Forestry Department
Food and Agriculture Organization of the United Nations

GLOBAL FOREST RESOURCES ASSESSMENT

COUNTRY REPORTS

UNITED STATES OF AMERICA

FRA2005/040
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The Forest Resources Assessment Programme

Sustainably managed forests have multiple environmental and socio-economic functions important at the global, national and local scales, and play a vital part in sustainable development. Reliable and up-to-date information on the state of forest resources - not only on area and area change, but also on such variables as growing stock, wood and non-wood products, carbon, protected areas, use of forests for recreation and other services, biological diversity and forests' contribution to national economies - is crucial to support decision-making for policies and programmes in forestry and sustainable development at all levels.

FAO, at the request of its member countries, regularly monitors the world's forests and their management and uses through the Forest Resources Assessment Programme. This country report forms part of the Global Forest Resources Assessment 2005 (FRA 2005), which is the most comprehensive assessment to date. More than 800 people have been involved, including 172 national correspondents and their colleagues, an Advisory Group, international experts, FAO staff, consultants and volunteers. Information has been collated from 229 countries and territories for three points in time: 1990, 2000 and 2005.

The reporting framework for FRA 2005 is based on the thematic elements of sustainable forest management acknowledged in intergovernmental forest-related fora and includes more than 40 variables related to the extent, condition, uses and values of forest resources. More information on the FRA 2005 process and the results - including all the country reports - is available on the FRA 2005 Web site (www.fao.org/forestry/fra2005).

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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

This report refers to RPA as a data source. RPA stands for the Resources Planning Act of 1974 (U.S. Public Law 93-378) which mandates periodic resource assessments which are *"to make and keep current a comprehensive survey and analysis of the present and prospective conditions of and requirements for the renewable resources of the forest and range lands of the United States, its territories and possessions, and of the supplies of such renewable resources, including a determination of the present and potential productivity of the land, and of such other facts as may be necessary and useful in the determination of ways and means needed to balance the demand for and supply of these renewable resources, benefits and uses in meeting the needs of the people of the United States."*

1.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year	Additional comments
Smith, W. Brad; Miles, Patrick L.; Vissage, John S.; Pugh, Scott. 2004. Forest Resources of the United States, 2002. Gen. Tech. Rep. NC-241. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 141 p.	H	Forest land Other land	2002	Forest area data from the referenced U.S. report, Table 3. U.S. data compiled in this report for 1987, 1997, and 2002 were used for 1990, 2000, and 2005 U.S. national assessment analysis and will represent 1990, 2000, and 2005 FRA assessment data as well to be consistent with national procedures.
Department of Commerce, Bureau of the Census (http://www.census.gov)	H	Land and water area	2000	FAOSTAT data will be used in lieu of U.S. Census data for this report for land and inland water totals.

Tiger files from Department of Commerce, Bureau of the Census (http://www.census.gov/geo/www/ua/ua_bdfile.html)	H	Urban areas	2000	Data for delineating urban areas in the U.S. derived by merging urban census tracts with U.S. forest cover map.

1.2.2 Classification and definitions

National class	Definition
Forest land	Land at least 10% stocked by forest trees of any size, including land that formerly had such tree cover and that will be naturally or artificially regenerated. Forest land includes transition zones, such as areas between heavily forested and nonforested lands that are at least 10% stocked with forest trees and forest areas adjacent to urban and built-up lands. Also included are pinyon-juniper and chaparral areas in the West and afforested areas. The minimum area for classification of forest land is 0.4 hectare. Roadside, streamside, and shelterbelt strips of timber must have a crown width of at least 37 meters to qualify as forest land. Unimproved roads and trails, streams, and clearings in forest areas are classified as forest if less than 37 meters wide.
Other land	Land that has never supported forests and lands formerly forested where use of forest management is precluded by development for other uses. (Note: This includes area used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, powerline clearings of any width, and 0.4- to 1.8-hectare areas of water or streams, sloughs, estuaries, and canals between 37 and 61 meters wide classified by the Bureau of the Census as land. If intermingled in forest areas, unimproved roads and nonforest strips must be more than 37 meters wide, and clearings, etc., more than 0.4 hectare, to qualify as nonforest land.)
Inland water (Census water)	Streams, sloughs, estuaries, and canals more than 60 meters wide; and lakes, reservoirs, and ponds more than 1.8 hectares in size.
Other wooded land	Not currently available. Previous unproductive forest data reported in this category meets FAO forest definition but was reported as "other wooded land" due to lack of inventory data.
Other land with tree cover (Subordinated to "Other land")	Currently included in "Other land" Other land with trees has not been previously estimated and includes urban land with trees, farm/pastureland with trees, wooded strips, windbreaks, shelterbelts, and other unclassified land with trees.

1.2.3 Original data

Forest area of the United States by land class, 1987, 1997, 2002

Land class	1987	1997	2002	1987	1997	2002	
	000 acres			*000 hectares*			
Forest	737,950	746,958	748,923	298,648	302,294	303,089	RPA Table 1
Of which:							
Private	*424,950*	*430,213*	*429,762*	*171,977*	*174,107*	*173,925*	RPA Table 2
Public	*313,000*	*316,745*	*319,161*	*126,671*	*128,187*	*129,164*	RPA Table 2
Other wooded land	ID	ID	ID	ID	ID	ID	
Other land	1,525,198	1,516,190	1,514,225	617,248	613,602	612,807	Balance
...of which with tree cover	*0*	*81,292*	*81,292*	*0*	*32,899*	*32,899*	FIADB
Inland water bodies	116,168	116,168	116,168	47,013	47,013	47,013	FAOSTAT
Total for country	2,379,316	2,379,316	2,379,316	962,909	962,909	962,909	FAOSTAT

ID= Insufficient data *Conversion factor for hectares is acres x 0.4047*

Other land with trees estimates

Land class	*000 ha*	*000 ac*
Urban with trees (UA)[1]	11,921	29,456
Farm and pastureland with trees	4,676	11,554
Shelterbelts, strips, windbreaks, rights-of-way	2,008	4,963
Other land with trees	14,294	35,320
Total other land with trees	**32,899**	**81,293**

[1]An urbanized area (UA) consists of densely settled territory that contains 50,000 or more people.

1.3 Analysis and processing of national data

1.3.1 Calibration

Total land and inland water data are aligned with FAOSTAT data.

1.3.2 Estimation and forecasting

U.S. forest inventory data for 1987, 1997, and 2002 were compiled for 1990, 2000, and 2005 U.S. national assessment analysis and will represent 1990, 2000, and 2005 FRA assessment data as well to be consistent with national procedures. No forecasting is used in this report for forest area.

1.4 Reclassification into FRA 2005 classes

Historically, the United States reported the area of unproductive forest (not capable of producing 1.4 cubic meters per year of average growth at culmination of mean annual increment) as "other wooded land". The reason for this was that until recently U.S. forest inventories did not have field data for these areas and chose not to confuse these data with areas for which volume estimates were available. New inventory data now allows these lands to be included in the "forest" category. This will significantly increase the area reported as "forest" for 1990 and 2000 but makes the figures consistent with national reporting of forest area. This area currently comprises approximately 22% of all U.S. forest. Users of older FAO data reports should combine "forest" and "other wooded land" categories to determine comparable historic figures for U.S. forest area.

Other land with trees has not been previously estimated and includes urban land with trees, farm/pastureland with trees, wooded strips, windbreaks, shelterbelts, and other unclassified land with trees.

1.5 Data for National reporting table T1

FRA 2005 Categories	Area (1000 hectares)		
	1990	2000	2005
Forest	298,648	302,294	303,089
Other wooded land	ID	ID	ID
Other land	617,248	613,602	612,807
...of which with tree cover [1)]	ID	32,899	32,899
Inland water bodies	47,013	47,013	47,013
TOTAL	**962,909**	**962,909**	**962,909**

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

Readers are advised that the numbers presented here for "forest" more accurately reflect data presented in national reports for the United States and should combine "forest" and "other wooded land" categories in previous FAO reports to determine comparable figures for U.S. forest area. The new data in this report bring global reporting for the United States into compliance with national reporting of forest area.

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
Smith, W. Brad; Miles, Patrick L.; Vissage, John S.; Pugh, Scott. 2004. Forest Resources of the United States, 2002. Gen. Tech. Rep. NC-241. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 141 p.	H	Ownership	2002	This data is used directly to represent 2005 in the FRA report. U.S. data compiled in this report for 1987, 1997, and 2002 were used for 1990, 2000, and 2005 U.S. national assessment analysis and will represent 1990, 2000, and 2005 FRA assessment data as well to be consistent with national procedures.
Smith, W. Brad; Vissage, John L.; Darr, David R.; Sheffield, Raymond M. 2002. Forest Statistics of the United States, 1997. METRIC UNITS Gen. Tech. Rep NC-222. St. Paul, MN: USDA Forest Service North Central Forest Experiment Station. 191p.	H	Ownership	1997	This data is used directly to represent 2000 in the FRA report.
Waddell, Karen L., Oswald, Daniel D., and Powell, Douglas S. 1989. Forest statistics of the United States, 1987. Resour. Bull. PNW-RB-168. Portland, OR: U.S. Department of Agriculture, Pacific Northwest Research Station. 106 p.	H	Ownership	1987	This data is used directly to represent 1990 in the FRA report. However, a reporting error in data for National Forests in OR and WA, and forest in west TX increased the total forest area above reported value.

2.2.2 Classification and definitions

National class	Definition
Ownership	The property owned by one ownership unit, including all parcels of land in the United States.
Private ownership	An ownership group that includes family and individual as well as all Forest Industry, Nonindustrial Private, and Native American lands.
Public ownership	An ownership group that includes all Federal, State, County, and Municipal lands.

2.2.3 Original data

Forest area of the United States by land class and owner, 1987, 1997, 2002

Land class	1987	1997	2002	1987	1997	2002	
	000 acres			*000 hectares*			
Forest	737,950	746,958	748,923	298,648	302,294	303,089	RPA Table 1
Of which:							
Private	*424,950*	*430,213*	*429,762*	*171,977*	*174,107*	*173,925*	RPA Table 2
Public	*313,000*	*316,745*	*319,161*	*126,671*	*128,187*	*129,164*	RPA Table 2
Other wooded land	ID	ID	ID	ID	ID	ID	
Other land	1,525,198	1,516,190	1,514,225	617,248	613,602	612,807	Balance
...of which with tree cover	*0*	*81,292*	*81,292*	*0*	*32,899*	*32,899*	FIADB
Inland water bodies	116,168	116,168	116,168	47,013	47,013	47,013	FAOSTAT
Total for country	2,379,316	2,379,316	2,379,316	962,909	962,909	962,909	FAOSTAT

ID= Insufficient data *Conversion factor for hectares is acres x 0.4047*

Data for 1987 were adjusted for a reporting error in data for National Forests in OR and WA, and forest in west TX which increased the total forest area above the 1987 reported value. Data for 1997 and 2002 U.S. national assessments are available.

2.3 Analysis and processing of national data

2.3.1 Estimation and forecasting

U.S. forest inventory data for 1987, 1997, and 2002 were were compiled for 1990, 2000, and 2005 U.S. national assessment analysis and will represent 1990, 2000, and 2005 FRA assessment data as well to be consistent with national procedures. No forecasting is used in this report for forest area.

2.4 Reclassification into FRA 2005 classes

The source data for FRA 1990 was the U.S. 1987 national assessment report reference. Since that time, Native American lands have been reclassified from “other federal” (public) to “miscellaneous private” (private). Thus public land decreased and private land increased for this reporting period.

2.5 Data for National reporting table T2

FRA 2005 Categories	Area (1000 hectares)			
	Forest		Other wooded land	
	1990	2000	1990	2000
Private ownership	171,977	174,107	ID	ID
Public ownership	126,671	128,187	ID	ID
Other ownership			ID	ID
TOTAL	**298,648**	**302,294**		

ID = Insufficient data

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
Smith, W. Brad; Miles, Patrick L.; Vissage, John S.; Pugh, Scott. 2004. Forest Resources of the United States, 2002. Gen. Tech. Rep. NC-241. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 141 p.	H	Forest industry owned and leased land, plantation forest, and stand age-class	2002	This data is used directly to represent 2005 in the FRA report. U.S. data compiled in this report for 1987, 1997, and 2002 were used for 1990, 2000, and 2005 U.S. national assessment analysis and will represent 1990, 2000, and 2005 FRA assessment data as well to be consistent with national procedures. See “Classification” notes for allocation procedure.
Smith, W. Brad; Vissage, John L.; Darr, David R.; Sheffield, Raymond M. 2002. Forest Statistics of the United States, 1997.	H	Forest industry owned and leased land, plantation forest, and	1997	This data is used directly to represent 2000 in the FRA report. See “Classification” notes for allocation procedure.

METRIC UNITS Gen. Tech. Rep NC-222. St. Paul, MN: USDA Forest Service North Central Forest Experiment Station. 191p.		stand age-class		
Waddell, Karen L., Oswald, Daniel D., and Powell, Douglas S. 1989. Forest statistics of the United States, 1987. Resour. Bull. PNW-RB-168. Portland, OR: U.S. Department of Agriculture, Pacific Northwest Research Station. 106 p.	H	Forest industry owned and leased land, plantation forest, and stand age-class	1987	This data is used directly to represent 1990 in the FRA report. See "Classification" notes for allocation procedure. Data for 1990 [from 1987 report] were adjusted for a reporting error in data for National Forests in OR and WA, and forest in west TX which increased the total forest area above the 1987 reported value.
Conservation Biology Institute, Protected Areas Database http://www.cbi.org	M	Protected areas	2001	This polygon data set was overlaid on the U.S. forest inventory plot grid to classify plot and area data for IUCN categories.
National Forest Systems Roadless Area Database	M	NFS Roadless areas	2002	This polygon data set was overlaid on the U.S. forest inventory plot grid to classify plot and area data for National Forest Systems roadless areas.

3.2.2 Classification and definitions

National class	**Definition**
Age class	A category into which the average age or age range of trees or other vegetation is divided for classification or use. Age-class is usually used in reference to even-aged stands of trees. It represents the dominant age of the main body of trees in a stand. In some mixed-aged stands, age-class can be used to describe the age of the dominant/codominant cohort of canopy trees.
Forest Industry land	An ownership class of private lands owned by a company or an individual(s) operating a primary wood-processing plant. For FRA 2005, this includes lands owned or leased by forest industry. Note: Although other forest lands may have production as a primary purpose, no defining data currently exist.
IUCN class	**Category I:** an area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring or a large area of unmodified or slightly modified land, and/or sea, retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition. **Category II:** a natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area, and (c) provide a foundation for spiritual, educational, recreational, and visitor opportunities, all of which must be environmentally and culturally comparable. **Category III:** an area of land [and/or sea???] containing one or more

	specific natural or natural/cultural features which are of outstanding or unique value because of their inherent rarity, representative or esthetic qualities, or cultural significance. **Category IV:** an area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species. **Category V:** an area of land with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant esthetic, ecological, and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance, and evolution of such an area. **Category VI:** an area of land and/or sea containing predominantly unmodified natural systems, managed to ensure long-term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to meet community needs.
Plantation	Forest stands consisting almost exclusively of planted trees of native or exotic species, and managed to generally maintain this composition at maturity. Management practices may include extensive site preparation before planting and suppression of competing vegetation. Forests that fall outside this classification are not necessarily natural forests.
Roadless area	An area in the National Forest System without any improved roads maintained for travel by standard passenger type vehicles (FSH 1909.12, Section 7.11) Http://ww.fs.fed.us/r4/uinta/projects/planning/docs/roadless/draft_roadless.htm. An area that generally appears to have been primarily affected by the forces of nature, with the imprint of human activity substantially unnoticeable.

3.2.3 Original data

Forest area of the United States by designated function, 1987, 1997, 2002

US data assigned to designated function	Original data						
	1987	1997	2002	1987	1997	2002	
Forest		*000 acres*			*000 hectares*		
Production	84,027	90,238	90,187	34,006	36,519	36,499	FIADB
Protection of soil and water	0	0	0	-	-	-	
Conservation of biodiversity	123,421	125,215	148,446	49,948	50,675	60,076	
of which :							
NFS Roadless areas	*33,583*	*33,583*	*33,583*	*13,591*	*13,591*	*13,591*	FIADB
Protected area DB	*81,796*	*81,796*	*81,796*	*33,103*	*33,103*	*33,103*	CBI
FIA Reserved AK	*8,041*	*9,836*	*33,067*	*3,254*	*3,981*	*13,382*	FIADB
Social services							
Multiple purpose	530,502	531,504	510,290	214,694	215,100	206,514	
No or unknown function							
Total - Forest	**737,950**	**746,958**	**748,923**	**298,648**	**302,294**	**303,089**	

ID= Insufficient data *Conversion factor for hectares is acres x 0.4047*

3.3 Analysis and processing of national data

The following procedure was applied to derive data for this table:

FRA class	U.S. reporting process
Production forest	Includes all forest industry land, whether owned or leased and all productive plantation forest.
Protection of soil and water	See Comments in section 2.6 for this table.
Conservation of biodiversity	Includes all IUCN classified forest and all National Forest System roadless areas. Roadless areas in the National Forest System are areas without any improved roads maintained for travel by standard passenger type vehicles (FSH 1909.12, Section 7.11)
Social services	Although studies show that 85% of the nation's forest is available for outdoor recreation to the entire public or persons selected by private owners, no data exists to identify specific acres for social service as a primary use. And, free public access to private lands has been declining in recent years.
Multiple purpose	All forest not otherwise classified as to primary function.

3.3.1 Estimation and forecasting

U.S. forest inventory data for 1987, 1997, and 2002 were compiled for 1990, 2000, and 2005 U.S. national assessment analysis and will represent 1990, 2000, and 2005 FRA assessment data as well to be consistent with national procedures. No forecasting is used in this report for forest area.

3.4 Reclassification into FRA 2005 classes

None of the classes in this table have a parallel in U.S. national reporting. See "Analysis and Processing" section for how data was delineated.

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	34,006	36,519	36,499	*ID*	*ID*	*ID*
Protection of soil and water				298,648	302,294	303,089
Conservation of biodiversity	49,948	50,675	60,076	*ID*	*ID*	*ID*
Social services				*ID*	85%	*ID*
Multiple purpose	214,694	215,100	206,514	not appl.	not appl.	not appl.
No or unknown function				not appl.	not appl.	not appl.
Total - Forest	**298,648**	**302,294**	**303,089**	**not appl.**	**not appl.**	**not appl.**
Other wooded land						
Production	*ID*	*ID*	*ID*			
Protection of soil and water	*ID*	*ID*	*ID*			
Conservation of biodiversity	*ID*	*ID*	*ID*			
Social services	*ID*	*ID*	*ID*			
Multiple purpose	*ID*	*ID*	*ID*	not appl.	not appl.	not appl.
No or unknown function	*ID*	*ID*	*ID*	not appl.	not appl.	not appl.
Total – Other wooded land				**not appl.**	**not appl.**	**not appl.**

3.6 Comments to National reporting table T3

Information on the "area where forests and other wooded land are managed primarily for soil protection" is not available for the United States. In fact, this type of information lacks relevance in the context of forest management in the United States because soil and water protection are over-riding considerations in the development of forest policy and in forest management practices. Soil and water protection are two of many elements that are considered in developing management regimes that maintain ecosystem function. There is a broad range of other elements that are simultaneously considered, including (but not limited to) site regeneration, water quality, habitat, aesthetic impacts, landscape diversity, endangered species, cultural/spiritual impacts, and others. Therefore, it is difficult to isolate areas in terms of being managed primarily for soil protection.

Measures to protect water and soil values have been in place for a time; however, these measures are constantly being reviewed, updated, revised, and improved (e.g., federal Clean Water Act, Best Management Practices legislation in the various States, etc.).

Management factors that can affect water and soil quality include harvesting close to streams and rivers, road construction techniques, harvesting on steep slopes, skidding methods, mechanized harvesting on soils sensitive to soil compaction, winter harvesting vs. summer harvesting operations, and post harvest site treatments (such as scarification, treatment of debris, etc.). Potential soil disturbance (or degradation) factors include compaction, erosion, loss of organic matter, and loss of productivity. Some areas are more susceptible to damage from these factors than others. For example, sensitive sites include riparian zones, steep slopes, wet and poor soils, shallow soils over bedrock, and soils susceptible to compaction.

In general, the creation of riparian buffer zones is now standard practice throughout most of the country. These zones range from 30 - 50 meters on either side of streams. Most States also have guidelines for road construction to minimize reductions in soil and water quality and aquatic habitats. Mechanized harvesting has accounted for an increasing proportion of the total harvest in recent years. The use of heavy equipment in the forest environment has the potential to cause problems relative to soil compaction. However, two factors mitigate or reduce potential problems related to reductions in soil quality. First, timing harvest activities to minimize site degradation such as winter harvesting in areas where it is feasible or avoiding harvest during seasonal wet periods. Second, through various new decision support tools such as forest ecosystem classification frameworks, management agencies are improving their understanding of a) which types of sites are sensitive to soil disturbance, b) where these sites are situated, and c) the kinds of modifications in management practices and equipment required to minimize the impacts of harvest operations.

Specifically, the Conservation Reserve Program in the 1980s and 1990s planted over one million hectares of nonforest land to forest for the purpose of soil protection. The Great Shelterbelt Program of the 1930s was also designed to protect soil and planted upwards of 4 million hectares in the central prairie region of the U.S. And the Soil Bank Program of the mid-1950s planted an additional 4 to 6 million hectares.

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
Smith, W. Brad; Miles, Patrick L.; Vissage, John S.; Pugh, Scott. 2004. Forest Resources of the United States, 2002. Gen. Tech. Rep. NC-241. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 141 p.	H	Forest area, plantation area	2002	This data is used directly to represent 2005 in the FRA report. U.S. data compiled in this report for 1987, 1997, and 2002 were used for 1990, 2000, and 2005 U.S. national assessment analysis and will represent 1990, 2000, and 2005 FRA assessment data as well to be consistent with national procedures. See Section 3.3 for allocation procedure.
Smith, W. Brad; Vissage, John L.; Darr, David R.; Sheffield, Raymond M. 2002. Forest Statistics of the United States, 1997. METRIC UNITS Gen. Tech. Rep NC-222. St. Paul, MN: USDA Forest Service North Central Forest Experiment Station. 191p.	H	Forest area, plantation area	1997	This data is used directly to represent 2000 in the FRA report. See Section 3.3 for allocation procedure.
Waddell, Karen L., Oswald, Daniel D., and Powell, Douglas S. 1989. Forest statistics of the United States, 1987. Resour. Bull. PNW-RB-168. Portland,	H	Forest area, plantation area	1987	This data is used directly to represent 1990 in the FRA report. See Section 3.3 for allocation procedure.

OR: U.S. Department of Agriculture, Pacific Northwest Research Station. 106 p.				

4.2.2 Classification and definitions

National class	Definition
IUCN class	**Category I:** an area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring or a large area of unmodified or slightly modified land, and/or sea, retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition. **Category II:** a natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area, and (c) provide a foundation for spiritual, educational, recreational, and visitor opportunities, all of which must be environmentally and culturally comparable. **Category III:** an area of land [and/or sea???] containing one or more specific natural or natural/cultural features which are of outstanding or unique value because of their inherent rarity, representative or esthetic qualities, or cultural significance. **Category IV:** an area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species. **Category V:** an area of land with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant esthetic, ecological, and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance, and evolution of such an area. **Category VI:** an area of land and/or sea containing predominantly unmodified natural systems, managed to ensure long-term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to meet community needs.
Plantation	Forest stands consisting almost exclusively of planted trees of native or exotic species, and managed to generally maintain this composition at maturity. Management practices may include extensive site preparation before planting and suppression of competing vegetation. Forests that fall outside this classification are not necessarily natural forests.
Roadless area	An area in the National Forest System without any improved roads maintained for travel by standard passenger type vehicles (FSH 1909.12, Section 7.11) Http://ww.fs.fed.us/r4/uinta/projects/planning/docs/roadless/draft_roadless.htm. An area that generally appears to have been primarily affected by the forces of nature, with the imprint of human activity substantially unnoticeable.

4.2.3 Original data

Forest area of the United States by characteristic, 1987, 1997, 2002

US data assigned to forest characteristic	Original data						
	1987	1997	2002	1987	1997	2002	
	000 hectares			*000 hectares*			
Primary	260,115	260,087	257,431	105,268	105,258	104,182	
T3 Conservation	*123,421*	*125,215*	*148,446*	*49,948*	*50,675*	*60,076*	From T3
All Stands age >150	*28,295*	*27,887*	*25,943*	*11,451*	*11,286*	*10,499*	FIADB
Non reserved int. AK	*108,399*	*106,985*	*83,042*	*43,869*	*43,297*	*33,607*	FIADB
Modified natural	443,748	433,034	433,711	179,585	175,249	175,523	
Semi-natural	8,624	13,624	15,624	3,490	5,514	6,323	Calc
Productive plantation	25,463	40,213	42,157	10,305	16,274	17,061	FIADB
Protective plantation	0	0	0	0	0	0	
TOTAL	**737,950**	**746,958**	**748,923**	**298,648**	**302,294**	**303,089**	From T1

ID= Insufficient data *Conversion factor for hectares is acres x 0.4047*

4.3 Analysis and processing of national data

The following procedure was applied to derive data for this table:

FRA class	U.S. reporting process
Semi-natural	The U.S. has no similar classification in its inventory process. However, the U.S. has developed estimates of forest where stocking has been augmented by planting. This value is reported here. While there may be significantly more area in this category there is no current process to capture this activity during field inventory. Plantations are excluded.
Plantation	Forest stands, identified during inventory, consisting almost exclusively of planted trees of native or exotic species, planted on regular spacing, and managed to generally maintain this composition at maturity. Management practices may include extensive site preparation before planting and suppression of competing vegetation.
Primary	The U.S. has no similar classification in its inventory process. Forest reported as "primary" for this table include all forest that is deemed to have a natural character. The value developed was based on identifying forest areas that are deemed to have had little human activity since 1850. This includes all forest classified as IUCN protected, all of interior Alaska, all National Forest System roadless areas, and all forest stands in excess of 150 years of age.
Modified natural	The U.S. has no similar classification in its inventory process. Thus, all stands that do not fall into other categories are placed here.
Protective plantation	No specific data reported. The Great Shelterbelt Program of the 1930s was designed to protect soil and planted upwards of 4 million hectares in the central prairie region of the U.S. The Soil Bank Program of the mid-1950s planted an additional 4 to 6 million hectares. And, the Conservation Reserve Program in the 1980s and 1990s planted over one million hectares of nonforest land to forest for the purpose of soil protection. However, none of these areas and current status can be spatially delineated in available data.

4.3.1 Estimation and forecasting

U.S. forest inventory data for 1987, 1997, and 2002 were compiled for 1990, 2000, and 2005 U.S. national assessment analysis and will represent 1990, 2000, and 2005 FRA assessment data as well to be consistent with national procedures. No forecasting is used in this report for forest area.

4.4 Data for National reporting table T4

FRA 2005 Categories	Area (1000 hectares)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Primary	105,268	105,258	104,182	ID	ID	ID
Modified natural	179,585	175,248	175,523	ID	ID	ID
Semi-natural	3,490	5,514	6,323	ID	ID	ID
Productive plantation	10,305	16,274	17,061	ID	ID	ID
Protective plantation						
TOTAL	**298,648**	**302,294**	**303,089**			

ID =Insufficient data.

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
Smith, W. Brad; Miles, Patrick L.; Vissage, John S.; Pugh, Scott. 2004. Forest Resources of the United States, 2002. Gen. Tech. Rep. NC-241. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 141 p.	H	Growing stock volume, all live volume	2002, 1997, 1987	Data from Table 32 was used for all commercial growing stock data. Data was increased by 14% to account for bark. Volume of all live trees. U.S. data compiled in this report for 1987, 1997, and 2002 were used for 1990, 2000, and 2005 U.S. national assessment analysis and will represent 1990, 2000, and 2005 FRA assessment data as well to be consistent with national procedures.

5.2.2 Classification and definitions

National class	Definition
Growing-stock volume	A classification of net volume under bark that includes live trees of commercial species meeting specified standards of quality or vigor on productive forest land. When associated with volume, includes only trees 12.7 cm d.b.h. and larger from stump height of 0.3 m to a top diameter of 10.0 cm. Cull trees, trees on unproductive forest and protected forest are excluded.
All live volume	Volume under bark of all living trees more than 12.7 cm in diameter at breast height on all forest land. Includes the stem from stump height of 0.3m to a top diameter of 10.0 cm. Sound cull trees, trees on unproductive forest and protected forest are included
Commercial species	Tree species suitable for industrial wood products.

5.2.3 Original data

Estimate of growing stock and commercial growing stock on forest land in the U.S.

U.S data and estimates	Original data and conversion					
	1987	1997	2002	1990	2000	2005
Volume- underbark		*million cuft*			*million m3*	
All live volume on timberland	827,409	884,571	910,458	23,430	25,048	25,781
All live volume on non-timberland*	169,193	170,792	177,410	4,791	4,836	5,024
All live volume on forest land	996,602	1,055,363	1,087,868	**28,221**	**29,884**	**30,805**
Commercial GS on timberland	781,667	835,669	856,062	**22,134**	**23,663**	**24,241**
Volume- overbark* **						
All live volume on timberland	943,246	1,008,411	1,037,922	26,710	28,555	29,390
All live volume on non-timberland*	192,880	194,703	202,248	5,462	5,513	5,727
All live volume on forest land	1,136,126	1,203,114	1,240,170	**32,172**	**34,068**	**35,118**
Commercial GS on timberland	891,100	952,663	975,911	**25,233**	**26,976**	**27,635**

* Based on average volume/acre relative to timberland of 40 percent.

** Conversion to m3, divide cuft by >> 35.3147

*** Overbark conversion estimated by multiplying underbark value by 1.14.

Estimating volume on forest currently without field data:

Category	Units	1987	1997	2002
Forest area	000 acres	737,950	746,958	748,923
Productive available (timberland)	*000 acres*	*488,403*	*503,664*	*503,542*
Unprductive and protected (non-timberland)	*000 acres*	*249,547*	*243,294*	*245,381*
Live volume per acre on timberland	cuft/acre underbark	1,694	1,756	1,808
Estimated average live volume per acre on non-timberland	cuft/acre underbark	678	702	723

5.3 Analysis and processing of national data

The following procedure was applied to derive data for this table:

FRA class	U.S. reporting process
Commercial growing stock	All growing stock by U.S. definition (which are reported under bark) adjusted upward by 14% to report volume including bark. This volume only occurs on productive, available forest land.
Growing stock	All live tree volume by U.S. definition (which are reported under bark) adjusted upward by 14% to report volume including bark. Includes sound cull trees. This volume includes an estimate of volume on unproductive and protected forest land.

5.3.1 Estimation and forecasting

U.S. forest inventory data for 1987, 1997, and 2002 were compiled for 1990, 2000, and 2005 U.S. national assessment analysis and will represent 1990, 2000, and 2005 FRA assessment data as well to be consistent with national procedures. No forecasting is used in this report for forest volume.

5.4 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	32,172	34,068	35,118	ID	ID	ID
Commercial growing stock	25,233	26,976	27,635	ID	ID	ID

ID =Insufficient data

Specification of country threshold values	Unit	Value	Complementary information
1. Minimum diameter at breast height of trees included in Growing stock (X)	cm	12.7	
2. Minimum diameter at the top end of stem (Y) for calculation of Growing stock	cm	10.0	
3. Minimum diameter of branches included in Growing stock (W)	cm	n/a	Branches are not included in growing stock in the U.S.
4. Minimum diameter at breast height of trees in Commercial growing stock (Z)	cm	12.7	
5. Volume refers to "Above ground" (AG) or "Above stump" (AS)	AG / AS	AS	
6. Have any of the above thresholds (points 1 to 4) changed since 1990	Yes/No	No	For commercial growing stock
7. If yes, then attach a separate note giving details of the change	Attachment		No change in threshoild but change in area basis since 1990 (see Table 1 notes).

5.5 Comments to National reporting table T5

Readers are advised that the numbers presented here for volume on "forest" more accurately reflect data presented in national reports for the United States. Previous FAO reports did not include volume data for "other wooded land". Thus total volume for "growing stock" will be higher than previous FAO reports. See comments for Table T1.

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
Birdsey, R.A. 1996. Carbon storage for major forest types and regions in the conterminous United States. Pages 1-26 and 261-379 *in* R. N. Sampson and D. Hair, editors. Forest and Global Change Volume 2: Forest Management Opportunities for Mitigating Carbon Emissions. American Forests, Washington D. C.	H	Carbon, biomass	1995	
IPCC/UNEP/OECD/IEA. 1997. Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, Volumes 1-3. Intergovernmental Panel on Climate Change, United Nations Environmental Programme, Organization for Economic Co-Operation and Development, International Energy Agency. Bracknell, UK.	H	Guidelines	1996	
IPCC. 2003. Good practice guidance for land use, land-use change, and forestry. J. Penman and others, editors. IPCC National Greenhouse Gas Inventories Programme. Copy at <http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.htm>, August 13, 2004.	H	Guidelines	2004	
Smith, J.E., and L.S. Heath. 2002. A model of forest floor carbon mass for United States forest types. Northeastern Research Station Research Paper NE-722, U.S. Department of Agriculture, Forest Service, Newtown Square, PA, 37 p.	H	Forest floor carbon, biomass	2000	
Smith, J.E., L.S. Heath, and J.C. Jenkins. 2003. Forest volume-to-biomass models and estimates of mass for live and standing dead trees of U.S. forests. Northeastern Research Station General Technical Report NE-298, U.S. Department of Agriculture, Forest Service, Newtown Square, PA, 57 p.	H	Biomass	2002	

6.2.2 Classification and definitions

National class	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 coarse living roots greater than 2 mm diameter.
Dead wood biomass	All non-living woody biomass either standing, lying on the ground (but not including litter), or in the soil.
Litter biomass	The litter itself, fumic, and humic layers, and all non-living biomass with a diameter less than 7.5 cm at transect intersection, lying on the ground.
Soil biomass	All organic material in soil to a depth of 1 meter but excluding the coarse roots of the above pools.

6.2.3 Original data

Forest inventory data were from the RPA databases and the FIADB version 1.7; all land defined as forestland within the conterminous United States is included. Estimates of tree biomass were based on Smith et al. (2003). Down dead wood excluded standing dead trees but did include all woody material larger than 7.5 cm at transect intersection; estimates were from a FORCARB2 simulation. Estimates made at the inventory plot level by the FORCARB2 coefficients were compatible with the categories necessary for this report. For example, standing dead trees and down dead wood were pooled for dead wood biomass.

6.3 Analysis and processing of national data

Estimates of biomass follow methodology and are consistent with Good Practice Guidance (IPCC 2003) and the Revised 1996 IPCC Guidelines (IPCC/UNEP/OECD/IEA 1997).

6.4 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	28,227	30,562	31,653	*ID*	*ID*	*ID*
Below-ground biomass	5,611	6,064	6,276	*ID*	*ID*	*ID*
Dead wood biomass	4,888	5,226	5,350	*ID*	*ID*	*ID*
TOTAL	**38,726**	**41,852**	**43,279**			

ID = Insufficient data.

Thresholds used by the United States are the following:

Specification of country threshold values	**Unit**	**Value**	**Complementary information**
1. Minimum diameter at breast height of trees included in Above-ground Biomass stock	cm	2.54	
2. Minimum diameter of branches included in Above-ground Biomass stock	cm	0	
3. Minimum diameter of roots included in below-ground Biomass stock	cm	2	
4. Minimum diameter of dead wood included in biomass stock	cm	7.5	
5. Foliage included in biomass stock	Yes/No	Yes	
6. Have any of the above thresholds (points 1 to 4) changed since 1990	Yes/No	No	Change in forest area base since 1990 will affect comparisons using older reports.
7. If yes, then attach a separate note giving details of the change	Attachment		

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
Amichev, B. Y. and J. M. Galbraith. 2004. A Revised Methodology for Estimation of Forest Soil Carbon from Spatial Soils and Forest Inventory Data Sets. Environmental Management 33, Supplement 1: S74-S86.	M	Soil carbon	1990, 2000, 2005	Additional updates from Dr. Steve Prisley, Virgina Polytechnic Institute, Blacksburg, VA, USA
Birdsey, R.A. 1996. Carbon storage for major forest types and regions in the conterminous United States. Pages 1-26 and 261-379 *in* R. N. Sampson and D. Hair, editors. Forest and Global Change Volume 2: Forest Management Opportunities for Mitigating Carbon Emissions. American Forests, Washington D. C.	H	Live understory carbon	1990	
Heath, L.S., J.E. Smith, and R.A. Birdsey. 2003. Carbon trends in U.S. forestlands: A context for the role of soils in forest carbon sequestration. Pages 35-45 *in* J. M. Kimble, L. S. Heath, R. A. Birdsey, and R. Lal, editors. The Potential of U. S. Forest Soils to Sequester Carbon and Mitigate the Greenhouse Effect. Lewis Publishers (CRC Press), Boca Raton, FL.	H	Forest carbon trends	1990, 2000,	
Johnson, M.G., and J.S. Kern. 2003. Quantifying the organic carbon held in forested soils of the United States and Puerto Rico. Pages 47-72 *in* J. M. Kimble, L. S. Heath, R. A. Birdsey, and R.	M	Soil carbon	1990, 2000	

Lal, editors. The Potential of U. S. Forest Soils to Sequester Carbon and Mitigate the Greenhouse Effect. Lewis Publishers (CRC Press), Boca Raton, FL.				
Smith, J.E., and L.S. Heath. 2002. A model of forest floor carbon mass for United States forest types. Northeastern Research Station Research Paper NE-722, U.S. Department of Agriculture, Forest Service, Newtown Square, PA, 37 p.	H	Litter carbon	1990, 2000	See Analysis notes
Smith, J.E., L.S. Heath, and J.C. Jenkins. 2003. Forest volume-to-biomass models and estimates of mass for live and standing dead trees of U.S. forests. Northeastern Research Station General Technical Report NE-298, U.S. Department of Agriculture, Forest Service, Newtown Square, PA, 57 p.	H	Tree biomass	1990, 2000, 2005	
Smith, J.E., L.S. Heath, and P.B. Woodbury. 2004. How to estimate forest carbon for large areas from inventory data. Journal of Forestry 102:25-31.	H	Forest carbon	1990, 2000, 2005	
IPCC/UNEP/OECD/IEA. 1997. Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, Volumes 1-3. Intergovernmental Panel on Climate Change, United Nations Environmental Programme, Organization for Economic Co-Operation and Development, International Energy Agency. Bracknell, UK.	H	Reporting guidelines	1990, 2000, 2005	
IPCC. 2003. Good practice guidance for land use, land-use change, and forestry. J. Penman and others, editors. IPCC National Greenhouse Gas Inventories Programme. Copy at <http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.htm>, August 13, 2004.	H	Reporting guidelines	1990, 2000, 2005	

7.2.2 Classification and definitions

National class	**Definition**
Above-ground carbon	Carbon in all living biomass above the soil including stem, stump, branches, bark, seeds, and foliage
Below-ground carbon	Carbon in all living biomass of coarse living roots greater than 2 mm diameter.
Dead wood carbon	Carbon in all non-living woody biomass either standing, lying on the ground (but not including litter), or in the soil.
Litter carbon	Carbon in the litter itself, fumic, and humic layers, and all non-living biomass with a diameter less than 7.5 cm at transect intersection, lying on the ground.
Soil carbon	Carbon in all organic material in soil to a depth of 1 meter but excluding the coarse roots of the above pools.

7.2.3 Original data

Estimates of carbon stocks for the U.S. are based on summaries submitted to the EPA in August 2004.

7.3 Analysis and processing of national data

The methodology is consistent with Good Practice Guidance (IPCC 2003) and the Revised 1996 IPCC Guidelines (IPCC/UNEP/OECD/IEA 1997).

FRA class	U.S. reporting procedure
Above-ground carbon	Carbon in all living biomass above the soil including stem, stump, branches, bark, seeds, and foliage. Live understorey carbon was based on Birdsey (1996).
Below-ground carbon	Carbon in all living biomass of coarse living roots greater than 2 mm diameter.
Dead wood carbon	Down dead wood excluded standing dead trees but did include all woody material larger than 7.5 cm at transect intersection; estimates were from a FORCARB2 simulation
Litter carbon	Litter carbon, which includes small woody debris less than 7.5 cm diameter at transect intersection, was from Smith and Heath (2002).
Soil carbon	Soil organic carbon was for soil to a depth of 1 m and excluded the live and dead coarse roots in the other pools; estimates were based on Johnson and Kern (2003). Soil organic carbon was for soil to a depth of 1 m and excluded the live and dead coarse roots in the other pools; estimates were based on Johnson and Kern (2003).

Each carbon pool was estimated for each periodic or annualized inventory in each State by applying coefficients from the FORCARB2 model (Heath et al. 2003, Smith et al. 2004) to the forest inventory data. .For more discussion of the carbon pool estimates, see USEPA (2002), Heath et al. (2003), and Smith et al. (2004).

Carbon stocks were calculated separately for each State based on inventories available since 1990 and for the most recent inventory prior to 1990. The biomass values required for National Reporting Table T6 were simply 2× carbon mass. If the years 1990 or 2000 fell between two surveys for a particular State, carbon stocks were estimated by linear interpolation between survey years. Stocks since the most recent survey within a State could be estimated under two alternate assumptions. The two most recent carbon stocks could be use to extrapolate to subsequent years, or alternatively, values from the final survey could be applied to all subsequent years. This choice affected all estimates for 2005 and even affected all three reporting years for some States. Carbon stock estimates for each pool were summed over all states to form estimates for the United States.

7.3.1 Estimation and forecasting

Stocks since the most recent survey within a State could be estimated under two alternate assumptions. The two most recent carbon stocks could be use to extrapolate to subsequent years, or alternatively, values from the final survey could be applied to all subsequent years. This choice affected all estimates for 2005 and even affected all three reporting years for some States. Carbon stock estimates for each pool were summed over all states to form estimates for the conterminous United States.

7.4 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	14,114	15,281	15,826	*ID*	*ID*	*ID*
Carbon in below-ground biomass	2,805	3,032	3,138	*ID*	*ID*	*ID*
Sub-total: Carbon in living biomass	**16,919**	**18,313**	**18,694**			
Carbon in dead wood	2,444	2,613	2,675	*ID*	*ID*	*ID*
Carbon in litter	4,496	4,261	4,657	*ID*	*ID*	*ID*
Sub-total: Carbon in dead wood and litter	**6,940**	**7,234**	**7,332**			
Soil carbon to a depth of 100 cm	15,640	15,749	15,732	*ID*	*ID*	*ID*
TOTAL CARBON	**39,499**	**41,296**	**42,029**			

ID = Insufficient data

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)	Years	Additional comments
Forest Insect and Disease Conditions in the United States. Issued annually by United States Department of Agriculture, Forest Service, Forest Health Protection. Washington, DC	M	Insects and disease Areas of outbreak are defined areas of host type having one or more multi-tree spots per 394 hectares	1979 to present	Information is collected during aerial surveys of forested areas of the United States. National Standards for Aerial Surveys are available on the internet at: http://www.fs.fed.us/foresthealth/publications/id/id_guidelines.html
National Interagency Fire Center (NIFC): http://www.nifc.gov/stats/wildlandfirestats.html	M	Fire area		Fire data are for all burned area, not just forest.

8.3 Analysis and processing of national data

FRA class	U.S. reporting process
Disturbance by fire	Total area burned, not broken out by forest/nonforest.
Disturbance by insects	Based on aerial surveys.
Disturbance by diseases	Based on aerial surveys.
Other disturbance	Limited data

The values presented in the reporting table below are 5-year averages, where the figures for 1990 are averages for the period 1988-1992 and the figures for 2000 are averages for 1998-2002.

8.4 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	1,685	2,085	*	*
Disturbance by insects	7,546	5,086	*	*
Disturbance by diseases	*ID*	17,380	*	*
Other disturbance	*ID*	*ID*		

* *Included under forests*

8.5 Comments to National reporting table T8

Additional data included in TBFRA 2000 report:

				Area	
Strong winds, hurricanes, tornadoes					
	1995	-	Idaho, Utah, Colorado	12,141	ha
		-	Northeastern U.S.	99,627	ha
		-	Alabama (25% of forest)	2,218,970	ha
	1995	-	Northeastern U.S.	607	ha
		-	N. Carolina, Virginia (Bertha, Fran)	107,518	ha
Drought					
	1995	-	Northeastern U.S.	4,212	ha
	1996	-	Arizona	24,739	ha
Flooding					
	1993	-	Midwest	4,452	ha
	1994	-	Iowa	532	ha
	1995	-	Missouri	73,273	ha
	1996	-	Iowa, Vermong	5,463	ha
Ice					
	1993	-	Iowa	62	ha
Air pollution					
	1996	-	Northeast U.S. (sulfur dioxide)	12,141	ha

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
Little, Elbert L., Jr. 1979. Checklist of United States trees (native and naturalized). Agric. Handb. 541. Washington, DC. U.S. Department of Agriculture, Forest Service, 375 p.	H	Tree species and status	1979	Updated using PLANTS database information to compile current list of tree species in U.S.
PLANTS database http://plants.usda.gov/	H	Plant species	2000	Used to update data from Little, 1979.
IUCN Trees Red List http://www.unep-wcmc.org/trees/Background/namerica.htm	H	Red List species	2000	Cross-matched with PLANTS DB and Forest Inventory and Analysis program data.

9.2.2 Classification and definitions

National class	Definition
Tree	The general definition of a tree in the U.S. as provided by Little is "a woody plant having one erect perennial stem or trunk at least 7.5cm in diameter at breast height (1.37m in the U.S.), a more less definitely defined crown of foliage, and a height of at least 4 meters" at maturity.

9.2.3 Original data

	US49		Hawaii	Total*
Native species	**751**		**300**	**1,051**
Introduced species	**82**		*ID***	**82**
of which domesticated	*62*		*ID***	**62**
Total species	**833**		**300**	**1,133**

*** Insufficient data*

IUCN Red List [except HI]	US49	Code	Hawaii	Total*
EXTINCT	**1**	**EX**	**14**	**15**
EXTINCT IN WILD	**1**	**EW**	**1**	**2**
CRITICALLY ENDANGERED	**6**	**CR**	**48**	**54**
ENDANGERED	**6**	**EN**	**41**	**47**
VULNERABLE	**19**	**VU**	**30**	**49**
LOWER RISK		**LR**		
Conservation Dependent	**5**	**LRcd**		**5**
Near Threatened	**13**	**LRnt**	**12**	**25**
DATA DEFFICIENT	**1**	**DD**		**1**
Total	**52**		**146**	**198**

** Fifty States, does not include Puerto Rico or Trust territiries.*

Total species for Hawaii estimated.

9.3 Data for National reporting table T9

FRA 2005 Categories	Number of species (year 2000)
Native tree species	1,051
Critically endangered tree species [CR]	55
Endangered tree species [EN]	69
Vulnerable tree species [VU]	60

9.4 Comments to National reporting table T9

Red List data for U.S. excluding Hawaii

Ref.	Scientific name	Common name	IUCN Cls	IUCN Sub	Location
1	*Cupressus abramsiana*	Santa Cruz Island cypress	**EN**	**C2a**	**CA**
2	*Guajacum sanctum*	Holywood lignumvitae	**EN**	**C2a**	**FL,PR**
3	*Pinus torreyana*	Torrey pine	**EN**	**C2b**	**CA**
4	*Quercus georgiana*	Georgia oak	**EN**	**B1+2ce**	**AL,GA,SC**
5	*Quercus oglethorpensis*	Oglethorpe oak	**EN**	**B1+2ce**	**GA,MS,SC**
6	*Swietenia mahagoni*	West Indian mahogany	**EN**	**A1cd**	**FL**
7	*Betula uber*	Virginia roundleaf birch	**CR**	**D1**	**VA**
8	*Cercocarpus traskiae*	Catalina Island mtn. mahogany	**CR**	**D1**	**CA**
9	*Quercus graciliformis*	Chisos Mountain oak	**CR**	**C2b**	**TX**
10	*Quercus tardifolia*	lateleaf oak	**CR**	**D1**	**TX**
11	*Taxus floridana*	Florida yew	**CR**	**B1+2c**	**FL**
12	*Torreya taxifolia*	Florida nutmeg	**CR**	**A1c,B1+2**	**FL,GA**
13	*Abies fraseri*	Fraser's fir	**VU**	**D2**	**NC,TN,VA**
14	*Celtis lindheimeri*	Lindheimer's hackberry	**VU**	**B1+2c**	**TX**
15	*Chamaecyparis lawsoniana*	Port Orford cedar	**VU**	**A1de+2de**	**CA,OR**
16	*Cupressus arizonica var. nevadensis*	Piute cypress	**VU**	**D2**	**CA**
17	*Cupressus arizonica var. stephensonii*	Cuyamaca cypress	**VU**	**D2**	**CA**
18	*Cupressus bakeri*	Modoc cypress	**VU**	**B1+2d**	**CA,OR**
19	*Cupressus forbesii*	tecate cypress	**VU**	**B1+2c**	**CA**
20	*Cupressus goveniana ssp. goveniana*	Gowen cypress	**VU**	**D1**	**CA**
21	*Cupressus macrocarpa*	Monterey cypress	**VU**	**D2**	**CA**
22	*Juglans californica var. hindsii*	northern California walnut	**VU**	**A1c**	**CA**
23	*Lyonothamnus floribundus*	Catalina ironwood	**VU**	**D2**	**CA**
24	*Pinus albicaulis*	whitebark pine	**VU**	**A1c**	**Pacific Northwest**
25	*Pinus longaeva*	Great Basin bristlecone pine	**VU**	**B1+2e**	**CA,NV,UT**
26	*Quercus arkansana*	Arkansas oak	**VU**	**D2**	**AL,AR,FL,GA,LA,MS,TX**
27	*Quercus engelmannii*	Engelmann's oak	**VU**	**A1c**	**CA**
28	*Quercus tomentella*	island live oak	**VU**	**B1+2ce**	**CA**
29	*Salix floridana*	Florida willow	**VU**	**B1+2c**	**FL,GA**
30	*Umbellularia californica*	California laurel	**VU**	**D2**	**CA**
31	*Zanthoxylum flavum*	West Indian satinwood	**VU**	**A1c**	**FL**
32	*Umbellularia californica*	California laurel	**VU**	**D2**	**CA**
33	*Zanthoxylum flavum*	West Indian satinwood	**VU**	**A1c**	**FL**
34	*Alnus maritima*	seaside alder	**LR/nt**		**DE,MD,OK**
35	*Chamaecyparis thyoides*	Atlantic white cedar	**LR/nt**		**AL,FL,MS**
36	*Leitneria floridana*	corkwood	**LR/nt**		**AR,GA,FL,MO,TX**
37	*Magnolia macrophylla*	bigleaf magnolia	**LR/nt**		**FL**
38	*Picea breweriana*	Brewer's spruce	**LR/nt**		**CA,OR**
39	*Pinus aristata*	Rocky mtn. bristlecone pine	**LR/nt**		**AZ,CO,NM**
40	*Pinus clausa*	sand pine	**LR/nt**		**AL,FL**
41	*Pinus muricata*	Bishop pine	**LR/nt**		**CA**
42	*Pseudotsuga macrocarpa*	bigcone Douglas fir	**LR/nt**		**CA**
43	*Sequoia sempervirens*	redwood	**LR/nt**		**CA,OR**
44	*Taxus brevifolia*	Pacific yew	**LR/nt**		**ID,MT.OR,WA**
45	*Tsuga caroliniana*	Carolina hemlock	**LR/nt**		**GA,NC,SC,TN,VA**
46	*Washingtonia filifera*	California fan palm	**LR/nt**		**AZ,CA,NV**
47	*Pinus balfouriana*	foxtail pine	**LR/cd**		**CA**
48	*Pinus radiata*	Monterey pine	**LR/cd**		**CA**
49	*Torreya californica*	California nutmeg	**LR/cd**		**CA**
50	*Tsuga mertensiana*	mountain hemlock	**LR/cd**		**CA,OR**
51	*Abies bracteata*	*bristlecone fir*	**LR/cd**		**CA**
52	*Taxodium mucronatum*	*Montezuma baldcypress*	DD		**TX**

Ref.	Scientific name		IUCN Cls	IUCN Sub	Location
1	Campanulaceae	*Cyanea arborea*	**EX**		**HI**
2	Campanulaceae	*Cyanea giffardii*	**EX**		**HI**
3	Campanulaceae	*Cyanea pohaku*	**EX**		**HI**
4	Campanulaceae	*Cyanea quercifolia*	**EX**		**HI**
5	Campanulaceae	*Cyanea superba ssp. Regina*	**EX**		**HI**
6	Campanulaceae	*Delissea undulata ssp. Kauaiensis*	**EX**		**HI**
7	Campanulaceae	*Delissea undulata ssp. Niihauensis*	**EX**		**HI**
8	Euphorbiaceae	*Chamaesyce celastroides var. tomentella*	**EX**		**HI**
9	Malvaceae	*Hibiscadelphus bombycinus*	**EX**		**HI**
10	Malvaceae	*Hibiscadelphus crucibracteatus*	**EX**		**HI**
11	Malvaceae	*Hibiscadelphus wilderianus*	**EX**		**HI**
12	Malvaceae	*Kokia lanceolata*	**EX**		**HI**
13	Thymelaeaceae	*Wikstroemia skottsbergiana*	**EX**		**HI**
14	Thymelaeaceae	*Wikstroemia villosa*	**EX**		**HI**
15	Malvaceae	*Kokia cookei*	**EW**		**HI**
16	Amaranthaceae	*Charpentiera densiflora*	**EN**	**A1ce**	**HI**
17	Apocynaceae	*Ochrosia haleakalae*	**EN**	**C2a**	**HI**
18	Apocynaceae	*Ochrosia kauaiensis*	**EN**	**C2a**	**HI**
19	Apocynaceae	*Pteralyxia kauaiensis*	**EN**	**C2a**	**HI**
20	Araliaceae	*Cheirodendron dominii*	**EN**	**B1+2c**	**HI**
21	Campanulaceae	*Clermontia arborescens ssp. Arborescens*	**EN**	**A1ce**	**HI**
22	Campanulaceae	*Clermontia tuberculata*	**EN**	**A1ce**	**HI**
23	Campanulaceae	*Cyanea macrostegia ssp. Gibsonii*	**EN**	**A1ce**	**HI**
24	Campanulaceae	*Clermontia drepanomorpha*	**EN**	**B1+2c**	**HI**
25	Campanulaceae	*Clermontia lindseyana*	**EN**	**B1+2c**	**HI**
26	Compositae	*Dubautia arborea*	**EN**	**A1ce**	**HI**
27	Compositae	*Dubautia knudsenii ssp. Knudsenii*	**EN**	**A1ce**	**HI**
28	Compositae	*Dubautia knudsenii ssp. Nagatae*	**EN**	**A1ce**	**HI**
29	Compositae	*Dubautia knudsenii ssp. Filiformis*	**EN**	**B1+2c**	**HI**
30	Dracaenaceae	*Pleomele fernaldii*	**EN**	**C2a**	**HI**
31	Dracaenaceae	*Pleomele forbesii*	**EN**	**C2a**	**HI**
32	Dracaenaceae	*Pleomele hawaiiensis*	**EN**	**C2a**	**HI**
33	Euphorbiaceae	*Chamaesyce herbstii*	**EN**	**B1+2c**	**HI**
34	Euphorbiaceae	*Chamaesyce celastroides var. kaenana*	**EN**	**B1+2c**	**HI**
35	Euphorbiaceae	*Euphorbia haeleeleana*	**EN**	**C2a**	**HI**
36	Gesneriaceae	*Cyrtandra giffardii*	**EN**	**C2a**	**HI**
37	Loganiaceae	*Labordia lydgatei*	**EN**	**C2a**	**HI**
38	Malvaceae	*Hibiscus arnottianus ssp. Immaculatus*	**EN**	**B1+2c**	**HI**
39	Malvaceae	*Hibiscus waimeae ssp. Hannerae*	**EN**	**B1+2c**	**HI**
40	Malvaceae	*Hibiscus kokio ssp. Saintjohnianus*	**EN**	**C2a**	**HI**
41	Myrtaceae	*Eugenia koolauensis*	**EN**	**C2a**	**HI**
42	Nyctaginaceae	*Pisonia wagneriana*	**EN**	**C2a**	**HI**
43	Palmae	*Pritchardia forbesiana*	**EN**	**A1acd**	**HI**
44	Palmae	*Pritchardia glabrata*	**EN**	**A1ce+2ce**	**HI**
45	Palmae	*Pritchardia remota*	**EN**	**A2ce**	**HI**
46	Palmae	*Pritchardia lanigera*	**EN**	**B1+2c**	**HI**
47	Pittosporaceae	*Pittosporum napaliense*	**EN**	**C2a**	**HI**
48	Rhamnaceae	*Colubrina oppositifolia*	**EN**	**B1+2c**	**HI**
49	Rubiaceae	*Psychotria grandiflora*	**EN**	**C2a**	**HI**
50	Rubiaceae	*Psychotria hobdyi*	**EN**	**C2a**	**HI**

Ref.	Scientific name		Cls	Sub	Location
51	Rutaceae	*Melicope balloui*	**EN**	**B1+2c**	**HI**
52	Rutaceae	*Melicope puberula*	**EN**	**B1+2c**	**HI**
53	Rutaceae	*Melicope ovalis*	**EN**	**B1+2cde**	**HI**
54	Rutaceae	*Melicope christophersenii*	**EN**	**C2a**	**HI**
55	Rutaceae	*Melicope cinerea*	**EN**	**C2a**	**HI**
56	Rutaceae	*Melicope orbicularis*	**EN**	**C2a**	**HI**
57	Rutaceae	*Melicope pallida*	**EN**	**C2a**	**HI**
58	Rutaceae	*Melicope saint-johnii*	**EN**	**C2a**	**HI**
59	Rutaceae	*Melicope sandwicensis*	**EN**	**C2a**	**HI**
60	Rutaceae	*Zanthoxylum hawaiiense*	**EN**	**C2a**	**HI**
61	Santalaceae	*Exocarpos gaudichaudii*	**EN**	**A1ce**	**HI**
62	Sapindaceae	*Alectryon macrococcus var. macrococcus*	**EN**	**C2a**	**HI**
63	Solanaceae	*Nothocestrum latifolium*	**EN**	**C2a**	**HI**
64	Apocynaceae	*Ochrosia kilaueaensis*	**CR**	**B1+2c**	**HI**
65	Araliaceae	*Munroidendron racemosum*	**CR**	**C2a**	**HI**
66	Araliaceae	*Tetraplasandra gymnocarpa*	**CR**	**C2a**	**HI**
67	Campanulaceae	*Clermontia oblongifolia ssp. Brevipes*	**CR**	**B1+2c**	**HI**
68	Campanulaceae	*Clermontia oblongifolia ssp. Mauiensis*	**CR**	**B1+2c**	**HI**
69	Campanulaceae	*Delissea undulata ssp. Undulate*	**CR**	**B1+2c**	**HI**
70	Campanulaceae	*Clermontia peleana*	**CR**	**C2a**	**HI**
71	Campanulaceae	*Cyanea hamatiflora ssp. Carlsonii*	**CR**	**C2a**	**HI**
72	Campanulaceae	*Cyanea procera*	**CR**	**C2a**	**HI**
73	Campanulaceae	*Cyanea stictophylla*	**CR**	**C2a**	**HI**
74	Campanulaceae	*Cyanea superba ssp. Superba*	**CR**	**C2a**	**HI**
75	Compositae	*Hesperomannia lydgatei*	**CR**	**B1+2c**	**HI**
76	Compositae	*Hesperomannia arborescens*	**CR**	**C2a**	**HI**
77	Euphorbiaceae	*Flueggea neowawraea*	**CR**	**D1**	**HI**
78	Flacourtiaceae	*Xylosma crenatum*	**CR**	**C2a**	**HI**
79	Leguminosae	*Caesalpinia kavaiensis*	**CR**	**D1**	**HI**
80	Loganiaceae	*Labordia tinifolia var. wahiawaensis*	**CR**	**B1+2c**	**HI**
81	Malvaceae	*Kokia kauaiensis*	**CR**	**C2a**	**HI**
82	Malvaceae	*Hibiscadelphus distans*	**CR**	**D1**	**HI**
83	Malvaceae	*Hibiscadelphus giffardianus*	**CR**	**D1**	**HI**
84	Malvaceae	*Hibiscadelphus hualalaiensis*	**CR**	**D1**	**HI**
85	Malvaceae	*Hibiscus clayi*	**CR**	**D1**	**HI**
86	Malvaceae	*Kokia drynarioides*	**CR**	**D1**	**HI**
87	Palmae	*Pritchardia viscosa*	**CR**	**A1acde+2cde**	**HI**
88	Palmae	*Pritchardia aylmer-robinsonii*	**CR**	**A1ace+2ce**	**HI**
89	Palmae	*Pritchardia hardyi*	**CR**	**A1ce**	**HI**
90	Palmae	*Pritchardia affinis*	**CR**	**A1ce+2ce**	**HI**
91	Palmae	*Pritchardia kaalae*	**CR**	**A1ce+2ce**	**HI**
92	Palmae	*Pritchardia napaliensis*	**CR**	**A1ce+2ce**	**HI**
93	Palmae	*Pritchardia schattaueri*	**CR**	**A1ce+2ce**	**HI**
94	Palmae	*Pritchardia munroi*	**CR**	**A2ce**	**HI**
95	Rubiaceae	*Gardenia brighamii*	**CR**	**C2a**	**HI**
96	Rubiaceae	*Gardenia mannii*	**CR**	**C2a**	**HI**
97	Rutaceae	*Melicope haupuensis*	**CR**	**B1+2c**	**HI**
98	Rutaceae	*Melicope zahlbruckneri*	**CR**	**B1+2c**	**HI**
99	Rutaceae	*Zanthoxylum dipetalum var. tomentosum*	**CR**	**B1+2c**	**HI**
100	Rutaceae	*Melicope knudsenii*	**CR**	**C2a**	**HI**

Ref.	Scientific name		Cls	Sub	Location
101	Sapindaceae	*Alectryon macrococcus var. auwahiensis*	**CR D1**		**HI**
102	Solanaceae	*Nothocestrum breviflorum*	**CR C2a**		**HI**
103	Solanaceae	*Nothocestrum peltatum*	**CR C2a**		**HI**
104	Urticaceae	*Urera kaalae*	**CR D1**		**HI**
105	Apocynaceae	*Pteralyxia macrocarpa*	**VU C2a**		**HI**
106	Campanulaceae	*Clermontia hawaiiensis*	**VU A1ce**		**HI**
107	Campanulaceae	*Clermontia oblongifolia ssp. Oblongifolia*	**VU A1ce**		**HI**
108	Campanulaceae	*Cyanea aculeatiflora*	**VU D2**		**HI**
109	Campanulaceae	*Cyanea hamatiflora ssp. Hamatiflora*	**VU D2**		**HI**
110	Campanulaceae	*Cyanea hardyi*	**VU D2**		**HI**
111	Campanulaceae	*Cyanea leptostegia*	**VU D2**		**HI**
112	Compositae	*Dubautia reticulata*	**VU A1ce**		**HI**
113	Dracaenaceae	*Pleomele auwahiensis*	**VU A1ce**		**HI**
114	Dracaenaceae	*Pleomele halapepe*	**VU A1ce**		**HI**
115	Euphorbiaceae	*Chamaesyce celastroides var. laehiensis*	**VU A1ce**		**HI**
116	Euphorbiaceae	*Chamaesyce celastroides var. lorifolia*	**VU A1ce**		**HI**
117	Euphorbiaceae	*Chamaesyce celastroides var. stokesii*	**VU A1ce**		**HI**
118	Euphorbiaceae	*Chamaesyce olowaluana*	**VU A1ce**		**HI**
119	Leguminosae	*Acacia koaia*	**VU A1ce**		**HI**
120	Malvaceae	*Hibiscus kokio ssp. Kokio*	**VU A1ce**		**HI**
121	Myrtaceae	*Metrosideros polymorpha var. newellii*	**VU A1ce**		**HI**
122	Palmae	*Pritchardia waialealeana*	**VU A2ce**		**HI**
123	Pittosporaceae	*Pittosporum terminalioides*	**VU A1ce**		**HI**
124	Rubiaceae	*Bobea sandwicensis*	**VU A1ce**		**HI**
125	Rubiaceae	*Bobea timonioides*	**VU A1ce**		**HI**
126	Rubiaceae	*Gardenia remyi*	**VU A1ce**		**HI**
127	Rubiaceae	*Psychotria greenwelliae*	**VU D2**		**HI**
128	Rutaceae	*Melicope hawaiensis*	**VU A1ce**		**HI**
129	Rutaceae	*Melicope kaalaensis*	**VU A1ce**		**HI**
130	Rutaceae	*Zanthoxylum oahuense*	**VU C2a**		**HI**
131	Rutaceae	*Melicope wawraeana*	**VU D2**		**HI**
132	Santalaceae	*Santalum freycinetianum var. lanaiense*	**VU A1ce**		**HI**
133	Sapindaceae	*Sapindus oahuensis*	**VU A1ce**		**HI**
134	Sapotaceae	*Nesoluma polynesicum*	**VU A1ce**		**HI**
135	Araliaceae	*Reynoldsia sandwicensis*	**LR/nt**		**HI**
136	Campanulaceae	*Clermontia grandiflora*	**LR/nt**		**HI**
137	Campanulaceae	*Clermontia persicifolia*	**LR/nt**		**HI**
138	Euphorbiaceae	*Chamaesyce celastroides var. celastroides*	**LR/nt**		**HI**
139	Euphorbiaceae	*Chamaesyce celastroides var. hanapepensis*	**LR/nt**		**HI**
140	Lauraceae	*Cryptocarya mannii*	**LR/nt**		**HI**
141	Loganiaceae	*Labordia hirtella*	**LR/nt**		**HI**
142	Malvaceae	*Hibiscus waimeae ssp. Waimeae*	**LR/nt**		**HI**
143	Rubiaceae	*Morinda trimera*	**LR/nt**		**HI**
144	Rutaceae	*Zanthoxylum dipetalum var. dipetalum*	**LR/nt**		**HI**
145	Rutaceae	*Zanthoxylum kauaense*	**LR/nt**		**HI**
146	Solanaceae	*Nothocestrum longifolium*	**LR/nt**		**HI**

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
Little, Elbert L., Jr. 1979. Checklist of United States trees (native and naturalized). Agric. Handb. 541. Washington, DC. U.S. Department of Agriculture, Forest Service, 375 p.	H	Tree species and status	1979	Updated using PLANTS database information to compile current list of tree species in U.S.
PLANTS database http://plants.usda.gov/	H	Plant species	2000	Used to update data from Little, 1979.
FIA Database Http://fia.fs.fed.us	H	Tree species, volume	2002	

10.3 Analysis and processing of national data

10.3.1 Estimation and forecasting

1990 values for some individual species were not available directly for 1990 and were estimated based on prorated available species totals.

10.4 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
Pseudotsuga menziesii, Douglas-fir	2,939	3,704
Pinus taeda, Loblolly pine	1,868	1,905
Pinus ponderosa, Ponderosa pine	1,001	1,177
Acer rubrum, Red maple	732	1,141
Tsuga heterophylla, Western hemlock	1,212	1,032
Pinus contorta, Lodgepole pine	862	927
Quercus alba, White oak	688	925
Acer saccharum, Sugar maple	553	771
Liriodendron tulipifera, Yellow-poplar	500	749
Quercus rubra, Northern Red oak	551	688
Remainder of species	14,327	13,957
TOTAL	**25,233**	**26,976**

10.5 Comments to National reporting table T10

Data presented are for Commercial Growing stock only. Full species level data are not currently available for protected areas and unproductive forests.

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
Howard, J.L. 2003. U.S. Timber Production, Trade, Consumption, and Price Statistics 1965-2002. Res. Pap. FPL-615. Madison, WI: U.S. Department of Agriculture, Forest Products laboratory. 90 p. http://www.fpl.fs.fed.us/documnts/fplrp/fplrp615/fplrp615.pdf	H	Roundwood products, fuelwood	2002, 1997, 1987	Data from Table 5b was used for roundwood removals. Data was increased by 14% to account for bark. Year selected to parallel reporting for other volume data.

11.2.2 Classification and definitions

National class	Definition
Industrial wood	All commercial roundwood products except fuelwood.
Removals	The net volume of trees (under bark), live or dead, of a specified minimum diameter (generally the same as for growing stock) removed from the forest during a specified year, or average for a reference period, by harvesting or cultural operation such as thinning or stand improvement, or by land clearing. Includes the volume of trees or parts of trees that are part of a harvest operation but are not removed from the forest.
Roundwood products	Logs, bolts, and other round timber generated from harvesting trees for industrial or consumer use.
Fuelwood	Wood used for conversion to some form of energy, primarily in residential use.

11.2.3 Original data

Removal of roundwood in the U.S., 1990, 2000, 2005

Howard, J.L. 2003. U.S. Timber Production, Trade, Consumption, and Price Statistics 1965-2002. FPL-RP-615. USDA FS, Madison WI. 90p. Table 5b.

FRA 2005 Category	Volume in 1000 cubic meters of roundwood UNDER bark					
	Forest			Other wooded land		
	1988-92	1998-2002	Est 2005	1987	1997	2002
Industrial roundwood	437,889	435,339	429,462			
Woodfuel	85,724	45,420	44,958			
TOTAL	523,614	480,759	474,420			

FRA 2005 Category	Volume in 1000 cubic meters of roundwood OVER bark *					
	USA			Other wooded land		
	1988-92	1998-2002	Est 2005	1987	1997	2002
Industrial roundwood	499,194	496,286	489,586			
Woodfuel	97,726	51,779	51,252			
TOTAL	596,920	548,066	540,838			

* Overbark conversion estimated by multiplying underbark value by 1.14.

Notes: To deal with annual variations, the figures are an average of a five year period for any reference year 1988 to 1992 for 1990 and 1998 to 2002 for 2000. Figures for 2005 are based on a forecast.

11.3 Analysis and processing of national data

The following procedure was applied to derive data for this table:

FRA class	U.S. reporting process
Industrial wood removal	All removals for industrial roundwood products by U.S. definition (which are reported under bark) adjusted upward by 14% to report volume including bark.
Woodfuel removal	All removals for fuelwood by U.S. definition (which are reported under bark) adjusted upward by 14% to report volume including bark.

11.4 Data for National reporting table T11

FRA 2005 Categories	Volume in 1000 cubic meters of roundwood over bark					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Industrial roundwood	499,194	496,286	489,586			
Woodfuel	97,726	51,779	51,252			
TOTAL for Country	**596,920**	**548,066**	**540,838**			

11.5 Comments to National reporting table T11

The Forest Service Forest Products Laboratory (FPL) reports these data to Joint Forestry Sector Questionnaire (JFSQ). When FPL reported on JFSQ in 2004, the data was for 2003. When ECE makes changes to the data base (as it did with the fuelwood data last year), FAO changes tend to lag. FPL revised the fuelwood data back to 1965. The values in submitted are from FPL table 5b and are the most current.

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
U.S. Timber Production, Trade, Consumption, and Price Statistics 1965-2002 FPL-RP-615, http://www.fpl.fs.fed.us/documnts/fplrp/ fplrp615/fplrp615.pdf An Analysis of the Situation in the U.S. 1952-2050 PNW-GTR-560	H	Industrial wood	1990, 2000	Data are assumed to be under bark.
FRA 2000: Global Forest Resources Assessment 2000. Main Report. FAO Forestry Paper 140. FAO, Rome.	H	Woodfuel	2000	1990 prorated on 2000 values
http://www.firewoodcenter.com/ 8/18/2004	M-L	Fuelwood prices	2004	2005 estimate based on 2 cubic meters per cord and stumpage at 8% of cord sale price for 2004. Fuelwood stumpage indexed for 1990 and 2000 based on stumpage trends for other products. Quality refers use of anecdotal data for national average.
http://www.ext.vt.edu/pubs/forestry/420-003/420-003.html	M-L	Fuelwood stumpage	2003	Regional estimate of $2-$12 per cord stumpage for fuelwood in 2003. 2005 value set at $6/m3 stumpage. Prices for 1990 and 2000 adjusted for price index. Quality refers use of anecdotal data for national average.

12.2.2 Classification and definitions

National class	Definition
Industrial roundwood value	Estimated average stumpage value of logs, bolts, and other round timber generated from harvesting trees for industrial or consumer use.
Fuelwood value	Estimated average stumpage value of wood used for conversion to some form of energy, primarily in residential use.

12.3 Analysis and processing of national data

To deal with annual variations, the figures are an average of a five year period for any reference year 1988 to 1992 for 1990 and 1998 to 2002 for 2000. Figures for 2005 are based on a forecast.

12.3.1 Estimation and forecasting

The stumpage value for industrial roundwood was estimated using the following steps for 1990, 2000 and 2005 (2005 was estimated by interpolating using projections from the 2003 RPA Timber Assessment to 2010):

1. Obtain stumpage value estimates in 1982 dollars from Table 15 of the 2003 RPA Timber Assessment (http://www.fs.fed.us/pnw/pubs/gtr560/gtr560_part1.pdf)
2. Convert stumpage values to $ per cubic foot using factors from tables B-11 and B-9 from "An Analysis of the timber situation in the United States: 1989-2040. 1989. USDA FS GTR-RM-199.
3. Weight $ per cubic foot values by production in Table 13 of the 2003 RPA Timber Assessment to obtain values in weighting them by amounts of production in table 13 to obtain average national value per cubic foot for each of 4 categories - softwood and hardwood sawtimber, softwood and hardwood pulpwood
4. Weighted values in 1982 dollars were multiplied by roundwood production amounts from tables 6a and 7a in "U.S. Timber Production, Trade, Consumption, and Price Statistics 1965-2002 (projections to 2005 based on table 13 of the 2003 Timber Assessment) to obtain total stumpage value in 1982 dollars for 1990, 2000 and 2005. See http://www.fpl.fs.fed.us/documnts/fplrp/fplrp615.pdf
5. Values in 1982 dollars were converted to current year dollars using the producer price index. See http://www.census.gov/prod/2004pubs/03statab/prices.pdf

12.4 Data for National reporting table T12

FRA 2005 Categories	Value of roundwood removal (1000 USD)					
	Forest			Other wooded land		
	1990	2000	2005	1990	2000	2005
Industrial roundwood	9,846,758	18,445,540	18,682,708			
Woodfuel	338,175	335,443	309,226			
TOTAL for Country	**10,184,933**	**18,780,983**	**18,991,934**			

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

Gathering nontimber forest products is a significant use of the Nation's forests that affect forest ecosystems. These products include medicinals, food and forage species, floral and horticultural species, resins and oils, art and craft species, game animals and fur bearers. Harvest of these products from forest ecosystems is a significant and very important activity for many Americans, for recreational, commercial, subsistence, and cultural uses.

- ***Medicinals-*** The use of medicinal plants has experienced an expansion in the past twenty years exceeding that of any other nontimber native flora. Medicinal herbal products and plants are a big business in the United States, with demand prompting protective measures for some species.
- ***Food and forage species-*** Foods from native species provide a very small share of the food species consumed by Americans, but are often culturally significant. Forage grass species are particularly important to Federal and private land management.
- ***Floral and horticultural species-*** Native plants used for decorating homes and workplaces are as diverse as the decorative forms invented and harvests have a strongly regional character.
- ***Resins and oils-*** Products derived from native plant species fall into several broad categories. Industrial chemists use aromatic plant compounds in air fresheners, bath products, diffusers, hair- and skin-care products, inhalants, massage oils, perfumes, and food flavouring. A few native species have a long tradition of commercial uses as fragrances and have international markets.
- ***Arts and crafts-*** Arts and crafts are an integral part of innumerable traditions from Native American use of bark, willow and branches in baskets, masks, traditional and ceremonial dress, to doll-making and baskets in the Appalachians, to furniture, birdhouses, bowls and other well-known and admired Shaker products.
- ***Game animals and fur bearers-*** This category includes big game (primarily large mammal species), small game (rabbits, squirrels, etc), migratory game birds (ducks, geese, etc), and furbearers (fox, raccoon, beaver,

etc). Trends indicate a likely increase in species that tolerate intensive land use activities, such as those associated with agricultural habitats and decreases in species associated with grasslands and early successional stages of forest habitats, and general declines in species dependent on wetlands. Generally big game hunting is increasing, small game hunting is declining, migratory bird hunting may be increasing after 20 years of decline and fur harvests declined sharply from 1980 to 1990.

In general, harvest of nontimber forest products is largely undocumented, particularly on private forest lands, but it is understood that any harvesting of these products may impact forest ecosystems.

Anecdotal data from TBFRA 2000:

24.2a - Major wild edible mushrooms and related harvest values in Washington, Oregon, and Idaho, 1992 (Source: Schlosser and Blatner, 1994)

Species	Scientific Name	Volume (kg)	Value (1992 US $)
Oregon black truffle	*Picoa carthusiana*	2,705	456,013
Cauliflower	*Sparassis crispa*	3,536	22,070
Chanterelle	*Cantharellus spp.*	515,989	3,664,261
Coral Tooth	*Hericium abietis*	676	5,761
Boletus species	*Boletes spp.*	218,936	2,290,599
Matsutake	*Tricholoma spp.*	374,840	7,955,687
Morels	*Morchella spp.*	602,649	5,222,237
Truffle species	*Tuber spp.*	3,382	235,533
Puffballs	*Lycoperdon and Calvatia spp.*	1,004	3,648
Spreading hedgehog	*Hydnum repandum*	19,542	122,438
Others		45,493	288,833
TOTAL		1,788,752	20,267,080

24.2b - Trends in harvest of selected game species, 1975-1993 (number harvested)

Species	1975	1980	1985	1990	1993
Elk	96,633	109,677	113,139	163,139	165,042
Forest Grouse*	3,828,133	5,046,383	3,512,296	4,113,031	2,424,810
Turkey	168,586	253,127	367,493	439,334	492,254
Deer	2,362,057	2,757,415	4,049,059	5,683,690	5,907,925
Squirrel	36,888,484	31,315,557	29,518,013	26,280,646	21,596,424
Black Bear	17,614	17,901	16,629	21,146	24,281
TOTAL	43,361,507	39,500,060	37,576,629	36,700,986	30,610,736

24.4a - Floral Greens and related harvest values during 1989 from western Washington, western Oregon, and southwestern British Columbia.

Species	*Scientific Name*	Value (1989 US $)
Evergreen Huckleberry	*Vaccinium ovatum*	1,480,995
Evergreen Huckleberry Tips	*Vaccinium ovatum*	107,123
Red Evergreen Huckleberry	*Vaccinium ovatum*	112,900
Salal	*Gaultheria shallon*	7,641,090
Salal Tips	*Gaultheria shallon*	5,439,294
Dwarf Oregon-grape	*Berberis nervosa*	59,485
Beargrass	*Xerophyllum tenax*	11,503,641
Sword Fern	*Polystichum munitum*	1,527,117
Scotch-Broom	*Cytisus scoparius*	138,279
Moss	*Many species*	2,060,628
TOTAL		30,070,552

Source: Schlosser & Blatner, 1994

24.4a - Major Christmas ornamentals and related harvest values for 1989 in Washington, Oregon, and southeastern British Columbia.

Species	Scientific Name	Volume	Unit	Value (1989 US $)
Noble fir	*Abies procera*	8,463	Metric tons	6,703,116
Douglas-fir	*Psuedotsuga menziesii*	1,197	Metric tons	263,393
Western red cedar	*Thuja plicata*	2,159	Metric tons	1,092,385
Western white pine	*Pinus monticola*	904	Metric tons	457,503
Lodgepole pine	*Pinus contorta*	247	Metric tons	97,856
Subalpine fir	*Abies lasiocarpa*	818	Metric tons	575,840
Western juniper	*Juniperous scopulorum*	257	Metric tons	141,705
Incense cedar	*Libocedrus decurrens*	160	Metric tons	133,242
Other Boughs	*Various*			59,242
Cones	*Many species*	7,230,871	Number	253,080
Holly	*Illex spp.*	867,664	kg	2,672,405
TOTAL				12,449,767

Source: Schlosser and Blatner, 1994

24.4c -- Trends in total furbearer harvest and value and selected species, 1971-1995

Year	Total harvest	Muskrat harvest	Raccoon harvest	Red Fox harvest	Total Value	Average Price
1971	8,195,408	4,369,602	1,085,529	155,421	$4,914,000	$1.35
1975	14,752,194	6,875,196	2,968,324	230,783	$67,164,101	$18.00
1980	20,001,967	8,287,356	4,995,503	396,289	$255,455,007	$38.38
1985	12,831,984	5,264,907	3,844,705	364,687	$119,724,029	$36.48
1990	4,993,539	1,284,959	1,220,084	177,463	$19,554,454	$19.97
1995	5,739,873	2,198,347	1,889,799	188,857	$40,603,170	$21.86

Source: Flather (pers. Comm)

13.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Flather, C.H., S.J. Brady, and M. S. Knowles. 1999. Wildlife Resource Trends in the United States. USDA Forest Service General Technical Report RMRS-GTR-33.	M	Furbearer harvest, number of pelts	Mid-90s	Summary of state statistics collected at approximately 5-year intervals. Data rounded to nearest million.
Maple syrup production: 2000 data: New England Agricultural Statistics, 2001	H	Maple syrup production, gallons	2000	Collected by USDA NASS since late 1990s. National summaries not available in earlier years.
Maple syrup production: 2005 projections: 2003 production from Pennsylvania Agricultural Statistics 2002-2003	M	Maple syrup production, gallons	2005	

13.2.2 Original data

The only national data collection of a non-wood forest product in the U.S. is maple syrup. Data are collected by the USDA National Agricultural Statistical Service (NASS) from producers, and the data are summarized annually. However, the national summaries are only available since the late 1990s. Data on furbearer harvest are based on a query of states by the USDA Forest Service, and then summed across states.

Numerous other products are collected from forests, and some of these products have substantial commercial value. Examples include mushrooms and decorative foliage. However, there is no system in place to uniformly collect data on either the quantity or value of these products. In 2000, data were collected from the permits sold to collect products on Forest Service and Bureau of Land Management lands. The Forest Service data does not include quantity data, and the revenue from the permits is far less than the value of the products collected.

13.3 Analysis and processing of national data

13.3.1 Estimation and forecasting

Forecast of maple syrup is 2003 U.S. production figure.
Furbearer harvest – 2000 estimate is based on 1995 data.

13.4 Data for National reporting table T13

FRA 2005 Categories	Scale factor	Unit	NWFP removal		
			1990	2000	2005
Plant products / raw material					
1. Food- Maple Syrup	1000	gal	n/a	1210	1239
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	1000	#	5,000	6,000	n/a
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					

13.5 Comments to National reporting table T13

The only national data collection of a non-wood forest product in the U.S. is maple syrup. This reporting table is therefore incomplete and do not reflect the current state and trends of all non-wood forest products.

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

14.2.1 Data sources

References to sources of information	**Quality (H/M/L)**	**Variable(s)**	**Year(s)**	**Additional comments**
Flather, C.H., S.J. Brady, and M. S. Knowles. 1999. Wildlife Resource Trends in the United States. USDA Forest Service General Technical Report RMRS-GTR-33.	M	Furbearer harvest, number of pelts	Mid-90s	Summary of state statistics collected at approximately 5-year intervals. Data rounded to nearest million.
Maple syrup production: 2000 data: New England Agricultural Statistics, 2001	H	Maple syrup production, gallons	2000	Collected by USDA NASS since late 1990s. National summaries not available in earlier years.
Maple syrup production: 2005 projections: 2003 production from Pennsylvania Agricultural Statistics 2002-2003	M	Maple syrup production, gallons	2005	

14.2.2 Original data

Nonwood product	Units	Value of NWFP per unit (USD)		
		1990	2000	2005
1. Food- Maple Syrup	gallon	n/a	$ 27.09	$ 27.60
10. Hides, skins and trophies	number	$ 3.92	$ 6.77	n/a

14.3 Analysis and processing of national data

14.3.1 Estimation and forecasting

Value of maple syrup in 2005 based on average per unit value in 2002.

14.4 Data for National reporting table T14

FRA 2005 Categories	Value of the of NWFP removed (1000 USD)		
	1990	2000	2005
Plant products / raw material			
1. Food- Maple Syrup	n/a	$32,780	$34,200
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	$19,600	$40,600	n/a
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			
TOTAL			

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
U.S. Department of Labor, Bureau of Labor Statistics. Sawmills and Planning Mills (General): 312421 & Logging: 312410	H	Primary production of goods	1990, 2000	
U.S. Department of Labor, Bureau of Labor Statistics. Fallers: 45-4021 & Logging Equipment Operators: 45-4022 & Log Graders and Scalers: 45-4023	H	Provision of services	2000	Data 1990 based on average proportion of category to primary production in 2000.
U.S. Department of Labor, Bureau of Labor Statistics. Forest and Conservation Workers: 45-4011	H	Unspecified forestry activities	2000	Data 1990 based on average proportion of category to primary production in 2000.

15.2.2 Classification and definitions

National class	Definition
Primary production of goods	Labor Department data on sawmills and planning mills (general) and logging.
Provision of services	Labor Department data on fallers, logging equipment operators, and log graders and scalers.
Unspecified forestry activities	Labor Department data on forest and conservation workers.

15.2.3 Original data

15.3 Analysis and processing of national data

15.3.1 Estimation and forecasting

15.4 Reclassification into FRA 2005 classes

15.5 Data for National reporting table T15

FRA 2005 Categories	Employment (1000 person-years)	
	1990	2000
Primary production of goods	244.7	221.1
Provision of services	54.8	49.6
Unspecified forestry activities	11.1	10.0
TOTAL	**310.6**	**280.7**

15.6 Comments to National reporting table T15