rainforest rescue

Sri Lanka Plant a Rainforest

Project Profile

Protect Rainforests Forever

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Rainforest Rescue is a not-for-profit organisation that has been protecting and restoring rainforests in Australia and internationally since 1998 by providing opportunities for individuals and businesses to Protect Rainforests Forever.

Our projects re-establish rainforests through planting, maintenance and restoration programs, as well as purchasing and protecting high conservation value rainforest and preserving its biodiversity.

Our mission is to inspire, engage and build community for the protection, preservation and restoration of rainforests through fundraising and education.

Rainforest Rescue is an Australian registered not-for-profit organisation with deductible gift recipient status and equivalent US 501 (c) 3 status.

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Introduction

Rainforest Rescue's Sri Lanka Plant a Rainforest Project is working in partnership with Rainforest Rescue International (RRI) to protect Sri Lanka's last remaining rainforests by reducing pressures on rainforest resources through community education, property purchase and rainforest regeneration.

Sri Lanka's rainforests are one of the most threatened ecosystems on the planet. With total cover less than a few thousand hectares; the rainforests of Sri Lanka have been reduced to 140 forest patches located in the deep south of the island. The largest of these forest patches are the World Heritage listed Sinharaja Forest Reserve, Kanneliya Forest and the Nakiyadeniya Complex.

The Sinharaja Reserve is regarded as one of the world's 25 biodiversity hot spots with very high levels of endemism. The loss of this unique rainforest ecosystem will have devastating consequences on the many species of flora and fauna that are found nowhere else on the planet.

Rainforest Rescue's Sri Lanka Plant a Rainforest Project is helping to combat the effects of deforestation by employing local people to plant trees to create a rainforest corridor between the two largest remaining rainforest areas in south-west Sri Lanka, the Sinharaja Forest Reserve and the nearby Kanneliya Forest.

The Sinharaja Forest Reserve

Located in south-west Sri Lanka, the Sinharaja Forest Reserve is Sri Lanka's last viable area of primary tropical rainforest. The Reserve was established in 1978 to protect the nearly extinct tropic lowland rainforest and was flagged as a World Heritage Site in 1988.

The total area of the Reserve is 18,899 acres or 7,648 hectares spanning a narrow strip 21 by 3.7 kilometres, with ranges in altitude from 300 to 1,170 metres.

The name Sinharaja means Lion (sinha) King (raja).

Sinharaja is an undisturbed fragment of the ancient tropical rainforest of Sri Lanka, part of a 47,000 hectare dense lowland forest, three-quarters of which was logged until recently. It contains over 50% of the remaining such forest of Sri Lanka. Of the 337 species that occur there, 116 are globally threatened.

Three main types of forest are found there: remnant Dipterocarp forest below about 500 metres, Shorea forest which occurs over most of the reserve on the middle and upper slopes to 900 metres, and a transitional zone to tropical montane forest above 900 metres. Approximately 220 species of trees and woody climbers are recorded of which 40 percent have low population densities and 43 percent have restricted distribution making them highly vulnerable to further encroachments into the reserve.

Of Sri Lanka's 217 endemic wet lowland trees and woody climbers 139 (64 percent) have been recorded in the Sinharaja, 16 of which are considered to be rare. Recorded with the Reserve are 495 of the 926 endemic flowering plants of Sri Lanka as well as 13 of the 25 endemic plant Genera. According to the records, 42 species of ferns are also found in the Sinharaja Reserve, 10 of which are endemic. More than 80 of the 189 orchid species from Sri Lanka are found the Sinharaja Reserve.

Endemism of fauna in the reserve is also high. Of 262 vertebrae animals species, 60 (23 percent) are endemic.

Table 1: Endemism of Sinharaja

Vertebrate Group	No. of Sps in Sri Lanka	No. Of sps. In Sinharaja	% of sps.in Sinharaja	No. Of endemic sps. in Sri Lanka	No. of endemic sps. in Sinharaja	% of endemic sps. in Sinharja	% of endemics out of total in Sinharaja
Fish	59	11	19%	16	3	19%	27%
Amphibia	37	20	54%	19	10	53%	50%
Reptiles							
Snakes	65	16	25%	34	6	18%	36%
Tetrapod	79	29	37%	38	15	39%	52%
Birds	384	147	38%	20	18	90%	12%
Mammals	85	39	46%	12	8	67%	20%
Total	**709**	**262**	**36%**	**139**	**60**	**43%**	**23%**

Source: (Zoysa, N. and Raheem, R. 1990. Sinharaja: A Rain Forest in Sri Lanka. March for Conservation. Royal Norwegian Development Council. 60 pp.

Endangered mammal species living in the Reserve include the Sri Lankan Elephant (*Elephas maximus maximus)*, the Grey Slender Loris (*Loris lydekkerianus)*, the Purple-faced Langur (*Trachypitecus vetulus*), and the Critically Endangered Nillu Rat (*Rattus montanus)*.

Appendix A contains the IUCN Red List of known threatened mammal species in Sri Lanka.

Threatened, endangered and rare birds in the Reserve include the Sri Lanka Wood Pigeon (*Columba torringtoni)*, Green-billed Coucal (*Centropus chlororhynchos*), Sri Lankan White-headed Starling (*Sturnia malabarica*), Sri Lankan Blue Magpie (*Urocissa ornata*) and Ashy-headed Babbler (*Malacocincla cinereiceps*), all of which are endemic. Of the 20 endemic bird species of Sri Lanka, 19 are found in the Sinharaja Reserve.

Found within the Reserve are 20 species of amphibians, 10 of which are endemic to the region. Amphibian species are particularly at threat from deforestation and encroaches on buffer zones to protected areas. Sri Lanka is ranked highest in Asia for having the highest percentage of extinct and threatened amphibian species. In the 20th century Sri Lanka lost 20 percent of its amphibians and more half of remaining species are on the verge of extinction.

Five of the 10 endemic amphibians to the Reserve are Critically Endangered according to the IUCN red list (2007); Sinharaja Shrub frog (*Philautus simba*), Cheeky Shrub Frog (*Philautus procax*), Papillated Shrub Frog (*Philautus papillosus*), Handapan Ella Shrub Frog (*Philautus lunatus*) and the Morning Side Tree Frog (*Polypedates fastigo*).

The Endangered Grey Slender Loris (Loris lydekkerianus)

The Threatened Sri Lankan Blue Magpie (Urocissa ornate)

The Critically Endangered Morning Side Tree frog (Polypedates fastigo)

Threats to the Rainforest

Deforestation is one of the most serious environmental issues impacting on Sri Lanka today. In the 1920s the island of Sri Lanka had a 49 percent forest cover; by 2005 this had fallen to only 20 percent. Between 1990 and 2000 Sri Lanka lost an average of 26,800 hectares of forest per year.

In a developing country with the same land mass of Tasmania, it's easy to imagine the pressure placed on Sri Lanka's natural resources. Most of the large number of people (21,000,000) on this relatively small island survive on only $2 or $3 a day and lack opportunities to relieve their poverty.

Sri Lanka's rainforests have been extensively cleared to make way for monoculture plantations including tea, rubber, coconut and palm oil.

Sri Lanka according to the IUCN has the highest deforestation and wildlife habitat loss rates in southern Asia. The major cause of this degradation is the result of population pressure, inappropriate land use and lack of effective management. Sri Lanka ranks 52nd in the world for population density and most of the communities surrounding the rainforest are engaged in monoculture tea, rubber and coconut plantations leading to encroachment and illegal resource extraction.

Primary forest in 1990 = 257,000 ha

Primary forest in 2005 = 167,000 ha

Primary forest lost between 1990 – 2005 = 90,000 ha

Sri Lanka's remaining rainforests are under great pressure. While being protected by the government of Sri Lanka rainforest remnants are facing serious threat from habitat fragmentation and buffer zone degradation. In areas with remaining rainforests many people presently rely on non-sustainable extractive activities – the harvesting of timber for building, fossicking and mining for gemstones, collecting firewood, rattan and other forest products.

Deforestation has also led to other environmental issues such as flooding, landslides and soil erosion.

Deforestation has had a serious impact on Sri Lanka's biodiversity. Sri Lanka has 709 known species of amphibians, birds, mammals and reptiles of which 19.6 percent are endemic, and over 3,314 vascular plants of which 26.9 percent are endemic.

Other threats to the rainforest include:

Habitat Loss: About 95 percent of the wet zone forest has been lost due to expansion of plantations, encroachment, poaching and extraction of forest products such as timber, firewood and medicinal plants.

Agrochemicals: Use of agrochemicals pose a serious threat to the quality of ecosystem services and severely affects habitats of marginal species such as amphibians.

Invasive species: Competition from invasive species and exotic species has affected native habitats.

Climate change: Both native flora and fauna are under threat from altered weather patterns caused by climate change.

Tsunami damage: The 2004 tsunami damaged coastal ecosystems by stripping land of vegetation and leaving deposits of sand, mud and debris.

Sri Lanka Plant a Rainforest Project

Rainforest Rescue has been working in partnership with Rainforest Rescue International (RRI) since 2008 to restore and conserve the highly threatened rainforest habitat between the Sinharaja World Heritage Forest Reserve and Kanneliya Forest Reserve which are critical biodiversity reservoirs.

The Sinharaja / Kanneliya Rainforest Corridor Program aims to protect and increase habitats and conservation areas for vulnerable rainforest species. By establishing biodiversity corridors, species will be able to move between habitat patches. These linkages help to stop extinction by creating more habitats, maintaining migratory pathways during times of environmental change, and encouraging breeding to help maintain viable populations.

Staff and supporters of Rainforest Rescue visiting the project site in 2011

Formed in 2002, RRI is a non-profit organisation based in Galle, Sri Lanka, that works to protect vulnerable environments through ecosystem restoration, development of sustainable livelihoods, education, research and advocacy.

Support from Rainforest Rescue is helping to achieve the following project outcomes:

- The creation of a rainforest corridor between the two largest remaining rainforests in Sri Lanka, the Sinharaja Forest Reserve and the Kanneliya Forest;
- The purchase of rainforest and buffer zone lands at risk of clearing for agriculture;
- Restoration of over 1,000 acres of degraded forest patches and riparian habitat which has seen nearly one million trees planted including many endemic and threatened rainforest trees;
- The establishment of seven plant nurseries to supply seedlings for restoration projects;
- Educating over 4,000 local children in environmental by conducting school education programs to support local forest stewardship;
- The training of over 1,000 farmers in organic agriculture to assist them in developing sustainable livelihoods thereby removing pressures on the rainforest;
- Supporting almost 8 percent of the population which relies on the rainforest for their livelihood.

Rainforest Rescue (Australia) has been supporting the work of RRI since 2008 contributing to the planting of 17,000 trees within the Sinharaja Forest Reserve. Each AU$2 donated to the project establishes one tree and helps manage the community engagement and education aspect of the program. This provides a sustainable livelihood and an alternative to extracting resources from the remaining rainforest.

Baddegama Nursery and Restoration Site

In 2008 4,000 rainforests trees were planted on a four acre degraded tea plantation in the Galle district village of Baddegama in the lowlands of south-western Sri Lanka.

A careful planting arrangement of 35 endemic species, including *Shoria tripesipolia, Duna ceylanica* and *Dipterocarpus zeylanica* were planted to replicate the structure of a well-established rainforest. The trees are now reaching a ‘maintenance free stage’.

Upul Kaarachchi, RRI Operation Manager with planting (2008)

The project used the Analog Forestry method (refer to Appendix B) that aims to recreate a rainforest using local endemic species which are also of benefit to local people in their everyday life. Approximately 1,000 trees were planted per hectare, 250 of which were selected to produce income for the local community and 750 rainforest species. As it grows, the resources in the newly created forest can be accessed, thereby reducing the pressure on the World Heritage Listed Sinharaja Forest Reserve and its precious biodiversity.

Alongside this growing rainforest is the Baddegama Rainforest Nursery, where over 20,000 plants from 90 different species have been cultivated. Stock from this nursery provides trees for other important rainforest restoration projects including the Sinharaja / Kanneliya Corridor Project.

The project was part of a community initiative and over 200 community members took part in a two-week long planting program.

Rainforest Rescue (Australia) CEO, Kelvin Davies, with a worker at the Baddegama Nursery

Ambelagedra & Hinneduma Restoration Project

A former cinnamon plantation, Ambelegadra is in the Sinharaja region and was planted with 4,000 trees in 2008. Regeneration work was also undertaken at the Amphibian Research Centre in Hinneduma in 2007-08 with 3,000 trees planted.

RRI purchased 18 acres of degraded land in Hiniduma with support from UK-based organisation Rainforest Concern and the Rainforest Trust of Sri Lanka. On eight acres of this land RRI have developed the Hiniduma Ecocentre which serves as a venue for research, training, community outreach and conservation tourism. The remaining 10 aces are being restored to natural forest using the Analog Forestry Method.

The Hinneduma Ecocentre

Karunadasa Tea Plantation

The Karunadasa Tea Plantation and other similar properties adjoining the Kanneliya Forest Corridors in this area have been planted using the Analog Forestry Method. There have been approximately 1,000 rainforest plants planted on such properties at approximately 1,000 plants per hectare, 750 of these being rainforest species and 250 being food sources.

Project site at Karunadasa

Project Costs

Propagation:	$0.06 per tree
Planting:	$0.21 per tree
RRI Management Costs:	$1.10 per tree
RR Costs:	$0.63
TOTAL:	$2.00 per tree

Sri Lanka Plant a Rainforest

Frequently Asked Questions

Where will the trees be planted?

The trees will initially be planted on lands purchased for the development of the Sinharaja / Kanneliya Rainforest Corridor in the south-west of Sri Lanka. Additional lands to be planted will be temple lands and schools located within the corridor area that have donated their lands to the establishment of a rainforest canopy that will be integrated into the corridor.

How much does it cost to plant a tree?

The cost of propagating and planting one tree in the Sinharaja / Kanneliya rainforest corridor is $2 which includes all project related management expenses.

Who plants the trees and how are they planted?

The local community with advice from Rainforest Rescue International plants the trees. This will provide employment for local people and encourage ownership of the project and its outcomes.

What about follow-up care?

Rainforest Rescue International provides all follow-up care programs for the plantings in the corridor. Education programs are also implemented in order to increase the local populations awareness of the importance of the local ecosystems and the need to protect them.

How do we know they will be protected in perpetuity?

The lands purchased for the corridor are zoned as trust lands by an Act of the Sri Lankan Government, which means the lands are in the name of the Sri Lankan public. Additionally Rainforest Rescue International is engaging with the local government to develop a protection policy for all remaining and restored rainforest areas under a “green city” sustainable development zone concept.

What are some of the pressures on the natural resources / rainforests?

The main pressure on rainforests in Sri Lanka is encroachment for agriculture and felling of timber. The additional impact upon local biodiversity is the loss of habitat by degradation and destruction of the forests.

How are local people involved in the Project?

The local people are involved in the collecting of seeds, propagating of plants and maintenance of the planted areas.

What species are being planted?

Approximately 1,000 trees are planted per hectare, 250 of which were selected to produce income for the local community and 750 rainforest species, many of which are endemic and threatened or endangered species. Species include *Shoria tripesipolia, Duna ceylanica* and *Dipterocarpus zeylanica*.

What is so important about the biodiversity corridor?

The Sinharaja / Kanneliya Rainforest Corridor Program aims to protect and increase habitats and conservation areas for vulnerable rainforest species.

It will be the only genetic corridor that will restore the link between the lowland remnant patch (Kanneliya) with the highland remnant patch (Sinharaja).

Can I visit the Biodiversity Corridor and other Rainforest Rescue International Projects?

Yes. The corridor is owned by the public of Sri Lanka and is linking to biodiverse rainforest patches, one of which is the Sinharaja Forest Reserve, a World Heritage Area. Rainforest Rescue International can arrange guided tours for interested parties.

Supporting the work of Rainforest Rescue

Your decision to support our projects means that together we can achieve significant outcomes for rainforest conservation. Each year we are able to protect more and more rainforest through people like you who really want to make a difference.

Rainforest Rescue was founded in 1998 to create opportunities for people to make saving rainforests a part of their lives, and to provide a more direct means of realising their desires to protect rainforests.

That's why we work in partnership with people like you who have made a conscious choice to take direct action in protecting our precious rainforests.

As a not-for-profit organisation, Rainforest Rescue is supported by generous donations from individuals, philanthropists, business sponsors and philanthropic foundations. We do not receive any government funding.

You can support our work to Protect Rainforests Forever by making a donation online at www.rainforestrescue.org.au.

How your donation will be used

Donations from people like you have helped us to achieve some amazing conservation outcomes, both in Australia and internationally. Your support means we can continue to Protect Rainforests Forever into the future through purchasing and protecting high-conservation value rainforest; re-establishing rainforests through planting, maintenance and restoration programs; and educating future generations on the importance of rainforests and their biodiversity.

Ways to donate

Rainforest Rescue provides the opportunity for you to support our projects in a variety of ways including by:

- making a one-off donation in support of our annual appeals;
- becoming a Rainforest Rescuer by making a regular monthly donations;
- leaving a bequest in your will;
- donating via your payroll through Workplace Giving;
- buying a Rainforest Rescue gift card;
- getting your business involved through our Business Partnerships Program;
- fundraising on our behalf.

For further information please visit our website at www.rainforestrescue.org.au.

Keeping informed

To stay informed about our projects you can sign up to our online newsletter and blog by visiting our website. By supplying us with your postal address we can also send you our annual supporters newsletter, which details our conservation achievements. You can also follow us on Facebook and Twitter.

About Rainforest Rescue

Rainforest Rescue is a not-for-profit organisation that has been protecting and restoring rainforests in Australia and internationally since 1998 by providing opportunities for individuals and businesses to Protect Rainforests Forever.

Our projects re-establish rainforests through planting, maintenance and restoration programs, as well as purchasing and protecting high conservation value rainforest and preserving its biodiversity.

Our mission is to inspire, engage and build community for the protection, preservation and restoration of rainforests through fundraising and education.

Rainforest Rescue is an Australian Company Limited by Guarantee, managed by a Board of Directors who contributes their service on a voluntary basis.

Rainforest Rescue is supported by donations from individuals, philanthropists, business sponsorship and foundation grants. We do not receive government funding.

We aim to keep management expenses as low as possible thus ensuring that donations result in the maximum benefit for rainforest conservation.

Our objectives:

The objectives of Rainforest Rescue are:

- The protection and enhancement of the natural environment;
- The conservation of rainforests and the preservation of the biodiversity of rainforest ecosystems;
- The restoration, rehabilitation, enhancement and management of remnant and regrowth rainforest
- The revegetation of ex-rainforest lands, including without limitation the establishment and ongoing management of rainforest plantings of significant ecological value.

Our strategies:

The strategies that we employ to achieve these objectives include

- Seeking funding in the form of donations and sponsorships from individuals, families, philanthropists and philanthropic trusts, business and corporations;
- Purchasing and protecting high conservation value rainforest and preserving its biodiversity;
- Financing projects that re-establish rainforests through planting, maintenance and restoration programs.

Monitoring and Reporting Framework:

Rainforest Rescue measures its performance of these objectives and strategies through ongoing governance, financial management and corporate compliance, therefore achieving the environmental objectives of the organisation's constitution being the protection and preservation of rainforests.

As an Australian registered company limited by guarantee and a registered charity with deductible gift recipient status, Rainforest Rescue is obliged by law to lodge annual financial reports to certain organisations & departments. These include the:

- Australian Securities Investment Commission (ASIC)
- Queensland Government, Office of Fair Trading
- Australian Register of Environmental Organisations

Board of Directors

Madeleine Faught MSocSc – Chair/Director

Madeleine is a consultant social ecologist. She has a long history of securing enhanced outcomes in community, cultural, and environmental spheres. Her focus is on building resilience in the link between social and ecological systems as a means toward greater sustainability and improved environmental outcomes.

Kelvin Davies - Director/Executive Officer

Kelvin is a co-founder of Rainforest Rescue and has been actively involved in rainforest conservation organisations since 1990. He has previously been employed with not-for-profit organisations involved in nature conservation including Conservation Volunteers Australia, Greening Australia, Wetland Care Australia and The Wilderness Society.

Sue Higginson - Director

Sue is a Senior Solicitor at the NSW Environmental Defender's Office, currently working out of the Northern Rivers branch office. Sue has worked as a solicitor in private practice and taught Environmental Law at university. Prior to becoming a lawyer, Sue was actively involved in forest conservation in north-east NSW and was an active campaigner and spokesperson for the North East Forest Alliance. Her main area of environmental interest is biodiversity and threatened species conservation.

Tony Gilding - Director

Tony spent 15 years as General Manager and later CEO of Skansen Holdings Ltd, Australia's largest gift company which listed on the ASX in 1993. Since then he has campaigned actively on social issues including an active involvement in the Palm Oil Action Group. He was Vice President of the Australian Orangutan Project for 8 years and is a founding member of the UN sponsored Great Ape Survival Project. He was for 10 years a non-executive director of Ecos Corporation a highly regarded consultancy that advises global corporations on sustainability strategy.

Frank Volckmar - Director

Frank started his working career as a consulting engineer and has since spent 20 years in various software sales, development, and marketing roles in Canada, US, UK and Australia. He is currently the Managing Director of ReadSoft Australia and is responsible for leading and managing the growth of ReadSoft in Oceania. Frank has a long-held commitment to preserving the environment, and is particularly interested in protecting the rainforest around the Daintree.

Our projects

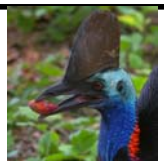
Full details on all our projects are available on our website rainforestrescue.org.au. The following is a short description of our projects outlining our objectives and achievements to date.

Daintree Buy Back and Protect Forever Project

Through our Daintree Buy Back and Protect Forever Project, Rainforest Rescue identifies and purchases precious rainforest at risk of development and establishes Nature Refuge status which protects it forever. To date Rainforest Rescue has purchased and protected 15 properties in the Daintree Lowlands Rainforest.

Plant a Rainforest Project

Our Plant a Rainforest Project restores previously cleared areas of rainforests thereby protecting their precious biodiversity. Since 1999 Rainforest Rescue has planted over 151,143 trees within the Daintree Rainforest in Far North Queensland and the Big Scrub Rainforest in northern New South Wales in Australia.



Cassowary Corridor Restoration Project

Rainforest Rescue is working to protect and restore vital Cassowary habitat in the Mission Beach area. This involves the planting of rainforest plant species that will provide habitat, food and a safe passage for generations of Cassowaries to come. Planting at Mission Beach is scheduled to commence in March 2012.

Richmond Birdwing Butterfly Habitat for Recovery Project

Rainforest Rescue is working to restore vital habitat for the threatened Richmond Birdwing Butterfly, one of Australia's largest and most beautiful native butterflies. Our project is looking to establish a series of rainforest corridors that will allow for the natural migration of the butterfly between isolated pockets of rainforest.

Big Scrub Restoration Project

Rainforest Rescue has been supporting the Big Scrub Restoration Project since 1999 with over $100,000 contributed towards rainforest restoration. Funds are used to engage professional rainforest regenerators who work in the remnants to remove weeds and facilitate natural regeneration of the rainforest.

Orangutan Habitat for Survival Project – Gunung Leuser National Park

In partnership with the Orangutan Information Centre in North Sumatra, Rainforest Rescue is working to protect and restore 60 hectares of Orangutan habitat in the Gunung Leuser National Park. This is being achieved through the planting of rainforest plant species, the removal of illegally planted Oil Palms, and the prevention of further clearing of the rainforest.

Plant a Rainforest Project Sri Lanka - Sinharaja Forest Reserve

Rainforest Rescue is protecting Sri Lanka's last remaining rainforests by reducing pressures on rainforest resources through community education, property purchase and rainforest regeneration. Through our project partner Rainforest Rescue International we have assisted in the planting of over 17,000 trees in Sri Lanka.

Ecuador "Save a Hectare" Project - Choco-Andean Cloud Forest Corridor

Our support for project partner Rainforest Concern is enabling the ongoing purchase and protection of land in the Choco-Andean Rainforest Corridor which provides a vital link between the Andean Cloud Forests and the lowland forests of the Awa Ethnic Reserve, ensuring continuity of the three largest reserves in Ecuador.

Glossary of Terms

Aboreal	Describes a species that spends most of its life in the trees.
Biodiversity	The collective natural diversity of flora and fauna, together with the environmental conditions necessary for their survival; includes regional ecosystem, species and genetic diversity within species.
Biosequestration	The removal and storage of carbon from the atmosphere in carbon sinks (such as oceans, forests or soils) through physical or biological processes, such as photosynthesis.
Buy Back	The process of purchasing, or 'buying back', properties that were originally sold for development to protecting their conservation values.
Bush regeneration	The rehabilitation of bush from a weed affected or otherwise degraded area to a healthier community of native plants and animals.
Canopy	Vertical level of a forest ecosystem describing the treetops.
Climate Change	A change in climate, attributable directly or indirectly to human activity which alters the composition of the global atmosphere and is in addition to natural climate variability observed over comparable time periods. Gradual alterations in worldwide climate patterns due to global warming—the rising temperature of the earth's surface recorded since the industrial revolution.
Coniferous Forest	Describes a forest with trees or shrubs bearing cones and evergreen trees.
Connectivity	The existing connection between a remnant and other remnant vegetation; also the distance of a remnant from other remnants or surrounding vegetation, as an indicator of potential linkage
Conservation	The preservation and management of the environment and natural resources
Corridor	A strip of vegetation that links two or more larger habitat areas
Covenant	A promise contained in a deed to land or real estate which is binding upon the current owner and all future owners. It defines the limitations, conditions or restrictions on the use of that land.
Deciduous Forest	Describes a forest with trees that seasonally lose their leaves throughout the year.
Deforestation	Term used to describe the cutting down and removal of all or most of the trees in a forested area. It can be done by burning or logging.
Ecology	The study of how individuals interact with each other and their environment.
Ecosystem	Term used to define the relationships among both plants and animals species as well as the chemical and physical components of a defined region**.**
Ecotourism	Responsible travel to natural areas that conserves the environment and improves the well-being of local people.
Emergent layer	Highest vertical level of a rainforest ecosystem, consisting of individual trees that stand above the main rainforest canopy
Endangered	Refer to threatened species entry
Endemic	A plant or animal that is believed to have evolved in, and is confined to, an area
Evergreen Forest	Describes a forest having foliage that persists and remains green throughout the year.

Evolution	The sequence of events involved in the evolutionary development of a species or taxonomic group of organisms
Extinction	Refer to threatened species entry
Fauna	All the animals living in a given place or time.
Flagship Species	Term used to describe a species that is particularly charismatic or fascinating, which can act as ambassadors to an entire conservation campaign.
Flora	All the plants living in a given place or time.
Forest Floor	Lowest vertical level of a forest ecosystem, the ground.
Fragmentation	The biological isolation of patches of rainforest, usually due to the impact of European settlement and clearance
Freehold	A form of land tenure providing the holder of the freehold title with the right of exclusive possession, (i.e. tan ability to exclude others from their land), no restrictions on the rights to sell the land but the use of the land may be restricted by planning laws.
Frugivore	A diet consisting primarily of fruit.
Global Warming	Term used to describe the increase in the average temperatures of the Earth's near-surface air and oceans. Refer to entry on Climate Change.
Habitat	The native environment where a plant or animal lives or grows
Lowland Forest	Describes a forest that is fairly flat and not very high above sea level (less than 1km in altitude).
Mature phase species	Later successional plant species grouping comprising trees and other plants which make up the intact and undisturbed rainforest and tend to have the following features: • Shade tolerant; • Long-lived; • Dense crown; • Slow to moderate growth; • Thick leaves; • Short-live seeds.
Mesophyll	Rainforest tree leaf-size category of 125 – 250 mm in length.
Microphyll	Rainforest tree leaf-size category of 25 - 75 mm in length.
Mulch	A natural or artificial layer of plant residue or other material on the soil surface which provides protection against erosion and aids plant establishments, mainly by restricting moisture loss and temperature variation and encouraging soil micro-organisms
Natural regeneration	The practice of restoring plant communities by utilising, reinstating and reinforcing the ecosystem's ongoing natural regeneration processes.
Nature refuge	A voluntary agreement between a landholder and the Government that acknowledges a commitment to preserve land with significant conservation value. A Nature Refuge is a class of protected area under State legislation.
Notophyll	Rainforest tree leaf-size category of 75 -125 mm in length.

Pioneer plant species	Early successional species comprising trees or other plants which generally have the following features: • Appear soon after disturbance (particularly large disturbance); • Light-demanding or shade-intolerant; • Fast growth; • Short life span; • Low density, open-grained timber; • Rapid biomass turnover (short leaf life); • Light-permeable crowns.
Rainforest	Forest on fertile soils with generally complex structure and high species diversity; canopy cover ranges from 70% to 100%; emergent, lianas, ferns and epiphytes are usually present.
Rainforest remnant	A persistent patch of rainforest surviving after clearing that retains at least some of the structure and species diversity that characterise larger intact areas of the same rainforest type; it has at least some individual canopy trees that pre-date clearing of rainforest from the surrounding landscape.
Rare	Species or taxa (groups) that are not at present endangered or vulnerable, but because of their small population size, are at risk.
Regeneration	The natural process of rainforest self-repair and potential for expansion of the forest onto cleared ex-rainforest sites; often referred to as natural regeneration.
Rehabilitation	The restoration of existing rainforest areas and remnants; involves controlling, ameliorating, eliminating or reversing adverse impacts (threatening processes) that threaten the biodiversity, structure, habitat values, ecosystem function, and long-term survival of the remnant rainforest community.
Restoration	The assisted repair of rainforest ecosystems, areas and remnants (including cleared sites and existing forest areas).
Reserve	A reserve is a form of land tenure. A reserve is land dedicated for a particular purpose under the Land Act 1994 or previous land legislation. Throughout the years land has been reserved for a number of different purposes – recreation, environmental, cultural etc
Revegetation	A form of rainforest restoration that involves planting and /or natural regeneration to re-establish as far as practicable the rainforest vegetation community that would have existed on the site prior to its clearing or degradation.
Riparian	Of or on the river bank
Sclerophyll	Plants with hard leaves that reduce moisture loss, e.g. eucalypts and melaleucas
Secondary regrowth	The vegetative regrowth after disturbance or clearing of the original forest cover.
Secondary species	Later successional species grouping comprising trees or other plants that tend to establish after the 'pioneer' species have established on a site. Often display the following characteristics:

	• Sunlight required for seed germination; • Growth rate varies from fast to slow; • Seed longevity varies; • Moderate to long life span; • Late secondaries can survive on mature canopy for hundreds of years.
Seed dispersal	The movement of seed around the landscape; the process may be facilitated by wind, water, animals and distribution of a species in a landscape.
Shrub	Woody plants growing to less than 5 metres in height and usually with many stems.
Soil Erosion	Removal of minerals and solids present in the ground, which are often important for plant/crop growth. It can be a natural process, but can also be caused by human intervention, such as unsustainable land use and like mass deforestation.
Species	Primary classification level to describe individuals that can mate with one another and produce viable offspring.
Species succession	Changes in plant community composition, structure and function over time as a result of natural or human disturbance.
Succession	The step-wise redevelopments of rainforest after disturbance, with each stage characterised by certain tree species.
Sustainability	Term used to describe a system that can be self-maintained, without external aid or the depletion of the resources. It implies consumption in a way that future generations will be able to have access to the resources.
Threatened species	Species that have been listed on state legislation due to their decline. Several categories depending on threat level. Rare species may or may not be considered threatened as they may be naturally rare in the wild. X – Presumed Extinct: species that have either not been found in recent years despite thorough searching, or have not been collected for at least fifty years and were only known from not intensively settled areas. E – Endangered: species in serious risk of disappearing from the wild state within one of two decades, if present land use and other causal factors continue to operate. V – Vulnerable: species not presently endangered, but at risk od disappearing from the wild over a longer period (twenty to fifty years) through continued depletion, or which largely occur in sites likely to experience changes in land use that would threaten the survival of the species in the wild; R – Rare: species that are rare in Australia but that overall are not currently considered endangered or vulnerable, Such species may be represented by a relatively large population in a very restricted area, or b y smaller populations over a wider range, or by some intermediate combination of distribution pattern.
Tree	Woody plants growing more than 5 metres in height and usually with a single distinct trunk
Tropical Rainforest	closed canopy forests growing in wet tropical areas (excluding mangroves).
Umbrella Species	Term used to describe a species whose home range and habitat requirements are large enough that when it becomes the focus of protective management,

	the entire ecosystem and biodiversity within its range is automatically protected.
Understorey	An underlying level of vegetation, especially the plants that grow beneath the forest's canopy.
Weeds	Naturalised plants, introduced or otherwise, which tend to displace local plant species
Wet Tropics	The Wet Tropics Of Queensland World Heritage Area. It is a high rainfall area of north-eastern Queensland between Townsville and Cooktown.
World Heritage Area	An area recognised as having international significance and outstanding universal value and registered on the World Heritage list.

Source:

Big Scrub Rainforest Landcare Group, Subtropical Rainforest Restoration, Second Edition,2005, Bangalow, Australia.

Wet Tropics Management Authority, www.wettropics.gov.au

APPENDIX A: IUCN Red List of Threatened Species: Mammals of Sri Lanka

Common Name	Species Name	IUCN Status
Sri Lankan Elephant	*Elephas maximus maximus*	Endangered
Dugong	*Dugong dugon*	Vulnerable
Gray Slender Loris	*Loris lydekkerianus*	Threatened
Gray Slender Loris	*Loris tardigradus*	Endangered
Toque Macaque	*Macaca sinica*	Endangered
Purple-faced Langur	*Trachypithecus vetulus*	Endangered
Tuffed Gray Langur	*Semopithecus priam*	Threatened
Indian Porcupine	*Hystrix indica*	Lower risk / least concern
Grizzled Giant Squirrel	*Ratufa macroura*	Vulnerable
Indian Giant Flying Squirrel	*Petaurista philippensis*	Lower risk / least concern
Travancore Flying Squirrel	*Petinomys fuscocapillus*	Lower risk / least concern
Layard's Palm Squirrel	*Funambulus layardi*	Lower risk / least concern
Indian Palm Squirrel	*Funambulus palmarum*	Lower risk / least concern
Dusky Palm Squirrel	*Funambulus sublineatus*	Lower risk / least concern
Indian Gerbil	*Tatera indica*	Lower risk / least concern
Lesser Bandicoot Rat	*Bandicota bengalensis*	Lower risk / least concern
Greater Bandicoot Rat	*Bandicota indica*	Lower risk / least concern
Blandford's Rat	*Cremnomys blanfordi*	Lower risk / least concern
Indian Bush Rat	*Golundra elliotti*	Lower risk / least concern
Soft-furred Rat	*Millardia meltada*	Lower risk / least concern
Little Indian Field Mouse	*Mus booduga*	Lower risk / least concern
Ceylon Spiny Mouse	*Mus fernandoni*	Lower risk / least concern
Mayor's Mouse	*Mus mayori*	Lower risk / near threatened
Nillu Rat	*Rattus montanus*	Critically Endangered
Ohiya Rat	*Srilankamys ohiensis*	Lower risk / near threatened
Nolthenius's Long-tailed Climbing Mouse	*Vandeleuria nolthenii*	Vulnerable
Asiatic Long-tailed Climbing Mouse	*Vandeleuria oleracea*	Lower risk / least concern
Indian Hare	*Lepus nigricollis*	Lower risk / least concern
Horsefield's Shrew	*Crocidura horsfieldii*	Lower risk / least concern
Sri Lankan Long-tailed Shrew	*Crocidura miya*	Endangered
Kelaart's Long-clawed Shrew	*Feroculus feroculus*	Endangered
Pearson's Long-clawed Shrew	*Solisorex pearsoni*	Endangered
Sri Lankan Shrew	*Suncus fellowesgordoni*	Endangered
Etruscan Shrew	*Suncus etruscus*	Least concern
Sri Lankan Highland Shrew	*Suncus montanus*	Vulnerable
Asian House Shrew	*Suncus marinus*	Lower risk / least concern
Jungle Shrew	*Suncus zeylanicus*	Endangered
Cynopterus	*Cynopterus brachyotis*	Lower risk / least concern
Greater Short-nosed Fruit Bat	*Cynopterus sphinx*	Lower risk / least concern
Indian Flying Fox	*Pteropus giganteus*	Lower risk / least concern
Hardwicke's Woolly Bat	*Kerivoula hardwickii*	Lower risk / least concern
Painted Bat	*Kerivoula picta*	Lower risk / least concern
Lesser Large-footed Bat	*Myotis hasseltii*	Lower risk / least concern
Chocolate Pipistrelle	*Falsistrellus affinis*	Lower risk / least concern
Tickell' Bat	*Hesperoptenus tickelli*	Lower risk / least concern
Kelaart's Pipistrelle	*Pipistrellux ceylonicus*	Lower risk / least concern

Common Name	Species Name	IUCN Status
Indian Pipistrelle	*Pipistrellus coromandra*	Lower risk / least concern
Greater Asiatic Yellow Bat	*Scotophilus heathi*	Lower risk / least concern
Lesser Asiatic Yellow Bat	*Scotophilus kuhlii*	Lower risk / least concern
Schreiber's Long-fingered Bat	*Minipterus schreibersii*	Least concern
Wrinkle-lipped Free-tailed Bat	*Chaerephon plicata*	Lower risk / least concern
Egyptian Free-tailed Bat	*Tadarida aegyptiaca*	Least concern
Naked-rumped Pouched Bat	*Saccolaimus saccolaimus*	Lower risk / least concern
Long-winged Tomb Bat	*Taphozous longimanus*	Lower risk / least concern
Black-bearded Tomb Bat	*Taphozous melanopogon*	Lower risk / least concern
Lesser False Vampire Bat	*Megaderma spasma*	Lower risk / least concern
Lesser Woolly Horseshoe Bat	*Rhinolophus beddomei*	Threatened
Woolly Horseshoe Bat	*Rhinolophus luctus*	Lower risk / least concern
Rufous Horseshoe Bat	*Rhinolophus rouxi*	Lower risk / least concern
Dusky Roundleaf Bat	*Hipposideros ater*	Lower risk / least concern
Fulvus Roundleaf Bat	*Rhinolophus luctus*	Lower risk / least concern
Cantor's Roundleaf Bat	*Hipposideros galeritus*	Lower risk / least concern
Indian Roundleaf Bat	*Hipposideros lankadiva*	Least concern
Schneider's Leaf-nosed Bat	*Hipposideros speoris*	Least concern
Indian Pangolin (anteater)	*Manis crassicaudata*	Lower risk / near threatened
Sri Lankan Jungle Cat	*Felis chaus kelaarti*	Least concern
Rusty-spotted Cat	*Prionailurus rubiginosus*	Vulnerable
Fishing Cat	*Prionailurus viverrinus*	Vulnerable
Sri Lankan Leopard	*Panthera pardus kotiya*	Least concern
Asian Palm Civet	*Paradoxurus hermaphrodites*	Lower risk / least concern
Golden-palm Civet	*Paradoxurus zeylonensis*	Lower risk / least concern
Small Indian Civet	*Viverricula indica*	Lower risk / least concern
Indian Gray Mongoose	*Herpestes edwardsii*	Lower risk / least concern
Indian Brown Mongoose	*Herpestes fuscus*	Data deficint
Ruddy Mongoose	*Herpestes smithii*	Lower risk / least concern
Stripe-necked Mongoose	*Herpestes vitticollis*	Lower risk / least concern
Sri Lankan Golden Jackal	*Canis aureus naria*	Least concern
Sloth Bear	*Melursus ursinus*	Vulnerable
European Otter	*Lutra lutra*	Neat threatened
Boar	*Sus scrofa*	Lower risk / least concern
Sri Lankan Spotted Chevrotain	*Moschiola meminna*	Least Concern
Yellow-striped Chevrotain	*Moschiola kathygre*	Least Concern
Sri Lankan Sambar Deer	*Cervus unicolor unicolor*	Lower risk / least concern
Sri Lankan Axis Deer	*Axis axis ceylonensis*	Lower risk / least concern
Sri Lankan Muntjac	*Muntiacus muntjak malabaricus*	Lower risk / least concern

APPENDIX B: Analog Forestry Method

Analog Forestry is a system of silviculture which aims to restore the local biodiversity while providing economic opportunities to small-scale farmers. Inspired by Sri Lankan's tradition of home-gardens it encourages the use of economically viable crops such as tea, spices, fruit and vegetables, as well as ecologically important species. Where Analog Forestry differs from other systems is the tree planting design, which mimics both the structure of the natural forest (i.e. different canopy layers) and the ecological functions of a natural forest (i.e. watershed management).

Combining local forest biodiversity with organic crop cultivation has a number of advantages. Using ecologically sustainable farming practices:

- Encourages high biodiversity
- Produces clean water and soil
- Gives watershed protection
- Conserves soil

While the first few years of converting a system to Analog Forestry can be intensive, the long-term economic and biodiversity gains make this a sustainable system. Although crops give lower yields than in more intensive farming practices, their diversity provides economic stability. For example, if one crop fails or market prices fall for one commodity, the other crops can still be sold to provide a stable income. Organic farming techniques require less expenditure on external inputs such as chemical fertilisers as there is higher resilience against plaques and diseases.

The name Analog Forestry was coined in 1987, and in April 1994 it was accepted as a methodology integrating the protection of biodiversity within the context of sound landscape management by scientific experts at the Open-ended Intergovernmental Meeting of Scientific Experts on Biological Diversity (sponsored by the UN) in Mexico City.

The International Analog Forestry Network (IAFN) based in Costa Rica, was established in 1996 as a worldwide forum for Analog Forestry practitioners.

Rainforest Rescue International first applied this system on an abandoned tea estate in the Sri Lankan hills, successfully restoring the ecosystem and its functions as well as the estate's income generation potential.

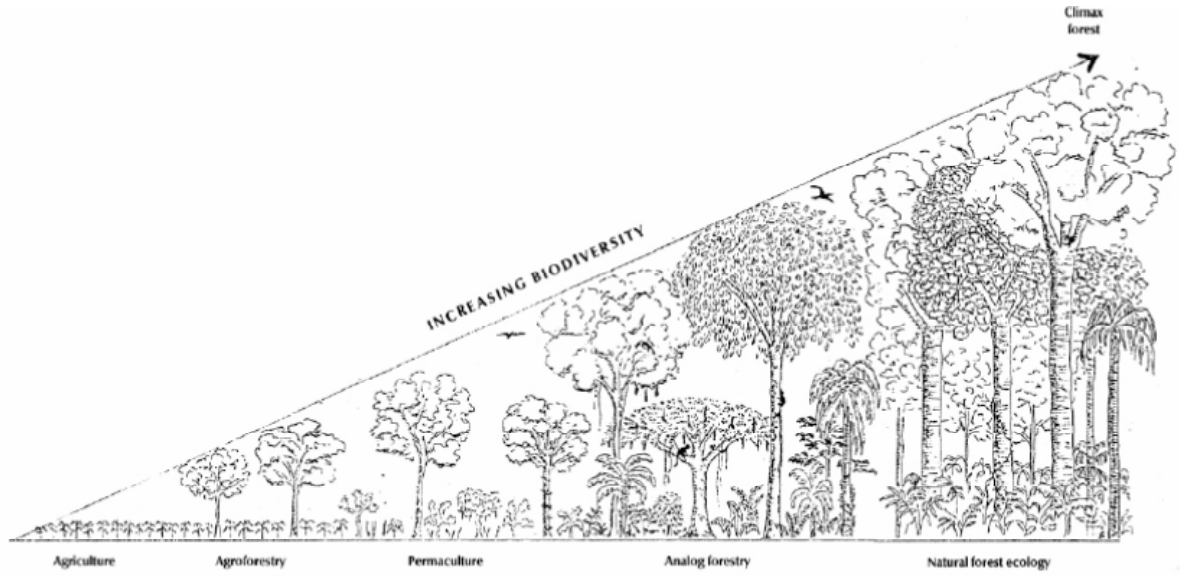


Figure 1. Successive serial stages provide increasing soil stability, biodiversity and canopy cover.