Forestry Department
Food and Agriculture Organization of the United Nations

GLOBAL FOREST RESOURCES ASSESSMENT 2005

JAMAICA

COUNTRY REPORT

DRAFT, JUNE 2005

The Forest Resources Assessment Programme

Forests are crucial for the well-being of humanity. They provide foundations for life on earth through ecological functions, by regulating the climate and water resources and by serving as habitats for plants and animals. Forests also furnish a wide range of essential goods such as wood, food, fodder and medicines, in addition to opportunities for recreation, spiritual renewal and other services.

Today, forests are under pressure from increasing demands of land-based products and services, which frequently lead to the conversion or degradation of forests into unsustainable forms of land use. When forests are lost or severely degraded, their capacity to function as regulators of the environment is also lost, increasing flood and erosion hazards, reducing soil fertility and contributing to the loss of plant and animal life. As a result, the sustainable provision of goods and services from forests is jeopardized.

FAO, at the request of the member nations and the world community, regularly monitors the world's forests through the Forest Resources Assessment Programme. The Global Forest Resources Assessment 2000 (FRA 2000) reviewed the situation of the world's forest by the end of the millennium and the main report is available on the World Wide Web (www.fao.org/forestry/fra).

Currently, FAO is preparing the Global Forest Resources Assessment 2005 (FRA 2005) which will be published in 2005. The reporting framework will be based on the thematic elements of sustainable forest management derived from the nine regional criteria and indicator processes.

The Forest Resources Assessment Programme is organized under the Forest Resources Division at FAO headquarters in Rome. The contact person for matters related to FRA 2005 is:

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Contents

1 Table T1 – Extent of Forest and Other wooded land

1.1 FRA 2005 Categories and definitions

Category	Definition
Forest	Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds *in situ*. It does not include land that is predominantly under agricultural or urban land use.
Other wooded land	Land not classified as "Forest", spanning more than 0.5 hectares; with trees higher than 5 meters and a canopy cover of 5-10 percent, or trees able to reach these thresholds *in situ*; or with a combined cover of shrubs, bushes and trees above 10 percent. It does not include land that is predominantly under agricultural or urban land use.
Other land	All land that is not classified as "Forest" or "Other wooded land".
Other land with tree cover (Subordinated to "Other land")	Land classified as "Other land", spanning more than 0.5 hectares with a canopy cover of more than 10 percent of trees able to reach a height of 5 meters at maturity.
Inland water bodies	Inland water bodies generally include major rivers, lakes and water reservoirs.

1.2 National data

1.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Evelyn O. B and Camirand R., 2003. *Forestry cover and deforestation in Jamaica: an analysis of forest cover and estimates over time.* Jamaica. *International Forestry Review, 5(4), 2003, pp. 354-363* (Table 6)	H	Forest cover, forest type classification, land use/cover change	1989 to 1998	Analysis of forest cover change over period 1989 to 1998 using LANDSAT TM images, aerial photos and field checks. Online at www.forestry.gov.jm

1.2.2 Classification and definition

National class	Definitions	Corresponding FAO Class for FRA 2005
Forests land use		
Bamboo	*Bambusa vulgaris* (bamboo brakes) on the lower shale hills (disturbed forest)	Forest
Mangrove	Edaphic forest (areas with brackish water) composed of trees with stilt roots or pneumatopores, species indicators such as *Rhizophora mangle* (red mangrove)	Forest
Closed broadleaf	Closed primary forest with broadleaf trees at least 5 m tall and crown interlocking, with minimal human disturbance	Forest
Disturbed broadleaf	Disturbed broadleaf forest with trees at least 5 m tall and species-indicators of disturbance such as *Ceropia peltata* (trumpet tree)	Forest
Short open dry	Open scrub, shrub, bush or brushland with trees or shrubs 1-5 m tall and crowns not in contact, in drier parts of Jamaica with species-indicators such as *Prosopis juliflora* (cashaw) or *Stenocereus hystrix* (columnar cactus)	Other wooded land
Swamp	Edaphic forest (soil waterlogging) with a single tree storey with species-indicators such as *Symphonia globulifera* (hog plum) and *Roystonea princeps* (royal palm)	Forest
Tall open dry	Open natural woodland or forest with trees at least 5 m tall and crown not in contact, in drier parts of Jamaica with species-indicators such as *Bursera simaruba* (red birch)	Forest
Mixed Land Use		
Bamboo and fields	>50% bamboo; >25% fields	75% Other wooded land 25% Other land
Bamboo and Disturbed broadleaf forest	>50% bamboo; > 25% Disturbed broadleaf forest	100% Forest
Bauxite extraction and Disturbed broadleaf forest	>50% bauxite extraction; >25% Disturbed broadleaf forest	25% Other wooded land 75% Other land
Fields and Disturbed broadleaf forest	>50% fields; >25% Disturbed broadleaf forest	25% Other wooded land 75% Other land
Fields or Disturbed broadleaf forest and Pine plantation	>50% fields or Disturbed broadleaf forest; >25% Pine plantation	100% Forest
Disturbed broadleaf forest and fields	>50% Disturbed broadleaf forest; >25% fields	75% Other wooded land 25% Other land
Non-Forest land use		
Buildings and other infrastructure	Buildings and other constructed features such as airstrips, quarries, etc.	Other land
Bauxite extraction	Surface mining/bauxite	Other land
Bare rock	Bare sand/rock	Other land
Fields	Herbaceous crops, fallow, cultivated grass/legumes	Other land
Herbaceous wetlands	Edaphic vegetation (soil waterlogging) with herbaceous plants	Other land
Plantations	Tree crops, shrub crops like sugar cane, bananas, citrus and coconuts	Other land with tree cover
Water bodies	Lakes, rivers	Inland water bodies
Small islands	Mostly sand/limestone, unvegetated small islands (cays)	Other land

1.2.3 Original data

Land use/cover change in Jamaica (1989-1998)

National classes	**1989 '000 ha**	**1998 '000 ha**
Forests land use		
Bamboo	2.8	3.0
Mangrove	9.8	9.7
Closed broadleaf	88.7	88.2
Disturbed broadleaf	177.2	174.8
Short open dry	12.1	12.1
Swamp	2.4	2.2
Tall open dry	42.1	42.0
TOTAL	**335.1**	**332.0**
Mixed land use		
Bamboo and fields	29.8	29.0
Bamboo and disturbed broadleaf	12.3	12.7
Bauxite and disturbed broadleaf	1.6	2.9
Fields and disturbed broadleaf	118.9	118.0
Fields/Disturbed broadleaf and pine plantation	8.9	8.2
Disturbed broadleaf and fields	166.8	166.0
TOTAL	**338.3**	**336.8**
Non-Forest land use		
Buildings/other infrastructure	51.9	52.3
Bauxite	1.2	4.9
Bare rock	0.9	0.9
Fields	273.2	274.5
Herbaceous wetlands	10.9	10.9
Plantations	83.1	82.3
Water bodies	1.6	1.6
Small islands	0.2	0.2
Total	**423.0**	**427.6**
Total area of country	**1096.4**	**1096.4**

Source: *Forestry cover and deforestation in Jamaica: an analysis of forest cover and estimates over time.*

1.3 Analysis and processing of national data

1.3.1 Calibration

Source	**Total land area (1000 hectares)**
National data	**1096.4**
FAOSTAT	**1099**

Calibration factor = (1099/1096) = 1.002371397

1.3.2 Estimation and forecasting

National classes	**1989 '000 ha_a**	**1998 '000 ha_b**	**1990[1] '000 ha_c**	**2000[1] '000 ha_d**	**2005[1] '000 ha_e**
Forests land use					
Bamboo	2.8	3.0	2.8	3.0	3.1
Mangrove	9.8	9.7	9.8	9.7	9.6
Closed broadleaf	88.7	88.2	88.9	88.3	88.0
Disturbed broadleaf	177.2	174.8	177.3	174.7	173.3
Short open dry	12.1	12.1	12.1	12.1	12.1
Swamp	2.4	2.2	2.4	2.2	2.0
Tall open dry	42.1	42.0	42.2	42.1	42.0
Total	**335.1**	**332.0**	**335.5**	**332.1**	**330.1**
Mixed land use					
Bamboo and fields	29.8	29.0	29.8	28.9	28.4
Bamboo and disturbed broadleaf	12.3	12.7	12.4	12.8	13.0
Bauxite and disturbed broadleaf	1.6	2.9	1.7	3.2	3.9
Fields and disturbed broadleaf	118.9	118.0	119.1	118.0	117.5
Fields/Disturbed broadleaf and pine plantation	8.9	8.2	8.9	8.2	8.2
Disturbed broadleaf and fields	166.8	166.0	167.1	166.2	165.7
Total	**338.3**	**336.8**	**339.0**	**337.3**	**336.7**
Non-Forest Land Use					
Non-Forest land use	407.0	411.6	408.5	413.6	416.2
Water	16.0	16.0	16.0	16.0	16.0
Total	**423.0**	**427.6**	**424.5**	**429.6**	**432.2**
Grand Total	**1096.4**	**1096.4**	**1099.0**	**1099.0**	**1099.0**

The class fields/disturbed broadleaf and pine plantation comprises pine and hardwood plantations

ha_a = original data for year 1989
ha_b = original data for year 1998
$ha_c = ha_a + (ha_a - ha_b)/9$ ***** calibration factor
$ha_d = (ha_b + (ha_a - ha_b)/9 * 2) *$ calibration factor
$ha_e = (ha_b + (ha_a - ha_b)/9 * 7) *$ calibration factor

*Areas are multiplied by the calibration factor to arrive at the FAO STAT Country total.
*[1] Data for the years 1990 and 2000 were estimated using linear interpolation of the data from 1989 and 1998. Similarly, data for year 2005 were forecasted using the same linear trend.
*Total Hectare for water was used as 16,000 hectares (total as reported by FOA STAT)

1.4 Reclassification into FRA 2005 classes

National Classes	FRA 2005 Categories					
	IWB	Forest	OWL	Other Lands	Total	OWLTC
Bamboo		100%				
Mangrove		100%			100%	
Closed broadleaf		100%			100%	
Disturbed broadleaf		100%			100%	
Short open dry[1]			100%		100%	
Swamp		100%			100%	
Tall open dry		100%			100%	
Bamboo and Fields			75%	25%	100%	
Bamboo and disturbed broadleaf		100%			100%	
Bauxite and disturbed broadleaf			25%	75%	100%	
Fields and disturbed broadleaf			25%	75%	100%	
Fields/Disturbed broadleaf and pine[2]		100%			100%	
Disturbed broadleaf and Fields			75%	25%	100%	
None-Forest land use				100%	100%	14.5%
Water	100%				100%	

OWLTC classification by expert knowledge

The mixed areas are placed in **other wooded lands** instead of forest because it is not sure that these areas fit the 10% crown cover criterion. In the past these areas were classified as other wooded lands because they did not fit the 1967 FAO's forest definition of "more than 20% crown cover". Because the analysis was done using Landsat TM a more detailed analysis would have to be done, possibly using aerial photographs, in order to extract the areas which fit the 2001/2005 definition of more than 10% crown cover.

1.5 Data for National reporting table T1

FRA 2005 Categories	Area (1000 hectares)		
	1990	2000	2005
Forest	345	341.0	339
Other wooded land	190.0	189	188
Other land	548	553	556
...of which with tree cover 1)	82	82	83
Inland water bodies	16.0	16.0	16.0
TOTAL	**1099.0**	**1099.0**	**1099.0**

1) Area of "Other land with tree cover" is included in the area reported under "Other land" and should therefore be excluded when calculating the total area for the country.

1.6 Comments to National reporting table T1

The disturbed areas were considered as other wooded land. If these areas were considered as forest, the area of forest on the island may show an increase when in fact there is no increase. This may put us back into the confused situation Jamaica was in in the 1990s when FAO reported a significant decrease in forest. As it is now, there is clarifyication and consistency between the reports over the years, facilitating comparison and analysis.

[1] Fails to satisfy height criterion for that of forest for FRA 2005 classification

[2] This class was classified as forest because of the pine and hardwood plantations making up its composition

There is a discrepancy between the area of water reported by FAO STAT and that reported by the Statistical Institute of Jamaica (STATIN). FAOSTAT is reporting 16, 000 ha while the official figure by STATIN is 1,600 ha. The area as reported by FAOSTAT of 16,000 ha. is used for this exercise.

2 Table T2 – Ownership of Forest and Other wooded land

2.1 FRA 2005 Categories and definitions

Category	Definition
Private ownership	Land owned by individuals, families, private co-operatives, corporations, industries, religious and educational institutions, pension or investment funds, and other private institutions.
Public ownership	Land owned by the State (national, state and regional governments) or government-owned institutions or corporations or other public bodies including cities, municipalities, villages and communes.
Other ownership	Land that is not classified either as "Public ownership" or as "Private ownership".

2.2 National data

2.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Camirand R. and Evelyn O.B., 2003**.** Forestry Department-Trees for Tomorrow Project. 2004. *National Forest Inventory Report 2003, Main Report and Appendices 1 to V* (Table 21)	H	Area (%) of Jamaica by protection status	1998	The same percentages can be applied for the reporting years as data used are those used for the creation of Table T1. Online at www.forestry.gov.jm

2.2.2 Classification and definitions

National class	Definition
Forest Reserve	Any crown or private lands so declared under the Forest Act
Other Protected	Government lands other than Forest Reserves and private lands so declared.
Unprotected	Privately owned lands which do not assume any protected status

2.2.3 Original data

Area (%) of Jamaica by forest land class and protection status

sub-Class	Forest Reserve	Other Protected	Unprotected	Grand Total
Closed broadleaf	5.8	0.1	2.1	8.0
Disturbed broadleaf	1.1	0.2	14.6	15.9
Tall open dry	0.6	1.3	2.0	3.9
Short open dry	0.1	0.4	0.6	1.1
Riparian/Swamp	0.0	0.1	0.1	0.2
Mangrove	0.1	0.5	0.3	0.9
Caribbean pine plantation *	0.3	0.0	0.1	0.4
Other species plantation *	0.3	0.0	0.1	0.4
Forest total	**8.3**	**2.6**	**19.9**	**30.8**
Disturbed broadleaf forest and Non-forest land use **	0.7	0.3	14.1	15.1
Non-forest land use and disturbed broadleaf forest ***	0.8	0.4	13.9	15.1
Mixed total	**1.5**	**0.7**	**28.0**	**30.2**
Grand forest and Mixed Total	**9.8**	**3.3**	**47.9**	**61.0**

Source: National Forest Inventory Report 2003, Main Report and Appendices 1 to V

* Caribbean pine plantation and Other species plantation = Fields/disturbed broadleaf and pine plantation from Table T1

** Disturbed broadleaf forest and Non-forest land use = Disturbed broadleaf forest and fields from Table T1

*** Non-forest land use and disturbed broadleaf forest = bamboo, bamboo and fields, bamboo and disturbed broadleaf, bauxite and disturbed broadleaf, and fields and disturbed broadleaf from Table T1

2.3 Analysis and processing of national data

Forest Reserve ha = Forest Reserve % * 1099.0 (country total area)
Other Protected ha = Other Protected % * 1099.0 (country total area)
Unprotected ha = Unprotected % * 1099.0 (country total area)

Sub-Class	Forest Reserve '000 ha	Other Protected '000 ha	Unprotected '000 ha	Total '000 ha
Closed broadleaf	63.7	1.1	23.1	87.9
Disturbed broadleaf	12.1	2.2	160.5	174.8
Tall open dry	6.6	14.3	22.0	42.9
Riparian/Swamp	0.0	1.1	1.1	2.2
Mangrove	1.1	5.5	3.3	9.9
Caribbean pine plantation	3.3	0.0	1.1	4.4
Other species plantation	3.3	0.0	1.1	4.4
Total forest	**90.1**	**24.2**	**212.2**	**326.5**
Disturbed broadleaf forest and Non-forest land use	7.7	3.3	155.0	166.0
Non-forest land use and disturbed broadleaf	8.8	4.4	152.8	166.0
Short open dry	1.1	4.4	6.6	12.1
Total other wooded lands	**17.6**	**12.1**	**314.4**	**344.1**

Reclasification on forest and other wooded land was done. See details in section 2.4. Percentages for Forest reserve, Other protected and Unprotected were estimated as follow:

FRA Classes	% Forest reserve	% Other protected	% Un-protected
Forest	27.59	7.41	64.99
Other wooded land	5.11	3.52	91.37

This percenges were applied to the total forest area for the years 1990 and 2000 presented in table number one, the results are preseted below:

	1990	2000
Forest	**344.7**	**341**
Forest reserve	95.12	94.10
Other protected	25.55	25.27
Unprotected	224.03	221.62
Other wooded land	**190**	**188.8**
Forest reserve	9.71	9.66
Other protected	6.68	6.64
Unprotected	173.60	172.50

2.4 Reclasification

Sub-Class	Forest	Other wooded land
Closed broadleaf	100%	
Disturbed broadleaf	100%	
Tall open dry	100%	
Riparian/Swamp	100%	
Mangrove	100%	
Caribbean pine plantation*	100%	
Other species plantation	100%	
Disturbed broadleaf forest ** and Non-forest land use		100%
Non-forest land use and disturbed broadleaf ***	9 %	91 %
Short open dry		100%

Caribbean pine plantation and Other species plantation = Fields/disturbed broadleaf and pine plantation from Table T1

** Disturbed broadleaf forest and Non-forest land use = Disturbed broadleaf forest and fields from Table T1

*** Non-forest land use and disturbed broadleaf forest = **bamboo, bamboo** and fields, bamboo and disturbed broadleaf, bauxite and disturbed broadleaf, and fields and disturbed broadleaf from Table T1 bamboo area is considered forest.

National class	Fra class
Forest Reserve	Public ownership
Other Protected	Other ownership
Unprotected	Private ownership

2.5 Data for National reporting table T2

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	1990	2000	1990	2000
Private ownership	224	222	174	172
Public ownership	95	94	10	10
Other ownership	26	25	7	7
TOTAL	**345**	**341**	**190**	**189**

2.6 Comments to National reporting table T2

For this report, Other ownership areas may include both private and public lands. This is so because our national Cadastral Index, which is in spatial format, is not available to do the breakout, which would address this problem.

3 Table T3 – Designated function of Forest and Other wooded land

3.1 FRA 2005 Categories and definitions

Types of designation

Category	Definition
Primary function	A designated function is considered to be primary when it is significantly more important than other functions. This includes areas that are legally or voluntarily set aside for specific purposes.
Total area with function	Total area where a specific function has been designated, regardless whether it is primary or not.

Designation categories

Category / Designated function	Definition
Production	Forest / Other wooded land designated for production and extraction of forest goods, including both wood and non-wood forest products.
Protection of soil and water	Forest / Other wooded land designated for protection of soil and water.
Conservation of biodiversity	Forest / Other wooded land designated for conservation of biological diversity.
Social services	Forest / Other wooded land designated for the provision of social services.
Multiple purpose	Forest / Other wooded land designated to any combination of: production of goods, protection of soil and water, conservation of biodiversity and provision of social services and where none of these alone can be considered as being significantly more important than the others.
No or unknown function	Forest / Other wooded land for which a specific function has not been designated or where designated function is unknown.

3.2 National data

3.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Department. 2001. *National Forestry Management and Conservation Plan.* Jamaica	H	Forest values to society	1990 2000	
Camirand R. and Evelyn O.B., 2003**.** Forestry Department-Trees for Tomorrow Project. 2004. *National Forest Inventory Report 2003, Main Report and Appendices 1 to V* (Table 21)	H	Area (%) of Jamaica by protection status	1990 2000	The same percentages can be applied for the reporting years as data used are those used for the creation of Table T1. Online at www.forestry.gov.jm

3.2.2 Classification and definitions

National class	Definition
Legal/Administrative function	A function prescribed by law or by administrative decree for a particular site
Not legal/administrative function	function performed although not prescribed by law or administrative decree

3.2.3 Original data

The forest types used in the Forestry Inventory and presented in table number one T1, calibrated, estimated/forecasted areas in 1.3.2 of this report, have been designated a legal administrative function as presented in the next table:

National classes	**FRA classes**
Closed broadleaf	Conservation of biodiversity
Disturbed broadleaf	Protection of soil and water
Tall open dry	OWL multiple purpose
Riparian/Swamp	Conservation of biodiversity
Mangrove	Conservation of biodiversity
Disturbed broadleaf forest and Non-forest land use	Multiple purpose
Non-forest land use and Disturbed broadleaf forest	Multiple purpose
Short open dry	Multiple purpose
Fields/Disturbed broadleaf and pine plantation	Production
Not legal/administrative designated	No or unknown function

Note: Fields/Disturbed broadleaf and pine plantation consists of Carib pine plantation and Other species plantation

This gives the results of primary function as presented below for specific years:

Primary Function - for year 1990 (000 hectares)

Primary Function	**Legal/Administrative Designated Function**					
Sub-Class	Production	Protection of soil and water	Conservation of biodiversity	Social services	Multiple purposes	No or unknown function
Closed broadleaf			65.5			
Disturbed broadleaf		14.5				
Tall open dry					20.6	
Riparian/Swamp			1.2			
Mangrove			6.5			
Caribbean pine plantation	5.0					
Other species plantation	3.9					
*Non-forest land use and disturbed broadleaf forest		1.0				
Forest total	**8.9**	**15.5**	**73.2**	**0.0**	**20.6**	**226.5**
Disturbed broadleaf forest and Non-forest land use					8.3	
Non-forest land use and disturbed broadleaf forest*		4.9				
Short open dry					5.5	
Other wooded land	**0.0**	**4.9**	**0.0**	**0.0**	**13.8**	**171.3**

* The area of Non-forest land use and disturbed broadleaf forerst classified as forest consists of Bamboo, and Bamboo and disturbed broadleaf from Table T1 (estimation and forecasting)

Figures in bold are transferred to reporting table T3 for corresponding year

Primary Function - for year 2000

Primary Function	**Legal/Administrative Designated Function**					
Sub-Class	Production	Protection of soil and water	Conservation of biodiversity	Social services	Multiple purposes	No or unknown function
Closed broadleaf			65.1			
Disturbed broadleaf		14.3				
Tall open dry					20.5	
Riparian/Swamp			1.1			
Mangrove			6.5			
Caribbean pine plantation	4.3					
Other species plantation	3.9					
*Non-forest land use and disturbed broadleaf forest		1.0				
Forest total	**8.2**	**15.3**	**72.7**	**0.0**	**20.5**	**224.3**
Disturbed broadleaf forest and Non-forest land use					8.3	
Non-forest land use and disturbed broadleaf forest		4.7				
Short open dry					5.5	
Other wooded land	**0.0**	**4.7**	**0.0**	**0.0**	**13.8**	**170.3**

* The area of Non-forest land use and disturbed broadleaf forerst classified as forest consists of Bamboo, and Bamboo and disturbed broadleaf from Table T1 (estimation and forecasting)
Figures in bold are transferred to reporting table T3 for corresponding year

Primary Function - for year 2005

Primary Function	**Legal/Administrative Designated Function**					
Sub-Class	Production	Protection of soil and water	Conservation of biodiversity	Social services	Multiple purposes	No or unknown function
Closed broadleaf			64.9			
Disturbed broadleaf		14.2				
Tall open dry					20.5	
Riparian/Swamp			1.0			
Mangrove			6.4			
Caribbean pine plantation	4.3					
Other species plantation	3.9					
*Non-forest land use and disturbed broadleaf forest		1.0				
Forest total	**8.2**	**15.2**	**72.3**	**0.0**	**20.5**	**223**
Disturbed broadleaf forest and Non-forest land use					8.3	
Non-forest land use and disturbed broadleaf forest		4.7				
Short open dry					5.5	
Other wooded land	**0.0**	**4.7**	**0.0**	**0.0**	**13.8**	**169.6**

* The area of Non-forest land use and disturbed broadleaf forerst classified as forest consists of Bamboo, and Bamboo and disturbed broadleaf from Table T1 (estimation and forecasting)
Figures in bold are transferred to reporting table T3 for corresponding year

3.3 Analysis and processing of national data

3.3.1 Calibration

Not needed.

3.3.2 Estimation and Forecasting

Total forest area used is the one reported in table number 1. The areas serving for total functions are based on expert opinion.

Total area with function – for year 1990

Forest	**Leg./Adm. Designated Area ('000 ha)**	**Area serving total functions**			
Primary function		**Production**	**Protection of soil and water**	**Conservation of biodiversity**	**Social services**
Production	8.9	8.9	8.9		
Protection of soil and water	15.5	14.5	15.5		
Conservation of biodiversity	73.2		73.2	73.2	73.2
Social services	0.0				
Multiple purposes	20.6	20.6	20.6	20.6	20.6
Total		**44**	**118**	**93.8**	**93.8**
Other wooded lands					
Production	0.0				
Protection of soil and water	4.9	4.9	4.9		4.9
Conservation of biodiversity	0.0				
Social services	0.0				
Multiple purpose	13.8	13.8	13.8	13.8	13.8
Total		**18.7**	**18.7**	**13.8**	**18.7**

Figures in bold are transferred to reporting table T3 for corresponding year

Total area with function – for year 2000

Forest	**Leg./Adm. Designated Area ('000 ha)**	**Area serving total functions**			
Primary function		**Production**	**Protection of soil and water**	**Conservation of biodiversity**	**Social services**
Production	8.2	8.2	8.2		
Protection of soil and water	15.3	14.3	15.3		
Conservation of biodiversity	72.7		72.7	72.7	72.7
Social services	0.0				
Multiple purpose	20.5	20.5	20.5	20.5	20.5
Total		**43**	**116.7**	**93.2**	**93.2**
Other wooded lands					
Production	0.0				
Protection of soil and water	4.7	4.7	4.7		4.7
Conservation of biodiversity	0.0				
Social services	0.0				
Muliple purpose	13.8	13.8	13.8	13.8	13.8
Total		**18.5**	**18.5**	**13.8**	**18.5**

Figures in bold are transferred to reporting table T3 for corresponding year

Total area with function – for year 2005

Forest	**Leg./Adm. Designated Area ('000 ha)**	**Area serving total functions**			
Primary function		**Production**	**Protection of soil and water**	**Conservation of biodiversity**	**Social services**
Production	8.2	8.2	8.2		
Protection of soil and water	15.2	14.2	15.2		
Conservation of biodiversity	72.3		72.3	72.3	72.3
Social services	0.0				
Multiple purpose	20.5	20.5	20.5	20.5	20.5
Total		**43**	**116.2**	**92.8**	**92.8**
Other wooded lands					
Production	0.0				
Protection of soil and water	4.7	4.7	4.7		4.7
Conservation of biodiversity	0.0				
Social services	0.0				
Multiple purpose	13.8	13.8	13.8	13.8	13.8
Total		**18.5**	**18.5**	**13.8**	**18.5**

Figures in bold are transferred to reporting table T3 for corresponding year

3.4 Reclassification into FRA 2005 classes

See section orginal data for details.

3.5 Data for National reporting table T3

FRA 2005 Categories / Designated function	**Area (1000 hectares)**					
	Primary function			**Total area with function**		
	1990	**2000**	**2005**	**1990**	**2000**	**2005**
Forest						
Production	9	8	8	44	43	43
Protection of soil and water	16	15	15	118	117	116
Conservation of biodiversity	73	73	72	94	93	93
Social services	0.0	0.0	0.0	94	93	93
Multiple purpose	21	21	21	not appl.	not appl.	not appl.
No or unknown function	227	224	223	not appl.	not appl.	not appl.
Total - Forest	**345**	**341**	**339**	**not appl.**	**not appl.**	**not appl.**
Other wooded land						
Production	0.0	0.0	0.0	19	19	19
Protection of soil and water	5	5	5	19	19	19
Conservation of biodiversity	0.0	0.0	0.0	14	14	14
Social services	0.0	0.0	0.0	19	19	19
Multiple purpose	14	14	14	not appl.	not appl.	not appl.
No or unknown function	171	171	170	not appl.	not appl.	not appl.
Total – Other wooded land	**190**	**189**	**188**	**not appl.**	**not appl.**	**not appl.**

3.6 Comments to National reporting table T3

Using local expert knowledge along with the assignment of agregates for the sub-classes in the creation of the Primary Function table the assignment of agregates to other functions were

done to create the Total Area with Function table. Multiple purpose area is assumed to serve all four functions

4 Table T4 – Characteristics of Forest and Other wooded land

4.1 FRA 2005 Categories and definitions

Category	Definition
Primary	Forest / Other wooded land of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed.
Modified natural	Forest / Other wooded land of naturally regenerated native species where there are clearly visible indications of human activities.
Semi-natural	Forest / Other wooded land of native species, established through planting, seeding or assisted natural regeneration.
Productive plantation	Forest / Other wooded land of introduced species, and in some cases native species, established through planting or seeding mainly for production of wood or non wood goods.
Protective plantation	Forest / Other wooded land of native or introduced species, established through planting or seeding mainly for provision of services.

4.2 National data

4.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Evelyn O. B and Camirand R., 2003. *Forestry cover and deforestation in Jamaica: an analysis of forest cover and estimates over time*. Jamaica. *International Forestry Review*, *5(4), 2003, pp. 354-363* (Table 6)	H	Classes for Forests and Other wooded lands	1989 & 1998	classification, definitions, tables etc. are extracted form information for Table T1 Online at www.forestry.gov.jm

4.2.2 Classification and definitions

National class	Definitions
Forests	
Mangrove	Edaphic forest (areas with brackish water) composed of trees with stilt roots or pneumatopores, species indicators such as *Rhizophora mangle* (red mangrove)
Closed broadleaf	Closed primary forest with broadleaf trees at least 5 m tall and crown interlocking, with minimal human disturbance
Disturbed broadleaf	Disturbed braodleaf foresr with trees at least 5 m tall and species-indicators of disturbance such as *Ceropia peltata* (trumpet tree)
Swamp	Edaphic forest (soil waterlogging) with a single tree storey with species-indicators such as *Symphonia globulifera* (hog plum) and *Roystonea princeps* (royal palm)
Tall open dry	Open natural woodland or forest with trees at least 5 m tall and crown not in contact, in drier parts of Jamaica with species-indicators such as *Bursera simaruba* (red birch)
Caribbean pine plantation	Forest plantation with *Pinus caribaea*
Other species plantation	Forest plantation with other species such as *Hibiscus elatus* (blue mahoe), *Swietenia macrophylia* (Honduras mahogany), *Tectona grandis* (teak), *Eucalyptus saligna*, *Cedrela odorata* (cedar), etc

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Other wooded lands	
Disturbed broadleaf forest and Non forest land use	>50% Disturbed broadleaf forest; >25% Non forest land uses
non forest land use and Disturbed broadleaf forest	>50% Non forest land use; >25% Disturbed broadleaf forest;
Short open dry	open scrub, shrub, bush or brushland with trees or shrubs 1-5 m tall and crowns not in contact, in drier parts of Jamaica with species-indicators such as *Prosopis juliflora* (cashaw) or *Stenocereus hystrix* (columnar cactus)

4.2.3 Original data

Land use/cover change in Jamaica (1989-1998)

National classes	**1989 '000 ha**	**1998 '000 ha**
Forests land use		
Bamboo	2.8	3.0
Mangrove	9.8	9.7
Closed broadleaf	88.7	88.2
Disturbed broadleaf	177.2	174.8
Short open dry	12.1	12.1
Swamp	2.4	2.2
Tall open dry	42.1	42.0
TOTAL	**335.1**	**332.0**
Mixed land use		
Bamboo and fields	29.8	29.0
Bamboo and disturbed broadleaf	12.3	12.7
Bauxite and disturbed broadleaf	1.6	2.9
Fields and disturbed broadleaf	118.9	118.0
Fields/Disturbed broadleaf and pine plantation	8.9	8.2
Disturbed broadleaf and fields	166.8	166.0
TOTAL	**338.3**	**336.8**

4.3 Analysis and processing of national data

4.3.1 Calibration

Same as Table T1

4.3.2 Estimation and forecasting

National classes	**1989 '000 ha**	**1998 '000 ha**	**1990 '000 ha**	**2000 '000 ha**	**2005 '000 ha**
Forests land use					
Bamboo	2.8	3.0	2.8	3.0	3.1
Mangrove	9.8	9.7	9.8	9.7	9.6
Closed broadleaf	88.7	88.2	88.9	88.3	88.0
Disturbed broadleaf	177.2	174.8	177.3	174.7	173.3
Short open dry	12.1	12.1	12.1	12.1	12.1
Swamp	2.4	2.2	2.4	2.2	2.0
Tall open dry	42.1	42.0	42.2	42.1	42.0
Total	**335.1**	**332.0**	**335.5**	**332.1**	**330.1**
Mixed land use					
Bamboo and fields	29.8	29.0	29.8	28.9	28.4
Bamboo and disturbed broadleaf	12.3	12.7	12.4	12.8	13.0
Bauxite and disturbed broadleaf	1.6	2.9	1.7	3.2	3.9
Fields and disturbed broadleaf	118.9	118.0	119.1	118.0	117.5
Fields/Disturbed broadleaf and pine plantation	8.9	8.2	8.9	8.2	8.2

Disturbed broadleaf and fields	166.8	166.0	167.1	166.2	165.7
Total (from table 1)	**338.3**	**336.8**	**339.0**	**337.3**	**336.7**

4.4 Reclassification into FRA 2005 classes

National Classes	1990 '000 ha	2000 '000 ha	2005 '000 ha	FRA 2005 classes					Other lands	Total %
				Primary	Modified natural	Semi-natural	Productive plantation	Protective Plantation		
FOREST										
Bamboo	2.8	3.0	3.1					100%		100%
Mangrove	9.8	9.7	9.6		100%					100%
Closed broadleaf	88.9	88.3	88.0		100%					100%
Disturbed broadleaf	177.3	174.7	173.3		100%					100%
Swamp	2.4	2.2	2.0		100%					100%
Tall open dry	42.2	42.1	42.0		100%					100%
Fields/Disturbed broadleaf and pine plantation	8.9	8.2	8.2				100%			100%
Bamboo and disturbed broadleaf	12.4	12.8	13.0		25%			75%		100%
Total forest lands	**332.5**	**328.2**	**326.5**							
OTHER WOODED										
Bamboo and fields	29.8	28.9	28.4					75%	25%	100%
Bauxite and disturbed broadleaf	1.7	3.2	3.9		25%				75%	100%
Fields and disturbed broadleaf	119.1	118.0	117.5		25%				75%	100%
Disturbed braodleaf and fields	163.0	163.1	163.1		75%				25%	100%
Short open dry	12.1	12.1	12.2		100%					100%
Total wooded lands	**342.3**	**341.4**	**340.0**							

The class fields/disturbed broadleaf and pine plantation comprises pine and hardwood plantations

4.5 Data for National reporting table T4

FRA 2005 Categories	Area (1000 hectares)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Primary	-	-	-	-	-	-
Modified natural	330	327	325	168	167	167
Semi-natural	-	-	-	-	-	-
Productive plantation	9	8	8	-	-	-
Protective plantation	6	6	6	22.4	21.7	21.3
TOTAL	**345**	**341**	**339**	**190.0**	**189**	**188**

4.6 Comments to National reporting table T4

5 Table T5 – Growing stock

5.1 FRA 2005 Categories and definitions

Category	Definition
Growing stock	Volume over bark of all living trees more than X cm in diameter at breast height (or above buttress if these are higher). Includes the stem from ground level or stump height up to a top diameter of Y cm, and may also include branches to a minimum diameter of W cm.
Commercial growing stock	The part of the growing stock of species that are considered as commercial or potentially commercial under current market conditions, and with a diameter at breast height of Z cm or more.

5.2 National data

5.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Camirand R. and Evelyn O.B., 2003**.** Forestry Department-Trees for Tomorrow Project. 2004. *National Forest Inventory Report 2003, Main Report and Appendices 1 to V*	H	Area and Volume	2003	

5.2.2 Classification and definitions

Not needed as classes correspond with FRA 2005 classe

5.2.3 Original data

Total Volume by forest types

Name	Area ('000 ha)	Volume (Mil. m^3)
Closed Broadleaf	88.2	17.09
Disturbed Broadleaf	174.7	28.91
Tall Open Dry	42.0	1.59
Short Open Dry	12.1	0.27
Riparian/Swamp	2.3	0.41
Mangrove	9.7	0.76
Caribbean Pine Plantations	4.3	0.51
Other Species Plantation	3.9	0.58
Forest total	**337.2**	**50.12**
Disturbed Broadleaf Forest & Non-Forest Land Use	166.0	15.53
Non-Forest Land Use & Disturbed Broadleaf Forest	165.6	11.00
Mixed Total	**331.6**	**26.53**
Total	**668.7**	**76.65**

Source: National Forest Inventory Report 2003, Main Report and Appendices 1 to V

5.3 Analysis and processing of national data

5.3.1 Calibration

Not needed

5.3.2 Estimation and forecasting

Name	Vol/ha (Mil. m3)	1990		2000		2005	
		AREA '000 HA	Volume (Mil. M3)	Area '000 ha	VOLUME (Mil. M3)	Area '000 ha	Volume (Mil. M3)
Closed Broadleaf	0.19	88.9	16.89	88.3	16.78	88.0	16.72
Disturbed Broadleaf	0.17	177.3	30.14	174.7	29.70	173.3	29.46
TALL OPEN DRY	0.04	42.2	1.69	42.1	1.68	42.0	1.68
Short Open Dry	0.02	12.1	0.24	12.1	0.24	12.1	0.24
Riparian/Swamp	0.18	2.4	0.43	2.2	0.40	2.0	0.36
Mangrove	0.08	9.8	0.78	9.7	0.78	9.6	0.77
Caribbean Pine Plantations	0.12	5.0	0.60	4.3	0.52	4.3	0.52
Other Species Plantation	0.15	3.9	0.59	3.9	0.59	3.9	0.59
Forest total		**341.6**	**51.36**	**337.3**	**50.69**	**335.2**	**50.34**
Disturbed Broadleaf Forest & Non-Forest Land Use	0.09	167.1	15.04	166.2	14.96	165.7	14.91
Non-Forest Land Use & Disturbed Broadleaf Forest	0.07	165.8	11.61	165.9	11.61	165.9	11.61
Mixed Total		**332.9**	**26.65**	**332.1**	**26.57**	**331.6**	**26.52**

Vol/ha (Mil. M3) = Volume (Mil. m3) / Area ('000 ha); from original table
Volume (Mil. M3) = Vol/ha (Mil. M3) * Area ('000 ha);
Areas are extracted from Total Calibrated '000 ha of calibration tables in Table T2 and Table T3.
Non-Forest Land Use and Disturbed Broadleaf Forest (Table T5) = Bamboo, Bamboo and fields, Bamboo and disturbed broadleaf, Bauxite and disturbed broadleaf, and Fields and disturbed broadleaf (Table T1).

5.4 Reclassification into FRA 2005 classes

For Year 1990

Name	Volume (Mil. M^3)	FOREST %	Wooded area %	Total %	Commercial growing stock %	RESULT OF RECLASSIFICATION	
						Forest	Other Wooded land
Closed Broadleaf	16.89	100		100		16.89	
Disturbed Broadleaf	30.14	100		100		30.14	
Tall Open Dry	1.69	100		100		1.69	
Short Open Dry	0.24		100	100			0.24
Riparian/Swamp	0.43	100		100		0.43	
Mangrove	0.78	100		100		0.78	
Caribbean Pine Plantations	0.60	100		100	100	0.60	
Other Species Plantation	0.59	100		100	100	0.59	
Disturbed Broadleaf Forest & Non-Forest Land Use	15.04		100	100			15.04
Non-Forest Land Use & Disturbed Broadleaf Forest*	11.61	22.4	77.6	100		2.60	9.01
Total						**53.72**	**24.29**

* From Non-forest Land Use and Disturbed Broadleaf Forest, the classes Bamboo, and Bamboo and disturbed broadleaf are reclassified as forest and the others remain as wooded lands.

For year 2000

Name	Volume (Mil. M^3)	FOREST %	Wooded area %	Total %	Commercial growing stock %	RESULT OF RECLASSIFICATION	
						Forest	Wooded area
Closed Broadleaf	16.78	100		100		16.78	
Disturbed Broadleaf	29.70	100		100		29.70	
Tall Open Dry	1.68	100		100		1.68	
Short Open Dry	0.24		100	100			0.24
Riparian/Swamp	0.40	100		100		0.40	
Mangrove	0.78	100		100		0.78	
Caribbean Pine Plantations	0.52	100		100	100	0.52	
Other Species Plantation	0.59	100		100	100	0.59	
Disturbed Broadleaf Forest & Non-Forest Land Use	14.96		100	100			14.96
Non-Forest Land Use & Disturbed Broadleaf Forest	11.61	23.3	76.7	100		2.71	8.90
Total						**53.16**	**24.10**

For year 2005

Name	Volume (Mil. M^3)	FOREST %	Wooded area %	Total %	Commercial growing stock %	RESULT OF RECLASSIFICATION	
						Forest	Wooded area
Closed Broadleaf	16.72	100		100		16.72	
Disturbed Broadleaf	29.46	100		100		29.46	
Tall Open Dry	1.68	100		100		1.68	
Short Open Dry	0.24		100	100			0.24
Riparian/Swamp	0.36	100		100		0.36	
Mangrove	0.77	100		100		0.77	
Caribbean Pine Plantations	0.52	100		100	100	0.52	
Other Species Plantation	0.59	100		100	100	0.59	
Disturbed Broadleaf Forest & Non-Forest Land Use	14.91		100	100			14.91
Non-Forest Land Use & Disturbed Broadleaf Forest	11.61	23.7	76.3	100		2.75	8.86
Total						**52.85**	**24.01**

5.5 Data for National reporting table T5

FRA 2005 Categories	Volume (million cubic meters over bark)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Growing stock	54	53	53	24.	24	24
Commercial growing stock	1.19	1.11	1.11	NA	NA	NA

Specification of country threshold values	Unit	Value	Complementary information
1. Minimum diameter at breast height of trees included in Growing stock (X)	cm	10	All species
2. Minimum diameter at the top end of stem (Y) for calculation of Growing stock	cm	7	7cm for ***Pinus*** species and crown point for other species
3. Minimum diameter of branches included in Growing stock (W)	cm	7	
4. Minimum diameter at breast height of trees in Commercial growing stock (Z)	cm	10	
5. Volume refers to "Above ground" (AG) or "Above stump" (AS)	AG / AS	AG	
6. Have any of the above thresholds (points 1 to 4) changed since 1990	Yes/No	No	
7. If yes, then attach a separate note giving details of the change	Attachment		

5.6 Comments to National reporting table T5

6 Table T6 – Biomass stock

6.1 FRA 2005 Categories and definitions

Category	Definition
Above-ground biomass	All living biomass above the soil including stem, stump, branches, bark, seeds, and foliage.
Below-ground biomass	All living biomass of live roots. Fine roots of less than 2mm diameter are excluded because these often cannot be distinguished empirically from soil organic matter or litter.
Dead wood biomass	All non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots, and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country.

6.2 National data

6.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Camirand R. and Evelyn O.B., 2003**.** Forestry Department-Trees for Tomorrow Project. 2004. *National Forest Inventory Report 2003, Main Report and Appendices 1 to V*	H	Biomass stock	2003	

6.2.2 Classification and definitions

Not needed as classes correspond with FRA 2005 classes

6.2.3 Original data

Results of table number 5.

FRA 2005 Categories	Volume (million cubic meters over bark)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Growing stock	54	53	53	24.	24	24
Commercial growing stock	1.19	1.11	1.11	NA	NA	NA

6.3 Analysis and processing of national data

6.3.1 Calibration

Not needed

6.3.2 Estimation and forecasting

Name	Growing stock (Mil. t)	Aboveground living biomass (Mil. tonnes)	Root-Shoot Ratio	B.G biomass (Mil. tonnes)
Closed Broadleaf	17.09	15.57	0.24	3.74
Disturbed Broadleaf	28.91	28.68	0.24	6.88
Tall Open Dry	1.59	3.38	0.27	0.91
Riparian/Swamp	0.41	0.37	0.24	0.09
Mangrove	0.76	1.05	0.24	0.25
Caribbean Pine Plantations	0.51	0.54	0.23	0.12
Other Species Plantation	0.58	0.63	0.24	0.15
*Non-Forest Land Use & Disturbed Broadleaf Forest (26.5%)	2.91	4.57	0.24	1.10
Total Forest	**52.76**	**54.79**		**13.24**
Disturbed Broadleaf Forest & Non-Forest Land Use	15.53	20.54	0.24	4.93
**Non-Forest Land Use & Disturbed Broadleaf Forest (73.5%)	8.09	12.66	0.24	3.04
Short Open Dry	0.27	0.74	0.27	0.20
Total Wooded lands	**23.89**	**33.94**		**8.17**
Grand Total	**76.65**	**88.73**		**21.41**

Root-Shoot Ratios taken from Guidelines for Country Reporting To FRA 2005, Table 5.5 in Appendix 5
Below Ground biomass (B.G biomass) = Aboveground biomass * Root-Shoot Ratio
*Non-Forest Land Use & Disturbed Broadleaf Forest (26.5%) consists of Bamboo, and Bamboo and disturbed broadleaf (estimation and forecasting) in Table T1.
**Non-Forest Land Use & Disturbed Broadleaf Forest (73.5%) consists of Bamboo and fields, Bauxite and disturbed broadleaf, and Fields and disturbed broadleaf (estimation and forecasting) in Table T1
For Forest – WCF, agb = 54.79/ 52.76 = 1.0385; WCF, bgb = 13.24 / 52.76 = 0.2509
For Wooded lands – WCF, agb = 33.94 / 23.89 = 1.4207; WCF, bgb = 8.17 / 23.89 = 0.3419

FRA 2005 category	Volume (million m3 over bark)							
	Forest				Other wooded lands			
	Factor	1990	2000	2005	Factor	1990	2000	2005
Growing stock		53.72	53.16	52.85		24.29	24.10	24.01
- WCF,abg	1.0385				1.4207			
- WCF,bgb	0.2509				0.3419			
Above-ground living biomass		55.79	55.21	54.88		34.51	34.24	34.11
Below-ground living biomass		13.48	13.34	13.26		8.30	8.24	8.21
Total living biomass		**69.27**	**68.55**	**68.14**		**42.81**	**42.48**	**42.32**
Dead-live ratio	0.11							
Dead wood biomass		7.62	7.54	7.50		4.71	4.67	4.66
Total		**76.89**	**76.09**	**75.64**		**47.52**	**47.15**	**46.98**

Growing stock figures extracted from Table T5
Above ground living biomass = Growing stock * WCF, agb (factor)
Below ground living biomass = Growing stock * WCF, bgb (Factor)
Dead-live ratio (taken from Guidelines to Country Reporting to FRA2005, Appendix 5, Table5.6)
Dead wood biomass = Total living biomass * Dead live ratio

6.4 Reclassification into FRA 2005 classes

Not needed

6.5 Data for National reporting table T6

FRA 2005 Categories	Biomass (million metric tonnes oven-dry weight)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Above-ground biomass	56	55	55	35	34	34
Below-ground biomass	13	13	13	8	8	8
Dead wood biomass	8	8	8	5	5	5
TOTAL	**77**	**76**	**76**	**48**	**475**	**47**

Thresholds used by the country are the following:
Default threshold values of 2 mm for fine roots and 10 cm for dead wood are used.
DBH => 10cm (all trees)

6.6 Comments to National reporting table T6

The calculations of aboveground biomass of the trees (over-storey living biomass, not including roots, litter, dead wood and under-storey) per hectare were made following the methodology proposed by Brown (1997), which uses crown point volume over bark (stem volume over bark in this study) per hectare for the broadleaf species. For coniferous species (pines), the calculations are based on the total volume over bark per hectare.

The following equations were used in the calculations:

Aboveground living biomass (t/ha) = VOB * WD * BEF, where
VOB (Broadleaf species) = Crown point volume over bark, all trees with DBH => 10cm
VOB (Coniferous species) = Total volume over bark, all trees with DBH => 10cm
WD = Volume-weighted average wood density (t of oven-dry biomass per m3 greenvolume)
BEF = Biomass expansion factor (ratio of aboveground oven-dry biomass of trees to oven-dry biomass of inventoried volume)
For Coniferous species (*Pinus caribaea*): WD = 0.51 and BEF = 1.3
For Broadleaf species: WD = 0.6 and BEF = Exp (3.213 – 0.506 * Ln(VOB*WD))

The aboveground living biomass (over-storey living biomass, not including roots, litter, dead wood and under-storey) of the Jamaican forests is approximately 88.73 million metric tons. The weighted average biomass per hectare is 132.7 metric tons, ranging between 60.9 t/ha for the short open dry forest and 176.4 t/ha for the closed broadleaf forest.

The closed and disturbed broadleaf forest types constitute one half of the aboveground living biomass. The mixed forest types associated with other land use types, such as cultivation, pasture, bauxite, etc, represents 42.6% of the total aboveground living biomass. Since the latter land use types are mostly unprotected it is likely that the total aboveground living biomass for these land use types could decrease in the future. Only 22.9% of the total aboveground living biomass of Jamaican forests is located on lands with protection status.

SOURCE: Camirand R. and Evelyn O.B., 2003**.** Forestry Department-Trees for Tomorrow Project. 2004. *National Forest Inventory Report 2003, Main Report and Appendices 1 to V*

7 Table T7 – Carbon stock

7.1 FRA 2005 Categories and definitions

Category	Definition
Carbon in above-ground biomass	Carbon in all living biomass above the soil, including stem, stump, branches, bark, seeds, and foliage.
Carbon in below-ground biomass	Carbon in all living biomass of live roots. Fine roots of less than 2 mm diameter are excluded, because these often cannot be distinguished empirically from soil organic matter or litter.
Carbon in dead wood biomass	Carbon in all non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots, and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country.
Carbon in litter	Carbon in all non-living biomass with a diameter less than a minimum diameter chose by the country for lying dead (for example 10 cm), in various states of decomposition above the mineral or organic soil. This includes the litter, fumic, and humic layers.
Soil carbon	Organic carbon in mineral and organic soils (including peat) to a specified depth chosen by the country and applied consistently through the time series.

7.2 National data

7.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Camirand R. and Evelyn O.B., 2003**.** Forestry Department-Trees for Tomorrow Project. 2004. *National Forest Inventory Report 2003, Main Report and Appendices 1 to V*	H	Biomass stock	2003	

7.2.2 Classification and definitions

Not needed as classes correspond with FRA 2005 classes

7.2.3 Original data

FRA 2005 Categories	Biomass (million metric tonnes oven-dry weight)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Above-ground biomass	56	55	55	35	34	34
Below-ground biomass	13	13	13	8	8	8
Dead wood biomass	8	8	8	5	5	5
TOTAL	**77**	**76**	**76**	**48**	**47**	**47**

Extracted from 'Data for National reporting table T6'

7.3 Analysis and processing of national data

7.3.1 Calibration

Not needed

7.3.2 Estimation and forecasting

Carbon in living biomass and dead wood (Using data from Table T6)

FRA 2005 category	Biomass (million tonnes oven-dry weight)				Carbon stock (million tonnes)		
	Forest						
	1990	2000	2005	IPCC-GPG DEFAULT VALUE	1990	2000	2005
ABOVE-GROUND BIOMASS	55.79	55.21	54.88	50%	27.89	27.60	27.44
Below-ground biomass	13.48	13.34	13.26	50%	6.74	6.67	6.63
Total living biomass	**69.27**	**68.55**	**68.14**		**34.63**	**34.27**	**34.07**
Dead wood biomass	7.62	7.54	7.50	50%	3.81	3.77	3.75
Total	**76.89**	**76.09**	**75.64**		**38.44**	**38.04**	**37.82**
Other wooded land							
ABOVE-GROUND BIOMASS	34.51	34.24	34.11	50%	17.25	17.12	17.06
Below-ground biomass	8.30	8.24	8.21	50%	4.61	4.12	4.10
Total living biomass	**42.81**	**42.48**	**42.32**		**21.86**	**21.24**	**21.16**
Dead wood biomass	4.71	4.67	4.66	50%	2.35	2.34	2.33
Total	**47.52**	**47.15**	**46.98**		**24.21**	**23.58**	**23.49**

Carbon stock (million tonnes) = Biomass (million tonnes oven-dry weight * IPCC-GPG default value

Carbon stock in litter

Forest	IPCC-GPG default value (Tonnes c per ha.)	1990		2000		2005	
		'000 ha	Litter Carbon (Mil. tonnes)	'000 ha	Litte Carbon (Mil. tonnes)	'000 ha	Litter Carbon (Mil. tonnes)
Broadleaf	2.1	339.7	0.71	336.7	0.71	334.9	0.70
Carib pines	5.2	5.0	0.03	4.3	0.02	4.3	0.02
Total		344.7	**0.74**	341.0	**0.73**	339.2	**0.72**
Other wooded land							
BROADLEAF	2.1	190	**0.40**	188.8	**0.40**	188.1	**0.40**

Classification done by expert knowledge

IPP-GPG default value per hectare obtained from Guidelines for country reporting to FRA2005, Appendix 5 - Table 5.7

Litter carbon (Mil. tonnes) = '000 ha ***** IPCC-GPG default value (Tonnes c per ha.) / 1000

Soil Carbon calculations

Forest	IPCC-GPG default value (Tonnes c per ha. for 0-30 cm depth)	1990		2000		2005	
		'000 ha	Carbon Mil. tonnes	'000 ha	Carbon	'000 ha	Carbon
Tropical, wet, volcanic soils	130	88.9	11.56	88.3	11.48	88.0	11.44
Tropical, dry, volcanic soils	50	42.2	2.11	42.1	2.11	42.0	2.10
Tropical, moist, volcanic soils	70	201.4	14.10	198.7	13.91	197.6	13.83
Tropical, wetlands soils	86	12.2	1.05	11.9	1.02	11.6	1.00
Total		334.7	**28.82**	341.0	**28.52**	339.2	**28.37**
Other wooded land							
TROPICAL, MOIST, VOLCANIC SOILS	70	177.9	12.45	176.7	12.37	176.0	12.32
TROPICAL, DRY, VOLCANIC SOILS	50	12.1	0.61	12.1	0.61	12.1	0.61
TOTAL		190.0	**13.06**	188.8	**12.98**	188.1	**12.93**

Classification done by expert knowledge
IPP-GPG default value per hectare obtained from Guidelines for country reporting to FRA2005, Appendix 5 - Table 5.8
Carbon Mil. tonnes = '000 ha * IPCC-GPG default value (Tonnes c per ha. for 0-30 cm depth) / 1000

7.4 Reclassification into FRA 2005 classes

Not needed

7.5 Data for National reporting table T7

FRA 2005 Categories	Carbon (Million metric tonnes)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Carbon in above-ground biomass	28	28	27	19	19	19
Carbon in below-ground biomass	7	7	7	5	5	5
Sub-total: Carbon in living biomass	**35**	**34**	**34**	**24**	**24**	**24**
Carbon in dead wood	4	4	4	3	3	3
Carbon in litter	1	1	1	0.40	0.40	0.40
Sub-total: Carbon in dead wood and litter	**5**	**5**	**4**	**3**	**3**	**3**
Soil carbon to a depth of 30cm	29	29	28	13	13	13
TOTAL CARBON	**68**	**68**	**67**	**40**	**40**	**40**

Soil carbon depth = 30cm (default value)

7.6 Comments to National reporting table T7

All default values used are taken from Guidelines for Country Reporting to FRA 2005, Appendix 5.

8 Table T8 – Disturbances affecting health and vitality

8.1 FRA 2005 Categories and definitions

Category	Definition
Disturbance by fire	Disturbance caused by wildfire, independently whether it broke out inside or outside the forest/OWL.
Disturbance by insects	Disturbance caused by insect pests that are detrimental to tree health.
Disturbance by diseases	Disturbance caused by diseases attributable to pathogens, such as a bacteria, fungi, phytoplasma or virus.
Other disturbance	Disturbance caused by other factors than fire, insects or diseases.

8.2 National data

8.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Department, 2001. *National Forestry Management and Conservation Plan***.** Jamaica	H	Existing plantations	2001	Online at www.forestry.gov.jm

8.2.2 Classification and definitions

Not needed as classes correspond with FRA 2005 classes

8.2.3 Original data

In the year of 1988, a total of 6.1 thousand hectares were destroyed by hurricane Gilbert.

8.3 Analysis and processing of national data

Not needed

8.3.1 Estimation and forecasting

FRA 2005 request five years average, therefore the 6.1 thousand hectares were divided by 5 for the reporting year of 1990.

8.4 Reclassification into FRA 2005 classes

Not needed

8.5 Data for National reporting table T8

FRA-2005 Categories	Average annual area affected (1000 hectares)			
	Forests		Other wooded land	
	1990	2000	1990	2000
Disturbance by fire	0	0	0	0
Disturbance by insects	0	0	0	0
Disturbance by diseases	0	0	0	0
Other disturbance	1.22	0	I.D.	0

Other disturbance is disturbance by the effects of hurricane winds**.**

8.6 Comments to National reporting table T8

In the year 1990, two years after hurricane Gilbert passed over the island, an inventory was carried out on its effects on Jamaica's forests. The hurricane destroyed 6, 100 hectares of pine and hardwood plantations. Damages to the hardwoods were minimal in comparison to the pines. Assessment on the natural forests showed that damage was mainly to the crown cover. No inventory was carried on the wooded lands to determine the extent of the hurricane damage.

9 Table T9 – Diversity of tree species

9.1 FRA 2005 Categories and definitions

Category	Definition
Number of native tree species	The total number of native tree species that have been identified within the country.
Number of critically endangered tree species	The number of native tree species that are classified as "Critically endangered" in the IUCN red list.
Number of endangered tree species	The number of native tree species that are classified as "Endangered" in the IUCN red list.
Number of vulnerable tree species	The number of native tree species that are classified as "Vulnerable" in the IUCN red list.

9.2 National data

9.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Camirand R. and Evelyn O.B., 2003**.** Forestry Department-Trees for Tomorrow Project. 2004. *National Forest Inventory Report 2003, Main Report and Appendices 1 to V* (Appendix 111, group 8)	H	Threatened tree species	2000	Online at www.forestry.gov.jm
Adams, C.D. 1972. *Flowering plants of Jamaic***a.** University of the West Indies, Kingston, 848 p.	H		1972	
IUCN Red List for forest habitats				IUCN lisdting see website: http://www.fao.org/forestry/foris/webview/forestry2/index.jsp?siteId=5461

9.2.2 Classification and definitions

Not needed

9.2.3 Original data

IUCN list.

9.3 Analysis and processing of national data

9.4 Reclasification

9.5 Data for National reporting table T9

FRA 2005 Categories	Number of species (year 2000)
Native tree species	722
Critically endangered tree species	15
Endangered tree species	27
Vulnerable tree species	62

9.6 Comments to National reporting table T9

The number of national reported threatened tree species reported is 39, which include species listed on the Critically endangered tree species, Endangered tree species and the vulnerable tree species lists from the IUCN red listings.

Some species listed on the IUCN listings are classified as shrub or trees as they are able to attain the height to be classified as tree under certain conditions. The lists are attached as Appendices 1-3 at the end of the report.

GROUP 8 - THREATENED TREE SPECIES			
Code	**Local name**	**Scientific name**	**Family name**
066-01-04	Wild Sour Sop	Annona praetermissa	Annonaceae
180-25-01		Antirhea tomentosa	Rubiaceae
151-02-07		Ardisia urbanii	Myrsinaceae
105-01-02	Siboney	Bursera aromatica	Burseraceae
111-01-02		Buxus arborea	Buxaceae
094-06-04		Calliandra paniculata	Mimosaceae
139-02-02	Coco Plum of Troy	Cassipourea brittoniana	Rhizophoraceae
139-02-04		Cassipourea subcordata	Rhizophoraceae
069-02-01	Mountain Cinnamon, Red Canella	Cinnamodendron corticosum	Canellaceae
080-03-04		Clusia havetioides	Clusiaceae
054-04-02	Big Leaf Grape	Coccoloba proctorii	Polygonaceae
112-05-04		Comocladia cordata	Anacardiaceae
166-06-10		Cordia harrisii	Boraginaceae
166-06-09		Cordia troyana	Boraginaceae
145-03-10		Dendropanax filipes	Araliaceae
141-06-42		Eugenia kellyana	Myrtaceae
141-06-43		Eugenia laurae	Myrtaceae
183-45-09		Eupatorium critoniforme	Asteraceae
174-04-16		Gesneria alpina	Gesneriaceae
174-04-05		Gesneria calycina	Gesneriaceae
102-01-01	Lignum Vitae	Guaiacum officinale	Zygophyllaceae
154-01-01	Sapodilla, Sappa, Sapodilla Bullet	Manilkara excisa	Sapotaceae
154-05-02	Mastic	Mastichodendron floribundum	Sapotaceae
154-05-01	Mastic	Mastichodendron foetidissimum	Sapotaceae
095-01-01	Red Nickel, Bead Tree	Ormosia jamaicensis	Fabaceae
141-03-05		Pimenta obscura	Myrtaceae
141-03-06		Pimenta richardii	Myrtaceae
038-02-01	Black Jointer	Piper amalago	Piperaceae
180-09-16		Rondeletia portlandensis	Rubiaceae
180-09-03		Rondeletia subsessilifolia	Rubiaceae
174-05-02	Cow 's Tongue, Wild Search-me-Heart	Rytidophyllum grande	Gesneriaceae
103-02-03	Mountain Pride	Spathelia coccinea	Rutaceae
161-06-01	Gutterw ood	Strempeliopsis arborea	Apocynaceae
106-03-01	Jamaican Mahogany, West Indian Mahogany	Sw ietenia mahagoni	Meliaceae
140-05-03	White Olive, Olive	Terminalia arbuscula	Combretaceae
077-03-01		Ternstroemia calycina	Theaceae
077-03-06		Ternstroemia glomerata	Theaceae
179-03-02		Viburnum villosum	Caprifoliaceae
151-03-06	Bob Cock	Wallenia sylvestris	Myrsinaceae
Source:			
KELLY, D.L. 1988. *The threatened flowering plants of Jamaica* . Biological Conservation 46: 201-216.			
CITES. 2000. Online internet list for Jamaica.			

Camirand R. and Evelyn O.B. 2003. Forestry Department-Trees for Tomorrow Project. 2004. *National Forest Inventory Report 2003, Main Report and Appendices 1 to V* (Appendix 111, group 8), pp 79

10 Table T10 – Growing stock composition

10.1 FRA 2005 Categories and definitions

List of species names (scientific and common names) of the ten most common species.

10.2 National data

10.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Camirand R. and Evelyn O.B., 2003**.** Forestry Department-Trees for Tomorrow Project. 2004. *National Forest Inventory Report 2003, Main Report and Appendices 1 to V* (Appendix 1V)	H	Important tree species by forest type	2000	Online at www.forestry.gov.jm

10.2.2 Original data

Insuficient data to report.

10.3 Analysis and processing of national data

10.3.1 Calibration

Not needed

10.3.2 Estimation and forecasting

Not needed

10.4 Reclasification

10.5 Data for National reporting table T10

FRA 2005 Categories / Species name (Scientific name and common name)	Growing Stock in Forests (million cubic meters)	
	1990	2000
	ID	ID
TOTAL	ID	ID

10.6 Comments to National reporting table T10

A major problem of forest inventory in Jamaica, as in other tropical countries, is the identification of tree species. Except for the most common, tree species can only be accurately identified by a skilled botanist. As observed in the FD's inventories and the John Crow Mountains botanical surveys (Kelly and Dickinson 1985)[3], the common, local or native names used by the tree spotters to identify species are often difficult to correlate with the scientific or Latin names. The same common name is often applied to a group of tree species or to different species in different parts of Jamaica and inversely, different common names are

[3] Kelly, D.L. and Dickinson, T.A. 1985. *Local names for vascular plants in the John Crow Mountains, Jamaica.* Economic Botany 39(3): 346-362.

used to identify the same tree species in different forest regions. Adams (1972)[4] made an attempt to prioritise the most widely used common, local or native names reported where possible.

The most dominant tree species, represent 20.3% of the total volume by hectare with DBH =>10cm

[4] Adams, C.D. 1972. *Flowering plants of Jamaic*a. University of the West Indies, Kingston, 848 p.

11 Table T11 – Wood removal

11.1 FRA 2005 Categories and definitions

Category	Definition
Industrial wood removal	The wood removed (volume of roundwood over bark) for production of goods and services other than energy production (woodfuel).
Woodfuel removal	The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

11.2 National data

11.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Department, Jamaica. various regional reports	M	Cubic meters	2000 & 2004	

11.2.2 Classification and definitions

Not needed

11.2.3 Original data

	Year 2000	Year 2004
Hardwood (‘000 m3)	0.329	0.330
Pine (‘000 m3)	0.342	0.358
Total	**0.671**	**0.688**

Source: Forestry Department lumber sales reports for years as shown

11.3 Analysis and processing of national data

11.3.1 Estimation and forecasting

	(1000, cubic meters)			
	1990	2000	2004	2005
hardwood		0.329	0.330	0.331
pine		0.342	0.358	0.374
Total	**I.D**	**0.671**	**0.688**	**0.705**

For years 1990 no figures are availablle, for 2000 reported figures are actual for that year
For 2005, figures are arived at by linear progression using 2000 and 2004 actual figures
There is no information to report for five years average as requested.

11.4 Reclassification into FRA 2005 classes

Not needed

11.5 Data for National reporting table T11

FRA 2005 Categories	Volume in 1000 cubic meters of roundwood over bark		
	Forest and Other wooded land		
	1990	2000	2005
Industrial roundwood	I.D.	1	1
Woodfuel	I.D.	I.D.	I.D.
TOTAL for Country	**I.D.**	**1**	**1**

11.6 Comments to National reporting table T11

Roundwood removal

As little or no records are kept of removal from private lands on a national basic only removal from state owned forests and other wooded lands are reported for this exercise. Removal from state owned forests and other wooded lands were being undertaken by the Forest Industries Development Company (FIDCO) in 1990 and as such no reports are available by the Forestry Department.

Fuelwood removal

Fuelwood removal are not reported or recorded hence these figures are not available for reporting.

12 Table T12 – Value of wood removal

12.1 FRA 2005 Categories and definitions

Category	Definition
Value of industrial wood removal	Value of the wood removed for production of goods and services other than energy production (woodfuel).
Value of woodfuel removal	Value of the wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

12.2 National data

12.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Department, Jamaica. various regional reports	M	Cubic meters	2000 & 2004	
Bank of Jamaica	H	Exchange rate	2004	
Guidelines for Country Reporting to FRA 2005, Appendix 4	H	Exchange rates	2000	

12.2.2 Classification and definitions

Not needed

12.2.3 Original data

12.3 Analysis and processing of national data

12.3.1 Estimation and forecasting

	Wood removal '000 m^3		Rates (Ja$)	Cost (J$'000)		Exchange Rates (US$)		Cost (US$'000)	
	2000	2005		2000	2005	2000	2005	2000	2005
Hardwoods	0.329	0.331	6105.25	2008.63	2020.84				
Pines	0.342	0.374	3707.00	1267.79	1386.42	**45.41**	**61.48**	**72.15**	**55.42**
Total	**0.671**	**0.705**		**3276.42**	**3407.26**				

Wood removal '000 m3 obtained from table T11
Rates (Ja$) from Forestry Departments stumpage rates (Revised 2004)
Cost (J$) = Wood removal '000 m3 * Rates (Ja$)
Rates (US$) obtained from Guidelines for Country Reporting to FRA 2005, appendix 4, for year 2000, and Bank of Jamaica exchange rate, for 2004
Cost (US$) = Total Cost (J$) / Exchange Rates (US$)

12.4 Reclassification into FRA 2005 classes

Not needed

12.5 Data for National reporting table T12

FRA 2005 Categories	Value of roundwood removal (1000 USD)		
	Forest and Other wooded land		
	1990	2000	2005
Industrial roundwood	I.D.	72	55
Woodfuel	I.D.	I.D.	I.D.
TOTAL for Country	**I.D.**	**72**	**55**

12.6 Comments to National reporting table T12

13 Table T13 – Non-wood forest product removal

13.1 FRA 2005 Categories and definitions

The following categories of non-wood forest products have been defined:

Category
Plant products / raw material
1. Food
2. Fodder
3. Raw material for medicine and aromatic products
4. Raw material for colorants and dyes
5. Raw material for utensils, handicrafts & construction
6. Ornamental plants
7. Exudates
8. Other plant products
Animal products / raw material
9. Living animals
10. Hides, skins and trophies
11. Wild honey and bee-wax
12. Bush meat
13. Raw material for medicine
14. Raw material for colorants
15. Other edible animal products
16. Other non-edible animal products

13.2 National data

13.2.1 Data sources

References to sources of information	**Quality (H/M/L)**	**Variable(s)**	**Year(s)**	**Additional comments**
Forestry Department 2001, *National Forestry Management and Conservation Plan***.** Jamaica	H	Minor forest products	2000	See comments Online at www.forestry.gov.jm

13.2.2 Classification and definitions

Not needed

13.2.3 Original data

Not available

13.3 Analysis and processing of national data

13.3.1 Estimation and forecasting

13.4 Reclassification into FRA 2005 classes

Not needed

13.5 Data for National reporting table T13

FRA 2005 Categories	Scale factor	Unit	NWFP removal		
			1990	2000	2005
Plant products / raw material			ID		ID
1. Food			ID		ID
2. Fodder			ID		ID
3. Raw material for medicine and aromatic products			ID		ID
4. Raw material for colorants and dyes			ID		ID
5. Raw material for utensils, handicrafts & construction			ID		ID
6. Ornamental plants			ID		ID
7. Exudates			ID		ID
8. Other plant products			ID		ID
			ID		ID
Animal products / raw material			ID		ID
9. Living animals			ID		ID
10. Hides, skins and trophies			ID		ID
11. Wild honey and bee-wax			ID		ID
12. Bush meat			ID		ID
13. Raw material for medicine			ID		ID
14. Raw material for colorants			ID		ID
15. Other edible animal products			ID		ID
16. Other non-edible animal products			ID		ID

13.6 Comments to National reporting table T13

Plant material collected from the forest is used for a variety of purposes. The principal source of materials for making hats, bags, table-mats, etc., is Jippi jappa (*Carludovica palmata*). Bamboo and thatch are used most often for temporary construction. Strips from the Rose Apple (*Eugenia jambos*) are used to make baskets and hampers. Wicker is widely used in furniture making. The bark from the bastard cabbage tree is used to make rope to bundle agricultural produce and for lashing poles together in temporary construction. Fern root is collected for the horticultural sector for use as a growing medium, particularly in orchid production. Mahogany bark is still collected for use as a dye.

Many trees and other forest plants are used medicinally: for example, Chainy root is used in the making of restorative tonics, chewsticks are collected for cleaning teeth, nettle is steeped to make a drink rich in mineral salts and vitamins, and the extract of bitterwood bark is used as a liver tonic, for fevers and for eliminating round worm.

How much of these materials are removed from the forest is not known nor is there current information with respect to their relative social and economic importance. A survey (with quantity data) of the utilisation of minor forest products would provide valuable information for use in assessing forest management options.

14 Table T14 – Value of non-wood forest product removal

14.1 FRA 2005 Categories and definitions

The following categories of non-wood forest products have been defined:

Category
Plant products / raw material
1. Food
2. Fodder
3. Raw material for medicine and aromatic products
4. Raw material for colorants and dyes
5. Raw material for utensils, handicrafts & construction
6. Ornamental plants
7. Exudates
8. Other plant products
Animal products / raw material
9. Living animals
10. Hides, skins and trophies
11. Wild honey and bee-wax
12. Bush meat
13. Raw material for medicine
14. Raw material for colorants
15. Other edible animal products
16. Other non-edible animal products

14.2 National data

Data sources

Insufficient data.

Classification and definitions

Not needed

Original data

Insufficient data.

14.3 Analysis and processing of national data

Insufficient data.

14.4 Reclassification into FRA 2005 classes

14.5 Data for National reporting table T14

Insufficient data.

14.6 Comments to National reporting table T14

15 Table T15 – Employment in forestry

15.1 FRA 2005 Categories and definitions

Category	Definition
Primary production of goods	Employment in activities related to primary production of goods, like industrial roundwood, woodfuel and non-wood forest products.
Provision of services	Employment in activities directly related to services from forests and woodlands.
Unspecified forestry activities	Employment in unspecified forestry activities.

15.2 National data

15.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Forestry Department's (FD) accounting records, and projects coordinator	H	Employment figures	2000	
Forest Industries Development Company's (FIDCO) *'Appraisal and financial statements April 89-March 1990'*	H	Manpower numbers	1989-1990	Statement VIII
Jamaica Conservation Development Trust (JCDT)	H	Employment figures	2000	

15.2.2 Classification and definitions

Not needed

15.2.3 Original data

For year 1990

Employment	1989	1990
Staff (FD)		
Staff (FIDCO)	132	104
Total	**132**	**104**

For year 2000

Employment	1999	2000	2001	2002	Total	2000 average.
Projects (FD)	1131	1132	1132	1132	4527	1132
Staff (FD)	141	141	141	141	564	141
Staff (JCDT)	6	6	6	6	24	6
Total	**1278**	**1279**	**1279**	**1279**	**5115**	**1279**

15.3 Analysis and processing of national data

15.3.1 15.3.1 Estimation and forecasting

Not needed

15.4 Reclassification into FRA 2005 classes

National Catigory	FRA Category
Projects	Primary production of goods
Staff	Provision of services

15.5 Data for National reporting table T15

FRA 2005 Categories	Employment (1000 person-years)	
	1990	2000
Primary production of goods		1.13
Provision of services	0.12	0.147
Unspecified forestry activities		
TOTAL	**0.12**	**1.28**

15.6 Comments to National reporting table T15

The figures provided are for employment in state run projects on forest reserves and direct public sector employment in the forestry service and the Jamaica Conservation Depelopment Thrust's rangers' sevices.

The 1990 total is an avaerage for work performed by the Forest Industries Development Company between 1989 and 1990. This Company was a government owned company involved in both plantation development and commercial timber production.

The 2000 total is an avaerage for work performed by the FD and the JCDT between 1999 and 2003.

16. Thematic reporting tables

If countries would like to submit additional reporting tables, these should be included here. (See the chapter on thematic reporting in the Guidelines for Country Reporting).

17. APPENDICES

Appendix 1: Critically Endangered Tree Species

[Scientific Name]	Common Name(s)	Red List
Antirhea tomentosa		CR B1+2c ver 2.3 (1994)
Calyptranthes acutissima		CR B1+2c ver 2.3 (1994)
Cassipourea subsessilis		CR B1+2c ver 2.3 (1994)
Comocladia parvifoliola		CR B1+2c ver 2.3 (1994)
Dendropanax cordifolius		CR B1+2c ver 2.3 (1994)
Dendropanax grandiflorus		CR B1+2c ver 2.3 (1994)
Dendropanax grandis		CR B1+2c ver 2.3 (1994)
Eugenia polypora		CR B1+2c ver 2.3 (1994)
Eugenia rendlei		CR B1+2c ver 2.3 (1994)
Ilex subtriflora		CR B1+2c ver 2.3 (1994)
Ouratea elegans		CR D ver 2.3 (1994)
Psychotria danceri		CR B1+2c ver 2.3 (1994)
Spathelia coccinea		CR B1+2c ver 2.3 (1994)
Ternstroemia glomerata		CR D ver 2.3 (1994)
Ternstroemia granulata		CR B1+2c ver 2.3 (1994)

Appendix 2: Endangered Tree Species

[Scientific Name]	Common Name(s)	Red List
Bursera hollickii		EN B1+2c ver 2.3 (1994)
Calyptranthes discolor		EN B1+2c ver 2.3 (1994)
Cassipourea brittoniana		EN B1+2c ver 2.3 (1994)
Coccoloba proctorii		EN B1+2c ver 2.3 (1994)
Eugenia acutisepala		EN B1+2c ver 2.3 (1994)
Eugenia eperforata		EN B1+2c ver 2.3 (1994)
Eugenia pycnoneura		EN B1+2c ver 2.3 (1994)
Guaiacum officinale	COMMONER LIGNUM VITAE (E) GUAIAC TREE (E) GUAYACÁN (S) PALO DE VIDA (S) PALO SANTO (S)	EN C2a ver 2.3 (1994)
Ilex jamaicana		EN B1+2c ver 2.3 (1994)
Manilkara excisa		EN B1+2c ver 2.3 (1994)
Ormosia jamaicensis		EN B1+2c ver 2.3 (1994)
Phialanthus jamaicensis		EN B1+2c ver 2.3 (1994)
Phialanthus revolutus		EN B1+2c ver 2.3 (1994)
Phyllanthus axillaris		EN B1+2c ver 2.3 (1994)
Pimenta richardii		EN B1+2c ver 2.3 (1994)
Psychotria clarendonensis		EN B1+2c ver 2.3 (1994)
Psychotria clusioides		EN B1+2c ver 2.3 (1994)
Rhamnidium dictyophyllum		EN B1+2c ver 2.3 (1994)
Rondeletia amplexicaulis		EN B1+2c ver 2.3 (1994)
Rondeletia dolphinensis		EN B1+2c ver 2.3 (1994)
Swietenia mahagoni	AMERICAN MAHOGANY (E) CUBAN MAHOGANY (E) SMALL-LEAVED MAHOGANY (E) WEST INDIAN MAHOGANY (E) ACAJOU (F) MAHOGANI DE SAINT-DOMINIQUE (F) MAHOGANI PETITES FEUILLES (F) CAOBA (S) COABILLA (S)	EN A1cd ver 2.3 (1994)
Tabernaemontana ovalifolia		EN B1+2c ver 2.3 (1994)
Terminalia arbuscula	WHITE OLIVE (E)	EN B1+2c ver 2.3 (1994)
Ternstroemia calycina		EN B1+2c ver 2.3 (1994)
Tetrasiphon jamaicensis		EN B1+2c ver 2.3 (1994)
Tetrazygia albicans		EN B1+2c ver 2.3 (1994)
Zanthoxylum negrilense		EN B1+2c ver 2.3 (1994)

Appendix 3: Vulnerable Tree Species

[Scientific Name]	Common Name(s)	Red List
Allophylus pachyphyllus		VU B1+2c ver 2.3 (1994)
Alvaradoa jamaicensis		VU B1+2c ver 2.3 (1994)
Annona praetermissa	WILD SOUR SOP (E)	VU B1+2c ver 2.3 (1994)
Ardisia urbanii		VU B1+2c ver 2.3 (1994)
Auerodendron jamaicense		VU B1+2c ver 2.3 (1994)
Bactris jamaicana	PRICKLY POLE (E)	VU A2c ver 2.3 (1994)
Brunfelsia jamaicensis		VU B1+2c ver 2.3 (1994)
Brunfelsia splendida		VU B1+2c ver 2.3 (1994)
Bunchosia jamaicensis		VU B1+2c ver 2.3 (1994)
Bursera aromatica		VU B1+2c ver 2.3 (1994)
Buxus arborea		VU B1+2c ver 2.3 (1994)
Calliandra comosa		VU D2 ver 2.3 (1994)
Calyptranthes nodosa		VU B1+2c ver 2.3 (1994)
Cedrela odorata	CIGAR-BOX WOOD (E) RED CEDAR (E) SPANISH CEDAR (E) ACAJOU ROUGE (F) ACAJOU-BOIS (F) CEDRAT (F) CEDRO ROJO (S)	VU A1cd+2cd ver 2.3 (1994)
Chionanthus jamaicensis		VU B1+2c ver 2.3 (1994)
Cinnamodendron corticosum		VU B1+2c ver 2.3 (1994)
Clusia portlandiana		VU B1+2c ver 2.3 (1994)
Coccoloba troyana		VU B1+2c ver 2.3 (1994)
Colubrina obscura		VU B1+2c ver 2.3 (1994)
Comocladia cordata		VU B1+2c ver 2.3 (1994)
Cordia troyana		VU B1+2c ver 2.3 (1994)
Dendropanax blakeanus		VU B1+2c ver 2.3 (1994)
Dendropanax ovalifolius		VU B1+2c ver 2.3 (1994)
Erithalis quadrangularis		VU B1+2c ver 2.3 (1994)
Erythroxylum incrassatum		VU B1+2c ver 2.3 (1994)
Eugenia brachythrix		VU B1+2c ver 2.3 (1994)
Eugenia schulziana		VU B1+2c ver 2.3 (1994)
Exostema triflorum		VU B1+2c ver 2.3 (1994)
Garcinia decussata		VU B1+2c ver 2.3 (1994)
Grimmeodendron jamaicense		VU B1+2c ver 2.3 (1994)
Guarea jamaicensis		VU B1+2c ver 2.3 (1994)
Guettarda frangulifolia		VU B1+2c ver 2.3 (1994)
Hyeronima jamaicensis		VU B1+2c ver 2.3 (1994)
Ilex florifera		VU B1+2c ver 2.3 (1994)
Ilex puberula		VU B1+2c ver 2.3 (1994)
Ilex vaccinoides		VU B1+2c ver 2.3 (1994)
Lasiocroton fawcettii		VU B1+2c ver 2.3 (1994)
Lasiocroton harrisii		VU B1+2c ver 2.3 (1994)
Lunania polydactyla		VU B1+2c ver 2.3 (1994)
Lunania racemosa		VU B1+2c ver 2.3 (1994)
Mappia racemosa		VU A1cd ver 2.3 (1994)
Ocotea robertsoniae		VU B1+2c ver 2.3 (1994)
Phyllanthus cauliflorus		VU B1+2c ver 2.3 (1994)
Pimenta obscura	WILD PIMENTO (E)	VU B1+2c ver 2.3 (1994)
Portlandia harrisii		VU B1+2c ver 2.3 (1994)
Psychotria domatiata		VU B1+2c ver 2.3 (1994)
Psychotria foetens		VU B1+2c ver 2.3 (1994)
Rondeletia pallida		VU B1+2c ver 2.3 (1994)
Rondeletia portlandensis		VU B1+2c ver 2.3 (1994)
Rondeletia racemosa		VU B1+2c ver 2.3 (1994)
Samyda glabrata		VU B1+2c ver 2.3 (1994)

Schefflera troyana		VU B1+2c	ver 2.3 (1994)
Schoepfia harrisii		VU B1+2c	ver 2.3 (1994)
Strempeliopsis arborea		VU B1+2c	ver 2.3 (1994)
Symplocos tubulifera		VU B1+2c	ver 2.3 (1994)
Tabernaemontana ochroleuca		VU B1+2c	ver 2.3 (1994)
Viburnum arboreum		VU B1+2c	ver 2.3 (1994)
Wallenia erythrocarpa		VU B1+2c	ver 2.3 (1994)
Wallenia sylvestris		VU B1+2c	ver 2.3 (1994)
Zanthoxylum flavum	WEST INDIAN SATINWOOD (E) YELLOW SANDERS (E) YELLOW-HEAD (E) YELLOWHEART (E) BOIS NOYER (F) ESPINILLO (S)	VU A1c	ver 2.3 (1994)
Zanthoxylum harrisii		VU B1+2c	ver 2.3 (1994)
Zanthoxylum hartii		VU B1+2c	ver 2.3 (1994)

Appendix IV: 10 most important tree species by forest type

Forest Type	Species	SU	N	BA	RF	DE	DO	IVI
Closed broadleaf forest (PF)	Xylopia muricata	25	208	4.19	3.36	8.74	5.22	17.33
	Clethra occidentalis	21	174	5.39	2.83	7.31	6.72	16.85
	Eugenia spp.	40	169	3.38	5.38	7.10	4.22	16.70
	Nectandra spp.	33	143	3.65	4.44	6.01	4.55	14.99
	Alchornea latifolia	20	120	3.22	2.69	5.04	4.01	11.74
	Cupania glabra	12	78	2.74	1.62	3.28	3.41	8.30
	Oreopanax capitatus	20	72	2.02	2.69	3.02	2.52	8.23
	Cecropia peltata	22	68	1.72	2.96	2.86	2.14	7.96
	Ocotea martinicensis	16	64	1.90	2.15	2.69	2.37	7.21
	Manilkara excisa	10	19	3.76	1.35	0.80	4.69	6.83
	Subtotal	219	1115	31.97	29.48	46.83	39.85	116.15
	Remaining 124 species	524	1266	48.27	70.52	53.17	60.15	183.85
	Total	743	2381	80.24	100	100	100	300
Disturbed broadleaf forest (SF)	Cecropia peltata	82	337	9.04	3.71	5.79	4.66	14.15
	Nectandra spp.	70	289	8.25	3.16	4.96	4.25	12.38
	Brosimum alicastrum	41	157	12.17	1.85	2.70	6.28	10.82
	Eugenia spp.	68	235	4.51	3.07	4.03	2.33	9.43
	Alchornea latifolia	60	162	5.26	2.71	2.78	2.71	8.21
	Xylopia muricata	47	187	4.33	2.12	3.21	2.23	7.57
	Calophyllum calaba	37	131	7.06	1.67	2.25	3.64	7.56
	Oreopanax capitatus	57	157	4.24	2.58	2.70	2.18	7.46
	Amyris balsamifera	36	174	5.02	1.63	2.99	2.59	7.20
	Clethra occidentalis	24	150	5.36	1.08	2.58	2.76	6.42
	Subtotal	522	1979	65.24	23.59	33.97	33.63	91.19
	Remaining 217 species	1691	3846	128.74	76.41	66.03	66.37	208.81
	Total	2213	5825	193.99	100	100	100	300
Non-forest land use and Disturbed broadleaf forest (CS)	Syzygium jambos	2	29	0.87	3.57	18.47	16.56	38.60
	Artocarpus altilis	3	10	0.60	5.36	6.37	11.48	23.21
	Cedrela odorata	2	11	0.57	3.57	7.01	10.89	21.47
	Cecropia peltata	4	8	0.18	7.14	5.10	3.49	15.72
	Mangifera indica	2	3	0.51	3.57	1.91	9.69	15.18
	Spathodea campanulata	3	4	0.25	5.36	2.55	4.74	12.65
	Simarouba glauca	3	8	0.11	5.36	5.10	2.11	12.57
	Ocotea martinicensis	1	8	0.11	1.79	5.10	2.06	8.94
	Pimenta dioica	2	5	0.10	3.57	3.18	1.90	8.66
	Eugenia spp.	1	7	0.07	1.79	4.46	1.41	7.65
	Subtotal	23	93	3.39	41.07	59.24	64.34	164.64
	Remaining 31 species	33	64	1.88	58.93	40.76	35.66	135.36
	Total	56	157	5.27	100	100	100	300
Disturbed broadleaf forest and Non-forest land use (SC)	Syzygium jambos	10	63	1.43	4.98	12.02	8.94	25.93
	Mangifera indica	7	25	2.06	3.48	4.77	12.91	21.16
	Cecropia peltata	7	26	1.12	3.48	4.96	7.00	15.44
	Andira inermis	9	23	0.52	4.48	4.39	3.28	12.15
	Eugenia spp.	6	24	0.32	2.99	4.58	2.02	9.59
	Nectandra spp.	8	14	0.40	3.98	2.67	2.50	9.16
	Alchornea latifolia	6	14	0.52	2.99	2.67	3.28	8.94
	Spathodea campanulata	6	11	0.48	2.99	2.10	2.99	8.08
	Matayba apetala	7	16	0.24	3.48	3.05	1.50	8.04
	Adenanthera pavonina	2	23	0.42	1.00	4.39	2.63	8.01
	Subtotal	68	239	7.52	33.83	45.61	47.06	126.50
	Remaining 74 species	133	285	8.46	66.17	54.39	52.94	173.50
	Total	201	524	15.97	100	100	100	300

SU = Number of sample units in which species occurred; N = Number of individuals;
BA = Basal area (m^2); RF = Relative frequency; DE = Relative density;
DO = Relative dominance; IVI = Importance value index (RF + DE + DO).

Forest Type	Species	SU	N	BA	RF	DE	DO	IVI
Short open dry forest (SL)	Prosopis juliflora	6	29	0.39	13.64	25.22	13.08	51.93
	Melicoccus bijugatus	2	13	0.37	4.55	11.30	12.46	28.31
	Bursera simaruba	4	6	0.28	9.09	5.22	9.64	23.95
	Mangifera indica	2	4	0.43	4.55	3.48	14.49	22.51
	Guazuma ulmifofia	3	11	0.13	6.82	9.57	4.28	20.67
	Spondias mombin	1	1	0.31	2.27	0.87	10.58	13.72
	Cordia gerascanthus	2	5	0.09	4.55	4.35	3.10	12.00
	Tabebuia heterophylla	1	5	0.13	2.27	4.35	4.41	11.03
	Peltophorum linnaei	1	4	0.11	2.27	3.48	3.58	9.33
	Coccoloba spp.	2	3	0.06	4.55	2.61	1.97	9.13
	Subtotal	24	81	2.29	54.55	70.43	77.61	202.59
	Remaining 18 species	20	34	0.66	45.45	29.57	22.39	97.41
	Total	44	115	2.95	100	100	100	300
Tall open dry forest (WL)	Bursera simaruba	52	136	4.25	13.13	13.88	19.09	46.10
	Metopium brownii	33	124	3.31	8.33	12.65	14.85	35.84
	Tabebuia heterophylla	17	84	2.10	4.29	8.57	9.45	22.31
	Haematoxylum campechianum	17	70	1.58	4.29	7.14	7.10	18.53
	Piscidia piscipula	21	60	1.13	5.30	6.12	5.05	16.48
	Thrinax parviflora	26	65	0.65	6.57	6.63	2.91	16.10
	Coccoloba spp.	18	45	0.95	4.55	4.59	4.24	13.38
	Neea nigricans	15	27	0.93	3.79	2.76	4.16	10.70
	Pouteria multiflora	8	24	0.61	2.02	2.45	2.76	7.22
	Eugenia maleolens	6	22	0.31	1.52	2.24	1.41	5.17
	Subtotal	213	657	15.81	53.79	67.04	71.00	191.83
	Remaining 77 species	183	323	6.46	46.21	32.96	29.00	108.17
	Total	396	980	22.27	100	100	100	300
Mangrove forest (MG)	Rhizophora mangle	22	294	9.78	40.74	49.41	60.26	150.42
	Avicennia germinans	14	122	2.75	25.93	20.50	16.94	63.37
	Laguncularia racemosa	10	123	2.55	18.52	20.67	15.69	54.88
	Conocarpus erectus	3	22	0.26	5.56	3.70	1.61	10.86
	Casuarina equisetifolia	1	20	0.50	1.85	3.36	3.07	8.28
	Terminalia catappa	2	11	0.30	3.70	1.85	1.84	7.39
	Ficus spp.	1	2	0.09	1.85	0.34	0.53	2.72
	Unknown / Unidentified	1	1	0.01	1.85	0.17	0.06	2.08
	Subtotal	54	595	16.24	100	100	100	300
	Remaining 0 species	0	0	0	0	0	0	0
	Total	54	595	16.236	100	100	100	300
Riparian / Swamp forest (SW)	Roystonea princeps	18	191	11.13	7.29	19.31	27.95	54.55
	Haematoxylum campechianum	18	161	4.03	7.29	16.28	10.13	33.70
	Guazuma ulmifofia	13	71	2.27	5.26	7.18	5.71	18.15
	Ficus spp.	11	27	3.90	4.45	2.73	9.79	16.97
	Ehretia tinifolia	4	83	1.24	1.62	8.39	3.10	13.12
	Samanea saman	8	18	2.91	3.24	1.82	7.31	12.37
	Nectandra spp.	7	56	1.26	2.83	5.66	3.15	11.65
	Piscidia piscipula	8	35	0.68	3.24	3.54	1.71	8.49
	Andira inermis	9	19	0.45	3.64	1.92	1.12	6.68
	Zanthoxylum martinicensis	7	22	0.63	2.83	2.22	1.58	6.64
	Subtotal	103	683	28.50	41.70	69.06	71.56	182.32
	Remaining 66 species	144	306	11.33	58.30	30.94	28.44	117.68
	Total	247	989	39.83	100	100	100	300

SU = Number of sample units in which species occurred; N = Number of individuals;
BA = Basal area (m^2); RF = Relative frequency; DE = Relative density;
DO = Relative dominance; IVI = Importance value index (RF + DE + DO).

Forest Type	Species	SU	N	BA	RF	DE	DO	IVI
Other species plantation (HP)	Hibiscus elatus	16	232	9.35	9.41	28.82	32.38	70.61
	Swietenia macrophylla	10	154	6.23	5.88	19.13	21.57	46.58
	Eucalyptus saligna	6	83	3.83	3.53	10.31	13.28	27.12
	Pinus caribaea	9	64	1.60	5.29	7.95	5.55	18.80
	Eucalyptus robusta	5	55	1.78	2.94	6.83	6.15	15.93
	Nectandra spp.	8	25	0.62	4.71	3.11	2.16	9.97
	Terminalia latifolia	8	20	0.51	4.71	2.48	1.76	8.95
	Cecropia peltata	7	12	0.38	4.12	1.49	1.33	6.94
	Oreopanax capitatus	6	8	0.12	3.53	0.99	0.41	4.93
	Alchornea latifolia	5	7	0.18	2.94	0.87	0.64	4.45
	Subtotal	80	660	24.61	47.06	81.99	85.23	214.28
	Remaining 53 species	90	145	4.26	52.94	18.01	14.77	85.72
	Total	170	805	28.88	100	100	100	300
Caribbean pine plantation (PP)	Pinus caribaea	99	2194	98.46	27.65	75.09	85.58	188.32
	Cecropia peltata	35	131	3.36	9.78	4.48	2.92	17.18
	Miconia spp.	23	67	0.77	6.42	2.29	0.67	9.39
	Nectandra spp.	15	62	1.03	4.19	2.12	0.90	7.21
	Alchornea latifolia	15	42	0.90	4.19	1.44	0.78	6.41
	Hibiscus elatus	11	34	0.93	3.07	1.16	0.81	5.04
	Brunellia comocladiifolia	10	44	0.69	2.79	1.51	0.60	4.90
	Clethra occidentalis	10	26	0.53	2.79	0.89	0.46	4.15
	Eucalyptus saligna	5	28	1.36	1.40	0.96	1.18	3.54
	Eugenia spp.	8	12	0.32	2.23	0.41	0.28	2.92
	Subtotal	231	2640	108.34	64.53	90.35	94.17	249.05
	Remaining 50 species	127	282	6.70	35.47	9.65	5.83	50.95
	Total	358	2922	115.04	100	100	100	300

SU = Number of sample units in which species occurred; N = Number of individuals;
BA = Basal area (m^2); RF = Relative frequency; DE = Relative density;
DO = Relative dominance; IVI = Importance value index (RF + DE + DO).