3.23.10: Species-Distribution of Growing Stock in Different Girth Classes

(cum)

Girth Class wise	*Pinus kesiya* 1st dominant	*Alnus nepalensis* 2nd dominant	Growing Stock in 26 Sample Plots	Growing Stock in Entire Forest
30-40	5.18	0.00	**5.18**	51.83
41-50	10.30	0.12	**10.42**	104.26
51-60	18.26	0.20	**18.46**	184.71
61-70	25.30	0.00	**25.30**	253.16
71-80	14.76	0.56	**15.32**	153.29

81-90	5.67	0.00	**5.67**	56.73
91-100	2.34	0.00	**2.34**	23.41
101-110	1.03	0.00	**1.03**	10.31
111-120	1.08	0.00	**1.08**	10.81
121-130	0.00	0.00	**0.00**	0.00
131-140	0.00	0.00	**0.00**	0.00
141-150	0.00	0.00	**0.00**	0.00
151 & above	0.00	0.00	**0.00**	0.00
Total	**83.92**	**0.88**	**84.80**	**848.52**

Figure 3.23.1: Girth Class-Wise Growing Stock in Entire Forest

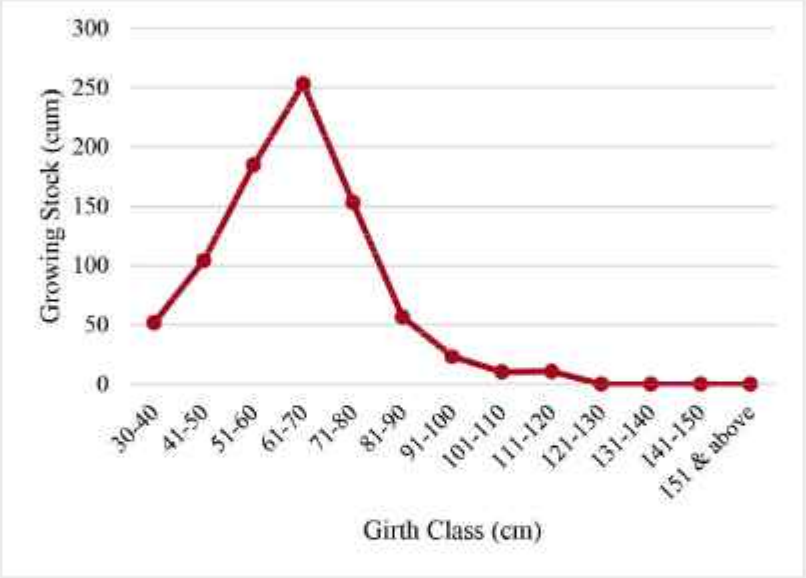


Table 3.23.11: Species-Wise Distribution of Growing Stock in Different Girth Classes in the Entire Forest

(cum)

Girth Class wise	*Pinus kesiya* 1st dominant	*Alnus nepalensis* 2nd dominant	Total (for 52.032 ha' area)	%wrt total volume
30-40	51.83	0.00	**51.83**	6
41-50	103.06	1.20	**104.26**	12
51-60	182.71	2.00	**184.71**	22
61-70	253.16	0.00	**253.16**	30
71-80	147.69	5.60	**153.29**	18
81-90	56.73	0.00	**56.73**	7
91-100	23.41	0.00	**23.41**	3
101-110	10.31	0.00	**10.31**	1
111-120	10.81	0.00	**10.81**	1
121-130	0.00	0.00	**0.00**	0
131-140	0.00	0.00	**0.00**	0

141-150	0.00	0.00	**0.00**	0
151 & above	0.00	0.00	**0.00**	0
Total	**839.72**	**8.81**	**848.52**	
% wrt total volume	**98.96**	**1.04**		100

As may be seen, 99.00%, of the total growing stock is contributed by the 1st dominant species (*Pinuskesiya*). The 2nd dominant species (*Alnus nepalensis*) constitutes 1.04% the remaining of the growing Stock.

Figure 3.23.2: Girth Class-Wise Distribution of Growing Stock

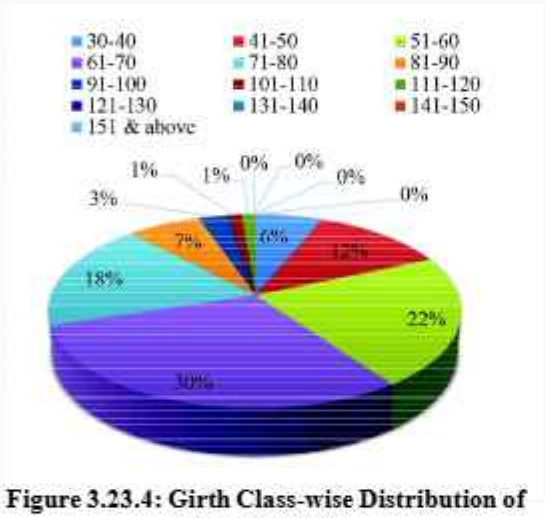


Figure 3.23.3: Species wise Distribution of Growing Stock

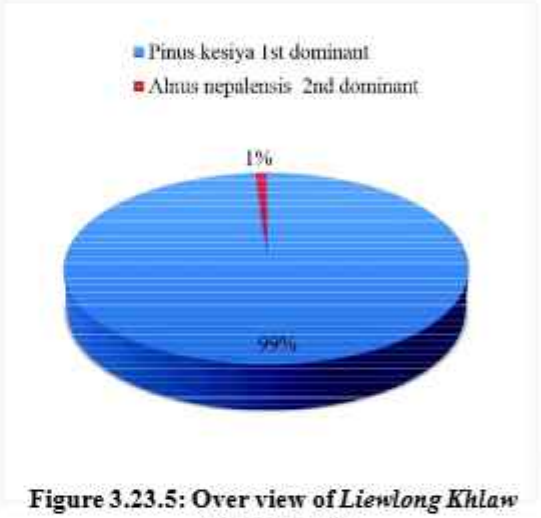


Figure 3.23.4: Girth Class-wise Distribution of Growing Stock

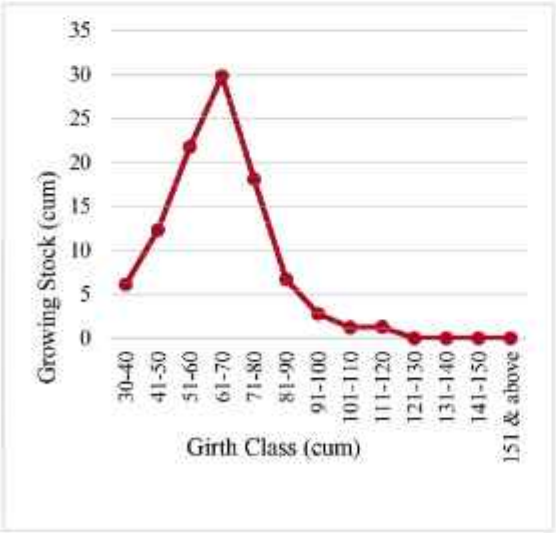


Figure 3.23.5: Over view of *Liewlong Khlaw Kur Marwein*



Species-wise number of stems in each girth class are given in Tables 3.23.12 & 3.23.13.As may be seen, maximum numbers of stems are found in lower girth classes i.e. from 30-40 cm to 61-70 cm. Number of steams are inversely proportional to mid-diameter of the girth class

Table 3.23.12: Species-wise Distribution of Stems in Different Girth Classes in 26 Sample Plots

(number of stems)

Girth Class wise	*Pinus kesiya* 1st dominant	*Alnus nepalensis* 2nd dominant	Total
30-40	138	0	**138**
41-50	108	1	**109**
51-60	104	1	**105**
61-70	89	0	**89**
71-80	36	1	**37**
81-90	10	0	**10**
91-100	3	0	**3**
101-110	1	0	**1**
111-120	1	0	**1**
121-130	0	0	**0**
131-140	0	0	**0**
141-150	0	0	**0**
151 & above	0	0	**0**
Total	**490**	**3**	**493**

Table 3.23.13: Species-wise Number of stems in Different Girth Classes in the Entire Forest

(number of stems)

Girth Class wise	*Pinus kesiya* 1st dominant	*Alnus nepalensis* 2nd dominant	Total
30-40	718	0	**718**
41-50	562	5	**562**
51-60	541	5	**541**
61-70	463	0	**463**
71-80	187	5	**187**
81-90	52	0	**52**
91-100	16	0	**16**
101-110	5	0	**5**
111-120	5	0	**5**
121-130	0	0	**0**
131-140	0	0	**0**
141-150	0	0	**0**
151 & above	0	0	**0**
Total	**2550**	**16**	**2565**

Figure 3.23.6: Number of Stems in Different Girth Classes

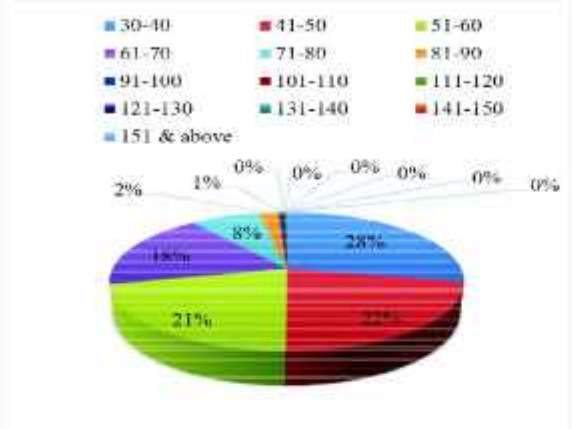


Figure 3.23.7: Species-wise Distribution of Stems

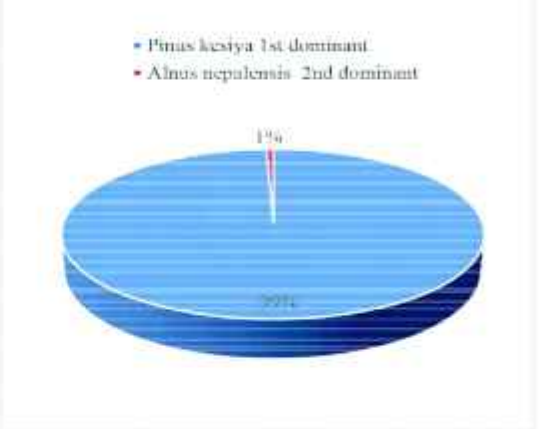


Figure 3.23.8: Number of Stems in Different Girth Classes



Figure 3.23.9: Insight view of *Liewlong Khlaw Kur Marwein*



3.23.9 Prescriptions for Future Management

3.23.9.1 Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Liewlong Khlaw Kur Marwein* has not been registered with the KHADC. The CFO of the KHADC and the representative of *Marwein Kur* may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Liewlong Khlaw Kur Marwein*, with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.23.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored Scheme of 'Integrated Development of Wildlife Habitats'. The representative of *Marwein Kur* and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Liewlong Khlaw Kur Marwein*, as a Community Reserve.

3.23.9.3 Boundary Demarcation

Boundary of the *Liewlong Khlaw Kur Marwein*, has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachment. To prevent and to ensure early detection of encroachments, boundary of the *Liewlong Khlaw Kur Marwein*, wherever it is not constituted by natural features of permanent nature, such as rivers or streams or hill ridges may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

3.23.9.4 Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India, during a period of 22 years (2002 -2023) nofire incident has occurred in the *Liewlong Khlaw Kur Marwein*. As per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of *the Liewlong Khlaw Kur Marwein* is moderately vulnerable to forest fire. However, as per the said information system, a major part of the *Liewlong Khlaw Kur Marwein* is not prone to forest fire. To prevent damage to the *Liewlong Khlaw Kur Marwein* from accidental forest fire, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Liewlong Khlaw Kur Marwein* and engagement of fire watchers during the critical months may be taken.

3.23.9.5Construction of Soil Moisture Conservation and Water Harvesting Structures

Liewlong Khlaw Kur Marwein is home to several seasonal streams such as Wah Tdong, Phinam steam and *Wah Phud Mawdhung Shyngrang* stream.To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench etc. may be constructed at suitable locations in the *Liewlong Khlaw Kur Marwein*.

3.23.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Liewlong Khlaw Kur Marwein* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath, walking trail, sign board, washrooms *etc.* may be constructed to attract tourists.

3.23.9.7 Restocking of Open Degraded Areas

A mojor part of the *Liewlong Khlaw Kur Marwein* is devoid of trees. Efforts are made to restock the open degraded patches in the *Liewlong Khlaw Kur Marwein* by assisting and promoting

natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.23.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Liewlong Khlaw Kur Marwein* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Liewlong Khlaw Kur Marwein.*

3.23.9.9 Awareness Campaign

The *Liewlong Khlaw Kur Marwein* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.

3.24. *LAWPYLLUNLAW ADONG KUR IAWPHNIAW*

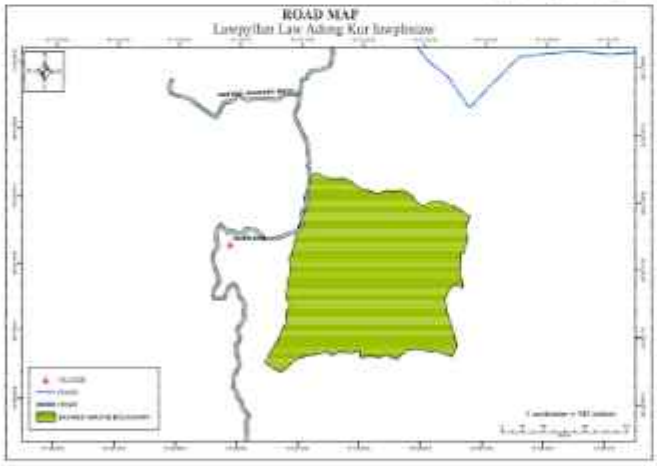
3.24.1 Location

Lawpyllun Law Adong Kur Iawphniaw is a clan protected forest which is situated in South West Khasi Hills District of Meghalaya at *Mawsaw* village, Syiemship of Nobosohphoh and under the aegis *of Kur Iawphniaw*. It covers an area of 52.03 ha. It lies between 25° 26′ 56" to 25° 27′ 24" N latitude and 91° 23′ 04" to 91° 23′ 35" E Longitude with an altitude of 1530 m above mean sea level. It is bounded in the North by *Twah Phudriatdiliang* and private land of *Kur Lyngkhoi*, in the East by private land of *Kur Pariong and Twah Ladew*, in the South by farm land of Smti. I. Iawphiang and footpath and in the West by *Twah Phudriatdiliang* and *shrah Merry*. The forest is accessible by road from Shillong via Mawkyrwat, which is about 93 km from Shillong and a trail of 50 meters leads to the grove.



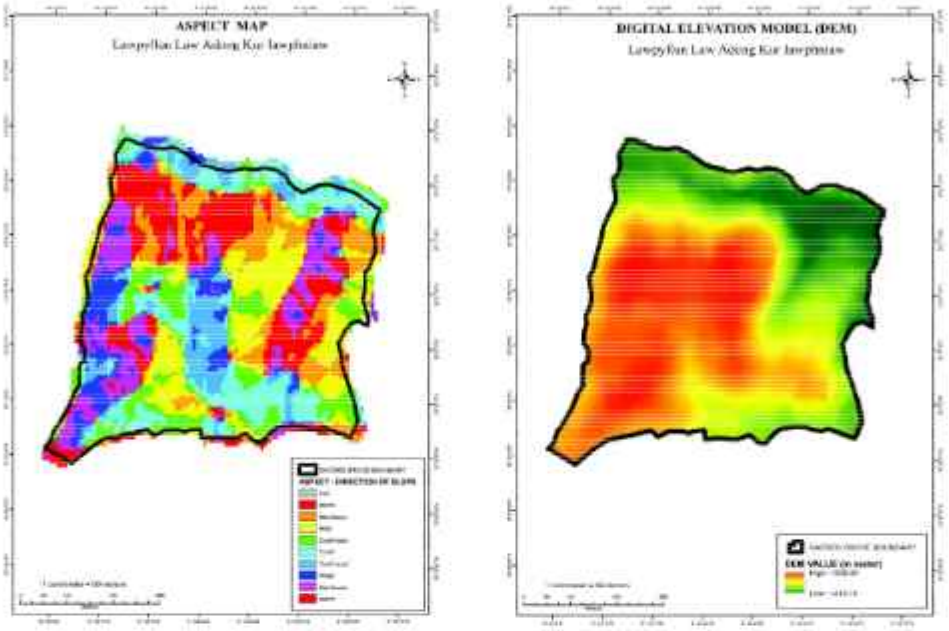


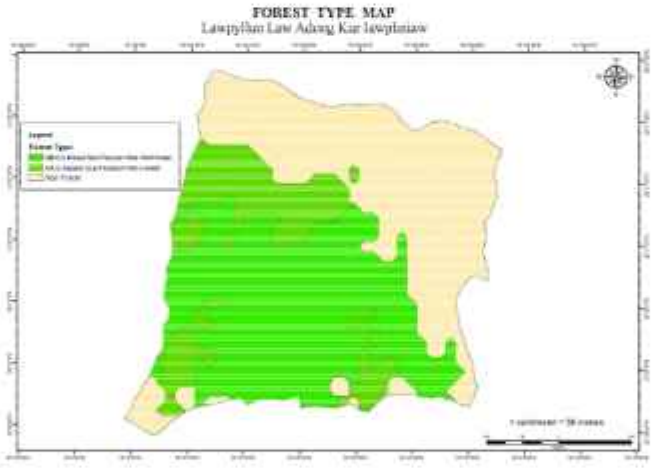




3.24.2 Brief History:

As informed by the village elders, *Lawpyllun Law Adong Kur Iawphniaw* was established by the *Kur Iawphniaw* centuries ago. In the past, religious rituals were performed in this grove as this forest had a religious significance for the clan. However, presently no such rituals are performed in this forest. Due to the past religious significance, this forest is revered now also.





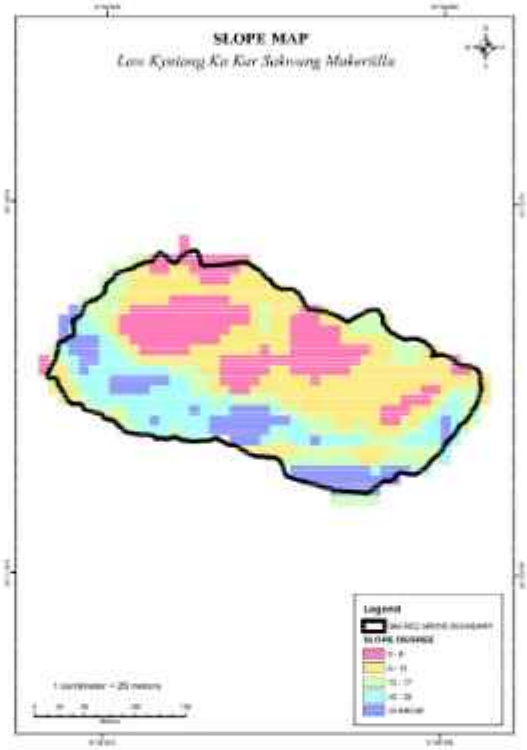
Nowadays, this forest has become ecologically and aesthetically significant for this area. It is owned by the clan and managed and administeredby the clan elders. Resident of the village are free to enter the forest but felling of the standing trees is strictly prohibited and punishable as per the customary rules framed by the *kur* (clan) *Dorbar*. The forest is free from any encroachment. However, wild fires and grazing have been observed in the forest.

3.24.3 Geography and Climate

Topography of the grove is hilly in nature with slope varying from as low as 0.70° to 50°. Major area of the *Lawpyllun Law Adong Kur Iawphniaw* falls in South, South West, North, North East, North West, South East and West Aspects. Soil texture is sandy-loam with loose stones. Soil

consistency is slightly compact. Colour of the soil is brown and soil depth is shallow. Three seasonal streams namely; *Twah Phudriatdiliang*, *Lawkhohkhniang* and *Twah Ladew* originate from this forest. All these streams flow towards north-east.

Winter season starts from the end of October and lasts till March of the next year. It receives high rainfall during the monsoon season from April to September. Average temperature varies from7°C to 18°C.



3.24.4 Forest Type:

As per the Champion and Seth classification (1968), forests found in the sacred grove are of the ***Type 8B/C2 Khasi Sub-Tropical Wet Hill Forest*** and ***9/CL Assam Sub-Tropical Pine Forest.***

3.12.5 Forest cover

As per the latest India State of Forest Report-2021 published by the Forest Survey of India, Dehradun Forest cover in the *Lawpyllun Law Adong Kur Iawphniaw, Mawsaw* is as below:

Forest Cover	Area (ha.)	% of total Area
Very Dense Forest (> 70%)	0	0
Moderately Dense Forest (40 %-70 %)	28.89	55.53
Open Forest (10% - 40%)	2.01	3.86
Scrub Forest (<10%)	0	0
Non-Forest	21.13	40.61
Total	**52.03**	**100**

3.24.6 Flora and Fauna

The *Law Pyllun Law Adong Kur Iawphniaw* is home to two-storied virgin dense forest of natural origin. *Castanopsis indica* and *Castanopsis tribuloides* are respectively the 1st and 2nd dominant tree species. The forest is home to many rare, endangered and endemic pant species.

3.24.6.1 Flora species

Table 3.24.1: Trees found in *Lawpyllun Law Adong Kur Iawphniaw*

Sl No.	Botanical Name	Local Name	Family
1.	*Agapetes variegata*	*Dieng sohlamut*	*Ericaceae*
2.	*Albizzia spp*	*Dieng tiewrilang/rilong*	*Fabaceae*
3.	*Aralia armata*	*Dieng latymphu*	*Araliaceae*
4.	*Beilschmeidia brandisii*	*Dieng sohkhyllam*	*Lauraceae*
5.	*Betula alnoides*	*Dieng lieng*	*Betulaceae*
6.	*Camelia caduca*	*Dieng tyrnem*	*Theaceae*
7.	*Castanopsis armata*	*Dieng siar*	*Fagaceae*
8.	*Castanopsis indica*	*Dieng sohot*	*Fagaceae*
9.	*Castanopsis tribuloides*	*Dieng sning*	*Fagaceae*
10.	*Cesearia varieca*	*Dieng rang*	*Flacourtiaceae*
11.	*Combretum aquamosum*	*Dieng sohrisang*	*Combretaceae*
12.	*Derris robustus*	*Dieng sohphyllad*	*Fabaceae*
13.	*Elaeocarpus lanceaefolios*	*Dieng sohkhyllam*	*Elaeocarpaceae*
14.	*Engelhardtia spicata*	*Dieng lba*	*Juglandaceae*
15.	*Erythrina indica*	*Dieng song*	*Leguminoseae*
16.	*Eurya accuminata*	*Dieng pyrshit*	*Theaceae*
17.	*Fotina integrefolia*	*Dieng snam maw*	*Pentaphylacaceae*
18.	*Grewia cerylifolium*	*Dieng sohmeblang*	*Tiliaceae*
19.	*Ilex venulosa*	*Dieng shyieng*	*Aquifoliaceae*
20.	*Ilex venulosa*	*Dieng sohkhawsyieng*	*Aquifoliaceae*
21.	*Itea chinensis*	*Dieng sohsyrtet*	*Iteaceae*
22.	*Lannea coromandelica*	*Dieng sohthangkynshi/ thang/ thang kynthei*	*Anacardiaceae*
23.	*Ligustrum rbustum*	*Dieng syiang/siang*	*Oleaceae*
24.	*Litea cubeba*	*Dieng sohsying*	*Oleaceae*
25.	*Lithocarpus fenestrata*	*Dieng jing*	*Fagaceae*
26.	*Macaranga denticulata*	*Dieng lakhar*	*Euphorbiaceae*
27.	*Michelia champaca*	*Dieng rai*	*Magnoliaceae*
28.	*Michelia oblonga*	*Dieng laniar*	*Magnoliaceae*
29.	*Michelia oblonga*	*Dieng laniarlieh*	*Magnoliaceae*
30.	*Michelia oblonga*	*Dieng laniariong*	*Magnoliaceae*
31.	*Michelia panduana*	*Dieng sohniar*	*Magnoliaceae*
32.	*Myrica esculenta*	*Dieng sohphie*	*Myricaceae*
33.	*Myrica indica*	*Dieng sohliya*	*Myricaceae*

34.	*Pinus khasiana*	*Dieng kseh*	*Pinaceae*
35.	*Pithecellboiu heterophylum*	*Dieng iapiar*	*Fabaceae*
36.	*Prunus nepalensis*	*Dieng sohiongkhlaw*	*Polygonaceae*
37.	*Prunus undulata*	*Dieng tyrkhum*	*Rosaceae*
38.	*Pyrus pashia*	*Dieng sohjhur/sohshur*	*Rosaceae*
39.	*Quercus dealbata*	*Dieng sai*	*Fagaceae*
40.	*Quercus glauca*	*Dieng stap*	*Fagaceae*
41.	*Quercus griffithii*	*Dieng wah*	*Fagaceae*
42.	*Quercus spp*	*Dieng shkor*	*Fagaceae*
43.	*Quercus spp*	*Dieng dngiem/lyngiem*	*Fagaceae*
44.	*Rhododendron arboreum*	*Dieng tiewsaw*	*Ericaceae*
45.	*Rhus chinensis*	*Dieng sohma*	*Anacardiaceae*
46.	*Rhus succedanea*	*Dieng kain*	*Anacardiaceae*
47.	*Schima khasiana*	*Dieng ngan*	*Theaceae*
48.	*Schefflera wallichinia*	*Dieng langrop*	*Araleaceae*
49.	*Symplocos theaefolia*	*Dieng dpei*	*Symplocaceae*

Table 3.24.2: Shrubs found in *Lawpyllun Law Adong Kur Iawphniaw*

Sl No.	Local Name	Botanical Name	Family
1.	*Dieng pyrshit*	*Eurya japonica*	*Theaceae*
2.	*Dieng rang*	*Cesearia varica*	*Flacourtiaceae*
3.	*Dieng sohlangdngiem*	*Viburnum carylliflium*	*Adoxaceae*
4.	*Dieng soh um*	*Eugenia jambolina*	*Myrtaceae*
5.	*Dieng sohpangkhlieh*	*Lantana camara*	*Verbanaceae*
6.	*Dieng soh risang*	*Combretum aquamosum*	*Combretaceae*
7.	*Soh thangkynthei*	*Lannea coromandelica*	*Anacardiaceae*
8.	*Snammaw*	*Photinia intigrefolia*	*Rosaceae*
9.	*Sohmaiblang*	*Grewia cerylifolium*	*Tiliaceae*
10.	*Sla mluh*	*Flacourtia jangomas*	*Salicaceae*
11.	*Dieng siang*	*Legistrum robostum*	*Oleaceae*
12.	*Dieng dpei*	*Symplocos khasiana*	*Symplocaceae*
13.	*Soh lamut*	*Agapetes setigera*	*Ericaceae*
14.	*Dieng wah*	*Quercus griffithii*	*Fagaceae*
15.	*Dieng tyrkhum*	*Acer laveigata*	*Sapindaceae*
16.	*Dieng sai*	*Quercus dealbata*	*Fagaceae*
17.	*Dieng jing*	*Lithocarpus fenestrata*	*Fagaceae*
18.	*Dieng rilong*	*Albizzia spp*	*Fabaceae*
19.	*Dieng sohma*	*Rhus chinensis*	*Anacardiaceae*
20.	*Dieng tyllang*	*Ilex excelsa*	*Aquifoliaceae*
21.	*Soh lang*	*Viburnum foetidum*	*Adoxaceae*

Table 3.24.3: Herbs found in *Lawpyllun Law Adong Kur Iawphniaw*

Sl No.	Local Name	Botanical Name	Family
1.	Sohrishan	Duchesnea indica	Rosaceae
2.	Ja lyngthem	Polygonum chinense	Polygonaceae
3.	Sienthap/Synrem	Artemisia cina	Asteraceae
4.	Soh bsein	Arisaema tortuosuar	Melostomaceae
5.	Shiah sohprow	Rubus khasiana	Rosaceae
6.	Sohthied	Osbeckia spp	Melostomaceae
7.	Jajew maw	Begonia spp	Begoniaceae
8.	Soh byrthit	Urena lobata	Malvaceae
9.	Lashing	Cuircuma longa	
10.	Soh byrthitrit	Sida rhombijolia	Malvaceae
11.	Soh ngangkhlaw	Solanum torvum	
12.	Soh byrthit bah	Sida acuta	Malvaceae
13.	Soh krismas	Sarcandra glabra	
14.	Sla eitmut	Eupatorium spp	Asteraceae

Table 3.24.4: Climbers found in *Lawpyllun Law Adong Kur Iawphniaw*

Sl No.	Local Name	Botanical Name	Family
1.	Sohkyrsu	Dioscorea alata	Dioscoreaceae
2.	Soh krot	Smilax zeylanica	Smilacaceae
3.	Poplarem	Rhaphidophora lancefolia	Araliaceae
4.	Meitung	Paederia foetida	Convalvulaceae
5.	Jyrmi stein	Lonicera macrantha	Caprifoliaceae
6.	Soh pdung	Vaccinium serratum	Vaccinaceae
7.	Jyrmishiah	Xanthozylum khasiana	Rotaceae
8.	Jyrmikhlaw	Entoda spp	Luguminaceae
9.	JyrmiKhlaw	Mucuna macrocarpa	Luguminaceae

Table 3.24.5: Orchids found in *Lawpyllun Law Adong Kur Iawphniaw*

Sl No.	Local Name	Botanical Name	Family
1.	Tiew dieng	Micropera manii	Orchideceae
2.	Syntiew die	Bulbophyllum cylindraceum	Orchideceae
3.	Tiew mat iong	Dendrobium chrysanthum	Orchideceae
4.	Tiew pawanglum	Anoectochilus setaceus	Orchideceae
5.	Sohkhasaw	Pleinoepraecox spp	Orchideceae

Table 3.24.6: Bamboo & Cane found in *Lawpyllun Law Adong Kur Iawphniaw*

Sl No.	Local Name	Botanical Name	Family
1.	*Kdaitnamlang*	*Chimonobambusa khasiana*	*Poaceae*

Table 3.24.7: Creepers found in *Lawpyllun Law Adong Kur Iawphniaw*

Sl No.	Local Name	Botanical Name	Family
1.	*Khliang syiar*	*Centella asiatica*	*Apiaceae*
2.	*Tmain Khla*	*Lycopodoum cernuum*	*Lycopodiaceae*
3.	*Bad refugi*	*Mikania micrantha*	*Astheraceae*

Table 3.24.8: Grasses found in *Lawpyllun Law Adong Kur Iawphniaw*

Sl No.	Local Name	Botanical Name	Family
1.	*Lang tylli*	*Arundinella khasiana*	*Poaceae*
2.	*Phlangtungkhar*	*Ageratena adenophora*	*Cyperaceae*
3.	*Lasier*	*Corex spiculata*	*Poaceae*
4.	*Lang phot*	*Juncus effusus*	*Poaceae*
5.	*Phlangphreit*	*Cymbopogon exsertus*	*Poaceae*

Table 3.24.9: Ferns found in *Lawpyllun Law Adong Kur Iawphniaw*

Sl No.	Local Name	Botanical Name	Family
1.	*Tyrkhang iong*	*Adiantum raddianum*	*Pteridaceae*
2.	*Tyrkhang*	*Cyathea gigantia*	*Cyatheaceae*
3.	*Tyrkhang*	*Maesa indica*	*Myrsinaceae*
4.	*Tyrkhang*	*Polypodium vulgare*	*Polypodalio*

3.24.6.2 Faunal Species

No scientific study to assess presence and abundance of wildlife in *Law Pyllun Law Adong Kur Iawphniaw* has been carried out so far. However, as per the local residents, presence of several wild animals has been reported in this forest.

3.24.7 Growing Stock

As per the methodology described in Chapter-II, enumeration was carried out in 10% area of the forest as its area is more than 50 ha. In each sample plot all the trees having GBH girth at breast height over 30 cm and above were enumerated by measuring the top height (in meters) and the girth (in centimetres) at breast height. Data collected during the enumeration were entered in Sacred Grove Description Form and Plot Enumeration Form. During the enumeration total 1,037 trees were found within 26 plots of 0.2 ha size. These include 140 *Castanopsis indica* (1st dominant), 140 *Castanopsis*

tribuloides (2nd dominant), 73 *Michelia oblonga* (3rd dominant) and 684 trees of rest of the species. Using the Local Volume Equations given in Chapter –II, girth class wise volume was calculated for each species for each of the 13 girth classes starting from 30-40 cm to 151 cm and above. Details of the same are given in the Tables 3.24.10 & 3.24.11 below. As may be seen, total growing stock in this forest is 2,325.30 cubic metres.

Table 3.24.10: Species-wise Distribution of Growing Stok in Different Girth Classes

(cum)

Girth Class wise	*Castanopsis indica* 1st dominant	*Castanopsis tribuloides* 2nd dominant	*Michelia oblonga* 3rd dominant	Rest of species	Growing Stock in 26 Sample Plots	Growing Stock in Entire Forest
30-40	2.00	2.12	1.66	11.58	**17.37**	173.77
41-50	5.31	4.76	2.40	28.32	**40.79**	408.12
51-60	7.33	7.91	1.59	28.70	**45.52**	455.48
61-70	6.78	6.23	0.68	21.56	**35.24**	352.64
71-80	5.32	7.00	0.81	16.00	**29.13**	291.49
81-90	3.60	1.31		13.33	**18.23**	182.45
91-100	2.67	0.00	1.41	6.33	**10.40**	104.07
101-110	0.00	0.00	0.00	1.11	**1.11**	11.12
111-120	1.48	0.00	0.00	2.77	**4.25**	42.47
121-130	1.55	0.00	0.00	4.83	**6.38**	63.88
131-140	0.00	0.00	0.00	3.93	**3.93**	39.27
141-150	0.00	2.35	0.00	4.41	**6.76**	67.65
151 & above	0.00	0.00	4.28	9.00	**13.28**	132.90
Total	**36.03**	**31.68**	**12.83**	**151.87**	**232.40**	**2325.30**

Figure 3.24.1: Girth Class-Wise Growing Stock in Entire Forest

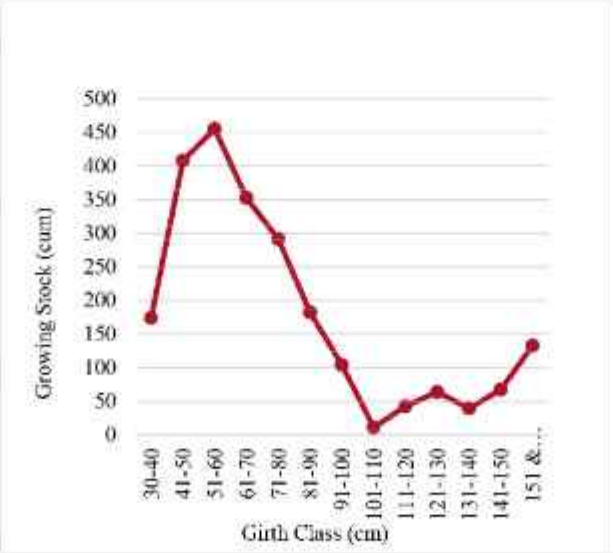


Table 3.24.11: Species- Wise Distribution of Growing Stock in Different Girth Classes in the Entire Forest

(cum)

Girth Class wise	*Castanopsis indica* 1st dominant	*Castanopsis tribuloides* 2nd dominant	*Michelia oblonga* 3rd dominant	Rest of species	Total (for 52.03 ha' area)	%wrt total volume
30-40	20.00	21.25	16.65	115.87	**173.77**	7
41-50	53.11	47.67	23.97	283.36	**408.12**	18
51-60	73.33	79.10	15.89	287.17	**455.48**	20
61-70	67.80	62.29	6.83	215.72	**352.64**	15
71-80	53.27	70.02	8.10	160.09	**291.49**	13
81-90	35.97	13.10	0.00	133.38	**182.45**	8
91-100	26.67	0.00	14.07	63.34	**104.07**	4
101-110	0.00	0.00	0.00	11.12	**11.12**	0
111-120	14.76	0.00	0.00	27.72	**42.47**	2
121-130	15.55	0.00	0.00	48.33	**63.88**	3
131-140	0.00	0.00	0.00	39.27	**39.27**	2
141-150	0.00	23.52	0.00	44.13	**67.65**	3
151 & above	0.00	0.00	42.80	90.09	**132.90**	6
Total	**360.46**	**316.94**	**128.32**	**1519.58**	**2325.30**	
% wrt total volume	**15.50**	**13.63**	**5.52**	**65.35**		**100**

As may be seen, 15.51% of the total growing stock is contributed by the 1st dominant species (*Castanopsis indica)*. The 2nd dominant species (*Castanopsis tribuloides*) constitutes 13.64% of the total growing stock. Similarly, the 3rd dominant species *(Michelia oblonga)* constitutes 5.52 % of the total growing stock. A major part of the growing stock *i.e.* 65.38 % is constituted by the rest of the species.

Figure 3.24.2: Girth Class-Wise Distribution of Growing Stock

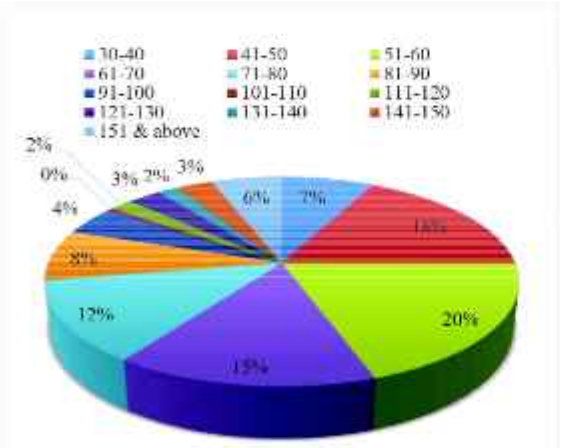


Figure 3.24.3: Species-Wise Distribution of Growing Stock

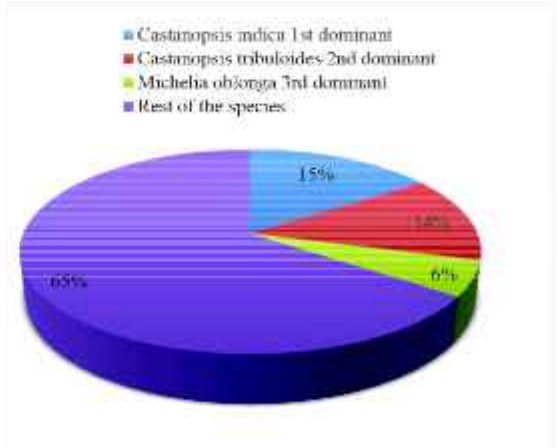


Figure 3.24.4: Girth Class-Wise Distribution of Growing Stock

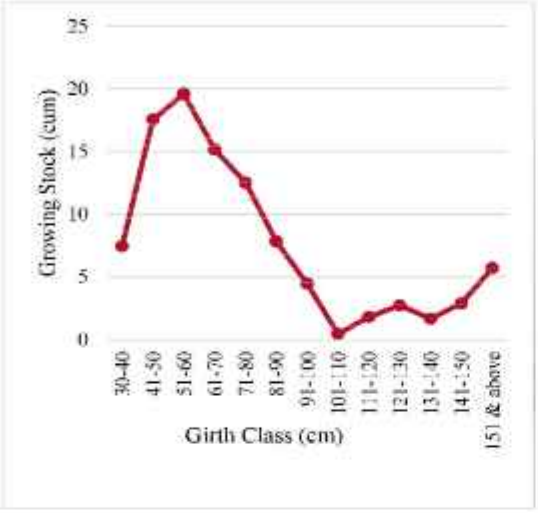


Figure 3.24.5: Over view of *Mawpynkhei Lawpyllun Law Adong Kur Iawphniaw*



3.24.8 Number of Stems

Species-wise number of stems in each girth class and are given in the Tables 3.24.12 & 3.24.13. As may be seen, maximum number of stems are found in lower girth classes *i.e.* from 30-40 cm to 61-70 cm. Numbers of stems are inversely proportional to mid-diameter of the girth class.

Table 3.24.12: Species -wise Distribution of stems in Different Girth Classes in 26 Sample Plots

(number of stems)

Girth Class wise	*Castanopsis indica* 1st dominant	*Castanopsis tribuloides* 2nd dominant	*Michelia oblonga* 3rd dominant	Rest of species	Total
30-40	35	39	28	234	**336**
41-50	36	34	26	203	**299**
51-60	31	33	11	119	**194**
61-70	18	17	3	58	**96**
71-80	10	14	2	31	**57**
81-90	5	2	0	19	**26**
91-100	3	0	2	7	**12**
101-110	0	0	0	1	**1**
111-120	1	0	0	2	**3**
121-130	1	0	0	3	**4**
131-140	0	0	0	2	**2**
141-150	0	1	0	2	**3**
151 & above	0	0	1	3	**4**
Total	**140**	**140**	**73**	**684**	**1,037**

Table3.24.13: Species-wise Number of Stems in Different Girth Classes in the Entire Forest

(number of stems)

Girth Class wise	*Castanopsis indica* 1st dominant	*Castanopsis tribuloides* 2nd dominant	*Michelia oblonga* 3rd dominant	Rest of species	Total
30-40	350	390	280	2341	**3362**
41-50	360	340	260	2031	**2992**
51-60	310	330	110	1191	**1941**
61-70	180	170	30	580	**961**
71-80	100	140	20	310	**570**
81-90	50	20	0	190	**260**
91-100	30	0	20	70	**120**
101-110	0	0	0	10	**10**
111-120	10	0	0	20	**30**
121-130	10	0	0	30	**40**
131-140	0	0	0	20	**20**
141-150	0	10	0	20	**30**
151 & above	0	0	10	30	**40**
Total	**1401**	**1401**	**730**	**6844**	**1,0376**

Figure 3.24.6: Number of stems in Different Girth Classes

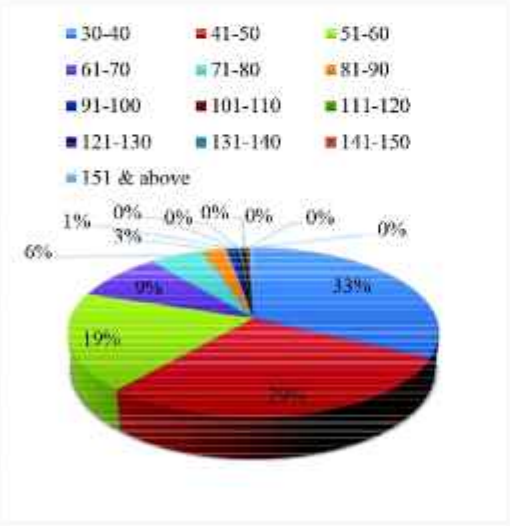


Figure 3.24.7: Species-wise Distribution of Stems

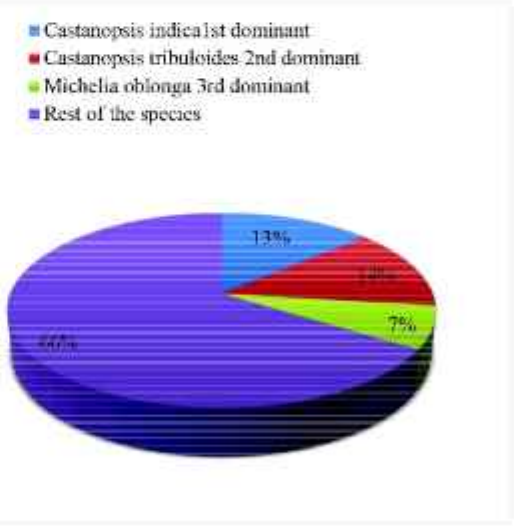


Figure 3.24.8: Number of stems in Different Girth Classes

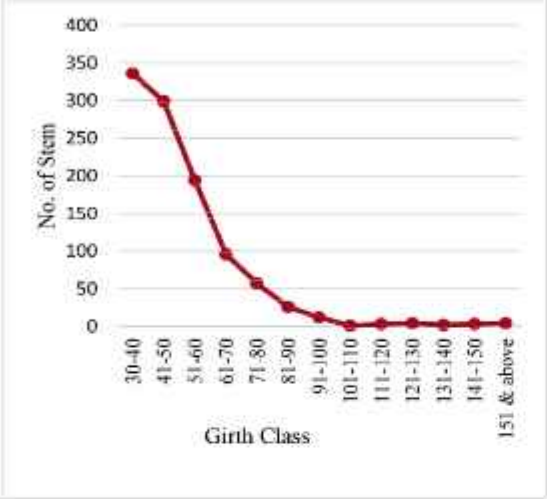


Figure 3.24.9: Inside view of *Lawpyllun Law Adong Kur Iawphniaw*



3.24.9 Prescriptions for Future Management

3.24.9.1 Registration with the Khasi Hills Autonomous District Council

The United Khasi-Jaintia Hills Autonomous District (Management and Control of Forests) Rules, 1960 provides for registration of each Law Adong located in areas falling under jurisdiction of the Khasi Hills Autonomous District Council (KHADC). Though these rules came into force about 63 years ago, the *Law Pyllun Kur Iawphniaw* has not been registered with the KHADC. The CFO of the KHADC and concerned representative of *Kur Iaphniaw* may take immediate necessary actions, as provided in Chapter-I of the said rules to register the *Lawpyllun Law Adong Kur Iawphniaw* with the KHADC. The same will accord legal recognition and protection from diversion for non-forestry purposes.

3.24.9.2 Notification as Community Reserve

Section 38C of the Wild Life (Protection) Act, 1972 provides that the State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, Wildlife Sanctuary or a Conservation Reserve, as a Community Reserve, for protecting fauna, flora and traditional or cultural conservation values and practices. Notification of an area as a Community Reserve accords it legal protection. It also makes it eligible to receive financial assistance under a Centrally Sponsored of 'Integrated Development of Wildlife Habitats'. The concerned village elders of *Kur Iawphniaw* and Wildlife Wing in the Forest and Environment Department, Government of Meghalaya may therefore take necessary actions for notification of the *Lawpyllun Law Adong Kur Iawphniaw*, as a Community Reserve.

3.24.9.3 Boundary Demarcation

Boundary of the *Lawpyllun Law Adong Kur Iawphniaw*, has not been physically demarcated on the ground. The same may result in intentional or unintentional encroachment. To prevent and to

ensure early detection of encroachments, boundary of the *Lawpyllun Law Adong Kur Iawphniaw*, wherever it is not constituted by natural features of permanent nature, such as rivers or streams, may be demarcated by erection of RCC boundary pillars and painting of rings on stem of trees standing on the boundary.

1.24.9.4Fire Protection

As per the Forest Fire Alert System maintained the Forest Survey of India, during a period of 22 years (2002 -2023) only one fire incident has occurred in the *Lawpyllun Law Adong Kur Iawphniaw*. As per the Meghalaya Forest Fire Information System developed by the North Eastern Space Application Centre (NESAC) a major part of the *Lawpyllun Law Adong Kur Iawphniaw* is highly vulnerable to forest fire. However, as per the said information system, a major part of the *Lawpyllun Law Adong Kur Iawphniaw* is not prone to forest fire. To prevent damage to the *Lawpyllun Law Adong Kur Iawphniaw* from accidental forest fire, measures such as creation and periodic cleaning of fire line along the periphery and at critical locations within the *Lawpyllun Law Adong Kur Iawphniaw* and engagement of fire watchers during the critical months may be taken.

3.24.9.5 Construction of Soil Moisture Conservation and Water Harvesting Structures

To prevent and minimise soil erosion and to improve moisture regime, water harvesting structures such as check dam, contour trench etc. may be constructed at suitable locations in the *Lawpyllun Law Adong Kur Iawphniaw*.

3.24.9.6 Creation of Eco-Tourism Facilities

To create awareness about rich biodiversity of the *Lawpyllun Law Adong Kur Iawphniaw* and also to create livelihood opportunities for local residents, eco-tourism facilities such as rain shelter cum view point, footpath, walking trail, sign board, washrooms *etc.* may be constructed to attract tourists.

3.24.9.7Restocking of Open Degraded Areas

Efforts may be made to restock the open degraded patches in the *Lawpyllun Law Adong Kur Iawphniaw* by assisting and promoting natural regeneration of native species. Areas which cannot be naturally regenerated may be afforested by planting seedlings of native species.

3.24.9.8 Formulation of Proposals and Registration Thereof on Carbon Registry to Earn Carbon Credits

To reward the local communities for their efforts in conservation and protection of *Lawpyllun Law Adong Kur Iawphniaw* for centuries, a proposal may be formulated and registered on an appropriate carbon registry to earn carbon credits for measures to be taken by the local communities for better protection and conservation of the *Lawpyllun Law Adong Kur Iawphniaw*.

3.24.9.9 Awareness Campaign

The *Lawpyllun Law Adong Kur Iawphniaw* has been protected by the local communities for centuries for religious, conservation and cultural beliefs. With gradual subordination of these beliefs, local communities concern for conservation and protection of sacred groves and other community owned forests is gradually declining. The same therefore need to be revived and strengthened by creating awareness among the local communities and grassroot level institutions about cultural, heritage and economic importance of sacred groves and other community owned forests.



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