

## **FOREST ECOSYSTEM**

### **Introduction**

A forest ecosystem is the one in which tall trees grow that support many animals and birds. The forests are found in undisturbed areas receiving moderate to high rainfall. The forest occupies nearly 40% of the world's land area. In India it occupies only 19% of its total land area.

### **Types of forest ecosystem**

Depending upon the climate conditions, forests can be classified into the following types.

1. Tropical Rain forests.
2. Tropical deciduous forests.
3. Tropical scrub forests.
4. Temperate rain forests.
5. Temperate deciduous forests.



## Features of different types of Forests

### 1. Tropical Rain forests

They are found near the equator. They are characterized by high temperature. They have broad leaf trees like teak and 1. and the animals like lion, tiger and monkey.

### 2. Tropical deciduous forests

They are found little away from the equator. They are characterized by a warm climate and rain is only during monsoon. They have different types of deciduous trees like maple, oak and hickory and animals like deer, fox, rabbit and rat.

### 3. Tropical Scrub forests

These are characterized by a dry climate for longer time. They small deciduous trees and shrubs and animals like maple, oak and hickory and animals like deer, fox, etc.,

### 4. Temperate Rain Forests

They are found in temperate areas with adequate rainfall. They are characterized by coniferous trees like pines, firs, red wood etc., and animals like, squirrels, fox, cats, bear etc.,

## **5. Temperate deciduous forests**

They are found in areas with moderate temperatures. have major trees including broad leaf deciduous trees like oak, hickory and animals like deer, fox, bear, etc.,

### **Characteristics of forest ecosystems**

1. Forests are characterized by warm temperature and adequate rainfall, which make the
2. generation of number of ponds, lakes etc.,
3. The forest maintains climate and rainfall.
4. The forest support many wild animals and protect biodiversity.
5. The soil is rich in organic matter and nutrients which support the growth of trees.
6. Since penetration of light is so poor, the conversion of organic matter into nutrients is very fast.

## Structure and Function of forest ecosystem

### I. Abiotic components

Climatic factors (temperature, light, rainfall) and minerals. The abiotic components are inorganic and organic substances found in the soil and atmosphere. In addition minerals, the occurrence of litter is characteristic features, majority of forests.

### II. Biotic components

1. **Producers:** The plants absorb sunlight and produce photosynthesis  
Trees, shrubs and ground vegetation..

## **2. Consumers**

(a) Primary consumers (herbivores) :They directly depend on the plants for their food.

Example : Ants, flies, insects, mice, deer, squirrels.

b. Secondary consumers (primary carnivores):They directly depend on the herbivores for their food

Examples: Snakes, birds, fox.

c. Tertiary consumers :They depend on the primary carnivores for their food

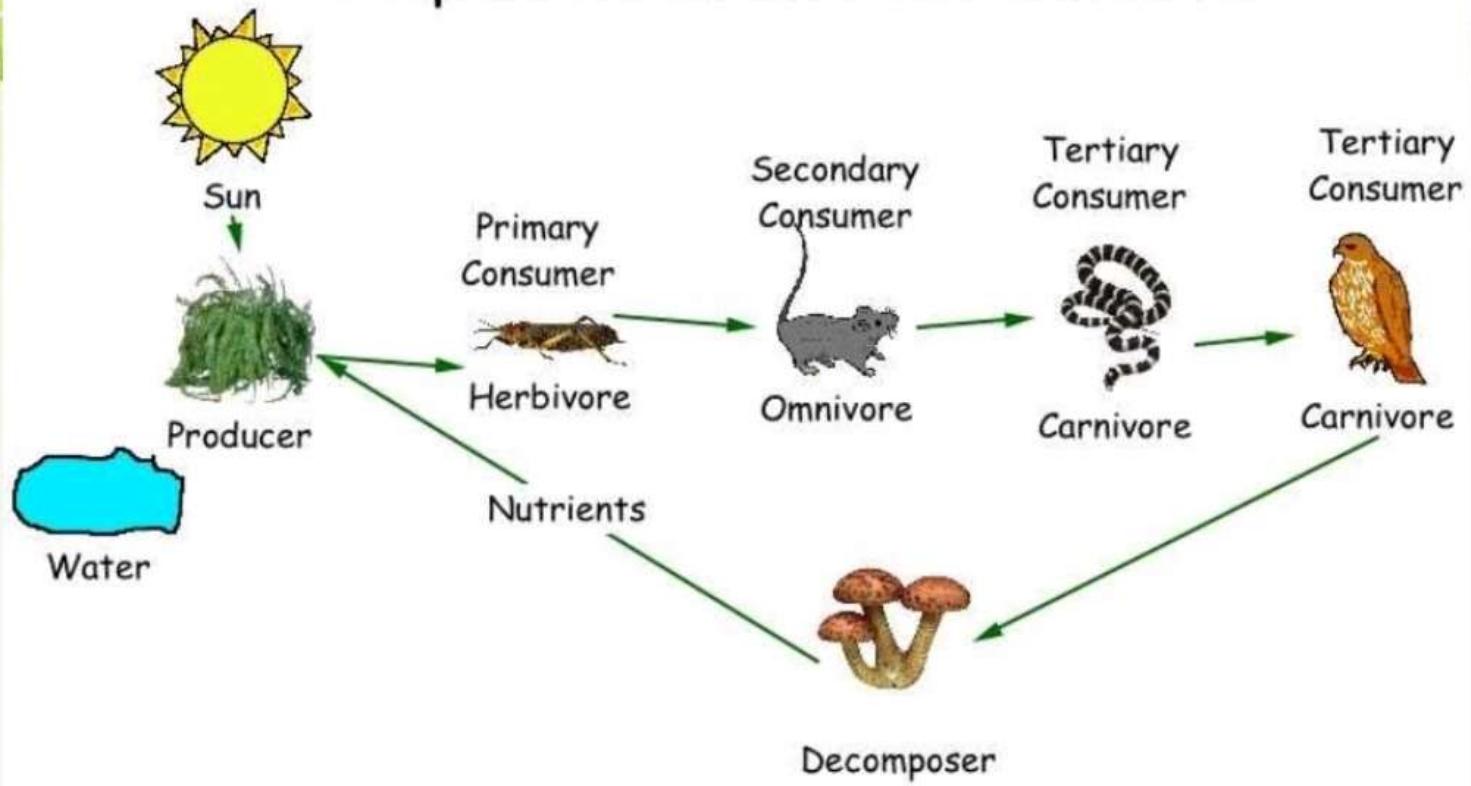
Examples : Animals, like tiger, lion, etc.,

## **3. Decomposers**

Bacteria and fungi.

They decompose the dead plant and animal matter, of decomposition in tropical and subtropical forests is rapid than in the temperate forests.

## Temperate Deciduous Forest Food Chain





# Sample PDF

## Created for testing [PDFObject](#)

This PDF is three pages long. Three long pages. Or three short pages if you're optimistic. Is it the same as saying "three long minutes", knowing that all minutes are the same duration, and one cannot possibly be longer than the other? If these pages are all the same size, can one possibly be longer than the other?

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# Design and build accessible PDF tables

## Sample tables

**Table 1**

Column header (TH)	Column header (TH)	Column header (TH)
Row header (TH)	Data cell (TD)	Data cell (TD)
Row header(TH)	Data cell (TD)	Data cell (TD)

**Table 2: example of footnotes referenced from within a table**

Expenditure by function £ million		2009/10	2010/11 <sup>1</sup>
Policy functions	Financial	22.5	30.57
	Information <sup>2</sup>	10.2	14.8
	Contingency	2.6	1.2
Remunerated functions	Agency services <sup>3</sup>	44.7	35.91
	Payments	22.41	19.88
	Banking	22.90	44.23
	Other	12.69	10.32

(1) Provisional total as of publication date.

(2) Costs associated with on-going information programmes.

(3) From the management accounts, net of recoveries, including interest charges.

**Table 3: "film credits" style layout**

<b>Main character</b>	Daniel Radcliffe
<b>Sidekick 1</b>	Rupert Grint
<b>Sidekick 2</b>	Emma Watson
<b>Lovable ogre</b>	Robbie Coltrane
<b>Professor</b>	Maggie Smith
<b>Headmaster</b>	Richard Harris

**Table 4: table 3 with column headers added**

<b>Role</b>	<b>Actor</b>
<b>Main character</b>	Daniel Radcliffe
<b>Sidekick 1</b>	Rupert Grint
<b>Sidekick 2</b>	Emma Watson
<b>Lovable ogre</b>	Robbie Coltrane
<b>Professor</b>	Maggie Smith
<b>Headmaster</b>	Richard Harris

**Table 5: year-end financial statement (£, thousands)**

	<b>2010</b>	<b>2009</b>	<b>2008</b>
<b>Non-current assets</b>			
<b>Property</b>	345	445	222
<b>Investment</b>	567	654	423
<b>Intangibles</b>	423	123	453
<b>Current assets</b>			
<b>Trade and other receivables</b>	435	634	231
<b>Cash and cash equivalents</b>	524	123	482
<b>Other</b>	223	211	254

**Table 6: a table with a more serious headings problem**

<b>Rainfall (inches)</b>	<b>Americas</b>	<b>Asia</b>	<b>Europe</b>	<b>Africa</b>
<b>2010</b>				
<b>Average</b>	104	201	193	144
<b>24 hour high</b>	15	26	27	18
<b>12 hour high</b>	9	10	11	12
<b>2009</b>				
<b>Average</b>	133	244	155	166
<b>24 hour high</b>	27	28	29	20
<b>12 hour high</b>	11	12	13	16

**Table 7: year-end statement, non-current assets (£, thousands)**

<b>Non-current assets</b>	<b>2010</b>	<b>2009</b>	<b>2008</b>
<b>Property</b>	345	445	222
<b>Investment</b>	567	654	423
<b>Intangibles</b>	423	123	453

**Table 8: year-end statement, current assets (£, thousands)**

<b>Current assets</b>	<b>2010</b>	<b>2009</b>	<b>2008</b>
<b>Trade and other receivables</b>	435	634	231
<b>Cash and cash equivalents</b>	524	123	482
<b>Other</b>	223	211	254

**Table 9: rainfall by continent, 2009**

<b>Rainfall (inches)</b>	<b>Americas</b>	<b>Asia</b>	<b>Europe</b>	<b>Africa</b>
<b>Average</b>	133	244	155	166
<b>24 hour high</b>	27	28	29	20
<b>12 hour high</b>	11	12	13	16

**Table 10: self-contained year-end statement (£, thousands) (multiple layout problems)**

	2011		2010 restated	
<b>General income</b>		250,000		200,000
<b>Increase in value, WIP</b>		15,000		30,000
		<b>265,000</b>		<b>230,000</b>
<b>Administrative costs</b>				
<b>Staff costs</b>	(200,000)		(150,000)	
<b>Early departures</b>	(10,000)		(20,000)	
<b>Other</b>	(25,000)		(10,000)	
<b>Depreciation</b>	(10,000)		(10,000)	
<b>Programme costs</b>				
<b>Impairment loss</b>	(10,000)		(5,000)	
<b>Other</b>	(5,000)		(5,000)	
	<b>(260,000)</b>		<b>(200,000)</b>	
<b>Surplus</b>		<b>5,000</b>		<b>30,000</b>

**Table 11: self-contained year-end statement (£, thousands) (multiple problems resolved)**

		2011	2010 restated
<b>Income</b>	<b>General income</b>	250,000	200,000
	<b>Increase in value</b>	15,000	30,000
	<b>Total income</b>	<b>265,000</b>	<b>230,000</b>
<b>Administrative costs</b>	<b>Staff costs</b>	(200,000)	(150,000)
	<b>Early departures</b>	(10,000)	(20,000)
	<b>Other operating costs</b>	(25,000)	(10,000)
	<b>Depreciation</b>	(10,000)	(10,000)
<b>Programme costs</b>	<b>Impairment loss</b>	(10,000)	(5,000)
	<b>Other</b>	(5,000)	(5,000)
	<b>Total costs</b>	<b>(260,000)</b>	<b>(200,000)</b>
	<b>Surplus</b>	<b>5,000</b>	<b>30,000</b>

**Table 12: merged data cells are not recommended**

<b>Name</b>	<b>2008</b>		<b>2009</b>	
	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>No</b>
<b>Bob</b>	2	5	6	7
<b>Sue</b>	3	8	4	7
<b>Sam</b>	[data relating to both columns in a single cell spanning both]		[data relating to both columns in a single cell spanning both]	

**Table 13: use of graphic symbols**

<b>Question</b>	<b>Respondent A</b>	<b>Respondent B</b>	<b>Respondent C</b>
<b>Are you a UK citizen?</b>	☒	✓	☒
<b>Are you currently employed?</b>	✓	☒	✓
<b>Do you have a driving licence?</b>	☒	☒	✓

**Table 14: symbols replaced by real text**

<b>Question</b>	<b>Respondent A</b>	<b>Respondent B</b>	<b>Respondent C</b>
<b>Are you a UK citizen?</b>	No	Yes	No
<b>Are you currently employed?</b>	Yes	No	Yes
<b>Do you have a driving licence?</b>	No	No	Yes

**Table 15: courses offered by Institution X. A = Bachelor of Science, B = Bachelor of Arts, C = Masters, D = Doctorate, E = Diploma**

	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
<b>Economics</b>	A, B	A, C	A, B	A, C
<b>International relations</b>	A, E	A, E	A, B	A, E
<b>Philosophy</b>	A	A	A	A, D
<b>Politics</b>	A, D	A, D	A, D	A
<b>Mathematics</b>	B, C	B	A, E	A, B
<b>English</b>	A, C	A, B	A, B	C

**Table 16: Masters courses offered by Institution X**

	2006	2007	2008	2009
<b>Economics</b>	No	Yes	Yes	Yes
<b>International relations</b>	No	No	No	No
<b>Philosophy</b>	No	No	No	No
<b>Politics</b>	No	No	No	No
<b>Mathematics</b>	Yes	No	No	No
<b>English</b>	Yes	Yes	Yes	Yes

**Table 17: accounts, 2011 (£, thousands)**

Accounting item		2011
<b>Income</b>	<b>General income</b>	200,000
	<b>Increase in value, WIP</b>	30,000
	<b>Income subtotal</b>	<b>230,000</b>
<b>Administrative costs</b>	<b>Staff</b>	150,000
	<b>Early departures</b>	20,000
	<b>Other operating costs</b>	10,000
	<b>Depreciation</b>	10,000
<b>Programme costs</b>	<b>Impairment loss</b>	10,000
	<b>Costs subtotal</b>	<b>200,000</b>
	<b>Balance</b>	<b>30,000</b>

**Table 18: accounts, 2011 (£, thousands)**

Accounting item		2011
<b>Income</b>	<b>General income</b>	200,000
	<b>Increase in value, WIP</b>	30,000
	<b>Income subtotal</b>	<b>230,000</b>
<b>Administrative costs</b>	<b>Staff</b>	(150,000)
	<b>Early departures</b>	(20,000)
	<b>Other operating costs</b>	(10,000)
	<b>Depreciation</b>	(10,000)
<b>Programme costs</b>	<b>Impairment loss</b>	(10,000)
	<b>Costs subtotal</b>	<b>(200,000)</b>
	<b>Balance</b>	<b>30,000</b>

**Table 19: Human Development Index (HDI)  
trends, 1980 to 2010. Source: Barro-Lee March, 2010**

Country	1980	1990	2000	2010
Afghanistan	0.78	1.48	2.16	3.33
Albania	8.89	9.67	9.89	10.38
Algeria	4.74	3.33	5.50	7.24
Andorra	4.98	5.63	9.09	10.35
Angola	-	-	4.42	4.42

**Table 20: footnotes referenced from within a table**

Expenditure by function £million		2009/10	2010/11 <sup>1</sup>
<b>Policy functions</b>	<b>Financial</b>	22.5	30.57
	<b>Information <sup>2</sup></b>	10.2	14.8
	<b>Contingency</b>	2.6	1.2
<b>Remunerated functions</b>	<b>Agency services <sup>3</sup></b>	44.7	35.91
	<b>Payments</b>	22.41	19.88
	<b>Banking</b>	22.90	44.23
	<b>Other</b>	12.69	10.32

(1) Provisional total as of publication date.

(2) Costs associated with on-going information programmes.

(3) From the management accounts, net of recoveries and including interest charges

**Table 21: footnotes replaced by additional table summary text**

Expenditure by function £million		2009/10	2010/11
<b>Policy functions</b>	<b>Financial</b>	22.5	30.57
	<b>Information</b>	10.2	14.8
	<b>Contingency</b>	2.6	1.2
<b>Remunerated functions</b>	<b>Agency services</b>	44.7	35.91
	<b>Payments</b>	22.41	19.88
	<b>Banking</b>	22.90	44.23
	<b>Other</b>	12.69	10.32

**Table 22: referencing multiple endnotes from within a table**

Expenditure £m	Notes ( <a href="#">Notes located on page [n]</a> )	2010	2011
<b>Information</b>	1	10.2	14.8
<b>Contingency</b>		2.6	1.2
<b>Payments</b>	3	22.41	19.88
<b>Banking services</b>	4	22.90	44.23
<b>Interest</b>		0.23	0.10
<b>Dividends</b>	23	2.5	3.68
<b>Other</b>	9	12.69	10.32

**Table 23: simulated table created using tabs and containing no structure**

Name	2008		2009	
	Entered	Completed	Entered	Completed
<b>Bob</b>	22	21	20	19
<b>Sue</b>	44	12	12	10

**Table 24: year-end financial statement (£, thousands)**

	<b>2010</b>	<b>2009</b>	<b>2008</b>
<b>Non-current assets</b>			
<b>Buildings</b>	345	445	222
<b>Investment</b>	567	654	423
<b>Intangibles</b>	423	123	453
<b>Current assets</b>			
<b>Trade</b>	435	634	231
<b>Cash</b>	524	123	482
<b>Other</b>	223	211	254
<b>Current liabilities</b>			
<b>Trade liabilities</b>	154	125	421
<b>Financial debt</b>	231	474	572
<b>Provisions</b>	111	312	347

**Table 25: setting column and row scope via the tags panel**

<b>Name</b>	<b>2008</b>		<b>2009</b>	
	<b>Entered</b>	<b>Won</b>	<b>Entered</b>	<b>Won</b>
<b>Bob</b>	22	21	20	19
<b>Sue</b>	44	12	12	10
<b>Sam</b>	16	4	45	30

**Table 26: courses offered by Institution X. A = Bachelor of Science, B = Bachelor of Arts, C = Masters, D = Doctorate, E = Diploma**

	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
<b>Economics</b>	A, B	A, C	A, C	A, C
<b>International relations</b>	A, E	A, E	A, B	A, B
<b>Philosophy</b>	A	A	A	A
<b>Politics</b>	A, D	A, D	A, B	A
<b>Mathematics</b>	B, C	B	A, B	A, B
<b>English</b>	A, C	A, B	A, B	A, C

**Table 27: “table” with columns simulated by using tab stops**

Name	Apples	Pears
<b>Bob Scott</b>	20	25
<b>Susan. P. Arnold-Jones, BA, FRSA, MD</b>	24	15
<b>Sam Holder-Dickinson</b>	14	10

**Table 28: year-end financial table (£, thousands) – headings problem revisited**

	2010	2009	2008
<b>Non-current assets</b>			
<b>Buildings</b>	345	445	222
<b>Investment</b>	567	654	423
<b>Intangibles</b>	423	123	453
<b>Current assets</b>			
<b>Trade</b>	435	634	231
<b>Cash</b>	524	123	482
<b>Other</b>	223	211	254
<b>Current liabilities</b>			
<b>Trade liabilities</b>	154	125	421
<b>Financial debt</b>	231	474	572
<b>Provisions</b>	111	312	347

**Table 29: multiple headers attributes for each data cell**

	<b>South America</b>	<b>Asia</b>	<b>Africa</b>	<b>Australia</b>
<b>2010</b>				
<b>Highest average</b>	523.6	467.4	405.0	340.5
<b>Highest in 24 hours</b>	73.1	54.1	27.2	66.3
<b>Highest in 12 hours</b>	42.4	30.1	15.9	40.3
<b>2009</b>				
<b>Highest average</b>	487.7	453.6	398.7	356
<b>Highest in 24 hours</b>	67.2	53.2	44.3	53.8
<b>Highest in 12 hours</b>	34.7	34.1	29.8	31.0
<b>2008</b>				
<b>Highest average</b>	496.7	444.3	502.1	399.6
<b>Highest in 24 hours</b>	44.2	56.7	32.1	63.2
<b>Highest in 12 hours</b>	30.1	32.7	21.9	40.2