



# FOREST

## FOREST EVERYWHERE



# FOREST

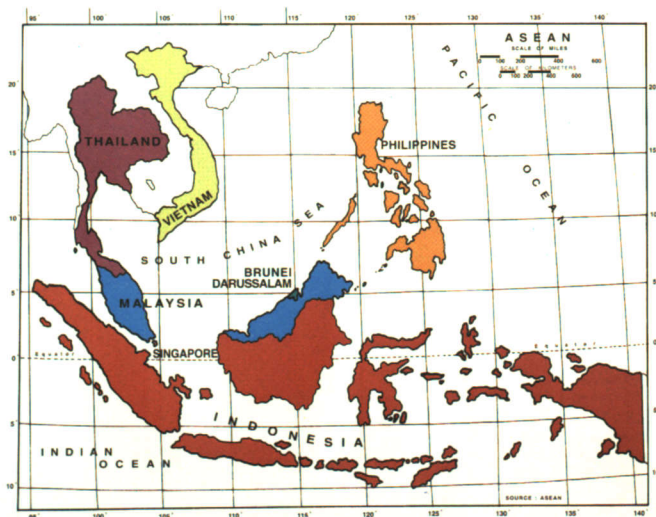
## FOREST EVERYWHERE



Children's Books and Source Materials  
on ASEAN Cultures Project

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Rafflesia bud



Rafflesia half open



Rafflesia full bloom



mushroom



cicada



beetle



butterfly



tigers and bears which have strong muscles, fangs and claws. The beautiful ones are peacocks, pheasants, colourful birds and deer with horns which look like tree branches. Snakes, reptiles and crawling insects like centipedes, ants and termites are everywhere. They move around for food, or simply feed on plants which they use also as their home.

Some animals eat the meat of the other animals, some feed on plants as well as provide beneficial effects. Birds, butterflies, bees and some small insects help propagate plant seeds. They carry pollen and seeds to new lands. When animals die, their corpses are decomposed by bacteria and are absorbed into the soil. These help to fertilize the soil and make trees grow.

Plants and animals cannot thrive without water. We can find water resources such as springs, streams, fountains, ponds and waterfalls in the forests. Trees and water depend on each other as well. Water, at the same time, needs trees to protect it from being dried up by strong sunlight. Trees also prevent water from overflowing the area because there are tree roots to store it underground. Fountains, streams, ponds, lakes and waterfalls add beauty to the forests.





# Introduction

Forests mean societies of trees, animals and human beings who live there. Other components of forests are soil, water and minerals contained in the soil. These provide food for growth of living things in forests.

Member countries of the Association of Southeast Asian Nations are blessed with rich forests. These countries are Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore, Thailand and Vietnam.

There are many forms of forests in the ASEAN member countries. These forests are collectively called rain forests. Each type is different from the others by the shape and structure of the trees. There are also differences for each kind of tree according to the location and the terrain of the forest. There are a hundred thousand various species of big trees and small plants.

The rain forest is also called evergreen forest. This means that it is green with leaves all the year round. However, there are some kinds of trees which shed leaves during the dry and cold seasons. The most outstanding trees are the giant dipterocarps which rise straight up above other plants. They look like kings of the forest because of their stature. Under the canopy, there are small bushes, numerous creepers or wood climbers, and epiphytes which grow on other plants. On the forest floor, one can find small plants such as mushrooms, lichen, fungi and bacteria. Some trees have beautiful leaves and flowers. Leaves and flowers are in different shapes. Fruit trees also abound.

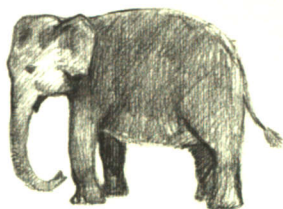
Not only big trees and small plants exist in the forests, there are also numerous kinds of animals which live there. The biggest of the animals are elephants, and the smallest ones are tiny insects. The powerful ones are



gibbon



hornbill



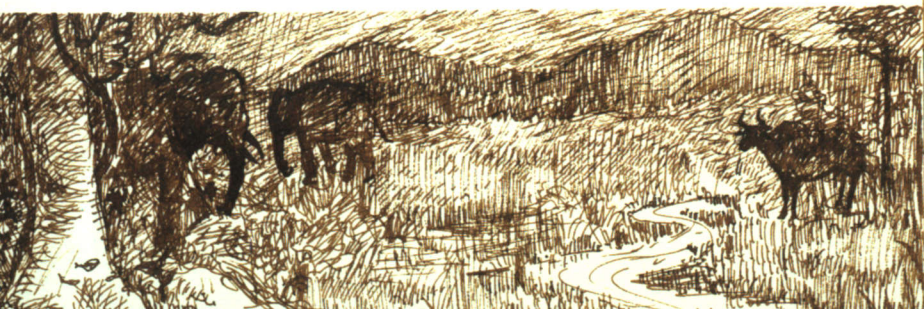
Since the beginning of humankind, forests with their trees, water, soil and mineral components have been providers of the basic sources for living. Our ancestors had learned about the riches of the forests and how to make use of them. They had identified plants that can be eaten, and that can be used to cure sickness. They also learned that some fibrous plants can be made into cloth, that tree trunks can be turned into logs and planks for building houses. They also learned that bark, strips of wood and palm leaves can be used to write on, and that wood pulp can be made into paper. They learned how plants grow, and they began to cultivate food plants.



pitcher plant

There are folktales and beliefs about forests and how forest components depend on one another. The destruction of one component will have a bad effect on others. Here is a Thai proverb which illustrates clearly interdependencies or the ecosystem of forest components :-

Tigers are fat because of forests,  
Forests are not cleared because of tigers,  
Grass grows because of soil,  
Soil is fertile because of grass.





# Forests Are Sources of Life



water for use and drink

Rain forests cover large areas of the ASEAN countries. They are full of life and rich in resources. Rain forests give animals and plants food and a natural habitat. Long ago man found his home, food and tools in the forests. Modern man still lives off the forests by tapping its resources. Rain forests also provide us with oxygen and water.



oil palm

The tropical rain forests are lungs for the world. The forests give us our much needed oxygen. The leaves of the trees with the help of sunlight remove carbon dioxide from the air and convert it to oxygen for us. The roots of the trees trap, absorb and store water. The trees then release some of the water back into the air through their leaves. Trees help to cool the air and make rain. Many people depend on forests to give them water for their everyday use. Without forests there will be less oxygen and no water. Forests also protect us against typhoons and floods.

It is no wonder why people who live in the forests especially the natives protest strongly against the felling of trees. Cutting down of trees serve mainly commercial interests, and even worse, destroy and ruin the environment. It also destabilizes water supplies and affects our climate.

### Forest Resources

The ASEAN rain forests are rich in timber. Logging is a profitable industry in Indonesia, Malaysia, the Philippines and Thailand. Sawn timbers and round logs are exported to Japan and countries in Europe. Some timber is used locally. Iron wood, ebony, redwood, teak and mahogany are used for furniture-making, interior furnishing, canoe and shipbuilding. Pulpwood is the main raw material for paper, rayon and plastics. Rattan and bamboo are very important to the people of the ASEAN. They are used for furniture-making. Rattan is made into mats, baskets, hats, lamp-stands and baby cribs. Bamboo is used for making fish traps, sun shades, musical instruments and building houses.

Mangrove forests are found in swampy areas along the coasts. The trunks of the mangrove trees are used as piles in the foundations of buildings. Cutches and tannins are extracted from the bark and are used for the strengthening of fishing nets and dyeing of leather. Man also makes dyes from plants in order to have colourful clothing. Silversmiths in Brunei Darussalam use charcoal from mangrove wood in the process of melting silver.



kapok tree



mahogany table

In the forest of Kalimantan in Indonesia there is a special tree, the *tengkawang*. Its seeds contain oil which is used in making cosmetics. Sandalwood is found in the islands of South Eastern Indonesia. People use this wood to make fans and perfume from its oil because of its sweet smell. In the Philippines forest-based industries create many jobs for Filipinos. Charcoal making, gathering honey and hunting wild game still provide a livelihood for families who live near or in the forests. In Thailand golden teak and rosewood are the main timber produced. Teak plywood furniture and furniture-parts are in great demand.

Malaysia exports timber from its forests. The timber types are redwood and hard wood. Malaysia also produces soft wood for paper pulp. Nowadays, rubber wood is used for making modern design furniture.



hat



book



fish trap



baby crib



## Plants for Food



mangosteen



nipa palm's fruit



durian



sago

Forests and swamp vegetation provide man with food. The nipa palm gives brown sugar. The sago palm produces sago flour. During the Second World War in 1942-1946 sago flour was the staple food of the people of Brunei Darussalam. The *Asmat* people in Indonesia eat sago flour as their traditional food. As for the Malaysians, only those in Sabah and Sarawak eat sago flour. The sago pearls are used in making cakes and desserts and are popular among the ASEAN people. Honey is also taken from the forests of the ASEAN countries and is used to make drink and to sweeten food. It is also used for medicinal purposes.

The forests of the ASEAN countries produce many different kinds of edible fruits and nuts such as durian, mangosteen, langsung, jackfruit, bread fruit, banana, pineapple, *rambai*, *tarap*, *kambayau*, *petai* and *buah keluak*.

Durian is relished by many in the ASEAN countries. It has a strong smell, thorny skin and creamy flesh. *Duri* means 'thorn' and durian is known as the king of fruits. These fruits are now grown in orchards in Thailand,



langsai



kambayau

Malaysia, Indonesia and the Philippines. The *kambayau* is an olive-like purplish black fruit and is a favourite in Brunei Darussalam.

In the undergrowth of the forests are different types of ferns, shrubs, mushrooms, fruits and seeds that can be eaten. The people, especially, in Malaysia and Brunei Darussalam as well as in Singapore and Indonesia enjoy eating the *pucuk paku*, a fern, and the shoots of many plants and vines found in the forests. A favourite in most ASEAN countries is the bamboo shoot and *petai*. *Buah keluak* is a nut enjoyed by many people in Indonesia, Malaysia and Singapore. Wild mushrooms are collected in the forest, but we have to be careful not to eat the poisonous ones even though they look beautiful.



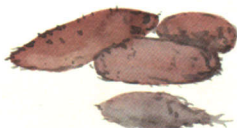
rambutan



petai



coconut



potato

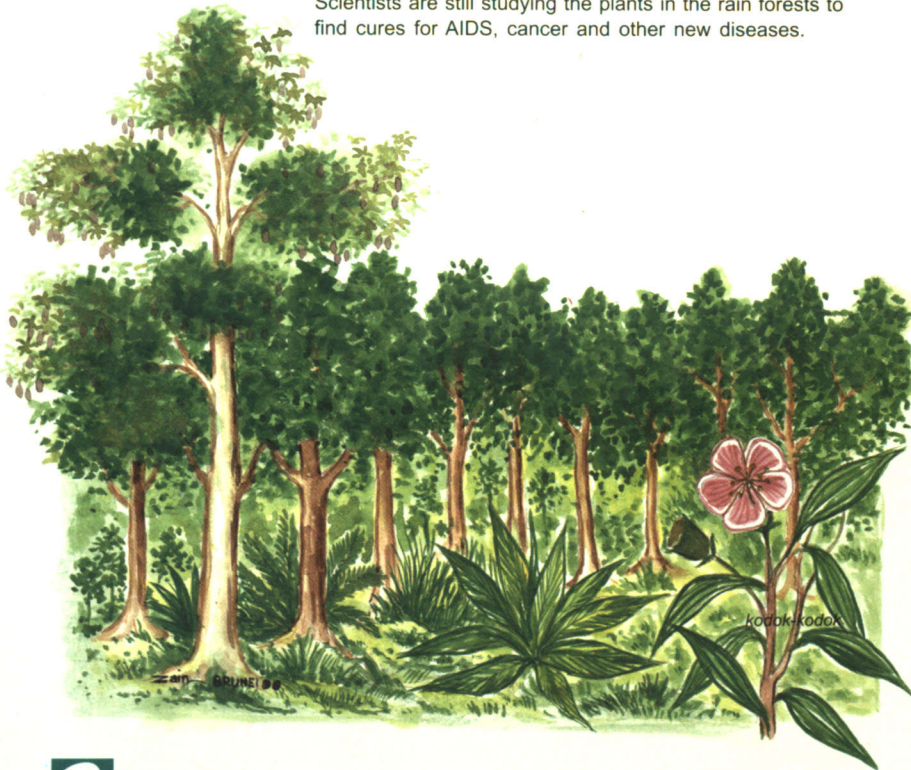


## Plants as Medicine



Roots, seeds, flowers, sprouts, leaves, pollen, sap, etc. can be made into medicines.

Some plants have medicinal uses. Village herbalists concoct cures from different parts of wild plants. The Philippines used to supply the world with chaulmoogra for leprosy. The cinchona tree, found in the forests of Indonesia gives us quinine from its bark. It is a powerful drug for the treatment of malaria. It is cultivated in Thailand for export to countries that use quinine for their manufacturing processes. All parts of the kapok tree are used to make medicines. In the Philippines it is used as an aphrodisiac, and in Singapore, kapok leaves are made into a drink to cure coughs. In Brunei Darussalam the fresh petals of *kodok-kodok* are used to rub on dried burnscars and wounds in order to accelerate healing and to reduce permanent scarring. All ASEAN people use ginger and tumeric to cure stomachache and as ingredients in cooking. Scientists are still studying the plants in the rain forests to find cures for AIDS, cancer and other new diseases.



## Flowers and Seeds for Food

Chrysanthemum, roses, hibiscus are not just valued as ornamental plants. These flowers are made into drinks. Sunflower seeds which are cholesterol free, are used to make cooking oil. Sap from spardix of coconuts and some kinds of palms can be made sugar and drinks.



bamboo shoot

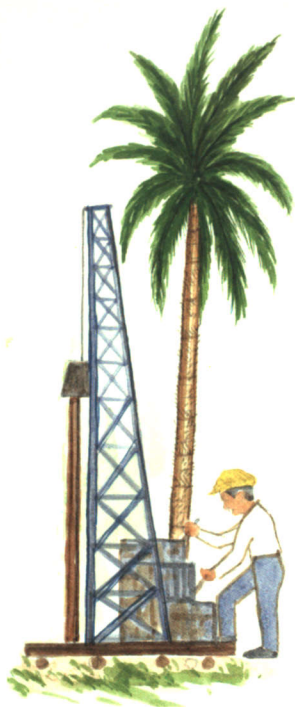


sunflower



## Plants for Building

The forest supplies man with all the materials for building his house — timber for the post, bamboo for the flooring and walls, and nipa thatch for the roof. The nibong palm's trunk provides posts and stilts for houses especially those that stand in water.



Palm trunks are used in building.



bamboo hut with palm thatched roof

## Animals Which Live in the Forests

The tropical rain forest is one of the richest habitats for all kinds of animals. The forest provides food for all the animals which live in it and creates a balance in nature. In most ASEAN countries, elephants, tigers, leopards, deer, *musang*, civets and monkeys roam in the forest and feed on leaves, stems and roots of plants and smaller animals. In Brunei Darussalam and East Malaysia, the proboscis monkeys and *orang-utans* are often observed by tourists. The flying foxes in Malaysia feed on the fruits of the season. The Javan rhinoceros is rare today and can only be found in Ujung Kulon Reserve in Java, Indonesia. The biggest bird in the Philippines is the *haribon*. It is a monkey-eating eagle and is now protected from extinction.



haribon or monkey-eating eagle



### Animals As a Food Provider

Among the animals that man hunts for food are deer, mouse-deer, wild pigs, rabbits, wild birds and quails. Most ponds and rivers found in the forest are a living place for fish which are food for man.

If there are no forests, animals, plants and man will not be able to live the way they are now. We need forests to support life. Therefore, we must take care of our forests.





# Forests Are Beautiful

The tropical rain forests of the ASEAN countries contain amazing varieties of flora and fauna. The colourful natural life of the evergreen forest habitants and the dense climate facilitate the existence of almost all life forms comprising various shapes, sizes, colours and living patterns in different forest habitats. The landforms in the forests consist of streams, rivers, lakes, caves, waterfalls and hot springs.

## Beautiful Vegetation and Plants

The forests in the ASEAN countries are essentially tropical forests, but they can be further subdivided according to the climate and geographical position. There are the northern monsoon-forests of Thailand (more or less deciduous), the southern monsoon-forests of East Java, Timor and Flores of Indonesia, and the central evergreen rain forests of Brunei Darussalam, Indonesia, Malaysia, and the Philippines. Trees are the main entity within the rain forests. Apart from trees, there are also other kinds of life forms such as lianas, palms, shrubs, herbs, ferns and bamboos.

ASEAN forests are known for their tall trees. The *tualang* tree found in Malaysia, Indonesia and Brunei Darussalam proved to be the tallest tree in the ASEAN forests. The dipterocarps are the most common timber trees which produce tall, straight and clear boles of 30 metres or more. As the seeds of the dipterocarps have wings, they are widely dispersed by swirling winds. Although there is no natural rain forest in Singapore, the country preserves forest vegetation in well-conserved national parks such as the Bukit Timah National Park.

Stilt-rooted screwpine forest is typical of the swampy areas.





The teak tree, another valuable timber is used for carvings and furniture-making. It is found in Thailand and Indonesia. Teak in Thailand is also used for building houses. In Malaysia and Thailand, teak is planted in large-scale forest plantations. When journeying in the rain forests, we may not be worried of starving for food or water. Delicious wildfruits are available almost everywhere. Durian, 'the King of Tropical Fruits' is the most popular indigenous fruit in the ASEAN countries. It can be found growing wild in the jungles of Brunei Darussalam, Indonesia, Malaysia, the Philippines and Thailand.

## Moving into the Forests

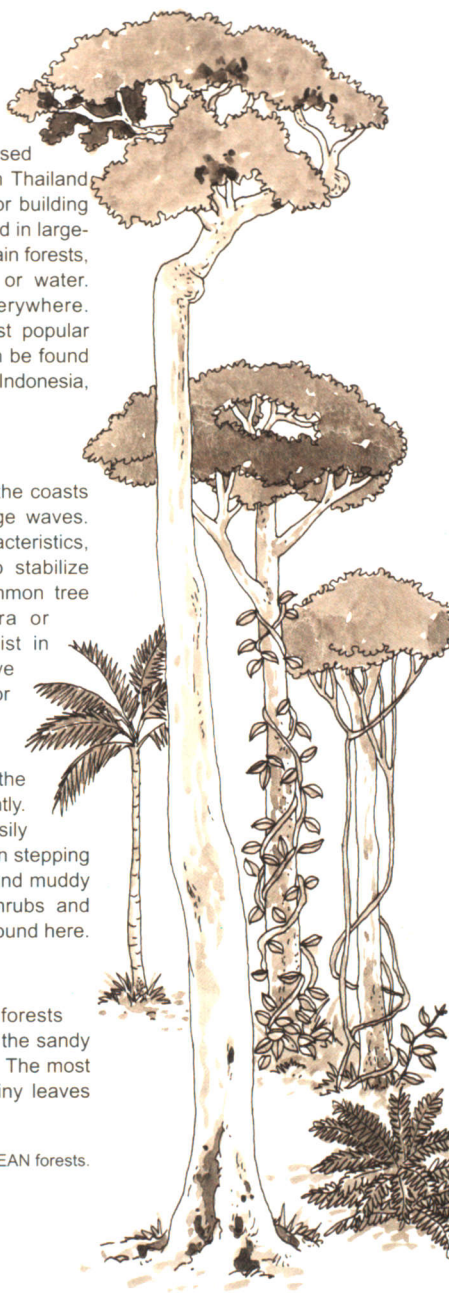
The mangrove forests are located along the coasts and protect land from strong currents and huge waves. Most of the plants living here have certain characteristics, for example, the stilts and breathing roots to stabilize themselves in the muddy soil. The most common tree having this characteristic is the *Rhizophora* or mangrove. Stilt-rooted screwpine forests exist in swampy areas. Along the mangrove waters live the nipa palms. The leaves are usually used for making thatched roofs and walls of huts.

Behind the mangrove forests are a belt of forests called the peat swamp forests. Here, the feathery-leaved, sealing wax palm grows abundantly. Its brilliant red leaf base, a distinct feature is easily noticed even from afar. We must be careful when stepping on the forest floor because the peat soil is soft and muddy enough to sink a person. Beautiful ferns, shrubs and epiphytes form relationships with ants normally found here.

## Beautiful Coasts

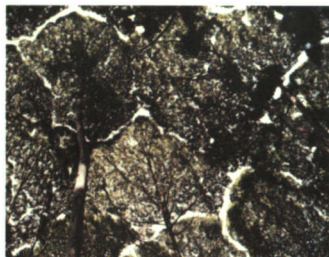
The beach vegetation in ASEAN rain forests include an association of herbs and creepers of the sandy beaches and a narrow belt of trees and shrubs. The most common attractive tree is the *Casuarina*. Its tiny leaves

The *tualang* tree proved to be the tallest tree in the ASEAN forests.





forest canopy



taller and bigger trees whose crowns are interlocked

and slender branches waving gently with the wind make us feel the balmy air from the sea. The greenery of plants along the shores of the blue sea make the environment more pleasant during windy days. On the sandy beach, there is usually a narrow herbaceous formation of creeping shrubs with colourful flowers.

## Into the Rain Forests

The journey into the rain forests often begins from the river bank of the lowlands. We see at the beginning an edge of vast blue-green rain forest beyond. As we dwell further into the forest, we can see various flora and fauna life occupying different levels from the forest floor. Underneath the forest canopy, the amount of light that penetrates is dramatically reduced. Yet in this understorey, diverse plants adapted to low light conditions exist. The lowland and hill forests usually consist of big trees and understorey palms, while open spaces are sometimes covered with bamboo thickets. It is in these types of forests that we might be surprised to see many kinds of life forms. The edge of the forests often show a three layered structure with multi-layered coloured foliage and canopies. What a fantastic scene if viewed from the air. It looks like a stretch of colourful carpets. Taller and bigger trees whose crowns interlock form a 'roof' which creates a relaxing and comfortable shelter underneath.

At higher altitude, the dipterocarps and pine trees dominate the upperhill forests. The beautiful stag-horn and bird-nest ferns are the most common epiphytes along the streams in the forest. Epiphytes and other climbing plants associated with ants can be found numerous in the heath forests which may be seen on forest hills. They are relatively poor in timber trees and wildlife since their occurrence are on highly leached, thin soil or sandstone. The damp forest floor provides an ideal house for moisture-loving fungi of various shapes and sizes, and are often colourful. Bracket fungi live on rotten and other debris which have fallen from the upper forest



layer. Underneath the tall trees live many kinds of palms with different shapes of leaves. Some are solitary whereas others are in clumps. The fan-shaped licuala palms are common and beautiful.

## Trail to the Mountain

The climax of the fascinating journey is in the montane forest. High above the sea level, the vegetation changes in both species, composition and structure. Here, the oaks and chestnuts prevail. Above this, lie the mossy cloud forests which tend to be moss covered. Trees are normally gnarled and often with twisted bole growing on very shallow soils. On open areas live the famous flowering 'Rhododendron' shrubs and a variety of orchids of fantastic sizes and colours. The Rafflesia, the largest flower in the world is a parasite blooming from the roots of a forest vine which grows abundantly in most of the mountain areas in Brunei Darussalam, Indonesia, Malaysia and Thailand. Inside the brickred leathery petal of the Rafflesia is a cauldron-like cup containing a spiked disc. It smells like rotten meat, which serves to attract carrion-scavenging flies and beetles.

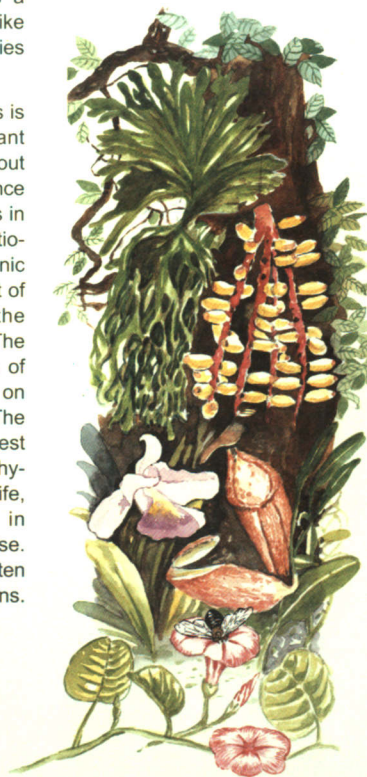
Trekking the trail of the summits of the mountains is an amazing journey. Along the trail occur abundant flowering shrubs, orchids, epiphytes and moss. About 1,000 metres above sea-level, there is an abundance of the beautiful tree-fern 'Cyathea'. At Cibodas in Indonesia, the Gunung Gede-Pangrango National Park is perhaps the best known volcanic mountain reserve. In the Philippines, most of the forest vegetation evolves on the remnants of volcanic mountains. The still, green waters and cool shades of mountain forest enchant the climber on the summit trail of Gunung Gede. The tree trunks on Doi Inthanon, the highest peak in Thailand are often full of epiphytes and other tiny plants. The plant life, on mountains like Mount Kinabalu in Malaysia, is considered a botanical paradise. The pitcher plant, an ant associated plant, is often found on the podsol soil of the mountains.



mossy forest



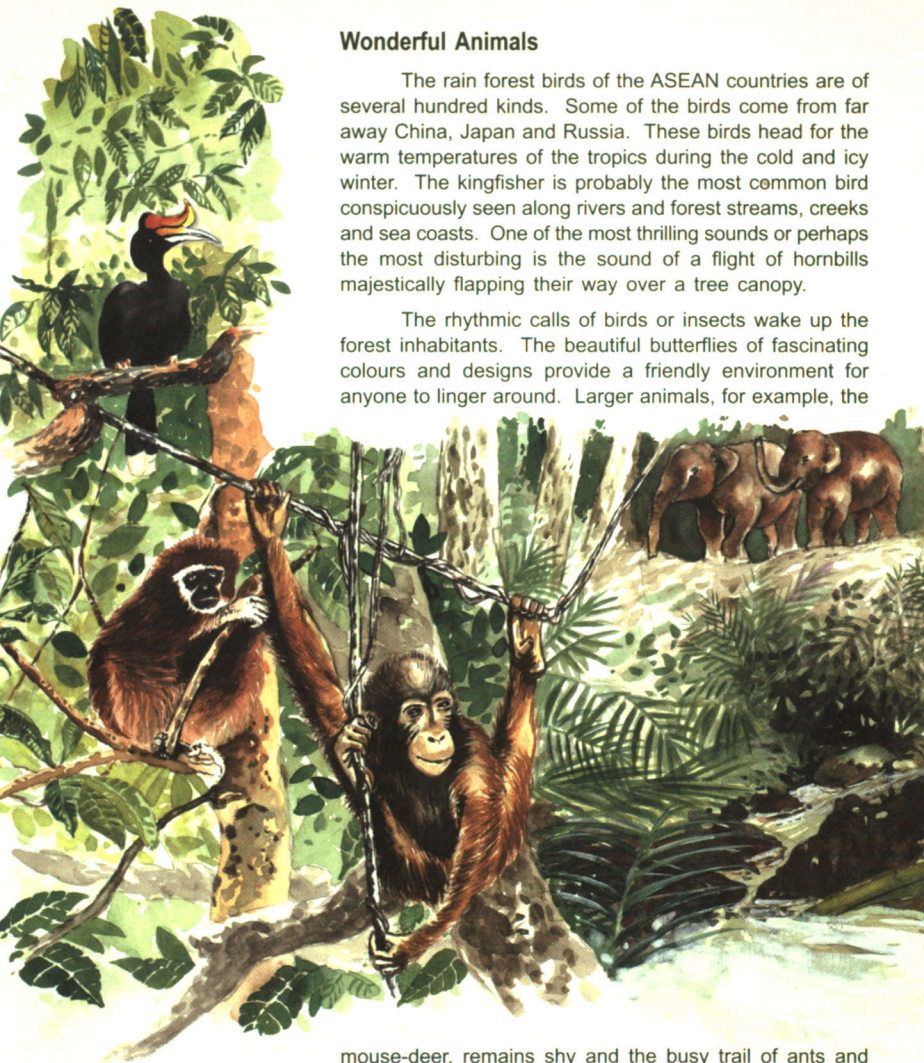
Rafflesia, the largest flower in the world



## Wonderful Animals

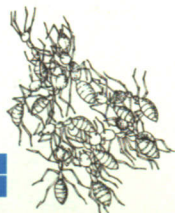
The rain forest birds of the ASEAN countries are of several hundred kinds. Some of the birds come from far away China, Japan and Russia. These birds head for the warm temperatures of the tropics during the cold and icy winter. The kingfisher is probably the most common bird conspicuously seen along rivers and forest streams, creeks and sea coasts. One of the most thrilling sounds or perhaps the most disturbing is the sound of a flight of hornbills majestically flapping their way over a tree canopy.

The rhythmic calls of birds or insects wake up the forest inhabitants. The beautiful butterflies of fascinating colours and designs provide a friendly environment for anyone to linger around. Larger animals, for example, the



mouse-deer, remains shy and the busy trail of ants and termites on the ground usually cross paths quietly and harmoniously. Many of the mammals dwell in the trees. Others are active only at night.

The greatest variety of animals are found in the lowland rain forests. The mammals which are most likely



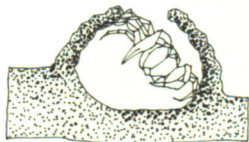
to be encountered are the squirrels and tree shrews. The bats, the only mammals that truly fly, appear as the sun sets. Other mammals are the mouse-deer, barking deer and the bearded pigs. These animals are dinner for carnivores such as the clouded leopards. Wild animals such as tigers may not be easy to meet. Thailand raises the largest number of elephants. In the dense, mountain forests of Indonesia and Malaysia notably in Mount Leuser, Sumatra in Indonesia, the Sumatran rhinoceros, the smallest rhinoceros in the world can be spotted.

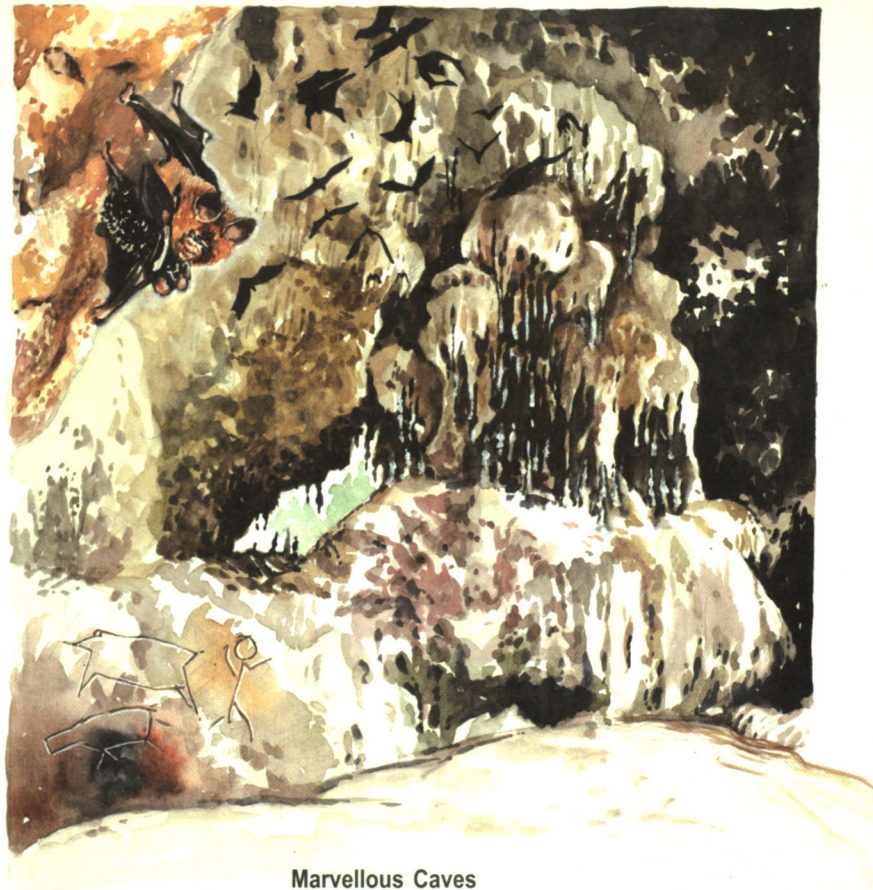
High up on the trees, in the thick hilly forests live Borneo's 'Man of the



Forest' or the *orang-utans*. Sometimes we can also hear at dawn the smaller gibbon territorial calls around poring hot springs in Malaysia. Venomous and non-venomous snakes of striking colours, sizes and lengths also commonly inhabit the forest areas to wait for their preys probably the noisy frogs and toads.

Mangrove swamps support a rich diversity of marine life. When in a swampy estuarine water, we must beware of crocodiles which may not like being visited. Here, many of the water animals such as crabs, fishes and prawns gather.





## Marvellous Caves

Limestone hills are widespread in rain forests and often have caves of great wonder.

Limestone outcrop can be explored in three ways: around them, over them and inside them. The rocky shores along the bay of Langkawi Island in Malaysia, for instance, are strewn with beautiful round pebbles of crystalline limestone. A stream flowing down from slopes of forests may lead to a hidden cave. In some caves, there are a series of cascades and pools such as found in the 'Good Luck Cave' of Sarawak in Malaysia. Here, fine massive stalactites and stalagmites which are shaped in mysterious forms are common features of the limestone caves. Wrinkle-lipped bats make noises as they fly out of the

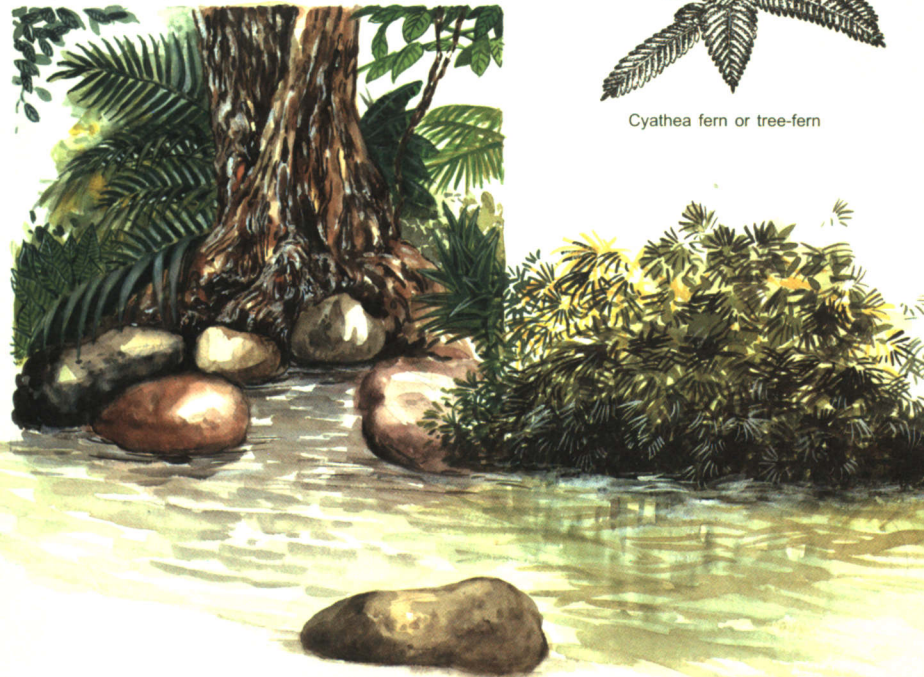
caves in the evening and back in the dark early morning. Inside the caves flow clear water rising from the rain forest floor. Walls in the caves sometimes carved with drawings and paintings indicate prehistoric evidence of primitive culture. Some are of archaeological value. Some depict religious beliefs.

### Rivers, Lakes, Waterfalls and Hot Springs

In the forests, there are often flowing rivers and lakes which provide an excellent environment for luxuriant plant growth. The banks are often lined with rheophytic palms, ferns, aroids and treelets.



Cyathea fern or tree-fern



Mountain and hill streams provide cool clear waters which are refreshing indeed. Riverside riparian habitats are normally observed by trailing adventitious riparian trees. Branches of larger trees bending across the rivers are often covered with a beautiful overhanging epiphytes. The tumbling torrential waterfalls from streams become habitats of a colourful foliage of aquatic plants.



Almost all the forests in the ASEAN countries have swift rivers and rapids that finally cascade from high waterfalls. High waterfalls at the head of most rivers add beauty to the surroundings.

Hot spring areas like at the Chae Son National Park in the north of Thailand are frequently visited by tourists. To be able to boil eggs in the hot spring water in just 10 minutes is fantastic.

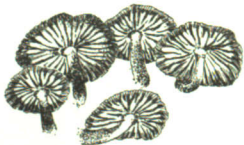
### The Rain Forests by Night

During the night, it is interesting to come across plants that are pollinated by small nectar-feeding moths, or perhaps by bats. Nocturnal animals like the flying squirrels are apparent during the night. During very dark nights, the fireflies and the phosphorescent fungi sparkle with brilliance, providing light and beauty to the forest. As night falls, the croaking of frogs compete with the noises of the long horned grasshoppers, crickets, cicadas, and occasionally interrupted by the rasping cry of the giant geckos. Movements in the branches sometimes betray the presence of civets or musang.



### Conserve the Forest Beauty

The beauty of the rain forests in the ASEAN countries impresses nature-lovers of other regions. The rich and diverse flora and fauna need to be protected and conserved in order to maintain the beauty and quality of the environment. The beautiful forest have often been described by many poets and composers. Our admiration for God's creation can be justified by our love for the beauty of our forests and our environment. Take nothing but photos, leave nothing but footprints!







## Forests Give Joy

Some forest reserves in the ASEAN countries are well worth visiting for their interesting flora and fauna. Nature-lovers can find happiness by walking or driving up hilly highways to look at strangely-shaped mountains and interesting forms of rocks and trees below. We can see the ground carpeted with green plants and wild blossoms. Some areas of the reserve can be used for camping, bird watching, trekking, canoeing and rafting. Unique views like waterfalls and limestone caves are also found here. A visit to the reserves needs comfortable clothes and shoes, so visitors can walk, climb, and go up and down the hill easily.



Students and researchers in botany, biology, and related sciences can enjoy searching and studying biodiversity in the forest which is a rich resource of invaluable knowledge. There are big and tall trees. Some plants climb around the trunks of the trees. Ferns and beautiful orchids visibly hang on the branches of the trees. Visitors can observe butterflies absorb flower pollen. Sometimes we can hear the chirps of different kinds of birds. In the reserve, we can take a breath of fresh air, and spread a mat and take a rest.

Forests provide not only cool water, but also hot springs of varying temperatures. Bathing in warm mineral water is good for the health. Boiling eggs in very hot springs is fun. Hot springs can be found in the forests in Indonesia, Malaysia, the Philippines and Thailand. Some temples in Indonesia and Thailand can also be found in the forests.



hot spring



## Camping

Most of the ASEAN countries have camping areas in their national parks. In Brunei Darussalam, there is a wide piece of land in the Gadong forest area used as a camping site. Indonesia has some forest areas for camping such as at Cibubur near Jakarta and the mountain-forest at Sibolangit not far from Medan. There are also camping areas in the Philippines at Los Baños and Laguna. These camping sites were also used for International Scouts Jamborees and are open to the public. Thailand has several national parks with fascinating camping sites in the forests in the northern and northeastern highlands.





It is necessary to bring along food and camping gears such as flashlights and compass. Light blankets are needed as it gets cooler in the evening. Campers must observe environmental cleanliness. In the evening, visitors can hear the voices of crickets, insects, small bats, birds, cicadas, and other wild animals. There are wonderful noises in the darkness of the forest. Fireflies shine as they fly in the night.

## Canoeing

Canoeing on the river is a good way to see unique scenes and the forest habitats. It is an enjoyable adventure to go through the forest by canoeing. There are many kinds of big and tall trees along the banks of the river. Sometimes we can see wild orchids and ferns hanging on the branches or plastered over the trunks of trees.



Insects, birds and wild animals such as deer, wild pigs, squirrels, *orang-utans* and the other members of the ape family can be seen. Most of these wildlife can also be found in the national parks of the ASEAN countries.

Some rivers in the national parks have rapids. It is a challenge for the young people who love the rafting sport. Generally, nature-lovers enjoy crossing the river rapids. Rafting is common in Indonesia, Malaysia, the Philippines and Thailand.





## Bird Watching

Bird watching can be enjoyed in the national parks or in the zoo. Viewers can observe the movements of beautiful birds and hear their sweet chirping.

A spectacular bird is the hornbill. There are many kinds of hornbills. The hornbills are noted for their enormous beak topped by a bonny casque. The largest bird in the world is the eagle. Both hornbills and eagles are found only in the forests of Indonesia, Malaysia and the Philippines.

Cassowaries are flightless giant birds. A cassowary measures 1.5 metres tall and weighs about 30-55 kilograms. These heavy bodied birds are found only in East Indonesia. Other flightless birds which can be found in Indonesia are the *maleo* birds. The *maleo* is not as big as the cassowary. A female *maleo* has big eggs about six times the volume of a chicken's egg. The *maleo* birds incubate their eggs in the sun-warmed beaches.



The colourful and exotic birds are birds of paradise, peacocks, parrots and cockatoos. Birds of paradise have gorgeous colours, flank plumes and breast shields with elongated wiry feathers. The male peacocks show their beauty by opening their tails like beautiful fans.

The birds which search for ants and insects with their chisel-like bills and sticky tongues on the tree trunks are the woodpeckers. The owls have large and sharp eyes. The herons have long legs, neck and beak. Usually herons catch fish in the swamp forest or mangrove forest.

## Waterfalls

Waterfalls can be found in the mountain-forests in all of the ASEAN countries except Singapore. There are fascinating views around the waterfalls. Visitors can enjoy the gushing sound of the waterfalls. The air is fresh and chilly. Sometimes there is a pond or a swimming pool beneath the waterfall for bathing and swimming.



The field around the waterfall attracts visitors. One must go up and down hills to reach the bottom of the waterfall.

## Limestone Caves

The famous and well-known limestone cave in the ASEAN reserves is in the Niah National Park of Malaysia. It lies on the north border between Kalimantan, Indonesia and Sarawak of Malaysia. Limestone caves can also be found in Indonesia, the Philippines and Thailand.

There are fantastic sceneries in the limestone caves such as the dripping limestone pillars. The pillars from the roof of the limestone caves are stalactites. The upright pillars on the floor of the limestone caves are stalagmites. Sometimes visitors can find refreshing underground streams in the limestone caves.

Artifacts such as stone bones, iron tools, and primitive drawings can still be seen in certain parts of the caves in Indonesia, Malaysia, the Philippines and Thailand. In the Philippines, the caves of Sagada are burial grounds of hundred year old mummies.

To be able to enjoy life in the forests, we must remember not to damage or deface anything that supports plant and animal life.



tools made of stone





## Forest Lore and Beliefs

Since ancient times, forests and mountains have been seen as awesome and mysterious. Animals and plants are thought to be inhabited by spirits with some possessing supernatural powers.

Some superstitions consider certain forest animals sacred. The snake, for ancient Filipinos, was believed to be a messenger of the spirits. The snake also stands for a new life because it sheds off its skin every year.

Some animals are believed to be magical or a source of medicine. Tigers are hunted for medical potions. Singaporeans believe that the pangolin gives virility to anyone who eats it.

Beliefs about animals are usually based on their unique appearances or characteristics. The big eyes of the owl make it look wiser than other birds. In many tales, animals seek his advice. The owl also helps settle differences. Yet, some owls are thought to announce death in the family and are feared.

The big animals are almost always respected for their strength. The tiger is addressed as 'grandfather' or 'master' in Sumatra, Indonesia. Before superstitious Filipinos cross a river, they entreat their 'grandfather' crocodile not to hurt them.

Despite such respect, the big animals are made to appear stupid in many ASEAN folktales and oftentimes outwitted by much smaller and harmless animals. The tiger, elephant or crocodile is a laughing stock in all their confrontations with the monkey, mouse-deer, rabbit or turtle. In Indonesia, it is said that the *kancil* or mouse-deer once took a drink at the river. He made the mistake of stepping



into the water. Before he knew it, one of his legs was bitten by the crocodile.

The *kancil* quickly but quietly thought of ways to escape. Then he saw a piece of wood, picked it up and shouted : "Crocodile, what are you biting at? That's not my leg. Look, if you really want my leg, here it is." And he threw the piece of wood into the water. The dumb crocodile of course let the leg of the *kancil* go and swam for the piece of wood.

This *kancil* story is shared by Brunei Darussalam, Malaysia, the Philippines and Singapore. In Thailand, it is a rabbit that outwits the tiger or elephant.







## Some Special Trees

There are ordinary trees and there are holy trees.

Siddhartha Gautama Buddha saw enlightenment while meditating under a *pho* tree. The said tree is sacred and is a symbol of worship in Thailand. When a *pho* tree is planted, some Thai people clear the ground in front of it for a small shrine. Figurines of animals, pots of incense, candles, and vases of flowers adorn the shrine at the *pho* tree.

The huge hundred years old *sai* tree or fig and *takien* or iron wood are also regarded with respect in Thailand. They are believed to possess supernatural powers that affect human beings.

The *tualang* is the tallest tree in Malaysia. Its light green leaves form a crownlike dome. That is why it is called '*kayu raja*' or the king's tree.

Honeybees hang their combs on the branches of the *tualang* tree in Indonesia. Before honey gatherers climb the *tualang*, they hold a special ceremony as peace offering. The tree is considered holy and is not cut down so that the honeybees are not disturbed.

Some trees though are home to bad spirits.

In Philippine folklore, the *balete* is an enchanted tree. It is home to *anitos* or spirits of ancestor. Superstitious Filipinos however stay away from a *balete* tree when it is believed to be inhabited by the *kapre*, an ugly, tobacco-smoking giant that sits on top of the tree in the evening.

*kapre* in the *balete* tree





*nang tanee*

Singaporeans are afraid of the *pontianak*. The *pontianak* is similar to Thais' *nang tanee*, a beautiful but ferocious lady who waits for victims under a banana tree.



*phoe kra sue*

Thick forest areas are often believed to conceal monsters, giants and other awful creatures. The *tiyanak* of the Filipinos tricks people into getting lost in the forest. In Brunei Darussalam, the forest is believed to be guarded by ghosts and people must first recite some magic verses to safely walk in it. Thais are afraid of forest and water spirits, like the *phoe kra sue* which is said to suck blood and devour intestines of victims.



*tiyanak*

## Guardians of the Forests

Filipinos have stories of *diwatas* or enchanted beings who protect the forests. The most famous *diwata* is Maria Makiling, the goddess of Mount Makiling in the province of Laguna.

According to legends, Maria is kind and helpful to the needy. She gives the poor pieces of ginger that later on turn to gold. But she hates those who desecrate her mountain. She punishes people who indiscriminately cut trees and hunt game.

In Brunei Darussalam, a *wasai* or small waterfall in the forest means it is guarded by a genie. During a full

Maria Makiling





wasai

moon, men are advised to bathe at the *wasai* to get magic *kebal* and become impervious to weapons.

On top of Mount Madyaas in Panay, the Philippines, the goddess *Sidapa* keeps a giant tree of life. By making notches on the tree, *Sidapa* marks the birth and death of men.

Traditional ASEAN cultures recognize man as an integral part of his surroundings. In Indonesia, the symbol that man lives in harmony with nature is *kalpatru* or 'Tree of Life'. It is portrayed in Javanese leather puppets called *gunungan* as a tree that shelters birds and animals, including man.



gunungan



Batu Belah Batu Bertangkub

## Caves and Spirits

ASEAN countries are rich with stories about kings and holy men who retreated to the forest to meditate and seek peace of mind. Some caves in Mount Banahaw, the Philippines are dwelling places for hermits and religious groups. Buddhist images are drawn or sculpted in some sacred Thai caves. Caves have been used as burial grounds in the mountain cliffs of Sagada in the northern Philippines.

Some places in the forest are also believed to be enchanted. One such place is the Batu Belah Batu Bertangkub in Selangor, Malaysia. It is a big rock which opens and closes as it devours human beings.

According to the story, the mother of a very poor family once left her children a big fish to eat. However, she asked them to reserve the fish roe for her because it was her favourite. She was furious when she returned home and found that her children had eaten the whole fish including the roe. She ran out of the house and went into the forest. When she accidentally passed near the enchanted rock, it devoured her.

According to tradition, Buddha was said to have travelled far and wide to preach. And every place he visited he left his footprints. Most of his prints are found in the forests where he stayed most of the time.

All year round, Thai people make pilgrimage to the *mondob* or the pavilion in Saraburi in central Thailand. Some three hundred years ago, a hunter named *Boon* discovered Buddha footprints in the forest.

While resting, *Boon* watched a wounded deer get well after drinking water from a small pool. *Boon* then tried to wash his skin rashes with water from the same pool. Lo and behold, his skin rashes disappeared.

When he looked closely at the pool, he saw the sacred footprints. The monks and historians at the Royal Court indentified them as Buddha's. A royal decree was issued and the *mondob* was built to protect Buddha's footprints.

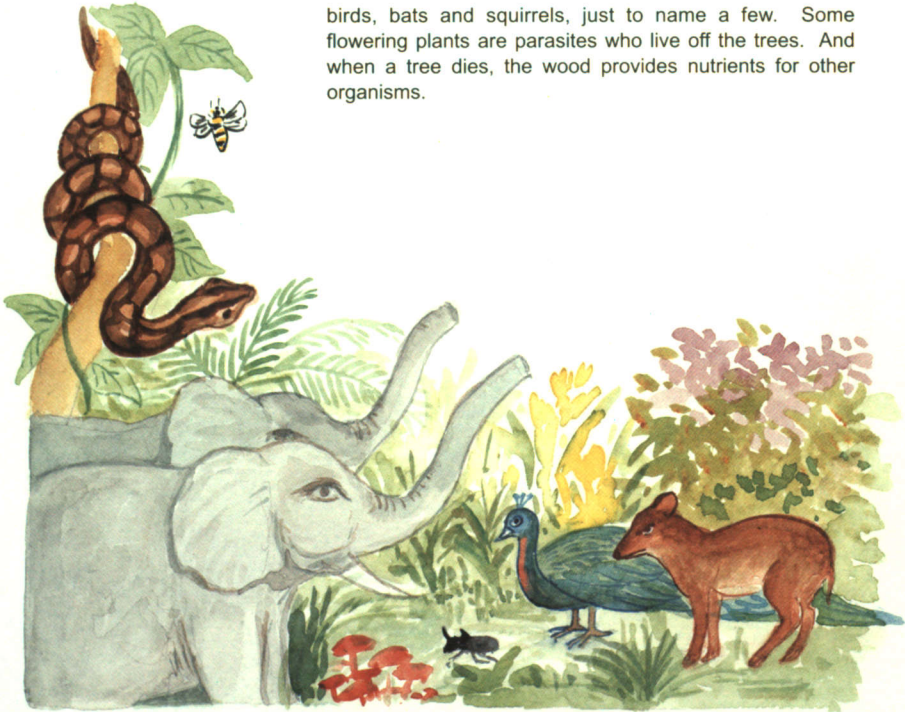
Phra Buddha Bath Pavilion, Saraburi





## Life in the Forests

Rich tropical rain forests provide food and shelter to many plants and animals. Although there seems to be no kind of order, the structure of the forests is very complex. The leaves from the trees provide food for insects and monkeys. Nectar or pollen from the flowers is used by the bees and butterflies. Fruits and seeds are food for the birds, bats and squirrels, just to name a few. Some flowering plants are parasites who live off the trees. And when a tree dies, the wood provides nutrients for other organisms.





## People

The forests have been home to people who have lived off it without depleting its resources. Most groups have hunted or farmed, and somehow preserved their cultures in spite of changes. There are also groups who have moved out of the forests and changed their lifestyles.

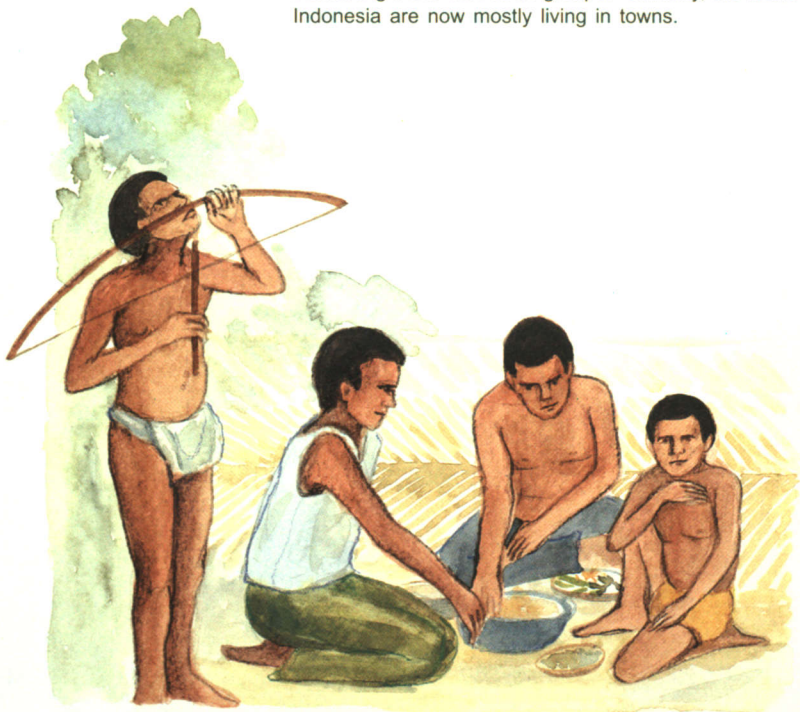
The original inhabitants of Malaysian forests were the nomad *Negritos* or *Semang* who lived off fruit and tubers, fish and small animals. There are also *Negritos* in Indonesia, the Philippines and southern Thailand.

The more settled *Orang Asli* or *Senoi* of Malaysia farm the land, hunt using a blowpipe to shoot small animals like squirrels, and collect and barter produce from the forest. There are also *Senoi* in Thailand.

The proto-Malays were similar in lifestyle to the *Senoi*, but are moving away from the old ways and interacting more with other groups. Similarly, the *Ibans* of Indonesia are now mostly living in towns.

Left bottom : *Siberut* man hunting with bow and arrow tipped with nerve poisons derived from forest roots and bark; and mixed with chili pepper to irritate wounds.

Right bottom : A *Negrito* family having dinner. The variety in the clothing indicates other influences on the lifestyle of the *Negrito*.



There are several forest tribes in the Indonesian rain forests. The *Siberut* people follow a simple way of life, living in clan houses near the rivers, as many as 20 families per house. They hunt with bows and arrows tipped with nerve poisons, and make their living raising crops such as sago and taro. Fishing, pig-raising and hunting are also practiced. Other groups in Indonesia are the *Orang Kubu* of Sumatra and the *Orang Asmat* of Irian Jaya.

Philippine forests are home to many cultural minorities like the *Ifugaos*, *Isnegs*, the *Mangyans* of Mindoro, the *Manobos*, *Subanons*, and *T'bolis* of Mindanao. These tribes have been admired for the way they have preserved their native cultures in spite of centuries of western colonial intrusions.

People still living in Thai forests are the hilltribes in the north and northwest which include the *Hmong*, *Karen*, *Yao* and *Eko*, as well as the *Sakai* in the south which are the same as Malaysia's *Senoi* and the *Negrito*es.



an *Ifugao* woman in the Philippines



a long-necked *Karen* in Thailand



Co tribe people in Vietnam



an *Iban* of Indonesia balancing on the canoe

## Forest Animals

Many wild animals feed on plant leaves, bark, fruits or grass. Others feed on animals. Some are nocturnal. It is difficult to observe forest animals as they avoid man.

The largest forest mammal is the elephant which is mostly found in Thailand, Malaysia and Indonesia ; and the smallest mammal is the forest bat which lives in limestone caves in Thailand.

Other mammals include squirrels, deer, the bearded pigs, monkeys and tarsiers and the scaly anteater or pangolin which is a nocturnal animal that feeds on ants and termites.

The mouse-deer is a hoofed mammal, greyish brown with a white throat. It gets its name from its looks and size and lives on fallen fruits.

There are too many varieties to count of apes, gibbons and monkeys in ASEAN forests. The most common is the long-tailed macaque. It has pouches in its cheeks which it uses as a store for food before it eats. The *orang-utan* is dependent on fruit, green leaves and tender branches from primary forests. Leaf monkeys are wonderful leapers, jumping six metres and more between trees.

Gliding animals cover great distances between trees and save energy this way. There is the flying lizard draco, the rare flying lemur which seems to fly when it leaps from tree to tree in the evenings. The Philippine tarsier with its big eyes, is another great leaper that hunts at night.

From top : gibbon, pig-tailed macaque, flying lizard, python, leopard

Many forest snakes hunt at night and are relatively common. They tend to avoid humans. Other reptiles like crocodiles and lizards are also common. The *komodo* dragon is the largest lizard in the world and can only be found in southeastern Indonesia. Other common amphibians are frogs and toads.

The tiger is a solitary hunter rare in Malaysia, but still found roaming in the forests of Indonesia and Thailand. Black leopards are found in the Indonesian national park and are the only large predator found in Indonesia apart from wild rare dogs. Most common of the wild cats in Malaysian forests is the very fierce leopard cat, nearly impossible to tame.

Most of the animals found in the Philippine forests are small. One of the biggest is the tamaraw or wild buffalo found only on the island of Mindoro.

The one-horned rhinoceros is found in Indonesia and Thailand.



From top : forest bat, tarsier, otter-civet, scaly anteater, mouse-deer, komodo dragon, wild buffalo



## Plants

Rain all year round and abundant water which is essential for life encourages plant life to flourish in the forest.

The tallest trees control the plant life, forming the main canopy. After this come the lesser trees such as palms and bamboos which are most abundant in some ASEAN forests. There are climbers and epiphytes followed by shrubs, and small palms such as the magic fan palms, gingers, herbs, and ferns on the forest floor.

There is constant leaf fall, which traps moisture and decay. Plants on the ground are sensitive to any change and will die if trees are cut down.

The tallest trees can reach great heights, an example is the *narra*, the national tree of the Philippines which reaches up to 30 metres. Other examples are the *balete*, *tualang*, acacia and raintree. Many trees are fruit-bearing, like the mango which grows in most forests in the ASEAN region. Other fruits common here are bananas, pineapples, jackfruits and durians.



stag's horn fern



bird's nest fern



canna hybrid



canopy . . .

sub-canopy

epiphyte . . .

shrub layer

forest floor

The forests are rich in climbing plants. Small climbers use their roots while very large climbers use their woody stems to twine, like ropes. Some are rooted in the ground but climb up the tallest trees into the sunlight. The bauhinias reach a great height and climb using tendrils. The flexible rattan palms use hooks to scramble upwards.

Epiphytes are plants that perch on other plants, such as the tall trees, using them to reach the sunlight. They are not parasites, they find their own ways to store much-needed water. Examples are ferns, such as the birds nest fern, orchids and mosses.

Parasitic plants are common, taking some of their nourishment from the life of another plant. Some live on the roots of trees. Many fungi, in the form of mushrooms and toadstools are parasites. They break down wood and release nutrients which support other life. They are also food for some animals.

On the forest floor there are forest herbs, grasses, mosses, gingers and wild flowers.



fungus



From top : woodpecker, eagle,  
kingfisher, sparrow, pheasant  
and peacock



hornbill

## Birds

The forest is a bird-watcher's paradise, with many brilliantly coloured birds in the region, such as the sunbirds that feed off flowers and insects. Common birds include peacocks, pheasants, hornbills, herons and kingfishers. Unusual birds are the Indonesian cassowaries, maleo birds and wild chickens.

Each species is highly specialised, and relies on a particular section of the forest for food. Some live in the tallest trees, some in the undergrowth and some live in the canopy, like the Asian fairy bluebird and the banded woodpecker. Others live at mid-forest level like the little spiderhunter. There are those who live on the forest floor.

The monkey-eating eagle is the great eagle of Asia. It is one of the largest birds of prey in the world and is found only in the Philippines.





## Fish

ASEAN forests are still amazingly rich in fresh-water fish. They are found in the lakes, ponds and rivers of the forest. Many kinds of catfish, carp, labyrinth fish, minnows, mudfish, crabs, shrimps and fresh-water eels can be found. The famous forest fighting fish is found in many forest streams.

## Insects

Many insects live in the forests. There are spiders, termites, beetles, cicadas, mosquitoes, bees and wasps. There are worms, dragonflies and stick insects. Ants are everywhere, including at the tops of the tallest trees. Bees are important as they are active pollinators. Beautiful butterflies are very common.



Right : (from top) redspot sawtooth, horsefield's baron, bumble bee, praying mantis, dragon fly, ladybird, rhinoceros beetle, the atlas moth, wasp, ants

Left : ❶ freshwater crab, ❷ mudfish, ❸ eel, ❹ coconut crab, ❺ snail, ❻ hermit crab, ❼ fish



## Conclusion

Forests are vital to the life of human beings. Forest plants give us food, medicine, fibre for making cloth, wood for building houses and making furniture and many other things we need. The paper for printing this book is also a forest product.

Animals give us meat and eggs which we eat. They help plants to grow well and to propagate. Some wild animals can be tamed for use in work and domestic purposes.

People now cultivate food crops and grow trees. Meat-providing animals are also raised. It is no longer necessary for us to go hunting in the forests. Nevertheless, forests are still essential for our everyday living and must be conserved.

The most important reason to conserve forests is that forests are great providers of oxygen. Without oxygen, no beings can breathe and live. This is why people grow trees in cities and around their houses to obtain oxygen. Forests play an important function in environmental control. They improve the climate, make the air clean, prevent floods, landslides and soil erosion. They are sources of clean water which is essential to our life. They are still homes for many unknown plants and animals which we can study, preserve and make use of.

Happiness in life does not depend completely on food, medicine, cloths and shelter. We need other things for our spiritual growth and recreation. We can relax and enjoy camping, trekking, canoeing, swimming, rafting along the streams and rapids. We can listen to forest music-bird

songs, cicadas' chirping, soft whispering of streams and the gushing of high waterfalls.

Terrible disasters have occurred in many countries where forests have been cleared. Great floods and sudden landslides have destroyed more trees and wreaked havoc on the lives of animals and people. Human carelessness has also caused forest fires which have killed living beings and dried up water resources. These are events to remember and to see that they will not happen again in the future. It is necessary to stop or slow down tree cutting and burning of forests. It is also necessary to prevent the blasting of mountains to obtain stones for building and construction works.

ASEAN member countries in Southeast Asia are well aware of the danger we are facing with the diminishing of our forests. The meetings of governments of ASEAN countries have agreed to solve together the problems pertaining to the environment and natural resources by taking measures to protect, preserve and develop our forests. Each country had declared selected forests as national parks. They have plans for reforestation that is to plant trees to make new forests. It is hoped that within 20-40 years, newly planted trees will be tall enough to replace those big trees which were cleared. It takes a few hours to cut down big trees, but it takes many years for trees to fully grow. Once mountains are exploded, they can never be replaced.

Can children participate in the schemes for protecting forests and reforestation?

Yes, children can very well do this.

Children can help planting saplings in tree growing schemes. We can help to pour water on them. We can also get rid of insects which eat their leaves. We can shoo away birds which pick on young leaves or flowers.

We can learn more about forests by reading books, articles in journals and brochures about dangers and how to prevent them. Children can help libraries to set up school or community exhibitions about forests.

When going out trekking or camping in the forests, we must not pluck flowers, nor pull small plants out of the





ground. We must not catch birds, butterflies, fish and insects and other small animals. Students who want to undertake studies about forests, should ask permission from school teachers and the forest conservation authorities.

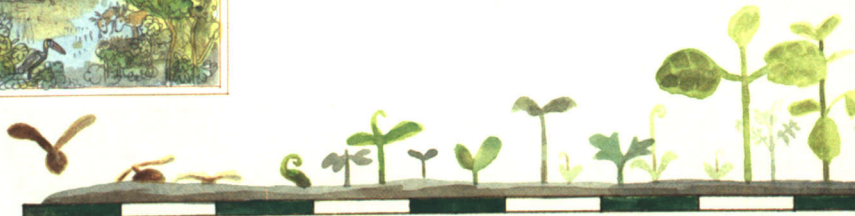
Once in the forest, We must not throw garbage around. They destroy the beauty of nature. Some animals may try to eat empty softdrink bottles and cans which are harmful to them. If we build a fire for cooking or make camp fire at night, we must be sure to extinguish the fire completely by pouring water on the burning ash under the ground surface.

Forests cannot protect themselves. Even poisonous plants and strong animals with sharp fangs and claws like tigers, have lost their lives because human beings unnecessarily destroy them. Human beings can give much help and protection to trees and animals.

Forests are a wonderful gift from nature. We should cherish them and do our best to conserve them. The future of forests are in our hands. The destruction of forests is a great loss for everyone.

ASEAN countries have tree planting schemes in cities and exploited forest areas. Singapore is making efforts to bring forests close to homes by setting up a programme of planting trees along streets and highways. Thailand is doing the same, and is also planting trees in exploited forest areas. A huge campaign was started in 1995 to celebrate the Golden Jubilee - of King Bhumipol's 50th anniversary on the throne. Millions of trees have been planted in devastated areas.

Save the forests to save our lives and our world.





# Glossary



**bamboo**

— A giant grass that mostly grows wild in ASEAN region. Its stem is used for building house, furniture, raft, tool, basket, etc. Young shoot is vegetable.



**2 bird of paradise**

— A beautiful bird with plumage of many dazzling colours.

**3 cassowary**

— A large flightless bird with long legs, can sprint fast.

**4 durian**

— A very sharp thorny skin, king of fruit in ASEAN region, having sweet and creamy flesh.



**5 epiphyte**

— An aerial plant growing on another plant. It manufactures its own food from the air or from debris accumulated around its roots.

**6 heron**

— A long-legged and necked bird that lives near water and feeds on fish.

**7 jackfruit**

— A large fruit having thorny skin. It contains soft and sweet yellow pulp. Seeds are nutritious.

**8 kapok**

— A plant having seedpod which provides light, soft, lustrous white, cotton-like fibre, chiefly used to fill mattress and pillow.

**9 kingfisher**

— A small brightly coloured bird that feeds on fish in the river or swampy area.

**10 komodo dragon**

— An Indonesian giant lizard with strong claws and saw-like teeth that can overpower deer and wild pig.

**11 langsat**

— A transparent flesh fruit with sweet and slightly sour taste.

**12 langur or leaf monkey**

— A furry animal with very long tail. It looks somewhat like a





13 mouse-deer

— A small deer-like animal without horns.

14 musang

— A furry mammal that looks somewhat like a cat, sometimes called a civet-cat, chiefly moves at night, feeds on small animals and fruit.



15 nipa palm

— A plant growing in mangrove forest. Its leaves are used for thatched roof and wall, sap for sugar, and fruit for food.

16 pangolin or scaly anteator

— An animal that eats ants and termites with its long and sticky tongue. It rolls itself into a ball when protecting against attackers.

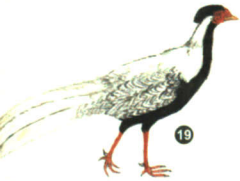


17 parasite

— A plant living and feeding on another plant.

18 peacock

— A bird with long tail feathers that can be spreaded out to show beautiful colours and patterns.

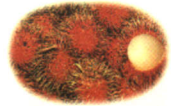


19 pheasant

— A large long-tailed bird, the male of which is usually brightly coloured.

20 rambutan

— A red, hairy fruit having white and sweet flesh.



21 rattan

— A reedy palm with a tough, stringy stem, bended easily and lasted long. It is used to make furniture, basket, baby crib, umbrella handle, walking stick, etc.



22 sago palm

— A plant providing sago flour. Young plant looks like nipa palm but the old one looks like coconut palm.

23 squirrel

— A small animal with a long furry tail that feeds on fruit.



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