

Plant Formations in the Sri Lankan BioProvince

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Sri Lankan Lowland Rain Forest

Confined to the southwest quarter of Sri Lanka, these multi-storied forests are some of the richest in the World with a density of species approaching the highest of all the World's natural jungles. Above the canopy, is usually an emergent layer of very tall trees, up to 38 m high, such as *Dipterocarpus zeylanicus*, *Doona congestifolia*, *Pygeum zeylanicum*, *Xyloia parvifolia*, together with endemics like *Cryptocaraya membranaceae* (Lauraceae), *Canarium zeylanicum* (Burseraceae), *Dipterocarpus hispidus*, *Hopea discolor*, *Shorea lissophylla* (Dipterocarpaceae), *Mangifera zeylanicum* (Anacardiaceae) and *Palaquium grande* (Sapotaceae). The canopy and sub canopy layers typically comprise *Adenanthera pavonina*, *Chaetocarpus castanocarpus*, *Cullenia excelsa*, *Cyathocalyx zeylanicus*, *Ficus callosa*, *Harpullia arborea*, *Horsfieldia iriya*, *lilex zeylanica*, *Isonandra lanceolata*, *Kokoona zeylanicus*, *Kurrima zeylanica*, *Lasianthera apicalis*, *Litsea glutinosa*, *Mesua ferrea*, *Mimusops elengi*, *Pometia exima*, *Pygeum zeylanicum*, *Scutinanthe brunnea*, *Strombosia zeylanica*, *Trichadenia zeylanica*, *Urandra apicalis*, and endemics such as *Anisophyllea cinnamomoides* (Anisophylleaceae), *Artocarpus nobilis* (Moraceae), *Camnosperma zeylanica*, *Semecarpus gardneri* (Anacardiaceae), *Carallia calycina* (Rhizophoraceae), *Chaetocarpus coriaceus* (Euphorbiaceae), *Diospyros quaesita* (Ebenaceae), *Horsfieldia iriyaghedhi*, *Myristica dactyloides* (Myristicaceae), *Hydnocarpus octandra*, *Trichadenia zeylanica* (Flacourtiaceae), *Mastixia tetrandra* (Cornaceae), *Pseudocarapa championii* (Meliaceae), *Shorea stipularis* (Dipterocarpaceae), *Syzygium makul* (Myrtaceae) and *Terminalia parviflora* (Combretaceae).

Below the canopy is lower story of medium sized trees principally comprised of *Adenanthera aglaeosperma*, *Aporosa latifolia*, *Axinandra lanceolata*, *Calophyllum pulcherrimum*, *Chrysophyllum roxburghic*, *Cinnamomum zeylanicum*, *Cleidion javanicum*, *Dillenia retusa*, *Eleocarpus serratus*, *Garcinia cambogia*, *Gironniera cuspidata*, *Hollarhena mitis*, *Julostylis angustifolia*, *Lanea grandis*, *Litsea cauliflora*, *Macaranga digyna*, *Machilus macrantha*, *Mallotus alba*, *Ochna wightiana*, *Pterygota thwaitesii*, *Rejoua dichotoma*, *Symplocos cuneata*, *Syzygium aquem*, *Trema orientalis*, *Turpinia malabarica* and *Wormia triquetra*. The endemic trees of this layer include *Bridelia moonii* (Euphorbiaceae), *Brysophyllum ellipticum*, *Timonius jambosella* (Rubiaceae), *Goniothalamus hookerii* (Annonaceae), *Litsea longifolia* (Lauraceae), *Semecarpus moonii* (Anacardiaceae), *Syzygium firmum*, *S. neesianum* (Myrtaceae) and *Stemonopurus cordifolium* (Dipterocarpaceae).

The shrub layer includes various small trees and shrubs such as *Agristitachys longifolia*, *Aporosa lindleyana*, *Desmos elegans*, *Diospyros insignia*, *Gaetnera vaginans*, *Gyrinops walla*, *Humboldtii laurifolia*, *Ixora coccinea*, *Lasianthus strigosus*, *Leea sambucina*, *Schumacheria castaneaefolia*, and *Symplocos coronata* together with endemics such as *Semecarpus pubescens* (Anacardiaceae) and *Syzygium spissum* (Myrtaceae). The field layer is usually rich in ferns and aroids, while other common plants include *Apama siliquosa*, *Calamus zeylanicus*, *Ellettaria cardmomum*, *Ochlandra stridula*, *Polyalthia acuminata*, *Psychotria nigra*, *Schizostigma hursuta*, *Symplocos minor*, *Todalial aculeata* and the endemic *Memecylon arnottianum* (Melastomataceae). Lianas, climbers and epiphytes are well represented. Typical climbers and lianas found on some of the larger trees include *Acacia concinna*, *Angistrocladus vahlie*, *Connarus monocarpus*, *Cosciniun fenestratum*, *Dalbergia championi*, *Derris scandens*, *Entada scandens* and *Tetracera*

scandens. Ferns, lichens and orchids dominate the epiphyte flora with common epiphytic orchids including *Liparis longipes*, *Pholidota imbricata* and *Sarchohilus pulchellus*.

Sri Lankan Lower Montane Rain Forest

These forests form a zone between 600 and 1500 m around the central hills and see their best development in the Knuckles Range and in the central part of the Great Escarpment. In some respects they are transitional between the lowland and upland rain forest but some species including endemic trees such as *Calophyllum tomentosum* (Hypericaceae), *Cinnamomum citrodorum*, *Cryptocarya wightiana*, *Litsea gardneri* (Lauraceae) and *Elaeocarpus glandulifer* (Elaeocarpaceae) are more characteristic of montane forest. In general their species richness is slightly lower than the lowland forests and their structure, with just three layers, is less complex. The canopy, which reaches heights of 80 feet, typically comprises *Calophyllum soulattri*, *Carallia calycina*, *Doona gardneri*, *Durio zeylanicus*, *Garcinia echinocarpa*, *Meliosma arnottiana*, *Nothopegia beddomei*, *Semecarpus nigro-viridis* and endemic species such as *Calophyllum cuneifolium*, *C. tomentosum* (Hypericaceae), *Doona gardneri* (Dipterocarpaceae), *Elaeocarpus glandulifer* (Elaeocarpaceae) and two endemic palms *Loxococcus rupicola* and *Oncosperma fasciculatum* (Arecaceae). In fact, the endemic dipterocarp *Doona gardneri* can be one of the most prominent species of these forests. In a lower arborescent storey the main species are *Acronychia pedunculata*, *Actinodaphne ambigua*, *Amoora rohituka*, *Celtis cinnamomea*, *Cleidon nitidum*, *Dovyalis hebecarpa*, *Elaeocarpus amoenus*, *Euodia roxburghiana*, *Helica zeylanicus*, *Lagerstroemea speciosa*, *Ligustrum walkeri*, *Meliosma simplicifolia*, *Machilus macrantha*, *Meloechia umbellata*, *Microtropis wallichiana*, *Nelitris jambosella*, *Neolitsea involucreta*, *Ouratea zeylanica*, *Ocophea zeylanica*, *Schefflera wallichiana*, *Villebrunea integrifolia*, while endemics at this level include species such as *Aporosa fusiformis* (Euphorbiaceae) and *Elaeocarpus subvillosus* (Elaeocarpaceae). Despite having a lower overall species diversity, these forests support much greater numbers of epiphytes, and these are particularly rich in orchids such as *Adrorhizon purpurescens*, *Dendrobium panduratum*, *Eria braccata*, *Josephia lanceolata* and *Oberonia longibracteata*. The field layer typically includes *Allophylus cobbe*, *Clerodendron infortunatum*, *Elettaria involucreta*, *Mallotus walkerae*, *Milliusa indica*, *Ochlandra stridula* and *Strobilanthes* species.

Sri Lankan Highland or Upper Montane Rain Forest

These forests, sometimes referred to as tropical montane cloud forests, start at about 1500 m but see their best development above 1800 m, and crown the highest mountains and plateaus of Sri Lanka. The largest single expanse occurs as a crescent extending from Siripada to Pidurutalagala (across the Nuwara, Eliya and Horton plains). Pidurutalagala is the highest peak on the island measuring 2524 m and this is still below the timberline for these forests, and there is no upper conifer zone. Isolated patches can also be found on Knuckles, Namunukula and Haputale. Floristically they are less rich than the forests of lower altitudes, but about 50% of all their species are endemic to Sri Lanka. Their structure is also less complex with all trees more or less arranged in a single layer. Their canopies normally reach heights of about 30 feet but on rare occasions extreme dwarf varieties of these jungles occur reaching no higher than about 3 feet. These so-called pygmy rain forests can be found, for example, on Knuckles Wilderness. Another unusual feature is the lack of conifers and members of the Fagaceae, which normally play an important role in the montane forests of Southeast Asia. Conifers, in particular, often form important emergents, but on Sri Lanka this role is mainly played by endemic species of *Calophyllum* (Hypericaceae). The frequency of various species of *Symplocos* (Symplocaceae) is a further peculiarity with all but one of them endemic. The tree layer typically comprises *Acronychia pedunculata*, *Actinodaphne ambigua*, *Adinandra*

Iasiopetala, *Aporosa latifolia*, *Elaeocarpus montanus*, *Euonymus rovolutus*, *Gordonia zeylanica*, *Litsea ovalifolia*, *Michelia nilagirica*, *Microtropis ramiflora*, *Neolitsea fuscata*, *Olea polygama*, *Photinia notoniana*, *Plectronia montana*, *Pygeum wightianum*, *Rhamnus arnottianus*, *Scolopia crenata*, *Syzygium revolutum*, *Symplocos spicata* and *Terstroemia japonica*. While among the many endemic species are *Calophyllum walkeri* (Hypericaceae), *Cinnamomum litsaefolium*, *Litsea iteodaphne* (Lauraceae), *Syzygium rotundifolium* and *S. umbrosum* (Myrtaceae). Epiphytes continue to be a major element with many orchids such as *Cirrhopetalum odoratissima*, *Coelogyne odoratissima*, *Dendrobium aureum*, *Eria bicolor*, *Oberonia wightiana* and the endemic *Ipsea speciosa* (Orchidaceae) covering the branches of trees. Mosses and filmy ferns cover many of the tree trunks and lichens hang from twigs. However, there are fewer climbers, but species such as *Asparagus falcatus*, *Elaeagnus latifolia* and *Toddalia asiatica* are often prominent. On the Knuckles range there are a number of rare, endemic species associated with these forests such as *Calophyllum trapezifolium* (Hypericaceae), *Eugenia lucida*, *E. phylliroides* (Myrtaceae) and *Stemonoporus affinis* (Dipterocarpaceae) that are confined to these mountains. In general the field layer is often densely carpeted with *Webera montana*, species of *Stenosiphonium* and dwarf bamboos such as *Indocalamus wightianus*, *Oxytenanthera monodelpha* and *Teinstachyum attenuatum*. Other associated species include *Dicalpe aspidioides*, *Doodia dives*, *Lastraea beddomii*, *Leptogramme totta*, *Lomaria patersoni*, *Muranta fraxinae* and *Osmunda javonica*.

Sri Lankan Monsoon Forest

Unlike the rain forests, the monsoon forests have to contend with periods of drought sometimes lasting up to six months. They are, however, the main type of forest found in this BioProvince covering about 75% of Sri Lanka's forested areas. The trees are a combination of evergreen, semi-evergreen and semi-deciduous, but the forests as a whole have a general deciduous character. Not surprisingly, the species diversity of monsoon forest is not as great as the rain forest and usually has a simple two-storied structure. The canopy is predominantly composed of *Hemicyclia sepiara*, while associated species include *Adina cordifolia*, *Alseodaphne semicarpifolia*, *Berrya cordifolia*, *Chloroxylon swietenia*, *Diospyros ebenum*, *Elaeodendron glaucum*, *Holoptelia integrifolia*, *Manilkara hexandra*, *Mitragyna parvifolia*, *Pterospermum canescens*, *Schleichera trijuga*, *Sterculia foetida*, *Stereospermum chelonoides*, *Strychnos nux-vomica*, *Syzygium cuminii* and *Vitex pinnata*. The subcanopy is usually dominated by *Nephilium langana* while other common species include *Aglaiia roxburghiana*, *Alatantia monophylla*, *Alphonsea sclerocarpa*, *Cassia marginata*, *Cordia domestica*, *Dimorphocalyx glabellus*, *Diospyros ovalifolia*, *Euphorbia antiquorum*, *Garcinia spicata*, *Gleniea zeylanica*, *Grewia polygama*, *Hesperethusa alata*, *Holorrhena mitis*, *Lapisanthes trichocarpa*, *Morinda tinctoria*, *Memycylon capitellatum*, *Phyllochlamys taxoides*, *Pityranthe verrucosa*, *Pleurostylia wightii*, *Premna tomentosa*, *Walsaru piscidia*, *Sapindus emarginatus*, *Tricalysia dalzelli* and the endemic *Canthium dicoccum* (Rubiaceae). Climbers and creepers are noticeable less conspicuous but may include *Cissus quadrangularis*, *Columnella trifida*, *Derris scandens*, *Hugonia mystax* and *Ventilago maderasalam*. Epiphytes, on the other hand, are well represented and include several orchids such as *Habenaria plantaginea*, *Rhynchostylis retusa*, *Saccolabium guttatum*, *Vanda spathulata* and *Vanilla walkeri*. They also have very rich field and shrub layers including ferns such as *Adiantum caudatum*, *Cheilanthes mysorensis*, *Gymnopteris quercifolia*, *Hemionitis arifolia*, *Micromelum minutum* and *Ophioglossum lustanicum*, while the shrubs typically include *Allangium lamarkii*, *Allophyllus cobbe*, *Croton aromaticus*, *Ehretia buxifolia*, *Glycosmis pentaphylla*, *Gmeliana asiatica*, *Ixora arborea*, *Murraya koenigii*, *Polyalthia koronii*, *Randia dumetorum*, *Stenosiphonium cordifolium*, *Tarana asiatica* and *Webera corymbosa*. In the transition zones between monsoon and rain forest there are forests of intermediate character known

as intermonsoon forests. Among the trees characteristic of these zones is the endemic *Hopea cordifolia* (Diperocarpaceae).

Further information required.

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