

“The Current status of the Sinharaja forest reserve as a last viable remnant of Sri Lanka’s tropical low land rain forest”



R M S U Gunathilake
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Dedication

This book is dedicated to my parents and all teachers & other staff of Department of Zoology who does pointed several students to conserve our natural recourses to nourish future generation.

Introduction:

Forest is the most valuable natural resource for any living being in the world. The key of controlling the eco-systems is also forest. There are no any human beings without flora. That means all planets where any human beings even live those who depend on the forest.

All watershed areas are at the forest zone. Human and other fauna are using the recourses of forest to do meaningful their lives. Human uses the forest as building their shelters, as fire wood, for herbal, for enjoy and several tasks.

After become to this technical era our natural recourses become threatened. Increasing the world population, abundance of human requirements, commercialized the human and some other things are happened to deforestation. If we unable to conserve that high valued forests or any other natural recourses then we'll be damned by our future generation.

Sinharaja is the greatest forest reserve of Sri Lanka. In today it is a world heritage. Sinharaja is a tropical low land rain forest. Tropical rain forests are the major of largest reserves of bio-diversity. They do store a vast diversity of flora and fauna. There are various endemic species can find in Sinharaja forest.

In our field visit of Sinharaja forest we can identified that the value of such tropical rain forest, endemism, usage of human, Impact of humans, natural impacts, current status of conservation and problems to conserve it. We can happy about the current situation of Sinharaja forest although it is not sufficient to protect the forest and endemic species because several species are become endangering. How ever if we can do our duty in best to conserve the biological resource like Sinharaja then our future generation will respect to us in bottom of their hearts.

Tropical Rain Forest

Tropical rain forests are confined to the tropical sectors of the “Globe”. Especially located in 20° N and 20° S of equator.

Africa, East and Southern Asia, Southern America and some islands in the south of equator are the major sites of rain forest occurrence. The largest rain forest located in Southern America, extends over Chili, Peru, St. Calves, Argentina and Brazil. This tropical rain forest is called “Amazon”.

In Asia, rainforests mainly found in especially Southern India and Sri Lanka. These rain forests hide a massive quantity of bio diversity and also contribute to the global climatic stability.

Characteristics of Tropical rain forest

1. Average rain fall	3000 – 6500 mm
2. Temperature	27° - 29°
3. Relative Humidity	60% - 90%
4. Elevation ranges	500 m – 3000 m
5. Temperature fluctuation	6 C° – 7 C°
6. Atmosphere O2 content	19 % -21 %
7. Atmosphere particle content	0.02 % - 0.09%

**“Sinharaja World Heritage forest is the
Tropical Rain Forest of Sri Lanka”**

About Sinharaja Rain Forest

What is Sinharaja

Dense, dark, wet and mysterious – Sinharaja is a primeval forest for meditation, relaxation and for scientific researches. This relatively undisturbed expanse of primary forest is a Sri Lankan heritage – the patch of sizable lowland evergreen rain forest still remaining more or less intact or undistributed in our island.

The forest is steeped in deep legend and mystery. The word Sinharaja means, Lion King and popular belief is that the legendary origin of the Sinhala people in Sri Lanka is from the children of the union the lion king who once lived in the forest and a princess.

Today, the spirit of the legend remains captured in solitude in the silent forest and the rising mist of the early dawn. More than time how ever separates the modern explorer in the Sinharaja forest from its legendary inhabitants; man has rapidly penetrated the seemingly inaccessible wilderness of the Sri Lanka's rain forest which once covered over 100,000ha of the south western hills and lowlands. The present reserve is but a glimpse of its former glory, occupying a narrow silver of land 21km in length and 3.7km in width, covering 11187ha.

Distribution to world heritage

- Sinharaja forest declared the Sinharaja forests in gazette no 4046 of 08 May 1875.
- Timber was removed from about 2025ha of the Sinharaja forest under selective felling from 1972 to 1977.
- These feelings were ceased & declared a Man and biosphere reserve MAB in 1978.
- Was declared a National heritage wilderness site 1988 and a world heritage site in 1989.

Physical information of Sinharaja

Location of Sinharaja



Sinharaja forest is situated at

6° 21⁰⁰ N - 6° 26⁰⁰ N

80° 21⁰⁰ N - 80° 34⁰⁰ N

Sinharaja spans over the three districts

1. Matara District
2. Rathnapura District
3. Galle District

Boundaries of the Sinharaja forest as follows

1. North – Napolagamuwa – Kokulana Ganga
2. East – Barley tea estate
3. South – Gin Ganga
4. South West – Sabaragamuwa and southern forest
5. West – Kalukannaduwwa Ganga

Sinharaja Access routes

1. Kudawa “Vana Nivahana”

Colombo to Mathugama or Rathnapura and then Kalawana and Weddagala at which point you turn off the main road to the forest department camp at Kudawa. Public transport is available up to Weddagala via Mathugama 117kms and via Rathnapura 154kms.

2. Pitadeniya conservation center

Colombo to Mathugama and then to Deniyaya via Neluwa. Travel 10kms from Deniyaya to Mederipitiya and then walk 3kms, further and cross Gin Ganga to research camp.

3. Morningside conservation center

Colombo to Rakwana via Deniyaya or Rathnapura and proceed through Surikakanda and turn off main road through Morningside estate track to forest department conservation center.

Climate of Sinharaja

Warm, humid climate which has a very little fluctuation within the year

1. Temperature : 27° C
2. Relative Humidity : 65% - 85 %

Average annual rainfalls not secondary distributed. There are no any times with out raining to Sinharaja forest.

- Average annually rain falls : 3000 – 6000mm

Soil of Sinharaja

Soil is very different in various places in Sinharaja forest. Soil is no very strong because it is being continuously wetted with rain. If soil is wet there are minimum of soil erosion at Sinharaja forest because soil is covered with the dry leaves then the water blobs doesn't drop on it.



Rivers of Sinharaja

1. Koskulana Ganga
2. Kudawa Ganga
3. Napalagala Ganga
4. Gin Ganga
5. Pitakele Ganga
6. Maha Ganga

Peaks of Sinharaja

1. Pinipitigala main complex – 1171 MSL
2. Pinipitigala west – 1170 MSL
3. Pinipitigala east – 1168 MSL
4. Mulawella – 760 MSL
5. Pathinigala – 605 MSL
6. Sinhagala – 742 MSL

Cultural value of Sinharaja

Sinharaja mean is Lion king. Sinha means “Lion” and Raja means “King”. Lion and King are attached to Sri Lankan culture. Herbal medicine plants at Sinharaja those are also a cultural events. Man climbs the Kithul tree and creates Toddy. However there are several cultural events hidden in Sinharaja. Since ancient time man is used to associate with forest and collection herbals and others. Therefore Sinharaja is valuable in cultural.

Conservation value of Sinharaja

There are about 240000 floras per 1ha and there are 340 timber species in Sinharaja. Out of 340, 192 are endemic to Sri Lanka. Out of endemic, 72 reptiles 21, 19 Amphibians 10, 20 bird species 18, 12 mammal species 8, has made Sinharaja site as their dwelling place. Therefore conservation valuation is very high in Sinharaja.

Sinharaja is identifies the heart of Sri Lanka because it's a machine of air clearing in all around the Sri Lanka. If there is no such forest, how much we have to pay to do it manually. Conservation value of Sinharaja is very higher than others.

Flora of Sinharaja forest



About Flora of Sinharaja

There are many floras we can find in Sinharaja forest. There are about 240000 plants species found per 1ha. There are 192 endemic timber species out of 340. 13 endemic flora species are recorded in Sinharaja forest.

There are 9 stand forest types in Sinharaja

1. High Forest
2. Secondary Forest
3. Degraded Forest
4. Ridge Forest
5. Scrubland
6. Encroachment / Chena
7. Grassland
8. Forest Plantation
9. Agriculture

Vegetation



The Sinharaja forest reserve is composed of a core zone and a Buffer zone. The core zone is composed of Tropical rain forest means wet tropical evergreen forest. But the buffer zone shows a diversity of forest types since it extends along a large sector of land.

The Sinharaja rain forest is gradients over to the south-western slope of central hills. Thus, the intermediate zone between the two zones composed of Wet, Lowland Montane forests.

Two main types of forest can be recognized.

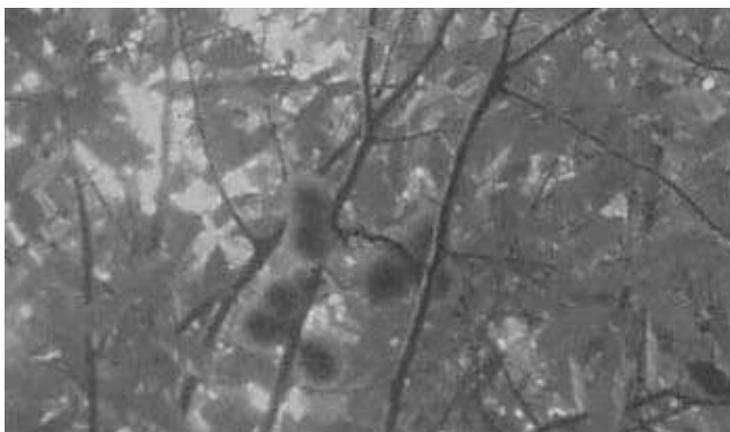
1. Remnants of Dipterocarpus forest occur in valleys and on their lower slopes, with hora and bu hora present in almost pure stands. Secondary forest and scrub occur where the original forest cover has been removed by shifting cultivation and in other places the forest has been replaced by rubber and tea plantations.
2. Mesua Doona forest, the climax vegetation over most of the reserve, covers the middle and upper slopes above 500m or above 335m as suggested by Gunatilleke. *Garcinia hermonii* followed by *Xylopia championii* invariably dominate the under storey tree stratum, a range of species dominate the subcanopy and na *Mesua nagassarium* usually predominates in the canopy layer.

A variety of plants of known benefit to man are present, of which palm kitul, wewal, cardamom, dun Shorea and weniwal are used intensively by villagers.

Endemic flora of Sinharaja

Common Name	Scientific Name
Wewal	<i>Calamus ovoideus</i>
Ataba	<i>Mangifera zeylania</i>
Hora	<i>Diptherocarpus Zeylanicus</i>
Thapasa Bulath	<i>Apama siliquosa</i>
Wal Inguru	
Milla	<i>Vitax Pinnata</i>
Kekuna	<i>Canarium Zeylanicum</i>
Madol	<i>Garcia sp</i>
Nawada	<i>Sharea stipularis</i>
Uru – Kuna	
Polon	<i>Bhesa zeylania</i>
Walu – Kena	<i>Galaphyllum bracteatum</i>
Batu Keena	<i>Callophyllum traperzitolum</i>
Pihibiya	<i>Fillicium decipens</i>
Katu Knada	<i>Scalopia acumnta</i>
Alu Bo	<i>Syzigium dulbo</i>
Aridda	<i>Camponosperma zeylanica</i>
Kurumbattiya	<i>Syzigum Rubicundum</i>
Kokum	<i>Kokoona Zeylania</i>

Mother plants of human foods



Mother plants of the flora species which are got for food can be found in Sinharaja. Wal Duriyan, Uru Wee, Wal Gammiris, Thithbatu are the examples for it. Mother plants are not changed under the eco cycle of thousand of years.

Fauna of Sinharaja forest

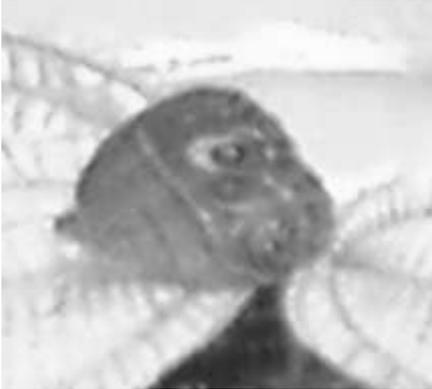


Sinharaja is a paradise of endemic and other species of fauna. That is a thing that you wondered is over 50% of endemic species of fauna are living in Sinharaja Tropical rain forest. There are about 282 birds are recorded in Sinharaja out of 384 in Sri Lanka. It is 73%. Most of species who are endemic to Sri Lanka can be seen on Sinharaja. Butterflies, fishes, amphibians, reptiles, birds and mammals are major fauna types.

Degree of Endemism

	No. of species recorded at Sinharaja	Total No. of species in Sri Lanka	% spp. at Sinharaja	No. of endemic recorded at Sinharaja	Total No. of endemic spp. in Island	Percentage endemic spp. at Sinharaja
Butterflies	65	242	26.85	21	41	51.21
Fishes	10	64	15.62	7	17	41.17
Amphibians	19	38	50.00	8	19	42.10
Tetra pod	14	73	19.17	7	34	20.58
Snakes	29	90	32.22	14	39	35.89
Birds	141	384	36.71	24	26	95.00
Mammals	40	85	47.05	7	12	58.33

Butterflies



There are several kinds of butterflies are recorded in Sinharaja forest. 21 species out of them is endemic to Sri Lanka.

- Ceylon Tree Nymph
- Clipper
- Blue Mormon
- Common Bind Wing
- Common Mormon
- Common Rose
- Crimson Rose
- Common Tiger
- Grassy Tiger
- Mime
- Five Bar Sword Tail

are some species of butterflies recorded in Sinharaja forest.

Fishes

Koskulana River, Kudawa River, Pitakele River, Napalagala River and Gin rivers are supported by Sinharaja forest. Therefore several fresh water ways can be found in Sinharaja. There are 10 fish species are recorded in Sinharaja forest and 7 species out of 10 are endemic to Sri Lanka. Some species are endemic to only Sinharaja forest.

- *Puntius tittaya* – le Thiththaya
- *Channa orientalis* – Ceylon Snake head
- *Belontia signata* – Thal Kossa
- *Pontius higratosciatus* – Bulath Hapaya

are some species of fishes recorded in Sinharaja forest.

Birds

Most important and attractive type of fauna in Sinharaja is birds because there are 24 endemic birds are recorded out of 26. It is 95%. And also there are 141 birds are recorded in Sinharaja.

Climate of tropical rain forests is suitable to live and ground layers of the forest is very secure them. Here are the endemic bird species recorded in Sinharaja forest.

Scientific name	Common name	% of 476 flocks in which seen
<i>Turdoides refuscens</i>	Orange Billed Babbler	92
<i>Dicrurus paradiseus lophorninus</i>	Crested Durango	89
<i>Harpectes faciatus</i>	Malabar Trogon	61
<i>Iole indica</i>	Yellow-browed Bulbul	53
<i>Hypothemis azurea</i>	Black-napped Monarch	49
<i>Phaenicophaeus phrrhosephalus</i>	Red-faced Malkoha	49
<i>Pericrotus flammeus</i>	Scarlet Minivet	48
<i>Magalaima flavifrons</i>	Yellow-fronted Barbet	48
<i>Garrulax cinereifrons</i>	Ashi-headed Babbler	47
<i>Rhoposichia atriceps</i>	Dark-fronted Babbler	44
<i>Pomatorhinus orsefieldii</i>	Scimitar Babbler	44
<i>Picus chlorolophus</i>	Lesser Yellow Nape	41
<i>Sturnirnex senex</i>	White-faced Starling	39
<i>Zosterops celonensis</i>	Sri Lanka White-eye	29
<i>Sitta frontalis</i>	Velvet-fronted Blue Nuthatch	28
<i>Phcnonotus melanicterus</i>	Black-capped Bulbul	28
<i>Psittacula calthropae</i>	Layard's Parakeet	26
<i>Dicaeum erithrorhynchus</i>	Pale-billed Flowerpecker	26
<i>Dicaeum vincens</i>	Legge's Flowerpecker	26
<i>Hypsipetes leucocephalus</i>	Black Bulbul	25
<i>Funumbulus</i>	Jungle squirrel	25

Reptiles and snakes

In Sinharaja, there are 29 snake species and a lot of reptiles. Some lizards are endemic to Sri Lanka. Ground layer of the primary and secondary forest is suitable to live them.

- Hump Horn Lizard
- Common Garden Lizard
- Whistling Lizard
- Kangaroo Lizard
- Green Garden Lizard
- Water Monitor Varanus
- Sri Lanka Krait
- Wolf snake
- Blanophs

are some species of butterflies recorded Sinharaja forest.

Mammals

Mammals also live in Sinharaja. There are 40 mammal species are recorded in Sinharaja and 7 species out of 40 are endemic to Sri Lanka. Some monkeys are special in that task. The monkey who is endemic to Sri Lanka called Haliwadura (*Presbytis senex vetulus*) live commonly in Sinharaja. Bulls, Bears and elephants are also recorded.

- Sri Lanka Jiant Squirrel
- Elephants maxima maxima
- Sri Lanka Leopard
- Samblur deer
- Sloth bear
- Torque monkey
- Purple faced leaf monkey
- Braking deer
- Haliwadura (*Presbytis senex vetulus*)

are some species of mammals recorded in Sinharaja forest.

Objectives:

- To study about the features, importance and significance of the Tropical low land rain forest of Sri Lanka called Sinharaja.
- To identify the conservation value of Sinharaja.
- Identify the parties who supported to conserve the Sinharaja since now.
- Identify the bad effects causes to Sinharaja forest from some parties of locally and internationally.
- Study of the importance of preparing the research centers at close to such tropical rain forest.
- Visit the flora and fauna in Sinharaja and identify the endemism of those to Sri Lanka or only Sinharaja.
- To study the conservation and management plans which are currently keep on in Sinharaja and find out its current processes and its omissions.
- To identify the impacts to species of Sinharaja forest from the people of closed villages, tourists who are visiting Sinharaja forest, politicians, timber profiteers, international NGOs, aggressive species which are destroy the eco system and some other parties.
- Create suggestions to slacken those human and other impacts to Sinharaja forest.



Observations

Flora which are observed

In our field visit we have to find out several species of floras. Majority of those are endemic to Sri Lanka or endemic only to Sinharaja. Here are some photographs of specific floras which we taken at the field visit.



Names of some observed flora species

- Kiri Hambiliya – *palaqualum / eavitolum*
- Grant Navada tree – *Shorea atipularis*
- Batuna – *Measua prechella*
- Wal Diul
- Wal Duriyan
- Bandura – Insect Trapper
- Orchid – *Dendrobium macarthisae*
- Ma Wewal – *Calamus ovoiddeus*
- Weniwel – *Concinum fenestratum*
- KiriHambiliya – Sapotaceae
- Babara Wel – *Geguminosae*
- Kithul tree – *caryota urens*
- Kakuna – *canarium yeulanicum*



Bandura – Insect Trapper

Fauna which are observed

In our field visit we can identify some fauna species including butterflies, birds, reptiles, mammals and fishes. Both of them are endemic to Sri Lanka. Ashy-headed babbler bird and Blue Mormon butterfly are special to me. Unfortunately we are unable to take a picture of them. Several birds and butterflies are observed although minimum other types of fauna are observed in adjoin to the foot path. Here are some pictures of fauna witch we taken at our field visit.



Names of some observed fauna species

Birds:

- Jungle fowl – Gallus Lafayette
- Malabar Trogon
- Orange Billed Babbler
- Sri Lanka gray Hornbill
- Ashy-headed Babbler
- Red fresh Malkoha

Mammals:

- Monkeys
- Meeminna

Butterflies

- Clippers
- Blue Mormon
- Ceylon Tree Nymph
- Brown Mormon
- Common Shalar

Fishes:

- *Belonti nitotocitus*
- Pulutta
- Gal padaya
- Le Thiththaya – *Puntus titiaya*

Others:

- Green garden Lizard
- Several types of Ants
- Spiders
- Frogs
- Leeches

Human Impacts

We can observe the human impacts to the forest in our field visit. Some villagers are working as guides and some are arranging boutiques in main entrance. Those guides haven't wide knowledge about the forest. Another usage of human is get Kithul sap to create Jaggery and toddy in buffer zone.

Numbers of tourists visit the forest daily. Students, researchers, foreigners, eco friends, gene profiteers, photographers, journalist visit the forest for various reasons.

The organizations of nationally and internationally do several things to conserve the Sinharaja forest. IUCN, UNESCO and some other NGOs do it.

Timber profiteers, illegal Gem miners and other illegal profiteers used to utilizes forest as their own possessions.

Exotic forest cultivations are being maintained by forest department joining with Ceylon Timber Corporation. As we can see although large amount of timber requirement of Sri Lanka can be accomplished, huge destruction is being happened from it.

Conservation status

Conservation status of Sinharaja is some what better than other forests of Sri Lanka. Sinharaja allocated to two zones like follows.

1. Buffer Zone
2. Core protected Zone

Buffer zone is at the border of Sinharaja forest and about 3.2km wide. Because of buffer zone contiguous human associated with only buffer zone and then core protected zone is secured.

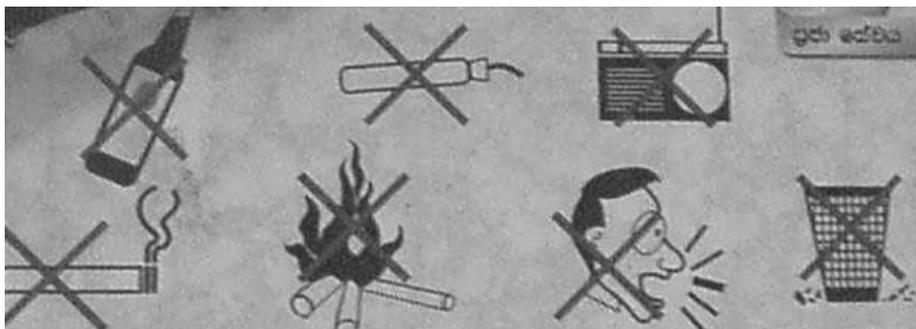
We could see some Nature trails on Sinharaja on the way to Mulawella and Nawada tree. Using Nature Trails is very important in conservation process.



Nature Trail

Guarders ordered to remove the poly-ethylene bags and lunch sheets which we have on the entrance.

There are many rules and regulations to behave in Sinharaja forest. Cannot destroy and flora part, cannot detriment to any fauna are already keep on.



Rules and regulation

Discussion

Man and Sinharaja forest

Sinharaja is very large and valuable natural resource of Sri Lanka. There fore man wants to associates with Sinharaja forest for several reasons. The land resources especially fauna and flora are being used for several tasks since long time ago. Here are the reasons for associate with the forest.

- Collecting firewood or Timber
- Hunting or collection fauna parts
- For collect the medicinal and drug production
- Enjoy with visiting flora and fauna
- Find food and recourses
- To waylay the gene resources
- To feel the natural beauty
- For researches

From contiguous community

In today, there are several impacts to Sinharaja from human beings. Sinharaja forest is associated by contiguous people. Villages comprise on Sinharaja forest.

- Warukandeniya
- Kolonthotuwa

And also there are several villages are close to forest.

- Kudawa – Waddagala
- Palawaththa
- Denuwakanda
- Kiriwalagama
- Pitadeniya
- Nilweligama
- Kosmulla

Villagers who are closed to Sinharaja forest is associates the village for several tasks. Those are,

- Working as a guides
- Collecting Kithul sap for Jaggary and toddy.
- Collection Wewal for create baskets
- Workers as wildlife or forest department

Destruction to Sinharaja from those people is very lower than others because forest is like their mother. All profits which they are gain because of Sinharaja. Any conservation plans cannot allocate forest with them because they use the forest in traditionally. There fore buffer zone is constituted for use them and core protected zone is constituted for the forest. It is more contribute to conserve the Sinharaja forest.

From government departments

Forest department and Timber Corporation are cultivating the exotic plant species in buffer zone and contiguous place of the forest for supply timber. Some such species are Eucalyptus, Pines and Oak types. These forests are not suitable to any plant or any fauna of Sri Lanka. There fore it may cause deforestation and it forced to move the fauna to inside of the forest.

Then after some period wood cutter machines and heavy vehicles enter to buffer zone for take the timber to timber Corporation. Those sounds are affected to birds, butterflies and other species.

From tourists

Tourists visit the Sinharaja forest daily. There are several facilities to visitors. Visitors are low in number and mostly naturalists. Entry is by permit, obtainable from the Forest Department in Colombo. Guidebooks to the Moulawella Trail and to the secondary vegetation have recently been prepared. Some accommodation is available with the Forest Department near the reserve entrance at Kudawa.

Shouting, hunting, collecting specie parts and some several reasons caused to bad effects to the forest. There are several rules and regulation to enter the forest. Guides should be able to identify the value of Sinharaja to tourists.

From national and international organizations

Nationally internationally organizations associate with Sinharaja forest because it is world heritage. UNESCO, IUCN and such organizations creates several plans to conserve and management this forest. The Forest Department has allocated higher than normal amounts of money for the protection of Sinharaja. This reached a record Rs.4 million in 1987. US\$ 35,000 was made available by WWF/IUCN for a conservation awareness program and for the purchase of equipment in 1986.

Every organization cannot accept as true in this fact because a lot of gene profiteers, flora and fauna sellers are entered to forest in impersonation as eco friendly organizations. Forest and wildlife departments should be reject those organizations from our mother land.

Conservation Management

Conservation Management Sinharaja is administered by the Forest Department under the Ministry of Lands and Land Development. Recognizing the need for maximum possible protection, it has recently been declared as a national heritage wilderness area under the National Heritage Wilderness Areas Act. The site is also partially protected under the provisions of the Forest Ordinance. A conservation plan has been officially approved, implementation of which is being carried out under a cooperative agreement between IUCN and the Sri Lankan government, with additional funding from the Norwegian government. In order to ensure the strict protection of the reserve for scientific and aesthetic reasons, a scheme of zoning and management is proposed for areas outside the reserve. The creation and propagation of essential forest products, for sustained utilization, in areas outside the reserve is intended to meet local needs and thereby eliminate former dependence on resources within the reserve. Alternative strategies are either to establish a 3.2km-wide buffer zone round the reserve or to enlarge the area protected to about 47,380ha, with the reserve forming a strictly protected core area and surrounding areas set aside as buffers for various uses.

Because of those types of conservation and management schemes Sinharaja is much secure from external human beings. Not only the conservation schemes started in such forests but also monitoring its situation, identifying the difficulties and continue its processes is required.

Invalidity things which we have seen

There are several invalidity occurrences which we have seen in our field visit of Sinharaja forest. However the management and conservation plans are currently continued those invalidity occurrences are also curbed by the governors.

1. Guides haven't wide knowledge of the forest and they should be able to explain more about the forest and they should be a good eco friend.
2. There are three main entrances although man enters from several borders. It is caused to deforestation. Entering without main entrance should be controlled.
3. Nature trails on Sinharaja are being developed with artificial things and concretes.
4. Natural behaviors of species are changed with human's behaviors in forest.
5. Monitoring of the conservation status is very lower.

Suggestions

1. Continuously monitoring the conservation and management status of the Sinharaja forest and avoid the difficulties of it.
2. Regular training is procured to all guided who are work in Sinharaja forest.
3. Introduce the new rules for accessing the forest with shouting, with smoking, with drinking.
4. Prohibit the afford foods to species of Sinharaja forest.
5. Footpaths to peaks of Sinharaja are kept on present's status like nature trails.
6. Removing the non crumble materials with polythene when the visitors enter the core protected zone.
7. Non suitable experiments which are done by done by the non government organizations should be prohibited.
8. Plantation of exotic forest like pines, eucalyptus or oak must stopped. Cost benefit of those plantations is negative.
9. Explain the value of conserve the tropical rain forest to the school and university students via leaflets or magazines.
10. The forest should be protected whiting the state level programs.

References

- Boards on the entrance of Sinharaja forest.
- Ape Kurullo – Sudhesh Chaminda Jayawardana.
- The Green Mantle of Sri Lanka – Pro. Alawaththagoda Premadasa.
- Sirilaka Thurulaka – Pro Alawaththagoda Premadasa.
- Sinharaja Map – Forest Department
- Conservation of Biology – Mc. Grow hill publishers 2004 Inc.
- Leaflets – reference center of Sinharaja entrance_
- www.environmentlanka.com
- http://www.eoearth.org/article/Sinharaja_Forest_Reserve,_Sri_Lanka
- www.sarisara.com