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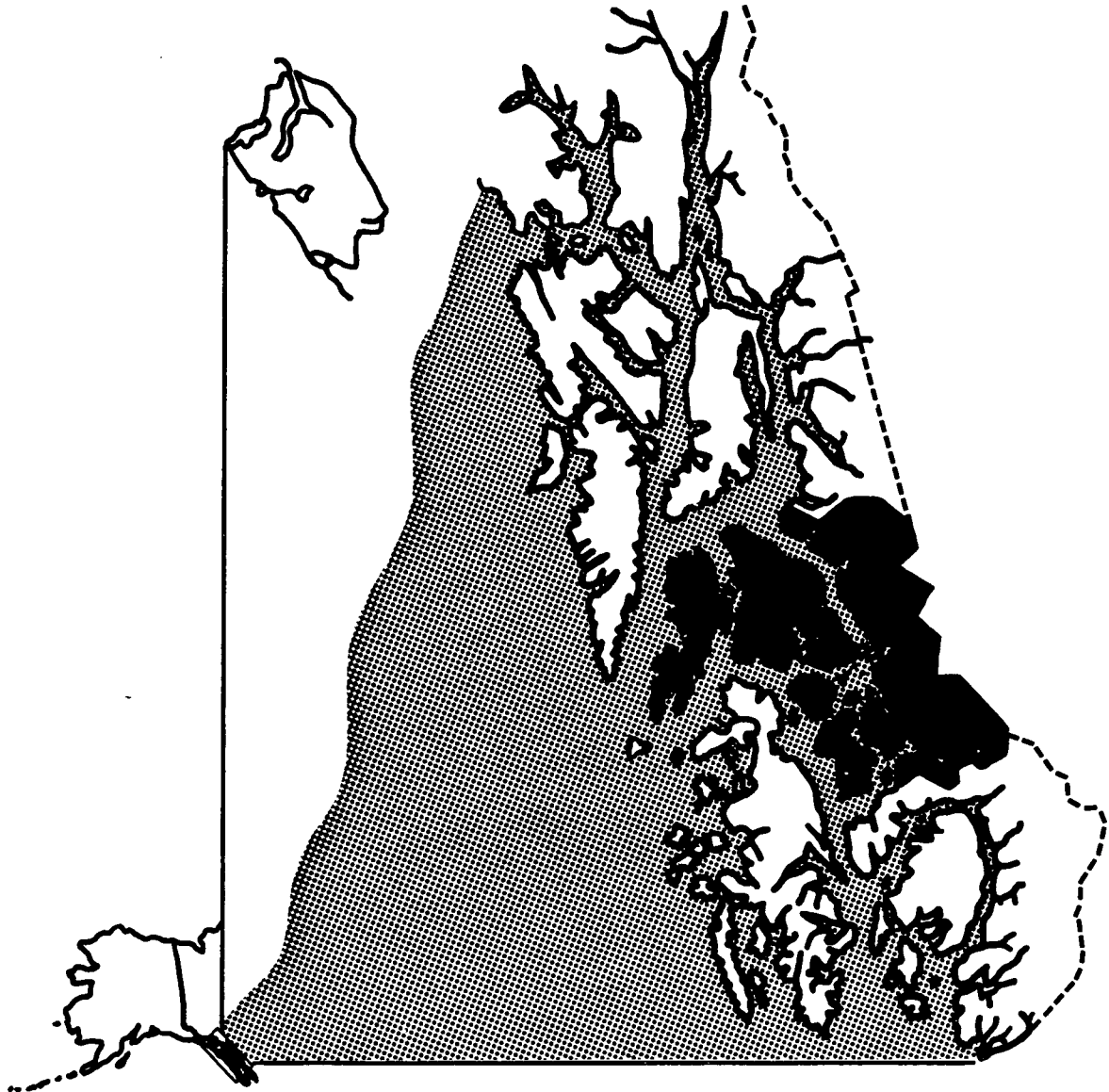
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Timber Resource Statistics for the Stikine Area of the Tongass National Forest, Alaska, 1984

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Abstract

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Statistics on forest area, total gross and net timber volumes, and annual net growth and mortality are presented from the 1983-84 timber inventory of the Stikine Area, Tongass National Forest, Alaska. Available timberland area is estimated at 1.2 million acres, net growing stock volume at 7.2 billion cubic feet, and annual net growth and mortality at 18.8 and 57.0 million cubic feet, respectively.

Keywords: Forest surveys, timber inventory, statistics (forest), Alaska (southeast).

Summary

This report for the 3.6-million-acre Stikine Area timber inventory unit is one in a series of three reports for southeast Alaska. The Stikine Area is in the panhandle of southeast Alaska and includes Kupreanof, Kuiu, Zarembo, Etolin, Woronofski, and Wrangell Islands along with a portion of the mainland. The eastern border of the unit is the United States-Canadian border. Except for cities, towns, and State and private in-holdings, the unit is administered by the Tongass National Forest.

This is the second general reinventory of the forests in the Stikine Area unit, which were first inventoried in 1956 and subsequently in 1972. Remeasurement of the growth and mortality plots established in 1956 was accomplished in 1966 and 1972. This set of growth and mortality plots was not considered representative by 1983 and was not remeasured a third time. The plots upon which estimates in this report are based were established as permanent plots for remeasurement in the future, however. Growth and mortality figures in this report therefore are derived from temporary plots.

Estimates of forest area, total gross and net timber volumes, and annual net growth and mortality are presented from the 1984 timber resource inventory of the Stikine Area. Additional detailed breakdowns of these estimates are provided in tabular form.

Preface

The USDA Forest Service, under authority of the McSweeney-McNary Forest Research Act of 1928, the Renewable Resources Planning Act of 1974, and the Renewable Resources Research Act of 1976, conducts periodic inventories of all states. In Alaska, personnel of the Tongass National Forest, the Chugach National Forest, and the Pacific Northwest Research Station's Forest Inventory and Analysis (FIA) unit in Anchorage, Alaska, have shared this responsibility.

Personnel of the Tongass National Forest were responsible for collection and compilation of necessary data; FIA personnel assisted with presentation of results shown in this series of reports.

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Highlights

	Available	Reserved	Total
	<i>Thousand acres</i>		
Total Stikine Area			
inventory unit:	3,057	563	3,620
Forest land	2,166	230	2,396
Nonforest land	864	320	1,184
Noncensus water	10	1	11
Census water	17	12	29
Forested area:			
Timberland	1,227	147	1,374
Other forest land	939	83	1,022
Timberland stand-size composition:			
Old-growth sawtimber	1,135	144	1,279
Young-growth sawtimber	8	1	10
Poletimber	5	1	6
Seedlings and saplings, and nonstocked	77	1	78
Timberland forest type composition:			
Sitka spruce	7	5	12
Hemlock-spruce	444	55	499
Cedar ^a	1	0 ^b	1
Hemlock ^c	768	84	852
Lodgepole pine	0	0	0
Red alder	2	0	2
Cottonwood	0	2	2
Nonstocked	4	1	5
	All growing stock	Sawtimber growing stock	
	Million cubic feet ^d	Million board feet Scribner rule ^e	
Volume on available timberland:			
Gross volume	8,315	43,073	
Net volume	7,233	31,958	
Net annual growth	19	102	
Annual mortality	57	244	
Volume on reserved timberland:			
Gross volume	1,076	5,654	
Net volume	938	4,212	
Net annual growth	2	15	
Annual mortality	8	44	

	All growing stock	Sawtimber growing stock
	<i>Million cubic feet^d</i>	<i>Million board feet Scribner rule^e</i>
Volume on available other forest land:		
Gross volume	1,601	6,069
Net volume	1,355	4,184
Net annual growth	12	41
Annual mortality	8	22
Volume on reserved other forest land:		
Gross volume	124	471
Net volume	105	325
Net annual growth	1	3
Annual mortality	1	2

^a Includes western redcedar and Alaska cedar.

^b 0 = less than 500 acres.

^c Includes western and mountain hemlock.

^d Volume of roundwood for growing stock trees 5.0 inches in d.b.h.(diameter at breast height) and larger.

^e Volume, Scribner rule (16-foot logs), for softwood trees 9.0 inches in d.b.h. and larger and for hardwood trees 11.0 inches in d.b.h. and larger.

Introduction

The Stikine Area inventory unit is located between 131.00° and 134.25° W. longitude and between 55.47° and 57.25° N. latitude in the panhandle of southeast Alaska (fig. 1).

Southeast Alaska is influenced by a maritime climate. Temperatures range from about 20 °F in the winter to around 75 °F in the summer. Precipitation is moderate to heavy throughout the region, and winter snowfall can exceed 60 inches.

The topography of the Stikine Area unit is typical of southeast Alaska. It is characterized by tall peaks, fjords, narrow valleys, and offshore islands. This physical character affects community development and resource use. The steepness of the land limits community development to narrow, coastal benches. Resource use is tempered by accessibility and site-integrity considerations.

Inventory Procedures

The sampling design used to derive area and timber volume estimates from the 1983-84 Stikine Area timber reinventory used a 100-percent vegetation-land type map as a base. The base map provided stratum areas on which 177 ground plots were proportionately allocated on a grid. The map (completed in 1978 from 1976 photos) polygons were classified by land type, forest type, stand-size class, and volume class. Updates were made to reflect the 1983 status of harvest, ownership, and availability. Tree measurements made at the ground plots served as the basis for the volume estimation.

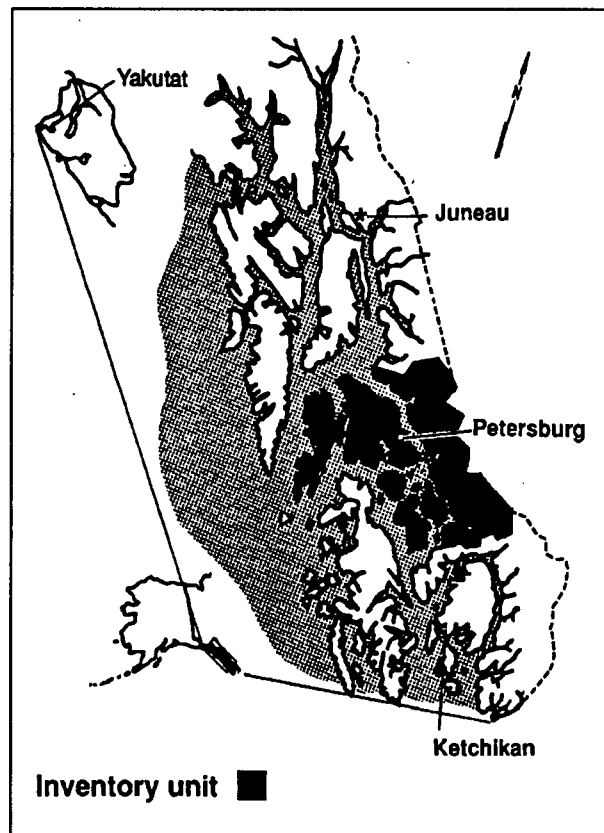


Figure 1—Stikine Area forest inventory unit, 1984.

Ownership Statistics

In 1972, ownership of land other than that administered by the USDA Forest Service was incidental. Since that time, Federal legislation has effected significant land status changes associated with Alaska Native and State of Alaska selections and wilderness withdrawals. These land status changes are the result of the Alaska Statehood Act of 1958 (Public Law 85-508), the Alaska Native Claims Settlement Act (ANCSA) of 1971 (Public Law 92-203), and the Alaska National Interest Lands Conservation Act (ANILCA; Public Law 96-487). As of 1983, the following acres have been removed since 1972 from National Forest status on the Stikine Area unit:

Change In Status	Acres
Native selections	23,178
State selections	27,964
Acquisition from the Bureau of Land Management (BLM)	296,343
Wilderness withdrawals	563,048

Land acquisition from BLM includes 132,343 acres of wilderness which is included in "wilderness withdrawals."

Timber Harvesting

A summary of timber volumes cut in the Stikine Area of the Tongass National Forest is provided in table 11. The current Stikine Area boundary does not coincide with the 1972 inventory boundary, but the volume-cut figures provide a close approximation of the amount of logging activity occurring in the area from shortly after the 1972 inventory through fiscal year 1984.

Change in Standards and Methods Influences Inventory Estimates

Results obtained from resource inventories conducted at different times are often compared to examine the data for any trend information that may be present. Many factors influence comparability of estimates derived from two or more resource inventories that did not measure the same sample by the same methods. For timber resource inventories, estimates of wood volume are important. An analyst making such a comparison must be aware not only of inventory design changes but also of volume computation changes.

Several changes were made to the volume computation procedures in the current inventory relative to the previous inventory. Changes were made in tree merchantability standards, cull tree determinations, and volume tables.

Merchantability standards changed between inventories in that the minimum breast-height diameter for sawtimber trees was lowered and the top diameters and stump heights were changed. Under the previous scheme, the break between poletimber-sized and sawtimber-sized trees was made at 11 inches for both softwoods and hardwoods, top diameters were at 40 percent of breast-height diameter for softwoods and 8 inches for hardwoods, and stump heights were variable. Under the current scheme, the break between poletimber and sawtimber is at 9 inches for softwoods and 11 inches for hardwoods. Current top diameters (inside bark) are 6 inches for softwoods and 8 inches for hardwoods, and stump height is 1 foot. Previously, for a live tree to be classified as merchantable (noncull), it had to have one merchantable saw log and, for softwood sawtimber, the tree had to be greater than 25 percent sound, board-foot measure (bfm) and, for hardwoods, greater than 50 percent sound, bfm. Poletimber trees, hardwood and softwood, had to be greater than 50 percent sound, cubic-foot measure. Currently, the requirements are simplified; any tree with at least one merchantable saw log is not cull.

Volume tables used to compute gross tree volumes also have changed. In the previous inventory, several equations were used. These were developed by Embry and Haack (1965), Bones (1968), and Farr and LaBau (1971). Currently, equations developed by Bruce (1984) are used for all Sitka spruce and hemlock. The magnitude of the differences due to use of these equations is difficult to estimate without total recompilation of the previous inventory.

Table 1 presents differences in available timberland area and cubic-foot volume estimates (in trees greater than 5.0 inches in diameter at breast height and larger) that result from different inventories and methods of area expansion. Data are presented from an inventory conducted in 1972 (van Hees and LaBau 1983) on all lands in the Stikine Area (not just National Forest lands) adjusted to National Forest area only. Also presented are two sets of data from the current (1984) inventory. The 1984 estimates of per-acre volume are both about 8 percent higher than the 1972 estimate.

Area estimates from the 1972 inventory were developed through a double-sampling technique involving area expansion of plot-level information (Bickford 1952). Estimates in the column labeled "Map '84" (in table 1) were developed by summation of mapped polygon areas, whereas estimates in the column labeled "Plot '84" were developed via a proportional, area expansion technique. Estimates presented in this report, other than those in table 1 labeled "Plot '72" or "Plot '84," were developed through mapped-polygon summation.

Although faults (such as poor correlation between photo-interpreted map classification and ground-sample classification) have been found with the 100-percent timber type map as an in-place resource information source, it is considered an adequate tool for separating productive from unproductive forest land and seedlings, saplings, poletimber, and low-volume young-growth from the group of old-growth volume classes. Even though there is low reliability in locating a particular volume class on a polygon-by-polygon basis, the type-map approach has proven highly reliable in predicting volumes by sale or drainage. Acreages derived by plot expansion, rather than directly from the map, are considered more accurate and are comparable in method to the 1972 results. These acres cannot be tied to the map though.

Old Growth

Nearly 92 percent of the timberland sample plots in the Stikine Area unit were in uncut timber. In southeast Alaska, uncut implies old growth because of the dearth of extensive, historical logging activity. Recent efforts to develop accurate characterizations of old-growth forests point to many difficulties in creating consistent definitions, however. For this timber inventory, a definition was used that focuses only on the timber component of the forest.

Stands of trees 150 years old or older are designated as old growth. Rationale for this breakpoint derives from the natural course of wood fiber productivity over the life of the stand. As stands age, the average amount of wood grown annually (the mean annual increment [MAI]) changes. In the early stages of stand growth, the increment is larger than at later stages. In southeast Alaska, the culmination of mean annual increment, for sawtimber-sized material, typically occurs at age 150 or earlier. At this point, the stand is no longer "youthful." Thus, the designation of age 150 as the delineation between young growth and old growth.

Table 1—Comparison of available timberland area and cubic-foot volume in trees 5.0 inches in diameter at breast height and larger by stand-size class, sawtimber-volume class, and type of inventory, Stikine area unit, southeast coastal Alaska

Stand-size and sawtimber-volume classes	Inventory					
	Plot '72		Map '84		Plot '84	
	<i>Acres</i>	<i>MMcf^a</i>	<i>Acres</i>	<i>MMcf</i>	<i>Acres</i>	<i>MMcf</i>
Seedlings and saplings, and nonstocked Poletimber	35,877	33	77,233	23	65,351	6
Sawtimber-volume class: ^b	5,290	19	5,536	30	—	—
Less than 8,000 board feet per acre	—	—	164	—	36,239	37
8,000-20,000	479,785	1,832	608,931	3,501	350,721	1,407
20,000-30,000	352,388	2,051	447,982	3,075	315,750	1,830
30,000-50,000	183,455	1,504	78,497	526	383,267	3,090
Greater than 50,000	48,227	601	8,422	78	75,437	879
Total	1,105,023	6,041	1,226,765	7,233	1,226,765	7,249
(Average volume per acre	5,467		5,896		5,909	

— = no data were collected.

^a MMcf = million cubic feet.

^b Net board feet, inventory Scribner volume, except base volume of 8,000 board feet, which is International 1/4-inch rule.

Stand age is based on plurality of tree stocking per acre. If, for example a stand has two age groups that are numerically adjacent, and that comprise more than 50 percent of the growing-stock stocking of the stand, stand age is assigned to the age group of the pair having the greater stocking, and the stand is designated even-aged. Stands can be classified even-aged beyond 300 years old, although 200 years is the upper age limit more commonly found. The few old, even-aged stands found during sampling generally resulted from fire, windthrow, or small village clearings.

Timber inventory crews generally do not attempt to age trees beyond 300 years. Farr and others (1976) examined 1,234 trees 11.0 inches and larger at breast height. They found average age at breast height to be 282 years in mixed hemlock and spruce stands. Three trees were more than 600 years old. The oldest tree in the study was 775 years old. The study by Farr and others (1976) indicated that trees more than 500 years old are not at all common.

Reliability of Inventory Data

All volume statistics reported here are estimates based on sampling and are subject to sampling error. Sampling errors for all estimates presented in the tables are available from the authors. The reliability of the inventory is expressed as relative sampling error at the 68-percent confidence level. Area statistics are generated directly from a vegetation-land type map and therefore are expressed without sampling error.

	Design sampling error	Sampling error achieved	Sampling error of the total estimate
	Percent		
Net growing stock volume on available timberland:			
Per billion cubic feet	10.0	9.1	
For the total 7,233,390,000 cubic feet			3.4
Net growing stock volume on available other forest land:			
Per billion cubic feet	15.0	17.5	
For the total 1,355,000,000 cubic feet			15.0
Net growth of growing stock on available timberland:			
Per billion cubic feet	10.0	4.8	
For the total 18,820,000 cubic feet			34.7
Net growth of growing stock on available other forest land:			
Per billion cubic feet	15.0	2.3	
For the total 12,000,000 cubic feet			20.8

For the Stikine Area inventory unit, growing stock volume on available timberland was estimated at 7.233 billion cubic feet, ± 3.4 percent, with 68-percent confidence limits of 6.989 and 7.477 billion cubic feet. A 68-percent confidence level means that if repeated samples were taken of this population, the estimate of total volume would be between 6.989 and 7.477 billion cubic feet 68 percent of the time.

Goals for the design sampling error were met for net volume on available timberland. Area estimates are derived from vegetation-land type maps, which are assumed to have no error.

Terminology¹

Available timberland—Timberland not withdrawn from use in production of timber products as a result of administrative statute or regulation.

Census water—Streams, sloughs, estuaries, and canals more than one-eighth of a mile wide; and lakes, reservoirs and ponds more than 40 acres in area. (*Also see* noncensus water.)

Forest land—Land at least 10.0 percent stocked by forest trees of any size, or formerly having such tree cover, and not currently developed for nonforest use.

¹ Terminology is from USDA Forest Service, Forest Service Handbook, Title 4813.1, 1967; and the manual of field instructions for the forest survey of the Stikine Area unit.

Forest types—A classification of forest land based on the species forming a plurality of the live-tree stocking.

Black cottonwood—Forests in which a plurality of the stand is black cottonwood. Black cottonwood is found south of the Alaska Range in pure stands along the major rivers.

Cedar—Forests in which a plurality of the stand is Alaska-cedar or western redcedar, either in combination or individually. Associates include mountain or western hemlock, lodgepole pine, and occasionally Sitka spruce, red alder, and cottonwood.

Hemlock-spruce—Forests in which 50 percent or more of the stand is western or mountain hemlock and where Sitka spruce comprises 30-49 percent of the stocking.

Lodgepole pine—Forests in which a plurality of the stand is lodgepole pine. Common associates are mountain and western hemlock and Alaska-cedar.

Mountain hemlock—Forests in which a plurality of the stand is mountain hemlock. An associated species is western hemlock.

Paper birch—Forests in which a plurality of the stand is paper birch. Paper birch can occur in pure stands but is more often mixed with white spruce, quaking aspen, or black spruce.

Red alder—Forests in which a plurality of the stand is red alder. Common associates are black cottonwood, Sitka spruce, western hemlock, and occasionally western redcedar or Alaska-cedar, or both.

Sitka spruce—Forests in which a plurality of the stand is Sitka spruce. An associated species is western hemlock.

Western hemlock—Forests in which a plurality of the stand is western hemlock. Common associates include Sitka spruce, Alaska-cedar, western redcedar, mountain hemlock, and occasionally cottonwood, red alder, or lodgepole pine.

Growing-stock trees—Sawtimber trees, poletimber trees, saplings, and seedlings; that is, all live trees except cull trees.

Growing stock volume—The net volume of sound wood in the bole of growing stock trees 5.0 inches and larger in d.b.h. (diameter at breast height), from stump to a minimum 4.0-inch top outside bark, or to the point where the central stem breaks into limbs.

Hardwoods—Broad-leaved trees that are usually deciduous. "Commercial" Alaska hardwood species are balsam poplar, black cottonwood, paper birch, and quaking aspen.

Land area—The area of dry land and land temporarily or partly covered by water, such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries, and canals less than 120 feet wide; and lakes, reservoirs, and ponds less than 5 acres in area.

Land class—A classification of land by major use, such as timberland, other forest, and nonforest. The minimum-size area for classification is 5 acres.

Mean annual increment (MAI)—A measure of the volume of wood, in cubic feet, produced on 1 acre during 1 year. Forest Inventory and Analysis minimum standard for timberland is the ability to produce 20 cubic feet per acre per year.

Merchantable tree—A merchantable tree must be producing or be capable of producing at least one merchantable saw log that is at least 50 percent sound for hardwoods or 33 percent sound for softwoods, board-foot measure. All poletimber less than 50 percent sound, cubic-foot measure, and all saplings with any sign of rot are not considered merchantable trees but rotten culls. Trees of such poor form that they will never produce a merchantable saw log are not classified as merchantable trees but as sound culls or rough trees.

Mortality—Number or sound wood volume of live trees dying from natural causes during a specified period.

Net annual growth of growing stock—The annual change in net volume of sound wood in live sawtimber and poletimber trees.

Net annual growth of sawtimber—The annual change in net board-foot volume of live sawtimber trees.

Net volume—The gross volume of a tree less deductions for rot, sweep, or other defect affecting product use.

Noncensus water—Streams, sloughs, estuaries, and canals between 120 feet and one-eighth of a mile wide; and lakes, reservoirs, and ponds between 5 and 40 acres in area. (*Also see census water.*)

Nonforest land—Land not qualifying as forest land. Includes land that never has supported forests and lands formerly forested where forest use is precluded by development for nonforest uses such as crops, improved pasture, residential areas, and city parks. Also includes improved roads and certain areas of water classified by the Bureau of the Census as land. Unimproved roads, streams, canals, and nonforest strips in forest areas must be more than 120 feet wide, and clearings in forest areas must be more than 5 acres in size to qualify as nonforest land.

Nonstocked areas—Timberland less than 10.0 percent stocked with growing stock trees.

Other forest land—Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions (producing less than 20 cubic feet MAI). This includes sterile or poorly drained forest land, subalpine forests, and steep rocky areas where topographic conditions are likely to prevent indefinitely management for timber production.

Poletimber-sized tree—Softwood tree 5.0 to 8.9 inches in d.b.h.; hardwood tree from 5.0 to 10.9 inches in d.b.h.

Poletimber stands—Stands at least 10.0 percent stocked with growing stock trees of which half or more are in poletimber- and sawtimber-size trees, with poletimber stocking exceeding that of sawtimber.

Rough trees—Live trees 5.0 inches and larger in d.b.h. that do not contain a saw log, now or prospectively, primarily because of roughness or poor form, or because they are a noncommercial species.

Rotten trees—Live trees 5.0 inches and larger in d.b.h. that do not contain a saw log, now or prospectively, primarily because of rot.

Salvable dead trees—Standing or down dead trees currently considered merchantable by regional standards. A poletimber tree must be more than one-half sound; a sawtimber tree more than one-third sound (board measure).

Sapling-sized tree—A tree 10 to 4.9 inches in d.b.h.

Saw log—A log meeting minimum standards of diameter, length, and defect, including logs at least 12 feet long for softwoods (8 feet for hardwoods), sound and straight, and with a minimum small-end diameter inside bark of 6 inches for softwoods (8 inches for hardwoods).

Saw-log portion—That part of the bole of sawtimber trees between the stump and the saw-log top.

Saw-log top—The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw-log top is 7.0 inches d.o.b. (diameter outside bark) for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber-sized tree—Softwood tree 9.0 inches d.b.h. and larger; hardwood tree 11.0 inches in d.b.h. and larger.

Sawtimber stands—Stands at least 10.0 percent stocked with growing stock trees, with half or more of total stocking in sawtimber- or poletimber-size trees, and with sawtimber stocking at least equal to poletimber stocking.

Sawtimber volume—Net volume of sawtimber trees measured in board feet.

Scribner rule—The common board-foot timber scaling rule used locally in determining volume of sawtimber. Standing inventory volume is based on 16-foot logs.

Seedling-sapling stands—Stands at least 10.0 percent stocked with growing stock trees of which more than half of the stocking is saplings and seedling-size trees.

Seedling-sized tree—An established tree less than 1.0 inch d.b.h.

Site productivity class—A classification of forest land based on capacity to grow crops of industrial wood.

Stand size class—A classification of forest land based on size of the growing stock present; that is, sawtimber, poletimber, or saplings and seedlings.

Stocking—The degree of occupancy of land by trees, measured either by basal area or by the number of trees in a stand by size or age and spacing, compared with the basal area or number of trees required to fully use the growth potential of the land; that is, the stocking standard.

Timberland—Forest land producing or capable of producing crops of industrial wood. Areas qualifying as timberland can produce more than 20 cubic feet per acre per year of industrial wood at culmination of mean annual increment.

Tree size class—A classification based on the diameter of the tree at breast height (4-1/2 feet above the ground on the uphill side of the tree).

Unclassified land—Locations that could not be classified on aerial photography for a number of reasons including cloud cover or shadow.

Upper stem portion—That part of the main stem or fork of sawtimber trees above the saw-log top to a minimum top diameter of 4.0 inches outside bark or to the point where the main stem or fork breaks into limbs.

Names of Trees²

Common name	Scientific name
Softwoods:	
Alaska-cedar	<i>Chamaecyparis nootkatensis</i> (D. Don) Spach
Lodgepole pine	<i>Pinus contorta</i> Dougl.
Mountain hemlock	<i>Tsuga mertensiana</i> (Bong.) Carr.
Western hemlock	<i>Tsuga heterophylla</i> (Raf.) Sarg.
Western redcedar	<i>Thuja plicata</i> Donn
Sitka spruce	<i>Picea sitchensis</i> (Bong.) Carr.
Hardwoods:	
Black cottonwood	<i>Populus trichocarpa</i> Torr. & Gray
Red alder	<i>Alnus rubra</i> Bong.

² Scientific names are according to Viereck and Little (1972).

Tables

Estimates in this report were developed from statistically based samples and therefore are subject to sampling error. Sampling errors for estimates of various resource quantities are presented in the section, "Reliability of Inventory Data."

Table 2—Area of forest land by forest type and land class, Stikine Area unit, southeast coastal Alaska, 1984

Forest type	Land class				All classes
	Timberland		Other forest land		
	Available	Reserved	Available	Reserved	
	Thousand acres				
Softwoods:					
Cedar ^a	1	0 ^b	346	30	377
Hemlock ^c	768	84	470	41	1,363
Hemlock-spruce	444	55	—	—	499
Lodgepole pine	0	—	99	9	108
Sitka spruce	7	5	—	—	12
Total	1,220	144	914	81	2,359
Hardwoods:					
Black cottonwood	0	2	—	—	2
Red alder	2	0	—	—	2
Total	2	2	—	—	5
Nonstocked	5	1	25	2	32
All types	1,227	147	939	83	2,396

— = no data were collected.

Totals may be off because of rounding.

^a Includes Alaska-cedar and western redcedar.

^b 0 = less than 500 acres.

^c Includes mountain and western hemlock.

Table 3—Number of growing stock trees on available timberland by species and diameter class, Stikine Area unit, southeast coastal Alaska, 1984

Species	Diameter class (inches)								All classes
	Seedlings less than 1.0	1.0- 4.9	5.0- 8.9	9.0- 12.9	13.0- 16.9	17.0- 20.9	21.0- 28.9	29.0 +	
<i>Thousand trees</i>									
Softwoods:									
Alaska-cedar	211,511	26,158	10,395	5,944	5,758	4,344	4,046	753	268,908
Lodgepole pine	10,924	—	—	—	183	—	—	—	11,106
Mountain hemlock	268,424	25,842	11,094	6,051	3,035	1,468	1,014	241	317,168
Western hemlock	5,929,394	199,513	46,394	28,471	14,360	10,839	10,772	5,034	6,244,777
Western redcedar	102,220	9,995	2,831	1,689	1,107	1,337	1,285	569	121,033
Sitka spruce	576,899	17,167	6,729	3,685	1,597	1,863	2,298	2,441	612,680
Total	7,099,371	278,675	77,445	45,839	26,040	19,851	19,415	9,037	7,575,672
Hardwoods:									
Black cottonwood	—	—	—	—	—	—	—	—	—
Red alder	38,037	2,874	—	368	327	118	57	—	41,781
Total	38,037	2,874	—	368	327	118	57	—	41,781
All species	7,137,408	281,548	77,445	46,207	26,367	19,969	19,471	9,037	7,617,452

— = no data were collected.

Totals may be off because of rounding.

Table 4—Net volume of timber on available timberland by class of timber and by softwoods and hardwoods, Stikine Area unit, southeast coastal Alaska, 1984

Class of timber	Softwoods	Hardwoods	All Species
<i>Million cubic feet</i>			
Sawtimber trees:			
Saw-log portion	6,946	19	6,965
Poletimber trees	267	1	268
All growing stock	7,213	20	7,233
Cull trees	76	—	76
Salvable dead trees	502	0 ^a	502
All timber	7,791	21	7,811

— = no data were collected.

Totals may be off because of rounding.

^a Less than 500,000 cubic feet.

Table 5—Net volume of sawtimber, Scribner rule, on available timberland by species and diameter class, Stikine Area unit, southeast coastal Alaska, 1984

Species	Diameter class (inches)					All classes
	9.0- 12.9	13.0- 16.9	17.0- 20.9	21.0- 28.9	29.0 +	
<i>Million board feet</i>						
Softwoods:						
Alaska-cedar	224	504	677	1,190	416	3,012
Lodgepole pine	—	22	—	—	—	22
Mountain hemlock	220	283	315	441	200	1,459
Western hemlock	1,251	1,862	2,818	5,722	6,217	17,869
Western redcedar	54	87	206	351	294	992
Sitka spruce	171	276	674	1,704	5,716	8,540
Total	1,918	3,033	4,691	9,409	12,843	31,894
Hardwoods:						
Black cottonwood	—	—	—	—	—	—
Red alder	9	30	14	12	—	65
Total	9	30	14	12	—	65
All species	1,927	3,063	4,705	9,420	12,843	31,958

— = no data were collected.

Totals may be off because of rounding.

Table 6—Net volume of growing stock on available timberland by species and diameter class, Stikine Area unit, southeast coastal Alaska, 1984

Species	Diameter class inches						All classes
	5.0- 8.9	9.0- 12.9	13.0- 16.9	17.0- 20.9	21.0- 28.9	29.0 +	
<i>Million cubic feet</i>							
Softwoods							
Alaska-cedar	38	68	144	186	317	108	860
Lodgepole pine	—	—	5	—	—	—	5
Mountain hemlock	21	75	77	77	102	45	398
Western hemlock	170	396	469	657	1,224	1,267	4,182
Western redcedar	11	16	24	53	85	70	259
Sitka spruce	27	54	62	134	314	917	1,508
Total	267	608	781	1,107	2,044	2,406	7,213
Hardwoods:							
Black cottonwood	—	—	—	—	—	—	—
Red alder	—	5	9	4	3	—	20
Total	—	5	9	4	3	—	20
All species	267	613	790	1,111	2,047	2,406	7,233

— = no data were collected.

Totals may be off because of rounding.

Table 7—Net annual growth of growing stock on available timberland by species and stand-size class, Stikine Area unit, southeast coastal Alaska, 1984

Species	Stand-size class			All classes
	Seedling and sapling	Poletimber	Sawtimber	
<i>Thousand cubic feet</i>				
Softwoods:				
Alaska-cedar	10	—	-398 ^a	-388
Lodgepole pine	—	—	-291	-291
Mountain hemlock	—	—	3,558	3,558
Western hemlock	206	1,027	7,785	9,017
Western redcedar	—	—	-898	-898
Sitka spruce	215	249	6,890	7,353
Total	430	1,276	16,646	18,352
Hardwoods:				
Black cottonwood	—	—	—	—
Red alder	—	—	471	471
Total	—	—	471	471
All species	430	1,276	17,117	18,823

— = No data were collected.

Totals may be off because of rounding.

^a Negative net annual growth indicates annual mortality exceeded gross annual growth.

Table 8—Net annual growth of sawtimber, Scribner rule, on available timberland by species and stand-size class, Stikine Area unit, southeast coastal Alaska, 1984

Species	Stand-size class			All classes
	Seedling and sapling	Poletimber	Sawtimber	
<i>Thousand board feet</i>				
Softwoods:				
Alaska-cedar	35	—	-918 ^a	-883
Lodgepole pine	—	—	-1,192	-1,192
Mountain hemlock	—	—	13,799	13,799
Western hemlock	624	1,749	46,010	48,383
Western redcedar	—	—	-4,409	-4,409
Sitka spruce	505	825	42,635	43,965
Total	1,164	2,574	95,925	99,664
Hardwoods:				
Black cottonwood	—	—	—	—
Red alder	—	—	1,859	1,859
Total	—	—	1,859	1,859
All species	1,164	2,574	97,784	101,523

— = No data were collected.

Totals may be off because of rounding.

^a Negative net annual growth indicates annual mortality exceeded gross annual growth.

Table 9—Average annual mortality of timber on available timberland by species and type of volume, Stikine Area unit, southeast coastal Alaska, 1984

Species	Type of volume	
	Cubic foot	Board foot ^a
<i>Thousand feet</i>		
Softwoods:		
Alaska-cedar	6,650	23,474
Lodgepole pine	379	1,720
Mountain hemlock	2,289	7,858
Western hemlock	38,713	168,806
Western redcedar	2,657	10,784
Sitka spruce	6,329	31,556
Total	57,018	244,198
Hardwoods:		
Black cottonwood	—	—
Red alder	—	—
Total	—	—
All species	57,018	244,198

— = No data were collected.

Totals may be off because of rounding.

^a Scribner volume based on 16-foot logs.

Table 10—Average per-acre characteristics of sawtimber-volume strata (map classified) for timber 9.0 inches in diameter at breast height and larger on available timberland, Stikine Area unit, southeast coastal Alaska, 1984

Per-acre characteristic	Sawtimber-volume stratum ^a			
	8,000-19,999	20,000-29,999	30,000-49,999	50,000 +
Number of trees	123	99	84	67
Basal area (square feet)	210	220	204	240
Quadratic-mean tree diameter (inches)	17.7	20.2	21.1	25.6
Average height of the 40 largest diameter trees (feet)	86	96	101	113
Percent volume-defect (Scribner rule)	27.4	24.6	22.2	14.6
Species distribution of total volume (Scribner rule), in percent:				
Alaska cedar	15.3	4.8	3.2	—
Sitka spruce	23.0	28.4	41.0	51.1
Lodgepole pine	.1	t ^b	—	—
Western redcedar	4.2	2.6	—	—
Western hemlock	50.6	61.6	50.1	48.9
Mountain hemlock	6.4	2.6	5.5	—
Hardwoods	.4	t	.2	—
Live-tree volume (Scribner rule)	24,029	32,210	34,412	51,930
Merchantable-dead tree volume (Scribner rule)	1,517	1,857	2,201	—

— = no data were collected.

^a Net board feet, inventory Scribner volume, except base volume of 8,000 board feet, which is International 1/4-inch rule.

^b t = trace.

Table 11—Summary of timber harvest, Scribner rule, Stikine Area unit, southeast coastal Alaska, 1972-84

Year of harvest	Volume scaled, Scribner rule ^a	Inventory volume, Scribner rule ^b
<i>Thousand board feet</i>		
1972	91,399	109,944
1973	96,590	116,188
1974	109,119	131,259
1975	76,971	92,588
1976	59,936	72,097
1977	82,448	99,177
1978	61,146	73,553
1979	57,118	68,707
1980	79,809	96,002
1981	92,287	111,012
1982	101,967	122,656
1983	37,121	44,653
1984	15,466	18,604
Total	961,377	1,156,440

^a Scribner rule, Bureau scale. From National Forest scale records.

^b Inventory volume = Scribner, Bureau scale volume × 1.2029.

Metric Equivalents

1 inch = 2.54 centimeters
1 foot = 0.3048 meter
1 acre = 0.4047 hectare
1 cubic foot = 0.0283 cubic meter
1 cubic foot per acre = 0.07 cubic meter per hectare
1 mile = 1.609 kilometers

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Statistics on forest area, total gross and net timber volumes, and annual net growth and mortality are presented from the 1983-84 timber inventory of the Stikine Area, Tongass National Forest, Alaska. Available timberland area is estimated at 1.2 million acres, net growing stock volume at 7.2 billion cubic feet, and annual net growth and mortality at 18.8 and 57.0 million cubic feet, respectively.

Keywords: Forest surveys, timber inventory, statistics (forest), Alaska (southeast).

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