

Reference Summary for Teachers

Global Environments: Rainforest

Stage 3

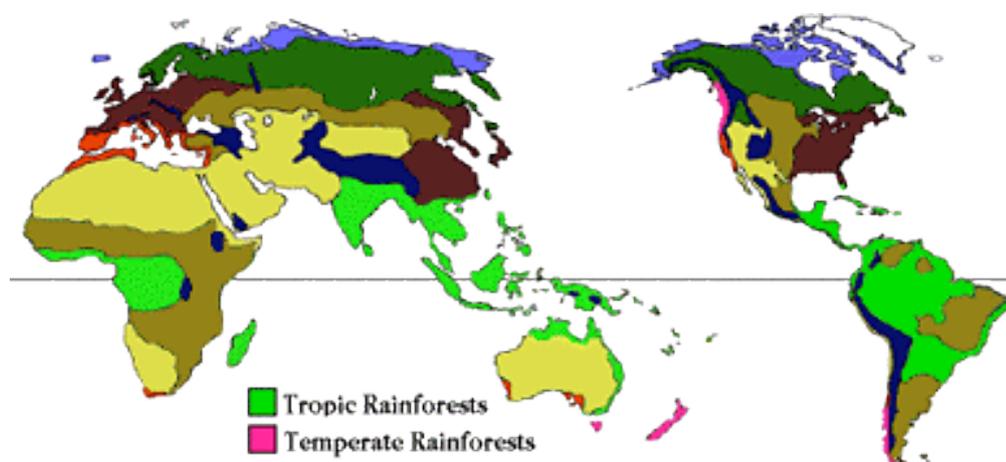
Unit Duration Approximately 7-8 Weeks



INDEX

| | |
|--|----|
| Defining a Rainforest _____ | 3 |
| Tropical and Temperate Rainforest _____ | 4 |
| Rainforest Layers _____ | 6 |
| Symbiotic Relationships _____ | 9 |
| Indigenous Rainforest People _____ | 12 |
| Importance of Rainforest _____ | 13 |
| Threats Rainforest Face _____ | 14 |
| Solutions to Protect and Preserve Rainforest _____ | 14 |
| Glossary _____ | 17 |
| References _____ | 20 |

Week 2 Lesson: Tropical and Temperate Rainforest



(Image on the left illustrates locations of tropical rainforest and temperate rainforest)

Characteristics of Tropical and Temperate Rainforest

Source: (<http://www.mbgnet.net/sets/rforest/where.htm>)

| Tropical Rainforest | Temperate Rainforest |
|--|--|
| <p>General characteristics of a Tropical Rainforest</p> <ul style="list-style-type: none"> ✓ <u>High even rainfalls</u> yearly, can reach up to 1016cm annually ✓ <u>Situated in the tropical zones:</u> 2,253 kilometres from the equator. Tropical rainforest lies between the tropic of cancer and tropic of Capricorn ✓ <u>Rainfall is recycled</u> heat during the day which causes evaporation and formation of cumulus clouds. Clouds above the canopy then release water in precipitation form. ✓ <u>Strong and complex symbiotic relationship</u> ✓ <u>High humidity</u> ✓ <u>Abundance of micro organisms</u> ✓ <u>Warm all year round</u> temperatures from about 22-34 degree Celsius ✓ <u>During dry seasons, cumulus clouds keep moist air intact preventing plants drying out</u> | <p>General characteristics of a temperate rainforest:</p> <ul style="list-style-type: none"> ✓ <u>High levels of rainfall</u> with a minimal of 140cm of rainfall a year. ✓ <u>Situated in the temperate zones:</u> Middle latitudes of the planet, between the tropics and the Polar Regions. ✓ <u>Mild Coastal Climates</u> ✓ <u>Proximity to the ocean:</u> ocean rain provides suitable climate necessary to sustain plantations in the temperate rainforest ✓ <u>Abundance of epiphytes:</u> Epiphytes are plants with no roots and do not touch soil, they grow on plants and absorb moisture from the moist air and precipitation. ✓ <u>High levels of biomass</u> ✓ <u>Heavy summer fog:</u> Fog creates the humidity to support epiphytes, |

| | |
|--|--|
| <p>✓ <u>Formation of cumulus clouds accommodates to 70% of their own rainforest rain</u></p> <p>http://www.mobot.org/hort/gardens/CLtropfor.shtml, http://bioexpedition.com/tropical-rainforest-biome/</p> <p>Examples of countries where tropical rainforests are located</p> <ul style="list-style-type: none"> ▪ Malaysia ▪ Indonesia ▪ South America ▪ QLD Australia ▪ Madagascar | <p>ferns and other rainforest plants.</p> <p>http://www.thedirt.org/temperaterainforest-zy http://suite101.com/article/the-temperate-rainforest-ecosystem-a116878</p> <p>Examples of countries where temperate rainforests are located</p> <ul style="list-style-type: none"> ▪ South Australia ▪ North America ▪ United Kingdom ▪ Japan ▪ New Zealand ▪ Tasmania |
|--|--|

Suggestion: students to map locations of forest on a global map and discuss their findings in order to integrate students' skills in mapping, ICT and research.

Week 3 Lesson: Rainforest Layers

Rainforest Layers

Rainforests are made of four different layers

(http://www.superteacherworksheets.com/reading-comp/5th-rainforest1_RAINF.pdf).

Emergent, Canopy, Understory and Forest Floor are the four layers that make up the rainforest.

1. **Emergent Layer** – Emergent layer is the highest layer of the rainforest. Trees over the canopy receive the most sunlight and generally have smaller leaves. The emergent layer trees grow up to 82 metres tall.

(<http://www.srl.caltech.edu/personnel/krubal/rainforest/Edit560s6/www/whlayers.html>)

Emergent level trees are characterised with a unique umbrella shaped crown and grow high above the rest of the rainforest. Trees in the emergent layer have their own distinct plants and animals. Emergent layer trees have unrestricted exposure to sunlight.

2. **Canopy Layer** – The canopy is the second layer of the rainforest. The canopy is the densest part of the rainforest with thick foliage. This part receives less sunlight compared to the emergent layer and trees in the canopy layer can grow up to 40 metres tall creating a tight covering over the rest of the forest. Due to the thick foliage in the canopy, very little sunlight manages to penetrate through the canopy. Branches and trunks of the trees in the canopy are generally covered with epiphytes which appear tied together with vines. Approximately 90% of all rainforest animals reside high in the canopy.

(<http://www.srl.caltech.edu/personnel/krubal/rainforest/Edit560s6/www/whlayers.html>)

3. **Understory Layer** – A dark, cool environment situated underneath the canopy. Minimal sunlight penetrates through the canopy and reaches the understory layer. As the third layer, the understory receives approximately 15% of the sunlight from the canopy. The understory tends to be very warm and humid. Trees and plants have adapted to the cool and dark environment and produce uniquely larger leaves to have the capacity to absorb more sunlight.

(<http://www.srl.caltech.edu/personnel/krubal/rainforest/Edit560s6/www/whlayers.html>)

Trees in the understory grow about 18 metres tall. There are many smaller trees, shrubs, vines, and plants with little air movement.

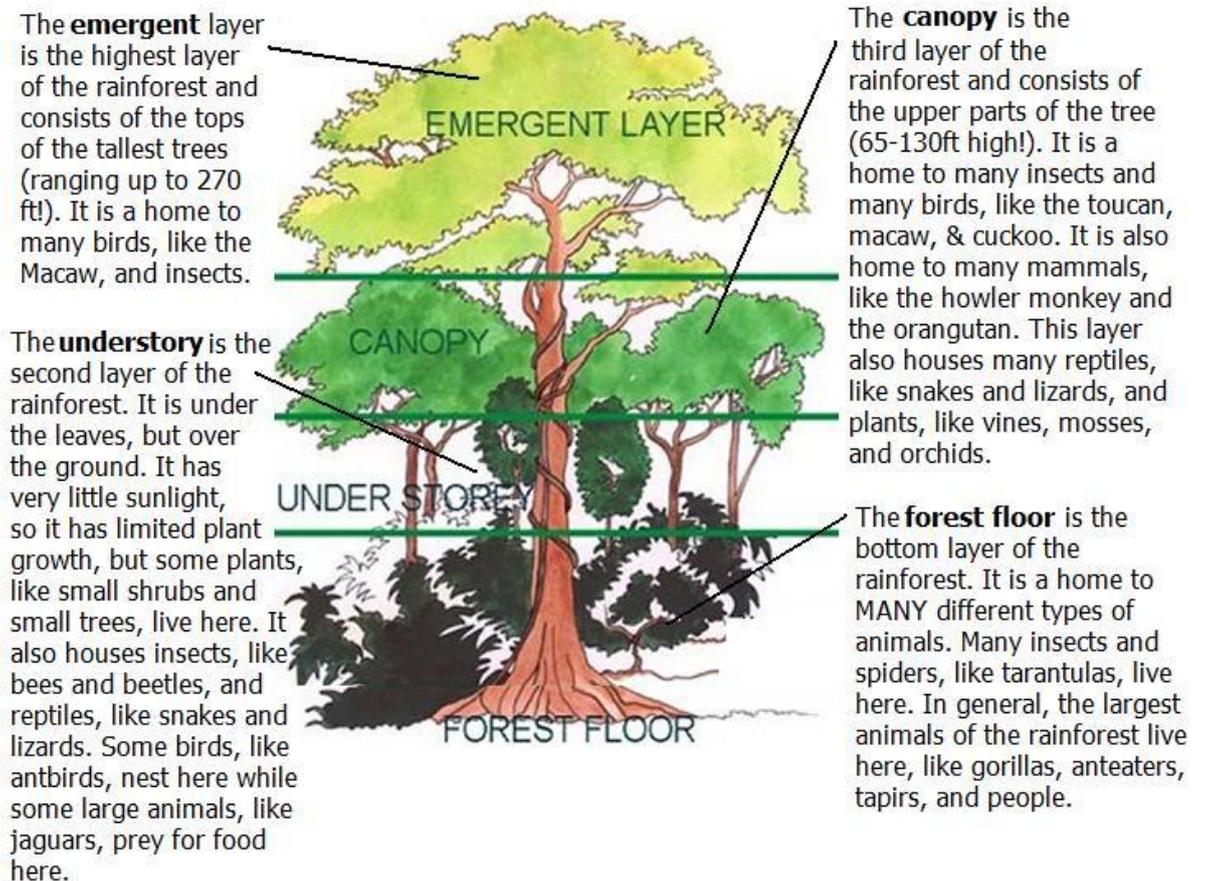
4. **Forest Floor** –This layer of the rainforest is usually reasonably dark. Less than 2% of sunlight reaches the forest floor.

(<http://www.srl.caltech.edu/personnel/krubal/rainforest/Edit560s6/www/whlayers.html>)

Due to the restricted sunlight, there is very little plant life on the forest floor. The forest floor decomposition process begins when the forest floor is covered with fallen leaves, seeds, dead flowers, fruits and branches.

Layers of the Rainforest

The temperature, the amount of sunlight, the wetness, and the amount and types of plant and animals differ in each layer (strata) of the rainforest.



The above image illustrates the different layers in rainforest.

(Source:<http://s677.photobucket.com/albums/vv136/beansmiller/?action=view¤t=LAYERSOFTHERAINFOREST.jpg&newest=1>)



Suggestion: Creative art: students can create a 3D graph of the four layers in the rainforest and label each layer with a description of each. Image on the left is an example of a 3D diagram of the 4 layers of the rainforest.

(Source:<http://www.confessionsofahomeschooler.com/blog/2010/05/geography-fair-2010.html>)

Week 4 Lesson: Symbiotic Relationships

Rainforest Symbiotic Relationships

Symbiosis is defined as a long-term ecological relationship between two or more different types of species in an ecosystem. (<http://www.cals.ncsu.edu/course/ent591k/symbiosis.html>) In every natural ecosystem, there is a unique relationship between species, plants and animals. This natural relationship between species, plants and animals within an ecosystem is referred to as a symbiotic relationship. A symbiotic relationship can be both or either beneficial and/or detrimental to either parties. (<http://symbioticrelationship.org/symbiotic-relationship/>)

There are three main types of symbiotic relationships: Mutualism, Commensalism and Parasitism (*K Drinnen, Tropical Rainforest 3rd Edition, p47, (2000) visited 20th August 2012*)

- Mutualism – Mutualism is a mutually beneficial relationship between two or more species in a natural ecosystem setting. All parties benefit from this type of relationship. (<http://symbioticrelationship.org/symbiotic-relationship/>)

For example, rainforest trees provide a home and food for ants. Ants by nature are territorial and in exchange, ants will protect their host tree from other predators. Ants have acidic toxins embedded within, when an unfamiliar plant grows or is established in close proximity to their home, ants will utilise their acidic venom and eradicate the foreign plant. By removing the growth of another potential tree, the ants clear a path for their host tree to grow and expand. When their host tree expands the ant's home grows.

This is a perfect example of a mutual symbiotic relationship where both parties' interaction benefits one another. The host tree provides accommodation and food for the colony of ants. In return, ants protect the host tree and help clear the way for the host tree to spread and grow.

- Commensalism- This relationship is a one sided relationship where one party benefits and the other party does not benefit nor is harmed (<http://symbioticrelationship.org/symbiotic-relationship/>).

Example of Symbiotic Commensalism Relationship

Bromeliads are a type of epiphyte. Epiphytes have no roots and predominately grow on other plants. Their growth and support depends highly on their host. Bromeliads have a special cup shape leaf to help the plant absorb and retain moisture during wet and dry seasons. Bromeliads require sufficient sunlight and moisture to grow therefore they grow on nominated host trees to reach and absorb adequate sunlight.

The interaction between the host tree and bromeliad is a commensalism relationship. As seen from the above example the bromeliad existence is highly dependent on their host tree to provide back bone support, sufficient exposure to sunlight and their unique cup leaves help collect and retain water and moisture. In reverse, the host tree does not benefit nor harm the bromeliad.



(Image of Bromeliad on right hand side)

Source: <http://en.wikipedia.org/wiki/Bromeliaceae>

- Parasitism – This symbiotic relationship benefits one party whilst the other party is harmed. (<http://www.saverfn.org/lessonssymb.html> visited 20th August 2012)

Example of a Parasitism Symbiotic Relationship

A parasitic wasp preys on fig wasps. The parasitic wasp drills a small hole into the fig wasp and injects her egg with her long ovipositor near the developing fig wasp larvae. In time when the parasitic wasp hatches, the fig wasps will be consumed by the parasitic wasp.

This scenario illustrates the fatal fate of a fig wasp should a parasitic wasp successfully inject eggs near a developing fig wasp larvae.

In this given scenario, the symbiotic relation is a parasitism relationship. The parasitic wasp mother benefits in this relationship by having her egg protected and manifested within another living organism. Once the newborn parasitic wasp hatches, they have access to nutrition and food through the consumption of their host fig wasp. Sadly, the fig wasp meets a fatal end.

Flowering Strategy

Flowering strategy revolves around the conceptual idea of a mutual symbiotic relationship. Flowers lack in mobility and have established strategies to attract other species to transport and assist in their pollination process.

Flowering strategies vary from plant to plant. Many plants have integrated their own strategy and each strategy aimed for a different purpose. Some plant utilise the use of illuminating colours to lure certain groups of insects and whereas some plants create distinctive food or scent to draw a different group of species.

(K Drunken, Tropical Rainforest 3rdEdition, Moody Gardens p54, (2000)

http://www.moodygardens.com/i/downloads/Educator__Rainforest.pdfhttp://www.moodygardens.com/i/downloads/Educator__Rainforest.pdf)

For example

Flowers produce two important elements pollen and nectar. Flowering plants produce pollen to reproduce and need some form of transportation to assist their pollination process. Flowers lack mobility and have adapted to produce nectar to attract bees. Bees extract nectar from numerous flowers, meanwhile as bees are extracting nectar from flower to flower, they also assist the flowering plant by transporting their pollen from one flower to another and so the pollination process begins.

Seed Dispersal

The seed dispersal process occurs when seeds are transported away from the parent plant. Due to the lack of mobility, plants utilise different forms of transport to assist in the seed dispersal process. Some forms of transportation may involve and are not limited to wind, gravity, water and animals. Depending on the type of plant, every plant has a different strategy to disperse their seeds.

(K Drinnen, Tropical Rainforest 3rdEdition, Moody Gardens p55, (2000)

http://www.moodygardens.com/i/downloads/Educator__Rainforest.pdf)

For example;

In North Africa, elephants as herbivores and other animals consume fruits that have fallen from trees. The plant creates irresistible fruit and their objective is to ensure an animal such as an elephant will consume the fruit. Once the elephant has consumed the fruit, the elephants will release the seed along with their droppings. The elephant's droppings act as a fertilizer and helps nourish the seed to disperse and grow.

This method of seed dispersal is very common for plants as this method also helps the plant diversify their geographic location.



Suggestion: To conclude learning sequence one, have students create a terrarium out of recycled plastic drink bottles and explain how rainforests are interdependent. Image on the left is an example of a terrarium in a recycled bottled

(<http://www.stormthecastle.com/terrarium/soda-bottle-terrarium.htm>)

Week 5 Lesson: Indigenous Rainforest People

Indigenous Rainforest People

Indigenous Rainforest people are people who have naturally lived and adapted to the natural rainforest ecosystem. Indigenous people have inhabited the rainforest for decades. Native people have strong bonds with their natural rainforest ecosystem and believe strongly the rainforest provides spiritual and physical healing anomalies. The natural nature of the rainforest mould native people's everyday lifestyle and belief system.

Native people have managed to live within the rainforest for many decades. Their everyday lifestyle and culture revolves around the natural ecosystem. It is only natural native people require resources from the rainforest in order to survive, however they have found and practice different strategies to source resources from the rainforest without inflicting any permanent or long term damage on the natural habitat and surroundings.

Hunting, fishing, picking fruit from trees and other edible plants are all very basic methods of sourcing food and nutrients. (*K Drinnen, Tropical Rainforest 3rdEdition, Moody Gardens p65, (2000) http://www.moodygardens.com/i/downloads/Educator__Rainforest.pdf*)

The main difference between the indigenous people and the rest of the world is the strategy to hunt without exploiting and causing any negative rippling effects.

Naturally, indigenous people are very fit and since the beginning, they have practised different management styles to maintain and sustain the rainforest. Indigenous people as hunters utilise general hunting equipment's such as spears, darts and nets. Native people hunt the appropriate proportion of food needed to support themselves and their tribe. Native people as hunters use spearing techniques cover the spear with poison sufficient to paralyse their prey without causing harm to the natural ecosystem.

Another technique rainforest people as farmers use is the slash and burn technique. The slash and burn technique involves cutting down trees and the remains are left to dry then burned. Burning the remains helps nourish the soil and helps the rainforest recover faster. Each place that is burned remains untouched for several years until forest has recovered and trees matured.

Native people not only hunt, slash and burn, they embrace natural food provided from Mother Nature. Native people gather fruits along with other edible plants as another basic form of sourcing for food.

Due to modern influences, indigenous people have engaged in the international trade of nuts, handmade baskets, bananas, coffee beans and more. These are the main exporting goods from native people in the rainforest. (*K Drinnen, Tropical Rainforest 3rdEdition, p58-59, (2000) http://www.moodygardens.com/i/downloads/Educator__Rainforest.pdf*)

Week 6: Importance of rainforests

Importance of rainforests

Rainforest in the past covered approximately 14% of land however, because of deforestation our rainforest currently covers 6% of our land. Over the next 40 years, should there be inadequate protection plans, rules and regulations in place and exploitation continues, life expectancy of the rainforest will cease to exist in the upcoming 40 years.

Rainforests have been taken for granted and many people do not understand the utter importance of the rainforest.

Rainforests provide everyday living resources from food diversity, to shelter, climate control, preventing flooding and even providing medicinal remedies,



http://www.rainforestinfo.org.au/good_wood/the_imp.htm Rainforests provide all our raw materials used in everyday living without people realising. Some examples of what we use or see everyday are furniture's, tables, kitchen, ceiling materials, housing infrastructure materials, oxygen, blinds, fruits, sugar, coffee, tea and more. Listed below are benefits of preserving our rainforest.

<http://kids.mongabay.com/elementary/401.html>

The importance of rainforests:

- ✓ Stabilising the world's climate and protects the planet from greenhouse effects
- ✓ Home to large diversity of plants and animals
- ✓ Providing raw materials for everyday living e.g. sugar, wood/timber, paper, sugar, food and medicinal remedies
- ✓ Maintains the water cycle
- ✓ Protects surrounding continents against flood, drought, and erosion
- ✓ Source of natural ingredients for medicine
- ✓ Supports tribal people
- ✓ Pumps large amounts of oxygen through photosynthesis. At the present produces 11.33 tons of oxygen per acre
- ✓ Prevents the spread of various tropical diseases, keeping diseases under strict control.

Rainforests inhabit the largest number of biodiversity in the world. Researchers estimated half of the world's animals live in rainforest and 25% of the medicine in the world derives from organic rainforest resources. Rainforests absorb a large fraction of the world's carbon dioxide and release up to 40% of the world's oxygen. <http://www.rainforestanimals.net/>

Week 7: Threats and Solutions to Our Rainforest

Threats to rainforest

Many factors contribute to the threats of our rainforest. The main threat to our rainforest is human interactions. Listed below are examples of main threats rainforest are faced.

(<http://environment.nationalgeographic.com/environment/habitats/rainforest-threats/>)

- Logging trees for timber
- Power plants – and other industries burn trees to generate electricity
- Paper Factories – Cut down trees to make papers by turning trees into pulp
- Mining refineries- clears forest to dig mines and build roads
- Cattle industry removing trees to make room for ranch
- Agricultural interests- Farmers cutting down trees for firewood and to establish new room for crops
- Governments making way for service and transit roads
- Hydroelectric projects flood acres of rainforest
- Introduction of foreign species, plantations

Solutions to preserve and protect our rainforest

Educating Society – Knowledge is the greatest and most powerful tool. Educating society should be a primary focus to educate society of the sheer importance of our rainforest. Many people in society understand the fundamentals however do not understand the complexity and benefits of preserving our rainforest.



- ✓ Government Intervention - Governments can intervene and place restrictions on logging. For example logging trees for natural resources should be limited to a certain quantity given the rainforest location. To help rejuvenate the rainforest once loggers have cleared a fraction of the rainforest, loggers should plant trees and allow the rainforest remain undisturbed until the trees mature and recover. Since in the past, the slash and burn technique was used and proven to work, governments should consider mandating this technique to help restore our rainforest.

- ✓ Government Moratoriums on road building and large infrastructure projects in the rainforest would save many acres.

(<http://environment.nationalgeographic.com/environment/habitats/rainforest-threats/>)

- ✓ Forming local awareness groups: Encourage local communities to form environmental group to build local awareness campaigns. Local environmental groups can encourage their local neighbourhood to shop smart and purchase goods/ service that been internationally recognised and certified by international environmental support group and to encourage recycling. Finally local groups can promote and participate in national environmental days such as “clean up Australia day”,



Source: <http://www.rainforest-alliance.org/>

- ✓ Surrounding neighbours of the rainforest to plant trees to help the rainforest recover and help the rainforest to spread
- ✓
- ✓ Eco Tourism formed for those whom are interested to see the natural beauty of our rainforest. This can raise funds to help contribute to the preservation of our rainforest and to build awareness through tourism.



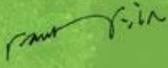
Certificate of Sponsorship

12th November 2009 Certificate No.:39-10000093

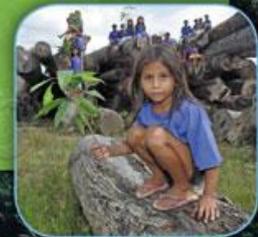
This is to certify that Sir David Attenborough has secured 1 acre of mature rainforest and has kept 260 tonnes of carbon dioxide where it belongs. This sponsorship is protecting 44 mature trees, 190 saplings, 6 endangered species of animal, 322 types of plant and over 11,000 species of insect and worm.

Sir David Attenborough has secured carbon in the following area:
Ashaninka

In partnership with Cool Earth Action, Sir David Attenborough is working to halt climate change by protecting the world's most endangered rainforest.


Frank Field MP


Johan Eliasch



www.coolearth.org/gift

Cool Earth Action is registered with the Charities Commission, number 1117978 71, South Audley Street, London W1K 1JA

([Http://www.coolearth.org/gift](http://www.coolearth.org/gift))

Glossary

(<http://www.enchantedlearning.com/subjects/rainforest/glossary/>)

Biomes – A complex community of plants and animals in a region. Biomes vary depending on the environment. Each environment varies due to the climate, temperate, moisture, light and more factors that differentiate each environment.

Bromeliads – Are a group of plants with leaves in a shape of a cup. These leaves helps the plants retains and catches water during wet weather.

Canopy layer – Second, layer in the four layers of a rainforest. It is the uppermost layer of vegetation in a plant community

Commensalism – One of the relationships in our natural ecosystem where one parties benefits in a relationship whilst the other party neither benefits nor harmed.

Climate - The general average weather

Epiphyte – A plantations that depends and grows upon another plant to for support but not for nutrients.

Emergent Layer – The highest point and first layer of natural vegetation of the rainforest where the trees grow over the canopy layer of the rainforest.

Ecosystem - A community of organisms together with their physical environment, viewed as a system of interacting and interdependent relationships and including such processes as the flow of energy through trophic levels and the cycling of chemical elements and compounds through living and nonliving components of the system.

Erosion - The gradual wearing away of land surface materials, especially rocks, sediments, and soils, by the action of water, wind, or a glacier. Usually erosion also

condition. Climates are determined through various factors such as temperature, rainfall, wind, and latitude of the earth.

Drought – Prolong shortage of rainfall

Deforestation –The cutting down of trees from natural rainforest.

Flood - A temporary rise of the water level, as in a river or lake or along a seacoast, results in its spilling over and out of its natural or artificial confines onto land that is normally dry.

Forest Floor – Last layer in the forest referred to as the flooring of the forest. A layer of organic residues on the soil surface of a forest; humus. The forest floor is formed by the decomposition of organic matter

Green House Effect - The process that raises the temperature of air in the lower atmosphere due to heat trapped by greenhouse gases, such as carbon dioxide,

involves the transport of eroded material from one place to another, as from the top of a mountain to an adjacent valley, or from the upstream portion of a river to the downstream portion

Fertilisation – Process and interaction between opposite sex for reproduction. E.g. Crops and manure as a fertilizer to enrich the growth of the crops.

Photosynthesis - The process by which green plants and some other organisms use sunlight to synthesize foods from carbon dioxide and water

Rainforest – Dense ever green natural ecosystem of mother nature filled and home with diverse habitat of plantations, animals, and other species.

Symbiosis - is close and often long-term interaction between two or more different biological species

methane, nitrous oxide,
chlorofluorocarbons, and ozone.

Mutualism – The natural relationship between two living species, animals, insects or plantations where both parties benefit from one another.

Parasitism – Natural relationship between animals, plants, insects or species where one party benefits and the other party is eventually harmed from the relationship.

Pollination - is the process by which pollen is transferred in the reproduction of plants, thereby enabling fertilization and sexual reproduction

Tropical Rainforest – Is an evergreen forest located at low elevations in regions between the Tropics of Cancer and Capricorn.

Abundant rainfall and very warm weather characterize tropical rainforests. This is why there are so many different types of vegetation there.

Temperate Rainforest – woodland of a usually rather mild climatic area within the temperate zone that receives heavy rainfall, usually includes numerous kinds of trees, and is distinguished from a tropical rain forest especially by the presence of a dominant tree

Under Story Layer - The forest layer below the canopy that includes small trees & young canopy trees. This is the second layer of a rainforest.

References

BioExpedition was used to define a tropical rainforest and the tropical rainforest biome characteristics.

Bioexpedition, <http://bioexpedition.com/tropical-rainforest-biome/> Visited on the 19th August 2012

Mongabay was used to define a rainforest and provides description of a rainforest structure and character and complex relationships in the rainforest

Rheet Butler (2012), <http://rainforests.mongabay.com/0201.htm> Visited on the 19th August 2012

Wordle is a teaching resource used to brainstorm ideas and concepts. Image was created on wordle and used as an image to give teachers an idea to integrate into a lesson plan.

Johnathan Feinberg (2011), <http://www.wordle.net> Visited on the 19th August 2012

Image of tropical and temperate rainforest regions on a global map

Missouri Botanical Garden (2002), <http://www.mbgnet.net/sets/rforest/where.htm> Visited on the 19th August 2012

RIC Good Wood Project, Kids Mongabay and document highlights the important factors and benefits of protecting rainforest

The RIC Good Wood Project (1998) http://www.rainforestinfo.org.au/good_wood/the_imp.htm
Visited on 20th August (2012) visited on the 21st August 2012

Mongabay.com, Kids.Mongabay (2004) <http://kids.mongabay.com/elementary/401.html>

The animal spot, Rainforest Animals (2008), <http://www.rainforestanimals.net/> visited 21st August 2012

Enchanted learning is an online resource site to source “rainforest glossary” for definitions.

Rainforest Glossary (2012) <http://www.enchantedlearning.com/subjects/rainforest/glossary/> Visited on 20th August 2012

Online dictionary facility to use to bring both clarity and define words used through report

Farlex Inc., The free dictionary (2012) <http://www.thefreedictionary.com> Visited on the 20th and 21st August 2012

Biology suite 101 and the dirt.org website and blog were used to define the temperate rainforest and their distinctive characteristics.

Bridget Coila, The Temperate Rainforest Ecosystem (2009) <http://suite101.com/article/the-temperate-rainforest-ecosystem-a116878> Visited on the 20th August 2012

Zeratha (2005), <http://www.thedirt.org/temperaterainforest-zy> Visited on the 20th August 2012)

Missouri Botanical Gardens and bio expedition is an online resource sourced describing the characteristics of a tropical rainforest.

Missouri Botanical Gardens, <http://www.mobot.org/hort/gardens/CLtropfor.shtml> Visited on the 20th August 2012

Bioexpedition, <http://bioexpedition.com/tropical-rainforest-biome/> Visited on the 20th August 2012

This is a website especially designed for teachers to source printable worksheets and summaries on specific topics. In this case this website worksheet was used to illustrate the four different layers in a rainforest.

Mikki Sadil, Super Teach Worksheets (2012), http://www.superteacherworksheets.com/reading-comp/5th-rainforest1_RAINF.pdf Visited on the 20th August 2012

Image used to illustrate the layers in a rainforest. Photobucket is an image/ photo website where images are uploaded online

Photobucket Corporation (2012)

<http://s677.photobucket.com/albums/vv136/beansmiller/?action=view¤t=LAYERSOFTHERAINFOREST.jpg&newest=1> Visited on the 20th August 2012

A teacher's blogging website where they provide teaching materials and ideas for home schooling. Image was used to illustrate a sample of a student's work of the four layers of a rainforest.

Erica, Confessions of a home schooler(2012)

<http://www.confessionsofahomeschooler.com/blog/2010/05/geography-fair-2010.html> Visited on the 20th August 2012

Cals is a general definition of the symbiosis process and image was used to show the 5 different types of symbiosis process however there are the 3 main relationships found in the rainforest ecosystem.

John r. Meyer, Close Encounters (1998) <http://www.cals.ncsu.edu/course/ent591k/symbiosis.html> visited on the 20th and 22nd August 2012

The following sites describe the importance of symbiotic relationships and differentiate the different relationships and characteristics.

Symbiotic Relationships, <http://symbioticrelationship.org/symbiotic-relationship/> Visited on the 20th and 21st August 2012

K Drinnen, Tropical Rainforest 3rdEdition, Tropical Rainforest p47, (2000)

http://www.moodygardens.com/i/downloads/Educator__Rainforest.pdf visited 20th August 2012
Visited on the 20th August 2012

Maggie Eisenberger, Save the Rainforest Inc (2009) <http://www.saverfn.org/lessonssymb.html>
visited 20th August 2012

Image was sourced from Wikipedia of a bromeliad a type of epiphyte. Wikipedia is an online encyclopaedia.

Wikimedia Foundation Inc., Wikipedia <http://en.wikipedia.org/wiki/Bromeliaceae> Visited on the 20th August 2012

Image of a sample terrarium was sourced from the website below. Image was used as a suggestion to teachers to have an idea of terrarium. This experience is a practical experiment for students to have fun and to have a more thorough understanding of how the whole rainforest ecosystem operates. This website educates readers the processes to make a terrarium.

<http://www.stormthecastle.com/terrarium/soda-bottle-terrarium.htm> Visited on the 20th August 2012

The following document was also used to as a reference guide to explore the concept of Indigenous Rainforest people.

K Drinnen, Tropical Rainforest 3rdEdition, Moody Gardens p65, (2000)

http://www.moodygardens.com/i/downloads/Educator__Rainforest.pdf visited 20th August 2012
Visited on the 20th August 2012

National geographic website highlights the threats rainforest face and possible solutions for sustainable management .

National Geographic (2012)

<http://environment.nationalgeographic.com/environment/habitats/rainforest-threats/> visited on the 20th and 21st of August 2012

Image as an example of a rainforest protection organisation. The symbol helps people and members of the public to identify and acknowledge companies for proper sustainable rainforest management.

Rainforest Alliance (2012) <http://www.rainforest-alliance.org/> visited on the 21st August 2012

Cool Earth is a charity organisation, this organisation focus solely on the preservation of rainforests. Image of campaign is an example of sponsorship methods used to protect acres of an endangered rainforest.

Cool Earth <http://www.coolearth.org/gift> Visited on the 21st August 2012