AN INVENTORY OF STATE-OWNED NON-NATIVE TIMBER RESOURCES ALONG THE HAMAKUA COAST OF HAWAII

Michael Constantinides

Kamakani J. Dancil

Ronald J. Cannarella

Honolulu, Hawaii
February 2000

Supported by:

The USDA Forest Service Economic Recovery Program
The Division of Forestry and Wildlife
The Hawaii Forestry and Communities Initiative
The University of Hawaii

Executive summary:

In 1997/1998 a comprehensive inventory of State-owned non-native timber resources was conducted along the Hamakua Coast on the island of Hawaii. Most of these resources were concentrated within the Hilo and Hamakua Forest Reserves. Primary survey objectives included producing accurate forest type maps, determining forest composition and structure, and estimating timber volumes by species.

The project area was mapped using remote imagery analysis followed by ground truthing, revealing 144 non-native timber stands in 37 forest types. These timber resources occupied 6,295 acres, under the jurisdiction of four different State agencies: The Division of Forestry and Wildlife (DOFAW) – 3,971 acres; The Land Division (LD) – 1,381 acres; The Department of Hawaiian Home Lands (DHHL) – 933 acres; and State Parks Division (PD) – 10 acres. Forest sampling was conducted on a grid of fixed radius plots over the entire landscape. Sample plot points were systematically selected every 45 acres, and supplemental plots were added when important forest cover types were inadequately sampled at the initial intensity.

The sum of merchantable timber volume in forested cover types exceeded: 25,600,000 cubic feet on lands managed by DOFAW; 5,900,000 cubic feet on lands managed by DHHL; and 6,400,000 cubic feet on lands managed by the LD. The survey intensity and resulting volume analyses of this study were designed to provide guidelines for long-term forest management, and were not intended to be the sole basis for conducting timber sales.

Most of the measured tree species appeared to be well suited to the growing conditions found along the Hamakua Coast – particularly the eucalypts. Mean annual increment (MAI) values in selected stands commonly ranged between 100-200 gross ft^3 $acre^{-1}$ $year^{-1}$. This MAI range is probably an underestimate of true site potential because a majority of the surveyed timber resources along the Hamakua Coast were over mature. Peak MAI values and optimal rotation ages in these stands occurred long ago. In two *Eucalyptus saligna* and one *E. globulus* stands (19-22 years old), MAI ranged from 300-500 gross ft^3 $acre^{-1}$ $year^{-1}$. A few small stands contained *Flindersia brayleyana* and *Toona ciliata*, which showed better growth rates, form, vigor, and self-pruning than the same species in the Waiakea Timber Management Area.

Introduction:

From October 1997 to May 1998, The Hawaii Forestry and Communities Initiative (HFCI) timber survey crew conducted an inventory of State-owned non-native timber resources along the Hamakua Coast on Hawaii. The primary objectives of the inventory were to:

1. Produce accurate maps of forest type distribution.
2. Determine forest composition and structure.
3. Provide current merchantable wood volume estimates by species.

A majority of State-owned timber resources on the Hamakua Coast were located within Hamakua and Hilo Forest Reserves on lands managed by the Division of Forestry and Wildlife (DOFAW). Additional timber resources were located on lands managed by the Land Division (LD), the Department of Hawaiian Home Lands (DHHL) and the State Parks Division (PD). Most timber stands occurred within the 1500-3000 foot elevation range, though some were located in higher pasture zones with elevations ranging from 3500-6300 feet. Rainfall within the Hamakua study area typically ranges from 50-125 inches per annum with the exception of the Akaka Falls and Hilo Watershed areas, where annual rainfall can exceed 250 inches. Most soils in the study area were deep ash-derived silty clay loams from the Honokaa and Akaka Series at lower elevations, or ash-derived silt-loams of the Maile and Umikoa Series at higher elevations (Soil Conservation Service, 1972).

The first comprehensive inventory of plantation timber along the Hamakua Coast of Hawaii reported merchantable wood volume of approximately 14,000,000 cubic feet on DHHL and State lands combined (Nelson and Honda, 1966). A second survey of plantations that were established after 1960, or had tree diameters ranging from 5-11" in the 1966 report, assessed smaller trees as a biomass resource (Division of Forestry, 1979). The latter survey revealed more than 2,600,000 gross cubic feet of plantation timber volume in Hamakua and Waiakea combined, in what were then relatively young timber stands. Eucalyptus species comprised over 77% and 86% of the 1966 and 1979 survey volumes, respectively.

The structure of undisturbed vegetation communities in the Hamakua survey area approximated mesic to wet Lowland and Montane Forests (Wagner et al., 1990). Excluding planted non-native species, overstory trees in the survey area included ohia (*Metrosideros polymorpha*) koa (*Acacia koa*), loquat (*Eriobotrya japonica*) and fire tree (*Myrica faya*). Excluding seedlings from planted non-native overstory trees, guava (*Psidium* spp.), fire tree, tree ferns (*Cibotium* spp.), kopiko (*Psychotria* spp.), kawau (*Ilex anomala*), olapa (*Cheirodendron trigynum*), sword fern (*Nephrolepis multiflora*), palm grass (*Setaria palmifolia*), uluhe (*Dicranopteris linearis*), *Melastoma* spp., ginger (various genera), and grasses (various genera) were common understory and groundcover species.

Survey methodology:

Planting maps, harvest maps, satellite imagery and aerial photographs were used to develop initial timber stand boundaries. During field inventory work, the survey crew verified and updated these boundaries while concurrently assigning forest types to each stand based on primary timber species, age, and stand composition.

A survey plot grid was created for the island of Hawaii with one point for every five acres. Using a random start, sample plots were established at every ninth grid point over the entire landscape. In smaller, commercially important forest types that had inadequate plot representation using the standard grid system, additional grid points were randomly selected and sampled to increase the precision of volume estimates.

Circular sample plots were 0.20 acres in size, with a fixed radius of 52.66 feet. All tree species larger than 5.5" diameter at breast height (DBH) were measured as “main plot” trees. Each plot tree was numbered and measured for DBH. Total height was recorded for every fifth tree of each species encountered on the plot. Regeneration data were recorded by tallying all tree stems in a DBH range of 1.6-5.5” within a nested 0.05 acre (26.33 feet in radius) “sub-plot.”

Three primary overstory, understory, and groundcover species on or near each plot point were recorded in order of decreasing abundance. These data were based on qualitative visual assessments, and did not represent actual stem counts. Other descriptive data collection included slope, aspect, and weather conditions.

Survey data were analyzed using Forestry Projection System software version 5.3a (Forest Biometrics, 1998). Gross wood volume calculations represented volume of all trees from base to tip. Merchantable wood volume calculations were based on 16 foot log sections, a minimum top diameter of four inches, a stump height of one foot, and trees with a minimum DBH of eight inches. No defect deductions were applied to volume analyses in this study. Once the initial survey was completed, all stand acreage and plot data were post-stratified by forest type. Acreage from unique or very small stands that had not been sampled were assigned to the forest type which best approximated their stand structure. Volume calculations were based on data from all cruised stands within each forest type. These data were subsequently used to predict volume in non-cruised stands of the same type. All tree species tallied during the survey were included in volume analyses, though some may currently be considered non-merchantable (Appendix A).

Three local taper profiles were available for volume analyses of species encountered during this survey, necessitating the use of taper profiles from alternate species and regions (Appendix B).

Survey results:

The 1998 timber plantation map contains 144 timber stands totaling 6,295 acres (Figures 1a, 1b & 1c). Total wood volume estimates from the 1998 Hamakua survey exceeded 37,900,000 merchantable cubic feet, with over 50% as *Eucalyptus robusta* and over 90% as all eucalyptus species combined (Table 1). All mapped stands were stratified into 37 unique cover types based on dominant overstory tree species, age and stand structure. Type-level volume summaries were divided by land management agency, with volume estimates exceeding: 25,600,000 merchantable cubic feet on DOFAW lands (Table 2a); 6,400,000 merchantable cubic feet on LD lands (Table 2b); and 5,900,000 merchantable cubic feet on DHHL (Table 2c). Approximately 10 acres of mixed eucalypts occurred on PD lands in Kalopa State Park, but this stand was not surveyed. Additional detail for type-level volume data are presented in Appendix C.

Approximately 92% of merchantable wood volume occurred on 84% of the surveyed acreage (forest type codes of “33” or higher). These stands contained a high proportion of total volume due to relatively high tree stocking and large tree size. The remaining 8% of merchantable wood volume occurred on 16% of the surveyed acreage (forest type codes of “22” or lower). The latter

Figure 1a. State non-native timber resources represented by primary overstory species in the HTMA - Northwest Hamakua.

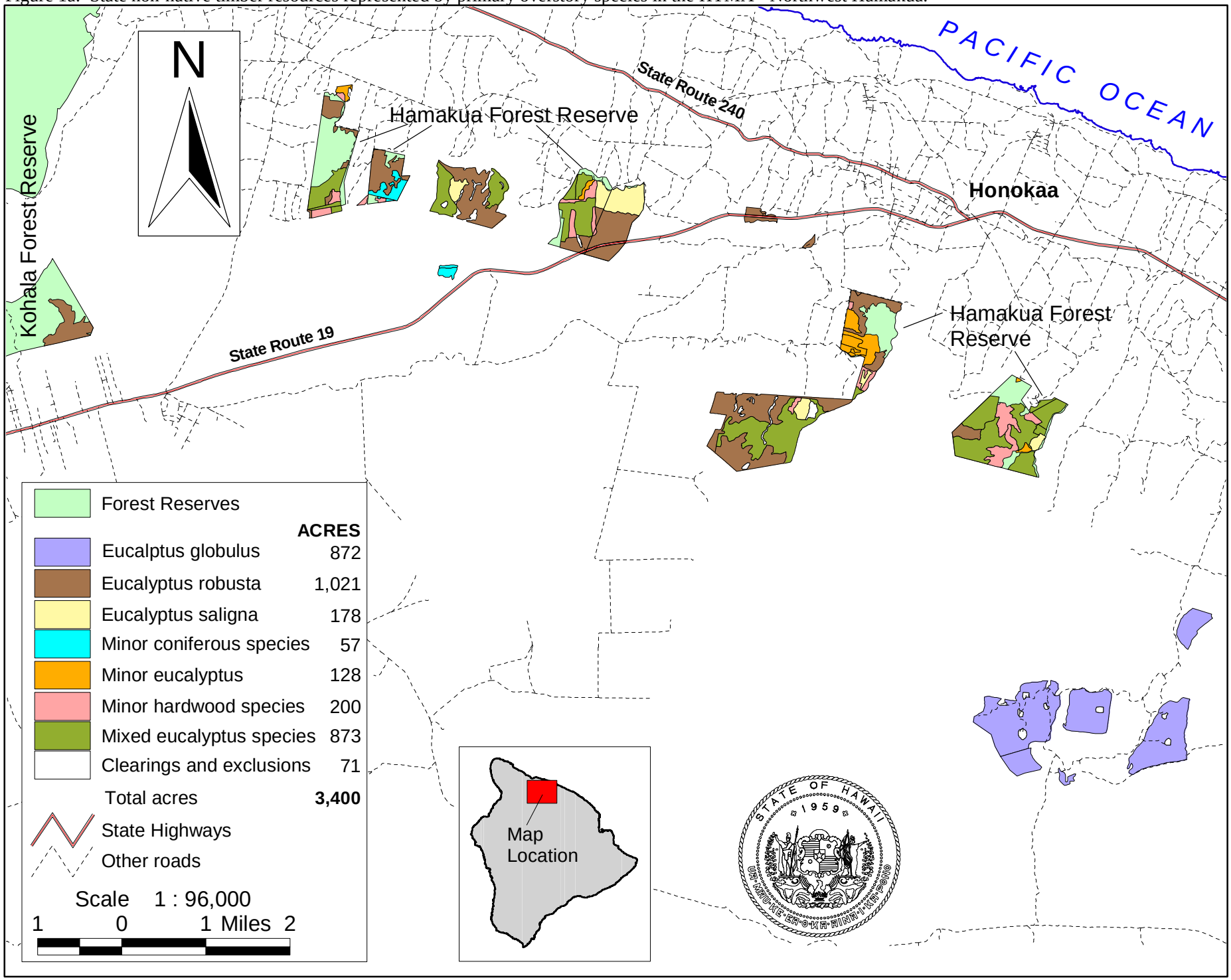


Figure 1b. State non-native timber resources represented by primary overstory species in the HTMA - Central Hamakua.

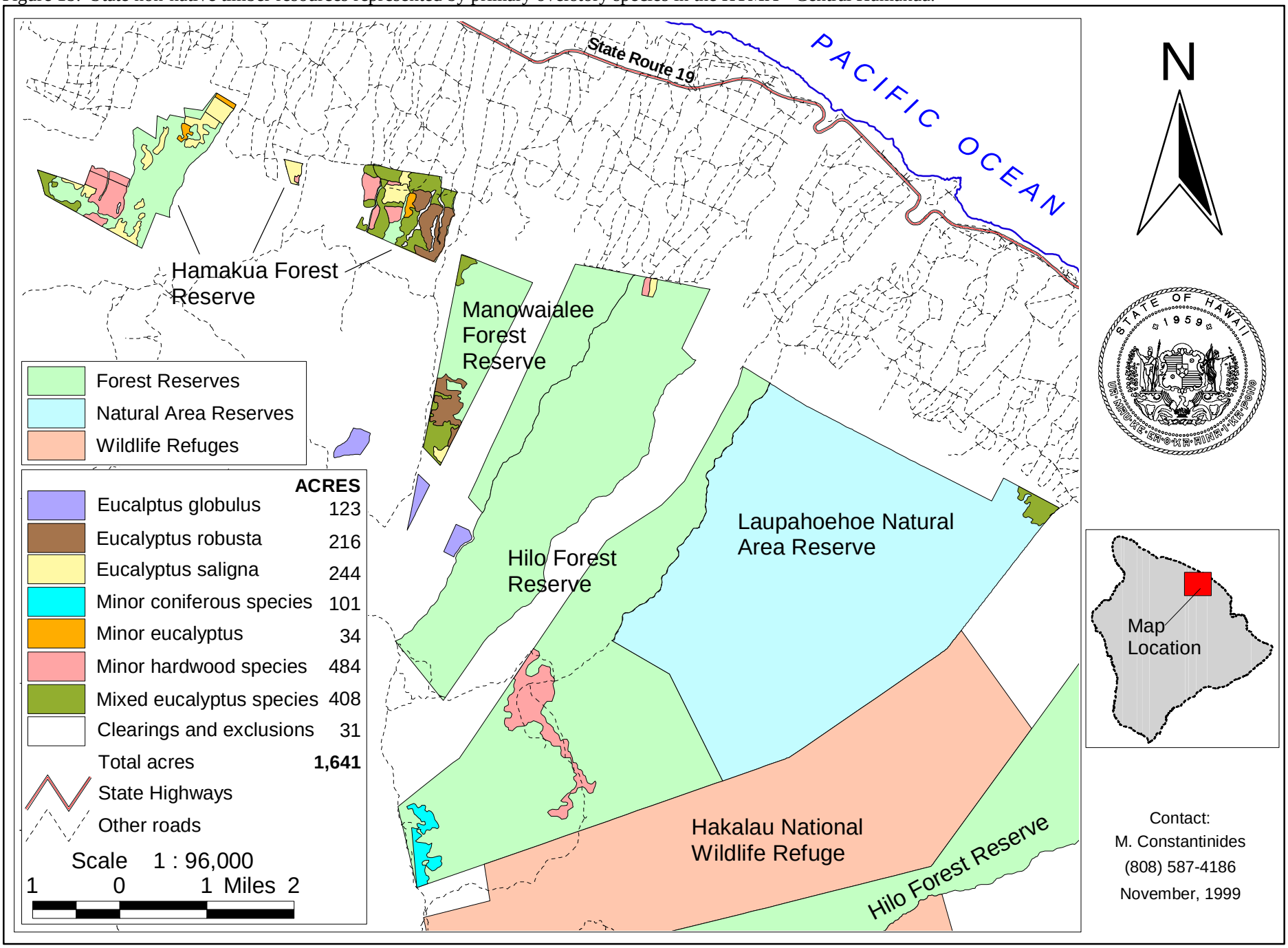
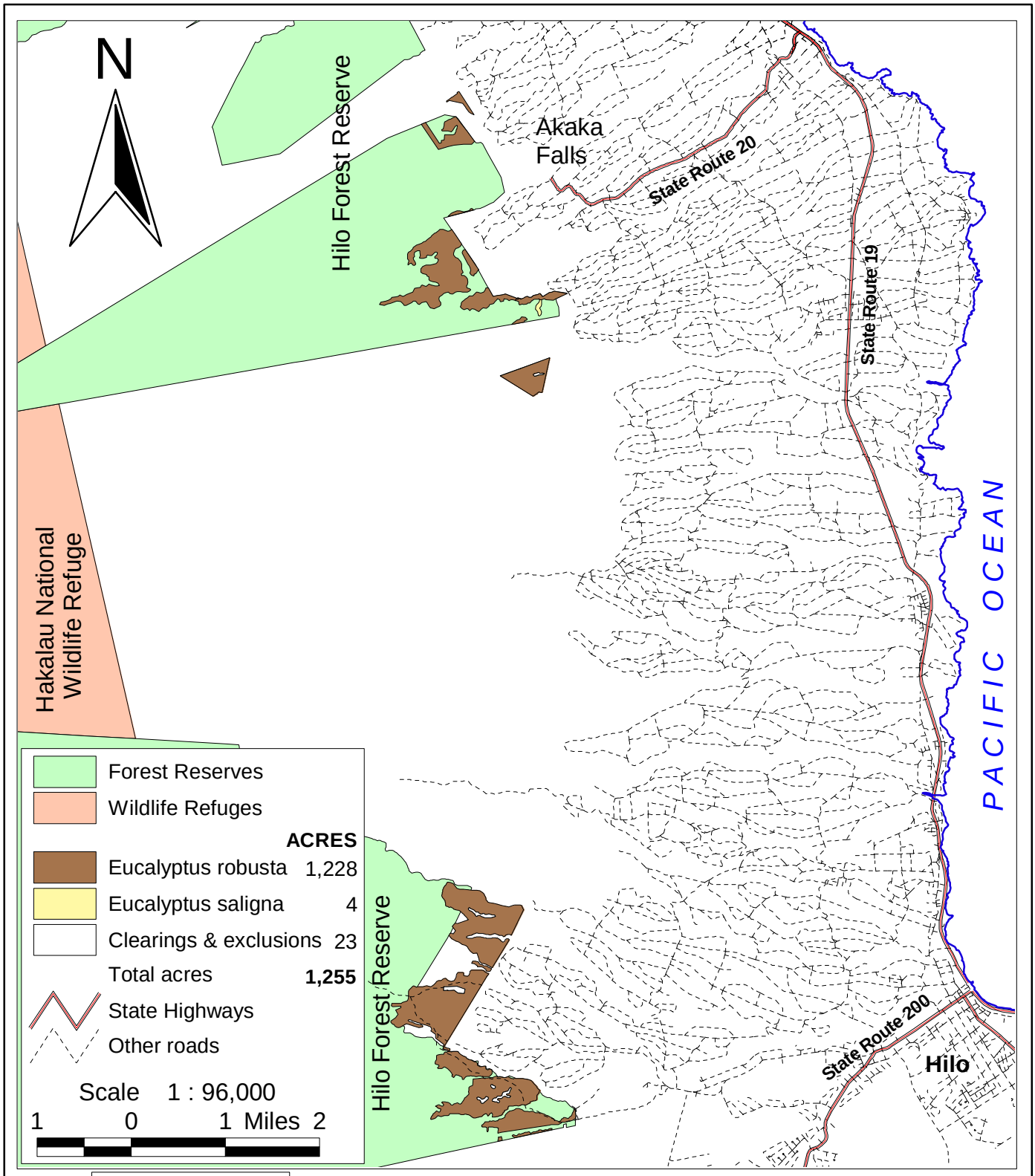


Figure 1c. State non-native timber resources represented by primary overstory species in the HTMA - Southeast Hamakua.



forest types included stands that had poor survival or growth, were poorly stocked, or were relatively young in age. If the entire inventory of surveyed trees were harvested at once and cut into sixteen foot logs, wood volume in log diameter classes of 4-8", 8-12", and 12+" would total 7,349,019, 9,470,789, 21,244,629 merchantable cubic feet, respectively (19%, 25%, and 56% of the total merchantable volume, respectively).

Table 1. Merchantable volume summary for Hamakua timber resources by primary species. Values in parentheses represent nearest whole percentages of area and merchantable volume totals.

Species	No Survey	Survey	Total		Total merch volume (ft^3)	
	---------- acres ----------					
Casuarina equisetifolia	0	112	112	(2)	384,515	(1)
Cryptomeria japonica	0	144	144	(2)	748,312	(2)
Cupressus macrocarpa	14	0	14	(0)	NA	
Eucalyptus citriodora	11	0	11	(0)	NA	
Eucalyptus globulus	0	995	995	(16)	4,103,663	(11)
Eucalyptus microcorys	8	42	50	(1)	552,188	(1)
Eucalyptus robusta	66	2,399	2,465	(39)	19,526,162	(51)
Eucalyptus rostrata	0	74	74	(1)	408,491	(1)
Eucalyptus saligna	14	412	426	(7)	3,649,133	(10)
Mixed Eucalyptus	336	945	1,281	(20)	6,524,392	(17)
Flindersia brayleyana	13	2	15	(0)	5,340	(0)
Fraxinus uhdei	22	277	299	(5)	1,116,392	(3)
Grevillia robusta	88	37	125	(2)	163,243	(0)
Lophostemon confertus	0	24	24	(0)	216,221	(1)
Syncarpia glomulifera	2	0	2	(0)	NA	
Toona ciliata	0	126	126	(2)	666,386	(2)
Experimental Hardwoods	7	0	7	(0)	NA	
Out or Non-stocked	125	0	125	(2)	NA	
Total	706	5,589	6,295		38,064,438	

Volume results expressed in units of mean cubic feet per acre were derived from statistical sampling, and are therefore estimates. Standard error (SE) analyses provide one tool for assessing the strength of the field survey data. Because sampling intensity was typically proportional to area, volume analyses for larger forest types were based on a larger number of sample plots. In the sampled forest types, standard error values rarely exceeded 16 percent of the mean (Table 3). Confidence intervals associated with standard error estimates represented the range of merchantable volume per acre that was 80% likely to contain the true mean volume per acre for each forest type. While individual stands were assigned to forest types based on the

Table 2a. Descriptive statistics for cover types on **Division of Forestry and Wildlife** lands. Stocking and DBH data represent all tree species with a minimum DBH of 2 inches. Maximum DBH data represtent planted, non-native trees only.

Cover & Type Description		Net acres	Age in years	Trees per acre	DBH range	Mean DBH	-- Mean ft^3 ac^{-1} -- Gross	Merch	Total merch volume (ft^3) by log minimum diameter class 4-8"	8-12"	> 12"	Row Sub-Totals
Casuarina equisetifolia												
CE22	Low to moderate volume saw timber	40	62-67	341	2-58	11	5,963	5,555	32,679	43,519	146,761	**222,960**
Sub-Total CE:		**40**							**32,679**	**43,519**	**146,761**	**222,960**
Cryptomeria japonica												
CJ33	Moderate volume pole and saw timber	137	62-65	353	2-34	12	5,892	5,204	294,763	304,496	111,637	**710,896**
Sub-Total CJ:		**137**							**294,763**	**304,496**	**111,637**	**710,896**
Eucalyptus microcorys												
EM77	Very high volume saw timber	34	62	180	2-42	18	13,418	13,054	31,324	62,612	347,814	**441,750**
Sub-Total EM:		**34**							**31,324**	**62,612**	**347,814**	**441,750**
Eucalyptus rostrata												
EO22	Low to moderate volume sawtimber	52	65	99	2-33	15	4,652	4,446	40,048	57,283	134,735	**232,066**
EO55	Moderate volume saw timber	22	65	200	2-27	14	8,278	7,947	36,666	45,352	94,407	**176,425**
Sub-Total EO:		**74**							**76,714**	**102,635**	**229,142**	**408,491**
Eucalyptus robusta												
ER22	Low to moderate volume saw timber	249	63	62	2-53	19	3,620	3,407	67,278	56,134	725,353	**848,765**
ER66	High volume saw timber	1,107	62-65	250	2-44	14	7,824	7,383	1,384,206	2,103,805	4,715,594	**8,203,605**
ER77	Very high volume saw timber	521	62-67	221	2-51	17	12,074	11,657	786,929	1,195,290	4,115,996	**6,098,216**
Sub-Total ER:		**1,878**							**2,238,413**	**3,355,228**	**9,556,944**	**15,150,585**
Eucalyptus saligna												
ES44	Moderate to high volume pole and saw timber	119	19-63	450	2-26	9	7,380	6,496	266,581	306,224	199,519	**772,324**
ES55	Moderate volume saw timber	133	62	193	2-69	14	8,114	7,743	99,703	134,779	794,556	**1,029,038**
ES66	High volume saw timber	43	20-62	412	2-50	11	12,858	11,974	82,043	109,398	315,841	**507,282**
ES77	Very high volume saw timber	45	62-63	165	2-56	20	16,910	16,401	49,105	53,709	636,873	**739,687**
Sub-Total ES:		**339**							**497,432**	**604,109**	**1,946,790**	**3,048,331**

Table 2a (Continued).

Cover & Type	Description	Net acres	Age in years	Trees per acre	DBH range	Mean DBH	-- Mean ft^3 ac^{-1} -- Gross	Merch	Total merch volume (ft^3) by log minimum diameter class 4-8"	8-12"	> 12"	Row Sub-Totals
Mixed Eucalyptus												
EX44	Moderate to high volume pole and saw timber	62	20	516	2-25	7	4,537	3,942	92,401	105,999	42,747	**241,147**
EX55	Moderate volume saw timber	148	62-63	401	2-44	11	7,231	6,673	154,650	179,743	645,247	**979,639**
EX66	High volume saw timber	219	62-65	305	2-68	12	9,579	9,021	299,931	405,813	1,279,372	**1,985,116**
EX77	Very high volume saw timber	33	62	262	2-42	16	15,466	14,965	47,610	85,891	355,901	**489,402**
Sub-Total EX:		**460**							**594,591**	**777,446**	**2,323,267**	**3,695,304**
Flindersia brayleyana												
FB11	Low volume pole and saw timber	2	20	214	2-17	10	2,561	2,322	2,352	1,920	1,068	**5,340**
FB33	Moderate volume pole and saw timber	12	NA	NA	NA	NA	NA	NA	NA	NA	NA	**NA**
Sub-Total FB:		**15**							**2,352**	**1,920**	**1,068**	**5,340**
Fraxinus uhdei												
FU22	Low to moderate volume saw timber	277	50	510	2-60	9	4,708	4,027	280,601	265,249	570,542	**1,116,392**
Sub-Total FU:		**277**							**280,601**	**265,249**	**570,542**	**1,116,392**
Grevillia robusta												
GR22	Low to moderate volume saw timber	37	62	56	8-35	23	4,558	4,376	16,766	20,447	126,030	**163,243**
Sub-Total GR:		**37**							**16,766**	**20,447**	**126,030**	**163,243**
Lophostemon confertus												
LC66	High volume saw timber	24	65	150	2-32	17	9,278	8,935	30,506	56,833	128,882	**216,221**
Sub-Total LC:		**24**							**30,506**	**56,833**	**128,882**	**216,221**
Syncarpia glomulifera												
SG55	Moderate volume saw timber	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sub-Total SG:		**2**		**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Toona ciliata												
TC33	Moderate volume pole and saw timber	95	21-29	418	2-37	10	6,142	5,280	185,873	190,065	123,852	**499,790**
Sub-Total TC:		**95**							**185,873**	**190,065**	**123,852**	**499,790**

Table 2a (Continued).

Cover & Type	Description	Net Acres
Other non-surveyed cover types- no data		
EM	Eucalyptus microcorys	8
ER	Eucalyptus robusta	34
ES	Eucalyptus saligna	14
EX	Mixed eucalyptus	320
FU	Fraxinus uhdei	10
GR	Grevillia robusta	88
XX	Clearings and openings	61
Sub-Total:		**534**
Total acreage:		**3,947**

Merch volume summary for surveyed cover types:
Cubic foot totals by log diameter and timber type class.

Type Class	Acres	----Log minimum diameter---- 4-8"	8-12"	> 12"	Total
11	2	2352	1920	1068	**5,340**
22	656	437,372	442,632	1,703,421	**2,583,426**
33	245	480,636	494,561	235,489	**1,210,686**
44	180	358,982	412,223	242,266	**1,013,471**
55	304	291,019	359,874	1,534,210	**2,185,102**
66	1,393	1,796,686	2,675,849	6,439,690	**10,912,224**
77	633	914,968	1,397,501	5,456,585	**7,769,054**
Total	**3,412**	**4,282,014**	**5,784,560**	**15,612,729**	**25,679,303**

Table 2b. Descriptive statistics for cover types on **Land Division** holdings. Stocking and DBH data represent all tree species with a minimum DBH of 2 inches. Maximum DBH data represtent planted, non-native trees only.

Cover & Type Description		Net acres	Age in years	Trees per acre	DBH range	Mean DBH	-- Mean ft^3 ac^{-1}-- Gross	Merch	Total merch volume (ft^3) by log minimum diameter class 4-8"	8-12"	> 12"	Row Sub-Totals
Casuarina equisetifolia												
CE22	Low volume pole and saw timber	71	62-67	341	2-58	11	5,963	5,555	58,097	77,367	26,091	**161,555**
Sub-Total CE:		**71**							**58,097**	**77,367**	**26,091**	**161,555**
Eucalyptus globulus												
EB33	Moderate volume pole and saw timber	905	22-24	779	2-22	6	5,194	3,934	1,473,064	1,560,921	52,417	**3,086,402**
EB44	Moderate to high volume pole and saw timber	91	62	150	2-38	15	11,624	11,228	115,859	207,071	694,331	**1,017,261**
Sub-Total EB:		**995**							**1,588,923**	**1,767,992**	**746,748**	**4,103,663**
Eucalyptus microcorys												
EM77	Very high volume saw timber	8	62	180	2-42	18	13,418	13,054	7,831	15,653	86,954	**110,438**
Sub-Total EM:		**8**							**7,831**	**15,653**	**86,954**	**110,438**
Eucalyptus robusta												
ER66	High volume saw timber	1	62-65	250	2-44	14	7,824	7,383	0	0	0	**0**
ER77	Very high volume saw timber	49	62-67	221	2-51	17	12,074	11,657	69,435	105,467	363,176	**538,078**
Sub-Total ER:		**50**							**69,435**	**105,467**	**363,176**	**538,078**
Eucalyptus saligna												
ES44	Moderate to high volume pole and saw timber	26	19-63	450	2-26	9	7,380	6,496	56,320	64,695	42,152	**163,167**
Sub-Total ES:		**26**							**56,320**	**64,695**	**42,152**	**163,167**
Mixed Eucalyptus												
EX55	Moderate volume saw timber	13	62-63	401	2-44	11	7,231	6,673	12,887	14,979	53,771	**81,637**
EX66	High volume saw timber	131	62-65	305	2-68	12	9,579	9,021	176,150	238,335	751,377	**1,165,862**
Sub-Total EX:		**143**							**189,037**	**253,313**	**805,148**	**1,247,498**
Toona ciliata												
TC33	Moderate volume pole and saw timber	24	21-29	418	2-37	10	6,142	5,280	49,566	50,684	33,027	**133,277**
Sub-Total TC:		**24**							**49,566**	**50,684**	**33,027**	**133,277**

Table 2b (Continued).

Cover & Type	Description	Net Acres
Other non-surveyed cover types- no data		
EC	Eucalyptus citriodora	11
ER	Eucalyptus robusta	33
EX	Mixed eucalyptus	6
FU	Fraxinus uhdei	12
XX	Clearings and openings	26
Sub-Total:		**88**
Total acreage:		**1,406**

Merch volume summary for surveyed cover types:
Cubic foot totals by log diameter and timber type class.

Type Class	Acres	----Log minimum diameter---- 4-8"	8-12"	> 12"	Total
22	71	58,097	77,367	26,091	**161,555**
33	929	1,522,630	1,611,605	85,444	**3,219,679**
44	117	172,179	271,766	736,483	**1,180,428**
55	13	12,887	14,979	53,771	**81,637**
66	132	176,150	238,335	751,377	**1,165,862**
77	57	77,266	121,120	450,130	**648,515**
Total	**1,318**	**2,019,209**	**2,335,171**	**2,103,295**	**6,457,676**

Table 2c. Descriptive statistics for cover types on **Department of Hawaiian Home Lands**. Stocking and DBH data represent all tree species with a minimum DBH of 2 inches. Maximum DBH data represtent planted, non-native trees only.

Cover & Type Description		Net acres	Age in years	Trees per acre	DBH range	Mean DBH	-- Mean ft^3 ac^{-1} -- Gross	Merch	Total merch volume (ft^3) by log minimum diameter class 4-8"	8-12"	> 12"	Row Sub-Totals
Cryptomeria japonica												
CJ33	Moderate volume pole and saw timber	7	62-65	353	2-34	12	5,892	5,204	15,514	16,026	5,876	**37,416**
Sub-Total CJ:		**7**							**15,514**	**16,026**	**5,876**	**37,416**
Eucalyptus robusta												
ER33	Moderate volume pole and saw timber	118	21-63	397	2-23	9	3,845	3,292	181,493	153,142	52,520	**387,155**
ER66	High volume saw timber	154	62-65	250	2-44	14	7,824	7,383	188,755	286,882	643,036	**1,118,673**
ER77	Very high volume saw timber	200	62-67	221	2-51	17	12,074	11,657	300,885	457,023	1,573,763	**2,331,671**
Sub-Total ER:		**472**							**671,133**	**897,047**	**2,269,319**	**3,837,499**
Eucalyptus saligna												
ES44	Moderate to high volume pole and saw timber	23	19-63	450	2-26	9	7,380	6,496	52,565	60,382	39,342	**152,289**
ES66	High volume saw timber	24	20-62	412	2-50	11	12,858	11,974	46,149	61,536	177,661	**285,346**
Sub-Total ES:		**47**							**98,714**	**121,918**	**217,003**	**437,635**
Mixed Eucalyptus												
EX22	Low to moderate volume saw timber	232	21	161	2-41	9	1,501	1,246	106,127	74,090	108,405	**288,622**
EX55	Moderate volume saw timber	44	62-63	401	2-44	11	7,231	6,673	47,254	54,921	197,159	**299,334**
EX77	Very high volume saw timber	66	62	262	2-42	16	15,466	14,965	96,662	174,384	722,587	**993,633**
Sub-Total EX:		**342**							**250,043**	**303,396**	**1,028,151**	**1,581,590**
Toona ciliata												
TC33	Moderate volume pole and saw timber	7	21-29	418	2-37	10	6,142	5,280	12,392	12,671	8,257	**33,319**
Sub-Total TC:		**7**							**12,392**	**12,671**	**8,257**	**33,319**

Table 2c (Continued).

Other non-surveyed cover types- no data

CM	Cupressus macrocarpa	14
XH	Experimental hardwoods	7
XX	Clearings and openings	38
Sub-Total:		**59**

Total forested acreage: **933**

Merch volume summary for surveyed cover types:
Cubic foot totals by log diameter and timber type class.

Type Class	Acres	----Log minimum diameter---- 4-8"	8-12"	> 12"	Total
22	232	106,127	74,090	108,405	**288,622**
44	23	52,565	60,382	39,342	**152,289**
33	131	209,398	181,839	66,652	**457,890**
55	44	47,254	54,921	197,159	**299,334**
66	178	234,904	348,419	820,696	**1,404,019**
77	266	397,547	631,407	2,296,350	**3,325,304**
Total	**874**	**1,047,796**	**1,351,058**	**3,528,605**	**5,927,459**

Table 3. Inventory precision analyses for the survey of non-native timber resources along the Hamakua Coast of Hawaii. All volume data are presented in units of gross cubic feet.

Cover Type	DOFAW acres	LD acres	DHHL acres	PD acres	Sample plots	Mean $ft^3\ ac^{-1}$	SE[A] $ft^3\ ac^{-1}$	Percent SE[B]	----80% CI[C]---- Low $ft^3\ ac^{-1}$	High $ft^3\ ac^{-1}$
CE22	40	72	0	0	4	5,963	742	12	4,748	7,178
CJ33	137	0	6	0	8	5,892	371	6	5,367	6,417
EB33	0	905	0	0	26	5,194	230	4	4,891	5,497
EB44	0	90	0	0	2	11,624	2,768	24	3,104	20,144
EM77	34	8	0	0	6	13,418	1,343	10	11,436	15,400
EO22	52	0	0	0	3	4,652	601	13	3,519	5,785
EO55	22	0	0	0	2	8,278	725	9	6,046	10,510
ER22	249	0	0	0	2	3,620	510	14	2,050	5,190
ER33	0	0	118	0	6	3,845	785	20	2,686	5,004
ER66	1,107	1	154	0	36	7,842	406	5	7,312	8,372
ER77	521	49	200	0	33	12,074	583	5	11,311	12,837
ES44	119	26	23	0	8	7,380	487	7	6,691	8,069
ES55	133	0	0	0	9	8,114	999	12	6,718	9,510
ES66	43	0	24	0	9	12,858	1,702	13	10,480	15,236
ES77	45	0	0	0	2	16,910	1,733	10	11,576	22,244
EX22	0	0	232	0	5	1,501	415	28	865	2,137
EX44	61	0	0	0	5	4,537	365	8	3,977	5,097
EX55	148	12	44	0	12	7,231	675	9	6,311	8,151
EX66	219	131	0	0	20	9,579	671	7	8,688	10,470
EX77	33	0	66	0	8	15,466	2,451	16	11,998	18,934
FB11	2	0	0	0	1	2,561	NA	NA	NA	NA
FU22	277	0	0	0	3	4,708	1,009	21	2,805	6,611
GR22	37	0	0	0	3	4,558	358	8	3,883	5,233
LC66	24	0	0	0	5	9,278	1,157	12	7,504	11,052
TC33	95	24	7	0	9	6,142	241	4	5,805	6,479
XX00	61	26	38	0	0	NA	NA	NA	NA	NA
Other[D]	487	62	21	10	0	NA	NA	NA	NA	NA
Total	3,946	1,406	933	10						

[A]SE represents standard error of the mean.

[B]Percent SE = ((standard error / mean) * 100) within each row of data.

[C]Confidence intervals (CI) associated with standard error estimates represent the range of gross cubic foot volume per acre that is 80% likely to contain the true mean volume per acre for each cover type.

[D]Other represents the sum of non-surveyed and non-typed timber stands (all species).

dominant overstory species, type level volume data also included components of secondary species (Table 4). Most forest types had three or less principal species components.

Within the non-native timber plantations, few ohia and koa trees were left standing following initial land clearing operations. As a result of this practice, non-native species comprised 100% of the primary overstory species recorded at sample plots. Ohia, and to a lesser extent koa, were observed as secondary overstory species at 6% and 1% of all sampled plot points, respectively.

Other non-native forest cover types that were observed but not measured due to their minor occurrence included turpentine tree (*Syncarpia glomulifera*), lemon gum (*Eucalyptus citriodora*), and Monterey cypress (*Cupressus macrocarpa*).

Relative abundance data revealed that the eucalypts were the most common and widely distributed primary overstory species within the Hamakua study area (Figure 2a). Secondary overstory species data were not dominated by any one species or distribution pattern with one exception (Figure 2b): Fire tree was concentrated almost exclusively within blue gum (*Eucalyptus globulus*) stands located in pasture lands (Figure 1a).

Guava, and to a lesser extent tree ferns, were the predominant understory species along the Hamakua Coast (Figures 3a & 3b). Guava appears to be highly shade tolerant as it was commonly found in dense patches under well-stocked and mature stands of timber. However, guava is notably absent in timber plantations above 3500 feet in elevation. Understory occurrence of fire tree and blue gum were again concentrated within blue gum stands.

Alien species were most common in the groundcover layer of non-native timber plantations along the Hamakua Coast (Figures 4a & 4b). Guava was the most dominant species in the groundcover layer, and was again concentrated below 3500 feet in elevation. Conversely, grasses were concentrated above 3500 feet in elevation, under blue gum stands in pasture areas.

Discussion and planning implications:

The non-native timber plantings along the Hamakua Coast exhibited a wide range of growth potential both within, and among species. Site quality and climatic conditions within the study area appear to be excellent for all species measured. Rainfall and soil depth both decrease with increasing elevation, giving lower elevation zones of the Hamakua Coast the highest growth potential. The low to moderate levels of stand productivity observed in most of the surveyed stands appeared to be an artifact of over-maturity and stand stagnation, rather than site and climatic limitations. Current within-species productivity differences can not be attributed to varying stand management or maintenance, since historically such activity has rarely been conducted.

In order to compare the productivity of different species, representative stands within the most important commercial forest types were selected for mean annual increment (MAI) analyses (Table 5). Among the non-native plantation species, MAI values were highest for the eucalypts, commonly ranging from 100-200 $ft^3\ ac^{-1}\ yr^{-1}$. In two *E. saligna* and one *E. globulus* stands that

Table 4. Component gross volume by forest type in the Hamakua timber survey.

		--mean ft^3 ac^{-1}--			----------Component gross volume per acre by species* (ft^3 ac^{-1})----------													
Type	**Acres**	**Gross**	**Merch**	**% Merch**	**ER**	**ES**	**EM**	**EO**	**EB**	**LC**	**MP**	**CE**	**TC**	**FU**	**GR**	**CJ**	**FB**	**OTH***
ER22	275	3,620	3,407	94	3,468						125							27
ER33	118	3,845	3,292	86	3,567	227					6	45						
ER66	1,428	7,824	7,383	94	7,147	289	1		29		8	1	2	30	8	164		144
ER77	1,251	12,074	11,657	97	11,983	49					12	2		2	14			13
ES44	168	7,380	6,496	88	35	6,526	199				126	50	79		26			339
ES55	139	8,114	7,743	95	231	6,536					381	72			790			104
ES66	80	12,858	11,974	93	577	10,359	135					44	81		623		11	1,028
ES77	45	16,910	16,401	97	572	15,179									516	90	552	
EB33	1,010	5,194	3,934	76	1				5,007		1							185
EB44	91	11,624	11,228	97					11,616									8
EM77	42	13,418	13,054	97	875	440	12,063					17			13			10
EO22	52	4,652	4,446	96				4,364		268	20							
EO55	22	8,278	7,947	96				6,574									1,705	
EX22	232	1,501	1,246	83	996	257					237							10
EX44	62	4,537	3,942	87	600	3,729	46							162				
EX55	206	7,231	6,673	92	2,245	2,858	102	970	104		113	1		12	91	415		321
EX66	353	9,579	9,021	94	3,209	4,850	149		28	54	26	231	206		422	26	77	303
EX77	99	15,466	14,965	97	4,043	5,488	5,721				28		4		124			56
CE22	112	5,963	5,555	93	1,783	233					22	3,485			214			227
CJ33	172	5,892	5,204	88							10					4,908		974
FB11	2	2,561	2,322	91							1,618						942	
FU22	277	4,708	4,027	86							1,600			3,108				
GR22	37	4,558	4,376	96							1,042				2,862	40		615
LC66	24	9,278	8,935	96				921		8,280							77	
TC33	126	6,142	5,280	86	41	329					556		3,404				1,422	389
XX00																		

AB = Araucaria bidwillii; AM = Acacia melanoxylon; CE = Casuarina equisetifolia; CJ = Cryptomeria japonica; CL = Chamaecyparis lawsoniana; CM = Cupressus macrocarpa; EB = Eucalyptus globulus; ED = Eucalyptus deglupta; EG = Eucalyptus grandis; EJ = Eriobotrya japonica; EM = Eucalyptus microcorys; EO = Eucalyptus rostrata; ER = Eucalyptus robusta; ES = Eucalyptus saligna; FB = Flindersia brayleyana; FU = Flindersia uhdei; GR = Grevillia robusta; LC = Lophostemon confertus; MP = Metrosideros polymorpha; OTH = other species; TC = Toona ciliata; XX = open or cleared area.

*OTH = Most cover types had one species dominating the "other species" volume component: ES44 with 253 as ED; ES66 with 1,028 as EJ; EX55 with 189 as CM; EX66 with 235 as EG; CJ33 with 724 as CL; GR22 with 302 as AM; TC33 with 261 as AB.

Figure 2a. Primary overstory species at sample plot locations for the Hamakua survey (n = 227). Species list is presented in clockwise order.

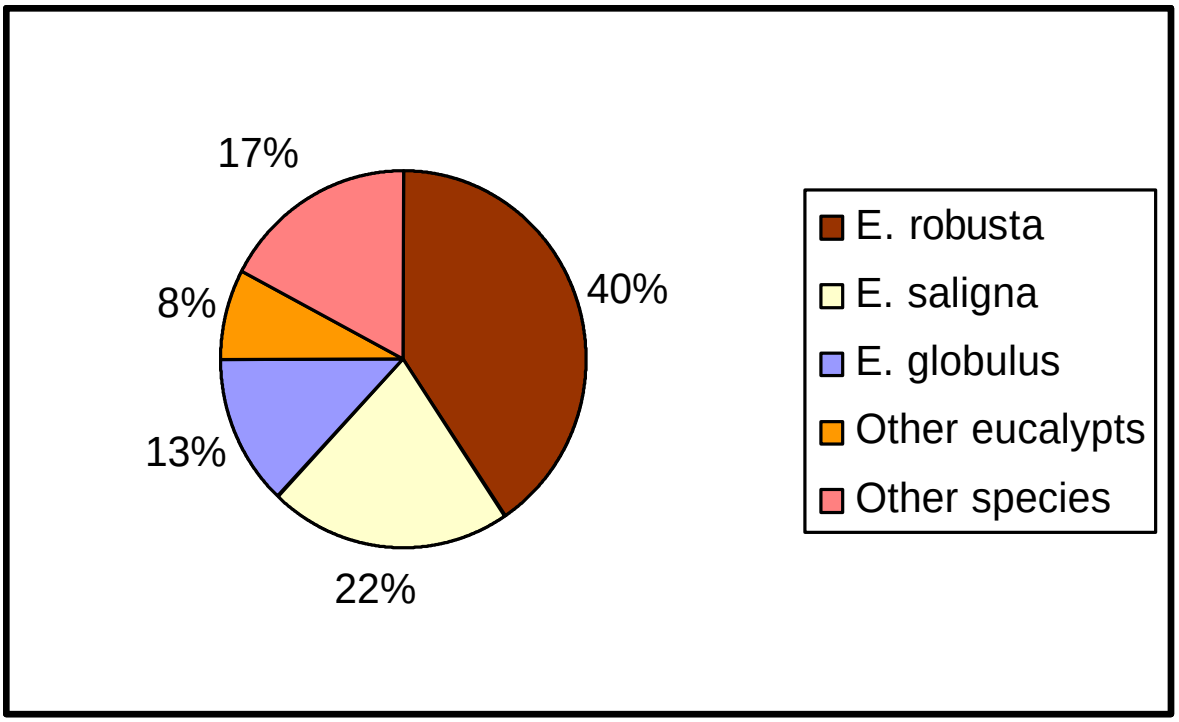


Figure 2b. Secondary overstory species at sample plot locations for the Hamakua survey (n =227). Species list is presented in clockwise order.

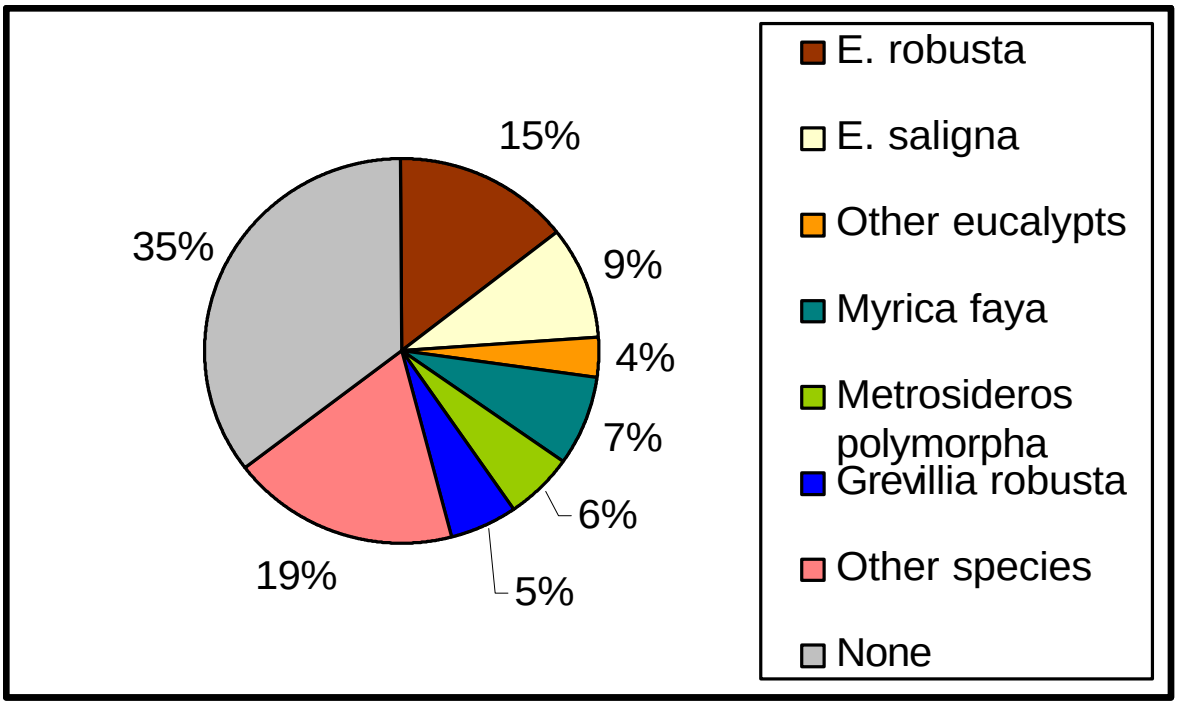


Figure 3a. Primary understory species at sample plot locations for the Hamakua survey (n = 227). Species list is presented in clockwise order.

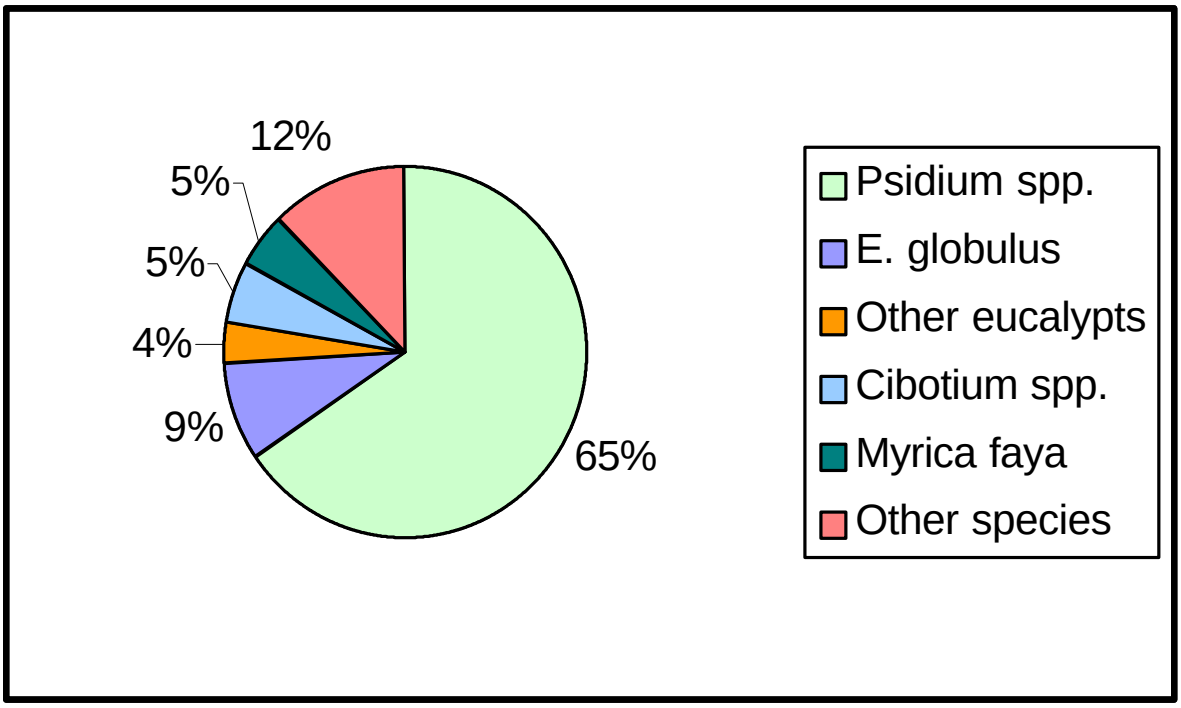


Figure 3b. Secondary understory species at sample plot locations for the Hamakua survey (n = 227). Species list is presented in clockwise order.

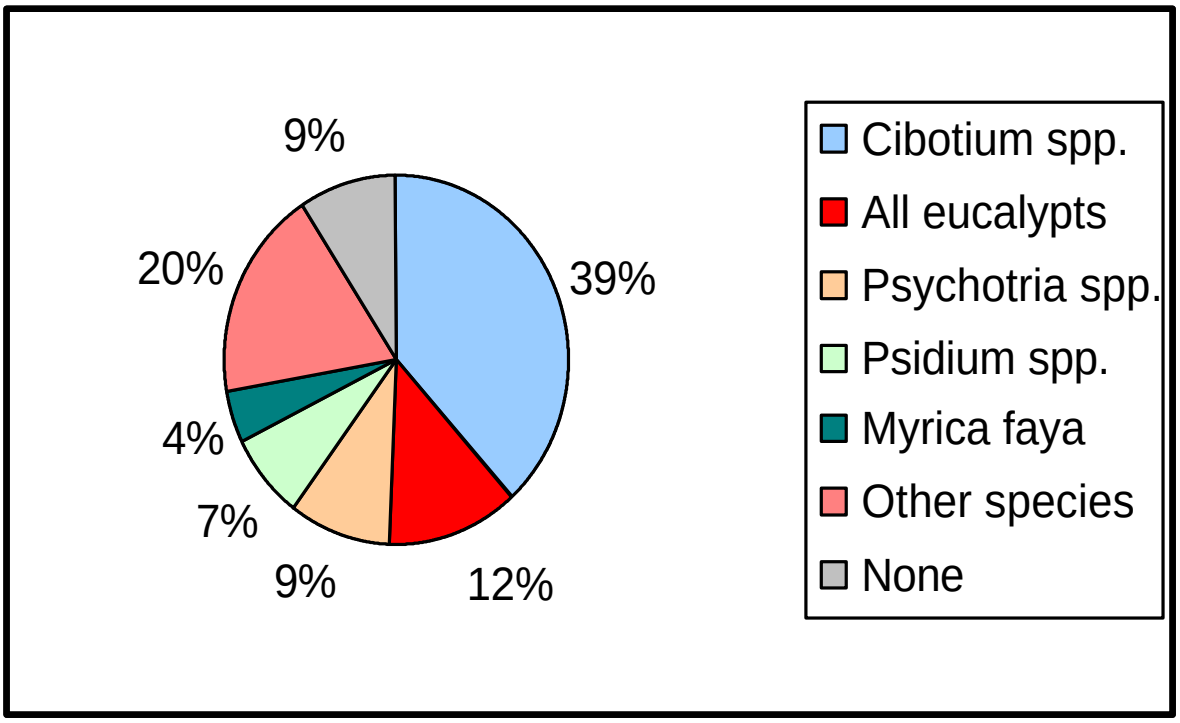


Figure 4a. Primary groundcover species at sample plot locations for the Hamakua survey (n = 227). Species list is presented in clockwise order.

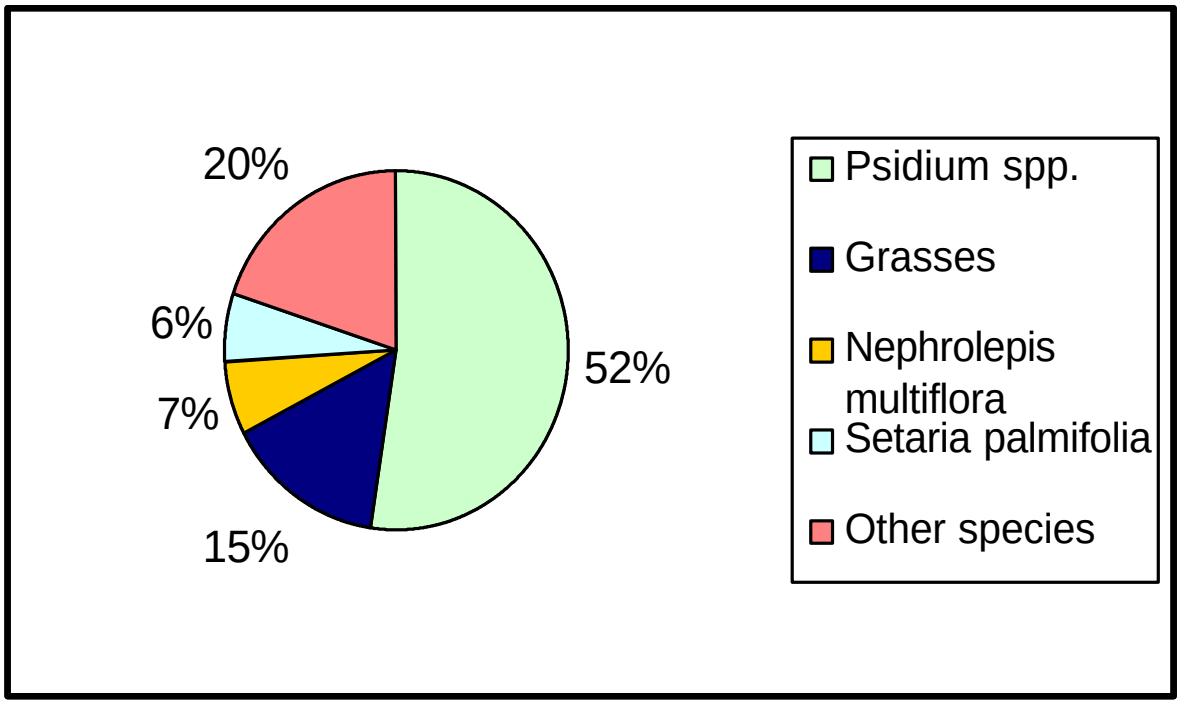


Figure 4b. Secondary groundcover species at sample plot locations for the Hamakua survey (n = 227). Species list is presented in clockwise order.

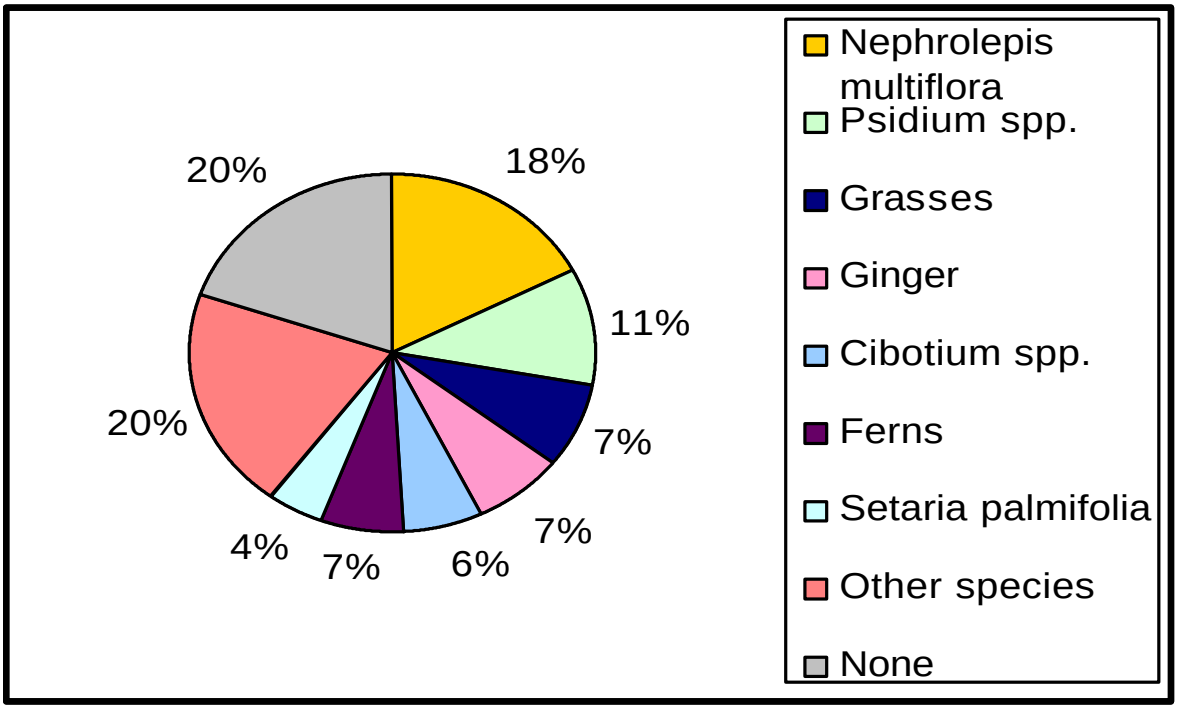


Table 5. Mean annual increment (MAI) analyses for selected stands in the Hamakua timber survey based on 1998 data. Data for each forest type exclude all secondary species components, and represent trees with a minimum DBH of two inches.

Species & Type	Stand ID	Net Acres	Plots	Age (Yr)	Trees Per Acre	Maximum DBH	Mean DBH	Basal Area (ft^2)	Gross volume ($ft^3\ ac^{-1}$)	MAI ($ft^3\ ac^{-1}\ yr^{-1}$)
Eucalyptus robusta										
ER33	2170	118	6	21	351	23	9.0	164	3,567	170
ER66	2038	154	6	62	120	39	19.0	230	7,579	122
ER66	8006	248	8	63	150	40	17.0	228	6,556	104
ER77	2150	200	7	63	147	49	20.0	309	11,012	175
ER77	8012	66	5	63	151	41	21.0	356	14,683	233
ER77	8043	133	7	62	127	46	22.0	320	11,603	187
Eucalyptus globulus										
EB33	1078	233	6	22	616	22	7.0	167	6,740	306
EB33	1081	348	7	23	1068	16	5.0	141	4,150	180
Eucalyptus microcorys										
EM7	8168	9	5	62	149	42	18.0	275	12,091	195
Eucalyptus rostrata										
EO22	8056	44	3	65	88	33	16.0	117	4,364	67
Eucalyptus saligna										
ES44	9070	84	6	19	218	22	11	149	6,382	336
ES55	9318	42	5	62	59	39	22	159	6,727	109
ES66	2039	24	4	62	76	37	21	180	9,546	154
ES66	8170	22	3	20	613	23	8	242	9,962	498
Mixed eucalyptus										
EX22	2160	232	5	21	56	41	14	53	1,253	60
EX44	9005	62	5	20	257	25	10	141	3,898	195
EX55	8120	69	5	62	370	39	10	195	4,576	74
EX55	8171	50	5	63	86	44	21	203	8,274	131
EX66	1041	87	7	62	100	68	19	198	9,386	151
EX66	8178	70	6	63	191	54	13	193	7,088	113
EX77	2039	24	4	62	115	37	19	231	11,077	179

Table 5 (Continued).

Species & Type	Stand ID	Net Acres	Plots	Age (Yr)	Trees Per Acre	Maximum DBH	Mean DBH	Basal Area (ft^2)	Gross volume ($ft^3\ ac^{-1}$)	MAI ($ft^3\ ac^{-1}\ yr^{-1}$)
Cryptomeria japonica										
CJ33	8121	101	3	62	153	34	15	189	4,173	67
Fraxinus uhdei										
FU22	8021	277	3	50	400	60	8	140	3,108	62
Grevillia robusta										
GR22	9310	13	3	62	27	35	26	97	2,862	46
Toona ciliata										
TC33	9305	95	6	29	171	27	10	95	3,036	105
Lophostemon confertus										
LC66	8057	24	5	65	134	28	17	207	8,280	127

were relatively young (19-22 years), MAI values ranged from 300-500 ft^3 ac^{-1} yr^{-1}, suggesting that extremely good yields can be achieved within the study area from timber stands under minimal management. It should be noted that the MAI values for *E. globulus* represent coppice re-growth of stands that were clear cut once in 1978 during a biomass operation.

Relatively low MAI values for *Fraxinus uhdei* and *Grevillia robusta* may be misleading since most of these stands were old and poorly stocked. Stand 9305 (TC33) was comprised of approximately two thirds *Toona ciliata* and one third *Flindersia brayleyana*, and had an MAI value that was 50-500% greater than comparable *Toona ciliata* stands in the Waiakea Timber Management Area (Constantinides and Cannarella, 1999). Though comprehensive MAI analyses for these four species are not available for the Hamakua Coast, qualitative field observations indicated that they had better growth rates, form, vigor, and self-pruning characteristics than the same species in the Waiakea Timber Management Area.

Total wood volume estimates for surveyed non-native timber resources exceeded 38,000,000 merchantable cubic feet, or approximately 190,000,000 merchantable board feet. Forest types coded "22" or lower could be considered to represent pre- or non-commercial timber acreage as of 1998 due to their low volume or heterogeneous composition. Well-stocked stands in these forest types could have significant commercial value in future years, while others will have salvage potential at best unless they are replaced. Forest types coded "33" or higher contained a majority of timber resources with current commercial value, where total merchantable volume exceeded 35,000,000 cubic feet, or approximately 175,000,000 board feet.

Merchantable cubic wood volume typically represented 86-97% of gross cubic volume (Table 4). One exception was cover type EB33, which had a relatively high proportion of volume in trees that were less than 8" DBH, and a merchantable cubic volume that was only 76% of gross cubic volume. Timber volumes reported here do not include deductions for tree form or defect, a fact that should be considered when using these data for planning purposes.

Qualitative data collection for the relative abundance of primary and secondary species in the study areas revealed a predominance of non-native timbers, underlain by invasive non-native weed species. If current commercial timber resources are harvested, control of these weed species will probably require significant resources during planting and establishment of future timber plantations.

The surveyed State timber resources along the Hamakua Coast represent a wide range of physical, political, and legal accessibility. Current road networks are comprehensive, though some have become overgrown or degraded. Because slopes within the study area are typically moderate, vehicle and heavy equipment operations would be restricted by slick roads and saturated soils only during high rainfall periods. Three different public agencies in two different State Departments are responsible for management of the timber resources reported here. Some resources currently exist on lands leased to private concerns, while others may currently provide services or functions for objectives other than timber production. A combination of these factors will influence and guide all active timber management efforts within the study area.

Analyses of inventory precision for this survey were variable. In the principal cover types comprising 350 acres or more, error analyses were robust and standard error values did not exceed seven percent of mean volume estimates (Table 3). These included cover types EB33, ER66, ER77, and EX66, which represented 52% and 64% of the total acreage and volume surveyed, respectively. With the exception of four other cover types comprising 717 acres (11% and 7% of total acreage and volume surveyed, respectively), error analyses were moderately to strongly robust and error values did not exceed 16 percent of mean volume estimates.

Field data collection and volume analyses were not designed to provide information for specific wood products, but rather generic cubic volume estimates. The volume data in this report are not intended to be the sole basis for negotiation of timber sale contracts, but rather a guideline to long term timber management planning within the surveyed areas. Additional survey, careful weighing or scaling of timber from harvest sites is highly recommended for all harvest contracts.

Acknowledgements:

We thank Jim Thain, Fetu Amuimuia, Ron Miyashiro, Paul Camba, Gene Kawai, and Roaxanne Mauga of the HFCI timber inventory crew for conducting the field survey. The Hawaii Branch of the Department of Land and Natural Resources, Division of Forestry and Wildlife provided invaluable logistical support for the crew during the Hamakua survey. This project was conducted by the Hawaii Forestry and Communities Initiative and its supporting agencies. Funding was provided by the USDA Forest Service Economic Recovery Program, and the Department of Land and Natural Resources, Division of Forestry and Wildlife.

Literature cited:

Constantinides, M. and R.J. Cannarella, 1999. A timber inventory of the Waiakea Timber Management Area. Division of Forestry and Wildlife, Department of Land and Natural Resources, State of Hawaii.

Division of Forestry, 1979. Forest Plantation Survey, Biomass Energy Tree Farm Program. State of Hawaii, Department of Land and Natural Resources.

Forest Biometrics, 1998. Forest Projection and Planning System (FPS), Version 5.3a. Forest Biometrics, Gresham, Oregon.

Nelson, R.E. and Honda, N., 1966. Plantation timber on the Island of Hawaii – 1965. U.S. Forest Service Resource Bulletin, PSW – 3.

Soil Conservation Service, 1972. Soil Survey of Island of Hawaii, State of Hawaii. United States Department of Agriculture, U.S. Government Printing Office, Washington D.C.

Wagner, W.L., D.R. Herbst and S.H. Sohmer, 1990. Manual of the Flowering Plants of Hawaii. University of Hawaii Press in cooperation with Bishop Museum Press, Honolulu, Hawaii.

Appendix A. Botanical classification for species tallied during the Hamakua timber survey.

TREE SPECIES

Latin genus and species	Common name
Acacia koa	Koa
Acacia melanoxylon	Blackwood
Araucaria bidwillii	Bunya Bunya
Araucaria excelsa	Norfolk Island Pine
Casuarina equisetifolia	Ironwood
Chamaecyparis lawsoniana	Port Orford Cedar
Cryptomeria japonica	Sugi
Cupressus macrocarpa	Monterey cypress
Eriobotrya japonica	Loquat
Eucalyptus deglupta	Mindanao Gum
Eucalyptus globulus	Blue Gum
Eucalyptus grandis	Rose Gum
Eucalyptus microcorys	Tallow-wood
Eucalyptus pilularis	Blackbutt
Eucalyptus robusta	Swamp mahogany
Eucalyptus rostrata	Red River Gum
Eucalyptus saligna	Sydney blue gum
Ficus spp.	Figs
Flindersia brayleyana	Queensland Maple
Fraxinus uhdei	Tropical Ash
Grevillia robusta	Silk oak
Lophostemon confertus	Brushbox
Melaleuca quinquenervia	Paper bark
Metrosideros polymorpha	Ohia
Myrica Faya	Firetree
Persea americana	Avocado
Sequoia sempervirens	Redwood
Spathodia campanulata	African Tulip Tree
Syncarpia glomulifera	Turpentine Tree
Syzgium jambos	Rose Apple
Terminalia myriocarpa	Jhalna
Toona ciliata	Australian Red Cedar

Appendix A (continued).

UNDERSTORY AND GROUNDCOVER SPECIES

Latin genus and species	Common name
Ageratum spp.	Maile
Bambussa spp.	Bamboo
Cheirodendron trigynum	Olapa
Cibotium spp.	Hapuu
Coffea arabica	Arabian Coffee
Cordyline terminalis	Ti Leaf
Dicranopteris linearis	Uluhe fern
Dodonaea viscosa	Aalii
Freycinetia arborea	Ieie
Ilex anomala	Kawau
Impatiens spp.	Impatiens
Melastoma spp.	Melastoma family
Mimosa pudica	Sensitive Plant
Nephrolepis multiflora	Sword fern
Oplismenus hirtellus	Basketgrass
Passiflora mollissima	Banana poka
Pelea clusiifolia	Alani
Perrottetia sandwicensis	Olomea
Pinus spp.	Pine
Psidium spp.	Guavas
Psychotria spp.	Kopiko
Rhus sandwicensis	neneleau
Rubus spp.	Raspberry
Setaria palmifolia	Palm Grass
Waiwaiole	Fern

Plants in other families

Orchidaceae	Orchid family
Papilionatae	Clover family
Zingiberaceae	Ginger family

Appendix B. Species assignments by taper profile class for volume analyses.

Species analyzed using a Hawaiian *Flindersia brayleyana* taper profile:

1. *Acacia koa*
2. *Acacia melanoxylon*
3. *Casuarina equisetifolia*
4. *Eriobotrya japonica*
5. *Flindersia brayleyana*
6. *Fraxinus uhdei*
7. *Grevillia robusta*
8. *Metrosideros polymorpha*
9. *Myrica Faya*
10. *Persea americana*
11. *Spathodia campanulata*
12. *Syzgium jambos*
13. *Terminalia myriocarpa*
14. *Toona ciliata*

Species analyzed using a Hawaiian *Eucalyptus saligna* taper profile:

1. *Eucalyptus microcorys* (bark thickness coefficients 1.5 times those of *E. saligna*)
2. *E. pilularis*
3. *E. robusta* (bark thickness coefficients 2.0 times those of *E. saligna*)
4. *E. saligna*
5. *Lophostemon confertus*
7. *Melaleuca quinquenervia* (bark thickness coefficients 2.0 times those of *E. saligna*)

Species analyzed using a Hawaiian *Eucalyptus grandis* taper profile:

1. *Eucalyptus deglupta*
2. *E. globulus*
3. *E. grandis*
4. *E. rostrata*

Species analyzed using a Pacific Northwest *Thuja plicata* (Western red cedar) taper profile:

1. *Araucaria bidwillii*
2. *Araucaria excelsa*
3. *Chamaecyparis lawsoniana*
4. *Cryptomeria japonica*
5. *Cupressus macrocarpa*
6. *Sequoia sempervirens*

Appendix C. Stand tables by forest type.

Guidelines for interpreting stand table data:

1. Stand tables summarize sample plot analyses using one-inch DBH classes. Statistics provided for each DBH class include trees per acre, basal area per acre (ft^2), average tree height (feet), and cubic foot volume per acre. Gross cubic volume represents the tree bole from tree base to tree tip. Merchantable wood volume calculations were based on 16 foot log sections, a minimum top diameter of four inches, a stump height of one foot, and a minimum DBH of eight inches.

2. For each forest type, statistics are first presented by tree species. The last row of each species section gives a species summary (species codes typically use the first initial from both genus and species names). The species summary shows average DBH, total trees per acre, total basal area per acre, and total volume per acre.

3. After all species for a particular forest type have been listed, two final rows provide type level summary statistics. The first row represents all trees with a DBH of two inches or larger. The second row represents only trees with a minimum DBH of eight inches. Type level summaries show average DBH, total trees per acre, total basal area per acre, and total volume per acre. Type level volume totals may differ slightly from those reported in Tables 2-4 due to rounding errors.

Forest Type ER22: Low to moderate volume *Eucalyptus robusta* saw timber.

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus robusta			
	7	106	5.0	1	37	0
	11	114	2.5	2	51	47
	14	121	5.0	5	175	168
	26	125	2.5	9	295	288
	40	130	2.5	22	677	661
	52	128	2.5	37	1079	1051
	53	132	2.5	38	1149	1121
ER summary:	31	120	22.5	115	3468	3338
			Melaluca quinquenervia			
	11	57	2.5	2	26	24
MQ summary:	11	57	2.5	2	27	24
			Metrosideros polymorpha			
	2	27	10.0	0	2	0
	4	40	10.0	1	11	0
	7	50	12.5	3	60	0
	9	55	2.5	1	22	19
	10	57	2.5	1	28	25
MP summary:	6	42	37.5	7	125	45
			-- Type Level Summary--			
All trees:	19.0		62	123	3620	3407
Merch trees:	29.3		24	117		

Appendix C (continued).

Forest Type ER33: Moderate volume *Eucalyptus robusta* pole and saw timber.

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus saligna			
	2	11	13.3	0	1	0
	4	35	13.3	1	14	0
	6	60	0.8	0	3	0
	7	67	3.3	1	20	0
	9	92	1.7	1	23	21
	10	103	1.7	1	32	29
	11	109	0.8	1	20	19
	12	117	0.8	1	25	24
	19	158	0.8	2	83	82
ES Summary:	6	42	36.7	7	227	177
			Eucalyptus robusta			
	2	8	53.3	1	8	0
	4	27	70.0	6	52	0
	6	48	30.7	6	81	0
	7	59	29.7	8	133	0
	8	71	26.2	9	182	150
	9	46	16.5	7	100	86
	10	58	18.2	10	168	150
	11	54	22.4	15	233	211
	12	17	17.9	14	105	84
	13	99	12.2	11	306	289
	14	105	18.9	20	582	555
	15	101	6.2	8	209	200
	16	82	10.5	15	331	315
	17	122	7.0	11	361	349
	18	130	6.0	11	366	355
	19	83	2.7	5	119	114
	20	125	1.0	2	72	70
	22	118	0.9	2	75	73
	23	117	0.8	2	73	71
ER summary:	9	105	351.1	164	3567	3080
			Metrosideros polymorpha			
	10	32	1.0	1	6	5
MP summary:	10	32	1.0	1	6	6
			Casuarina equisetifolia			
	4	30	3.3	0	3	0
	6	40	0.8	0	2	0
	7	45	1.7	0	7	0
	9	56	0.8	0	7	6
	10	59	0.8	0	9	8
	12	65	0.8	1	15	14
CE summary:	7	43	8.3	2	45	29
			-- Type Level Summary--			
All trees:	9.0		397	174	3845	3292
Merch trees:	12.4		176	149		

Appendix C (continued).

Forest Type ER66: High volume *Eucalyptus robusta* saw timber.

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus robusta			
	2	27	13.5	0	2	0
	4	46	25.1	2	27	0
	6	59	10.4	2	32	0
	7	61	11.6	3	53	0
	8	71	10.7	4	74	60
	9	73	8.1	4	74	64
	10	77	6.7	4	79	71
	11	79	6.8	5	100	91
	12	94	4.9	4	100	94
	13	88	5.5	5	123	116
	14	56	7.1	8	123	114
	15	82	6.4	8	178	169
	16	83	6.7	9	215	205
	17	97	6.3	10	262	252
	18	108	6.6	12	340	328
	19	82	6.2	12	272	261
	20	99	5.3	12	305	295
	21	88	4.5	11	258	249
	22	125	2.9	8	251	244
	23	107	4.6	13	376	365
	24	98	3.8	12	310	300
	25	140	3.1	11	379	370
	26	131	2.4	9	297	290
	27	99	2.9	12	296	287
	28	134	2.4	10	344	336
	29	98	2.5	11	287	278
	30	191	1.7	8	394	388
	31	120	1.3	7	197	192
	32	160	1.0	5	214	210
	33	124	1.0	6	178	174
	34	126	0.8	5	162	158
	35	127	0.7	5	144	140
	36	128	0.4	3	91	89
	37	125	0.7	5	157	153
	38	122	0.4	3	97	94
	39	131	0.1	1	36	35
	40	132	0.4	4	114	111
	41	133	0.2	2	52	51
	42	134	0.1	1	42	41
	43	135	0.1	1	44	43
	44	135	0.1	1	46	45
ER summary:	16	117	186.2	257	7147	6783
			Eucalyptus pilularis			
	19	82	0.3	1	15	14
	21	88	0.1	0	9	9
EP summary:	20	84	0.4	1	25	24
			Eucalyptus microcorys			
	7	58	0.3	0	1	0
EM summary:	7	42	0.3	0	1	0

Appendix C (continued).

Forest Type ER66: (continued).

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus saligna			
	6	77	0.3	0	1	0
	8	85	0.1	0	1	1
	9	71	0.3	0	3	2
	11	103	0.1	0	3	3
	12	95	0.1	0	3	3
	14	118	0.1	0	5	5
	15	122	0.1	0	6	6
	16	142	0.6	1	36	35
	17	105	0.1	0	7	7
	19	137	0.1	0	12	11
	21	144	0.1	0	15	15
	24	152	0.1	0	21	20
	27	160	0.1	1	27	27
	32	171	0.1	1	40	39
	33	173	0.1	1	43	42
	36	202	0.1	1	58	58
ES summary:	19	125	2.9	6	289	281
			Melaluca quinquenervia			
	6	14	0.1	0	0	0
	17	56	0.1	0	3	3
	29	80	0.3	1	26	25
MQ summary:	22	58	0.6	2	30	29
			Eucalyptus globulus			
	6	65	0.1	0	0	0
	19	111	0.1	0	11	11
	22	115	0.1	0	16	16
EB summary:	17	97	0.4	1	29	28
			Toona ciliata			
	6	51	0.3	0	1	0
	7	56	0.3	0	1	0
TC summary:	6	53	0.6	0	2	0
			Fraxinus uhdei			
	2	24	2.2	0	0	0
	4	42	1.1	0	1	0
	6	49	0.3	0	0	0
	7	16	0.6	0	1	0
	8	56	0.1	0	0	0
	9	58	0.3	0	2	2
	10	64	0.4	0	5	4
	11	60	0.3	0	3	3
	12	61	0.1	0	2	2
	13	62	0.1	0	2	2
	15	64	0.1	0	3	3
	16	63	0.1	0	4	4
FU summary:	7	39	5.8	2	30	24
			Acacia koa			
	14	67	0.1	0	3	3
AK summary:	14	23	0.1	0	4	3

Appendix C (continued).

Forest Type ER66: (continued).

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Metrosideros polymorpha			
	2	5	5.0	0	0	0
	4	14	1.1	0	0	0
	6	26	0.3	0	0	0
	10	55	0.1	0	1	1
	16	67	0.2	0	4	4
MP summary:	4	10	6.7	1	8	6
			Grevillia robusta			
	2	38	0.6	0	0	0
	4	51	0.6	0	0	0
	8	65	0.3	0	2	0
	10	68	0.1	0	1	1
	13	73	0.1	0	3	3
GR summary:	6	52	1.7	0	8	5
			Casuarina equisetifolia			
	6	31	0.3	0	0	0
CE summary:	6	22	0.3	0	1	0
			Terminalia myriocarpa			
	2	5	0.6	0	0	0
	4	14	1.1	0	0	0
	6	37	0.3	0	0	0
	8	65	0.1	0	1	0
	9	66	0.1	0	1	1
	10	71	0.1	0	1	1
	14	108	0.1	0	5	5
TM summary:	6	29	2.5	0	11	9
			Persea americana			
	9	31	0.3	0	1	1
	10	35	0.3	0	2	1
PA summary:	10	33	0.6	0	4	3
			Syzgium jambos			
	2	5	0.1	0	0	0
	4	13	0.1	0	0	0
	6	26	0.8	0	1	0
	8	65	0.1	0	1	0
	9	44	0.7	0	4	4
	10	49	0.4	0	4	3
	11	47	0.3	0	3	2
	12	45	0.1	0	1	1
	13	44	0.1	0	2	1
SJ summary:	9	37	2.9	1	19	15

Appendix C (continued).

Forest Type ER66: (continued).

	DBH (in)	Average Height (ft)	Number of trees	Basal Area	Gross	Merch
			Values per acre		Volume (ft^3)	
			Myrica faya			
	2	18	8.3	0	1	0
	4	40	1.7	0	2	0
	6	55	0.1	0	0	0
	7	61	0.4	0	2	0
	8	65	0.3	0	2	2
	12	80	0.3	0	6	5
	13	83	0.1	0	3	3
MF summary:	4	27	11.3	1	19	11
			Cryptomeria japonica			
	2	16	8.9	0	1	0
	4	35	3.3	0	3	0
	6	46	1.0	0	3	0
	7	45	2.4	1	12	0
	8	57	2.6	1	20	18
	9	62	1.3	1	13	12
	10	65	2.0	1	25	23
	11	57	0.8	1	11	10
	12	66	1.0	1	17	16
	13	60	0.4	0	8	7
	14	68	0.4	0	10	10
	15	69	0.3	0	7	7
	16	70	0.2	0	4	4
	17	71	0.3	0	9	9
	18	72	0.2	0	5	5
	22	74	0.1	0	7	6
CJ summary:	7	40	25.1	8	164	133
			Sequoia sempervirens			
	4	18	0.6	0	0	0
	7	31	0.1	0	0	0
	9	38	0.1	0	0	0
	11	53	0.1	0	1	1
	12	48	0.1	0	1	1
	13	43	0.3	0	4	3
	15	57	0.1	0	3	3
	17	62	0.1	0	4	3
	22	75	0.3	1	14	13
SS summary:	13	43	1.9	2	32	29
			-- Type Level Summary--			
All trees:	14.3		250	281	7824	7383
Merch trees:	18.4		146	270		

Appendix C (continued).

Forest type ER77: Very high volume *Eucalyptus robusta* saw timber.

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus saligna			
	4	82	0.6	0	1	0
	11	139	0.2	0	4	4
	16	153	0.2	0	10	10
	17	154	0.2	0	12	11
	22	162	0.2	0	20	20
ES summary:	12	117	1.2	1	49	47
			Eucalyptus robusta			
	2	10	33.9	1	4	0
	4	29	17.6	2	13	0
	6	57	9.4	2	28	0
	7	59	8.4	2	37	0
	8	66	8.0	3	52	42
	9	77	8.8	4	84	73
	10	71	7.8	4	85	77
	11	102	8.0	5	150	138
	12	106	9.6	8	220	207
	13	92	6.5	6	152	144
	14	126	7.6	8	279	267
	15	98	7.5	9	246	235
	16	128	5.5	8	266	256
	17	115	5.5	9	269	259
	18	128	5.4	10	326	316
	19	127	5.8	11	386	374
	20	136	4.0	9	310	301
	21	175	3.8	9	418	409
	22	154	4.6	12	488	477
	23	156	5.5	16	641	626
	24	131	3.5	11	369	359
	25	129	3.3	11	377	368
	26	155	2.3	9	340	332
	27	172	3.4	13	583	572
	28	132	4.1	18	589	575
	29	156	3.1	14	561	549
	30	165	1.5	8	311	305
	31	110	1.6	8	226	219
	32	185	1.8	10	443	435
	33	219	2.1	13	667	658
	34	174	1.1	7	282	277
	35	190	2.3	16	716	704
	36	93	2.1	15	342	330
	37	172	0.5	4	148	146
	38	181	0.5	4	153	151
	39	183	1.1	9	390	383
	40	184	0.8	7	285	280
	41	186	0.3	3	132	130
	43	189	0.2	2	66	65
	45	191	0.3	4	168	165
	46	193	0.3	3	153	150
	49	196	0.2	2	87	85
	51	199	0.2	3	122	120
ER summary:	17	156	209.9	328	11983	11579

Appendix C (continued).

Forest type ER77: (continued).

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Melaluca quinquenervia			
	18	64	0.2	0	6	5
MQ summary:	18	31	0.2	0	6	6
			Fraxinus uhdei			
	7	32	0.2	0	0	0
	7	36	0.4	0	1	0
FU summary:	7	35	0.6	0	2	0
			Metrosideros polymorpha			
	22	95	0.2	0	12	11
MP summary:	22	36	0.2	0	12	12
			Grevillia robusta			
	2	8	1.8	0	0	0
	4	26	0.6	0	0	0
	6	42	0.5	0	1	0
	7	52	0.5	0	2	0
	8	73	0.2	0	1	1
	9	65	0.2	0	1	1
	11	63	0.2	0	2	2
	12	85	0.2	0	3	3
GR summary:	6	30	4	1	14	8
			Casuarina equisetifolia			
	2	6	3.6	0	1	0
	6	45	0.2	0	0	0
CE summary:	2	8	3.8	0	2	0
			Eriobotrya japonica			
	2	10	0.6	0	0	0
	4	29	0.6	0	0	0
	13	92	0.2	0	5	4
EJ summary:	5	29	1.4	0	6	5
			Myrica faya			
	4	29	0.6	0	0	0
MF summary:	4	29	0.6	0	1	0
			-- Type Level Summary--			
All trees:	16.5		221	331	12074	11657
Merch trees:	20.4		142	324		

Appendix C (continued).

Forest type ES44: Moderate to high volume *Eucalyptus saligna* pole and saw timber.

	DBH (in)	Average Height (ft)	Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus saligna			
	2	22	40.0	1	7	0
	4	47	37.5	3	50	0
	6	68	19.1	4	87	0
	7	83	19.7	5	149	0
	8	83	20.4	7	204	177
	9	94	14.6	6	208	188
	10	107	16.3	9	325	302
	11	109	16.4	11	405	381
	12	115	12.4	10	381	362
	13	130	12.7	12	512	491
	14	131	12.5	13	585	564
	15	151	11.9	15	725	703
	16	141	12.1	17	785	763
	17	159	6.9	11	563	549
	18	137	5.4	9	429	417
	19	163	2.5	5	260	254
	20	155	2.7	6	294	287
	21	169	0.6	2	81	79
	22	181	1.9	5	285	279
	26	195	0.8	3	181	178
ES summary:	10	151	266.3	153	6526	5985
			Eucalyptus deglupta			
	2	46	5.0	0	1	0
	4	74	13.1	1	28	0
	6	88	3.1	1	21	0
	7	90	2.5	1	25	0
	8	93	0.6	0	9	8
	9	96	1.9	1	30	28
	10	98	0.6	0	13	13
	11	100	1.3	1	32	31
	15	104	0.6	1	34	33
	20	102	0.6	1	55	53
ED summary:	7	77	29.4	7	253	168
			Eucalyptus robusta			
	6	61	3.1	1	11	0
	7	70	1.9	1	10	0
	8	70	0.6	0	4	3
	11	79	0.6	0	9	8
ER summary:	7	66	6.3	2	35	13
			Eucalyptus pilularis			
	18	137	0.6	1	48	47
EP summary:	18	137	0.6	1	49	48
			Grevillia robusta			
	6	67	2.4	0	10	0
	7	79	0.8	0	5	0
	8	89	0.8	0	8	7
GR summary:	7	74	4.1	1	26	7

Appendix C (continued).

Forest type ES44: (continued).

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus microcorys			
	2	42	30.0	1	8	0
	4	59	25.0	2	36	0
	6	72	2.5	0	10	0
	7	72	5.6	2	33	0
	8	66	3.3	1	24	20
	9	95	2.7	1	35	31
	10	81	1.3	1	17	15
	18	95	0.6	1	32	30
EM summary:	5	66	71	9	199	99
			Toona ciliata			
	2	9	2.5	0	0	0
	4	31	7.5	1	7	0
	6	57	1.9	0	7	0
	7	60	1.3	0	7	0
	8	72	2.5	1	21	18
	9	79	0.6	0	8	7
	10	86	0.6	0	9	8
	12	96	0.6	0	16	15
TC summary:	6	45	17.5	3	79	51
			Metrosideros polymorpha			
	6	55	5.7	1	21	0
	7	64	2.4	1	14	0
	8	71	2.4	1	21	18
	10	85	1.6	1	25	23
	11	91	0.8	1	16	15
	13	102	0.8	1	25	24
MP summary:	8	68	13.8	5	126	82
			Casuarina equisetifolia			
	2	13	10.0	0	1	0
	4	31	15.0	1	14	0
	6	48	1.9	0	6	0
	7	49	2.5	1	11	0
	8	67	1.9	1	15	13
CE summary:	4	30	31.3	3	50	13
			Spathodia campanulata			
	2	9	7.5	0	1	0
	7	63	0.6	0	3	0
	9	79	0.6	0	7	6
	11	86	0.6	0	11	10
	11	93	0.6	0	13	12
SC summary:	5	27	10	1	37	30
			-- Type Level Summary--			
All trees:	8.7		450	186	7380	6496
Merch trees:	12.7		179	157		

Appendix C (continued).

Forest type ES55: Moderate volume *Eucalyptus saligna* saw timber.

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus saligna			
	2	20	17.8	0	3	0
	4	38	4.4	0	5	0
	6	50	2.8	1	10	0
	7	77	3.3	1	24	0
	9	71	0.6	0	6	6
	10	75	2.8	2	41	38
	11	98	1.7	1	38	36
	12	100	1.7	1	45	43
	13	68	2.8	3	61	58
	14	94	1.1	1	38	37
	15	98	1.7	2	69	66
	16	101	0.6	1	26	25
	17	89	2.8	4	134	129
	20	114	0.6	1	44	43
	21	134	1.7	4	174	170
	22	127	2.8	7	302	294
	23	131	1.1	3	137	133
	25	127	2.8	10	389	379
	28	128	1.1	5	192	187
	30	138	1.1	5	233	228
	31	140	1.1	6	250	245
	32	142	1.1	6	262	256
	34	150	1.1	7	320	314
	35	155	1.1	7	347	341
	38	150	1.1	9	382	374
	38	152	1.1	9	397	389
	39	153	0.6	5	210	205
	44	161	0.6	6	269	264
	50	160	0.6	8	338	331
	54	173	0.6	9	417	408
	63	182	0.6	12	563	552
	69	217	0.6	15	795	782
ES summary:	21	114	65	151	6536	6345
			Eucalyptus robusta			
	2	5	2.2	0	0	0
	11	47	0.6	0	4	4
	25	82	0.6	2	42	40
	27	84	0.6	2	47	45
	45	100	0.6	6	136	131
ER summary:	21	42	4.4	11	231	223
			Casuarina equisetifolia			
	2	20	2.2	0	0	0
	4	30	6.7	1	6	0
	6	37	0.6	0	1	0
	7	40	1.7	0	6	0
	10	47	0.6	0	5	4
	28	66	0.6	2	50	48
CE summary:	8	33	12.2	4	72	53

Appendix C (continued).

Forest type ES55: (continued).

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Metrosideros polymorpha			
	2	8	6.7	0	1	0
	6	32	0.6	0	1	0
	7	37	0.6	0	2	0
	8	42	1.1	0	6	5
	10	55	1.7	1	18	16
	11	45	1.1	1	12	11
	13	75	0.6	1	13	12
	14	60	1.1	1	25	23
	15	70	1.1	1	32	31
	17	76	1.1	2	45	43
	18	79	1.1	2	52	49
	20	84	0.6	1	33	32
	22	90	0.6	1	43	41
	23	91	1.1	3	94	91
MP summary:	12	44	18.9	15	381	358
			Grevillia robusta			
	2	20	2.2	0	0	0
	4	46	11.1	1	14	0
	6	59	3.9	1	15	0
	7	70	3.3	1	21	0
	8	71	2.8	1	24	20
	9	80	2.8	1	34	30
	10	75	2.8	2	39	36
	11	81	2.2	1	40	37
	12	80	1.7	1	36	33
	13	84	1.7	2	44	41
	14	84	5.0	5	153	145
	16	101	3.3	5	156	150
	17	72	2.2	4	85	81
	18	85	1.1	2	55	53
	19	93	1.1	2	67	64
GR summary:	10	73	47.2	28	790	697
			Myrica faya			
	2	5	17.8	0	0	0
	4	15	13.3	1	8	0
	6	27	2.8	1	6	0
	7	42	3.3	1	14	0
	8	42	3.9	1	21	18
	9	53	1.7	1	14	12
	11	47	1.7	1	18	17
	12	65	1.1	1	19	18
MF summary:	5	22	45.6	7	104	67
			-- Type Level Summary--			
All trees:	14.3		193	216	8114	7743
Merch trees:	20.9		86	206		

Appendix C (continued).

Forest Type ES66: High volume *Eucalyptus saligna* saw timber.

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus saligna			
	2	16	46.7	1	7	0
	4	42	37.8	3	47	0
	6	68	22.2	5	106	0
	7	76	20.0	5	142	0
	8	94	16.7	6	188	164
	9	99	13.3	6	206	188
	10	111	7.8	4	165	153
	11	121	9.4	6	260	246
	12	110	10.0	8	298	284
	13	129	7.2	7	285	273
	14	124	12.8	14	568	547
	15	133	6.7	8	362	350
	16	145	6.1	8	406	394
	17	150	3.9	6	295	287
	18	138	1.7	3	135	132
	19	165	3.3	7	356	348
	20	170	3.3	7	393	385
	21	35	1.7	4	51	47
	22	171	2.2	6	317	311
	23	217	1.7	5	333	328
	25	178	1.1	4	204	200
	25	165	2.8	9	493	484
	26	203	2.8	10	651	641
	27	188	0.6	2	130	128
	29	194	0.6	2	148	146
	30	196	0.6	3	167	165
	32	192	1.1	6	366	360
	34	206	2.2	14	864	851
	35	208	1.1	7	465	458
	37	213	0.6	4	265	261
	42	222	1.1	11	691	681
	50	235	1.1	15	978	965
ES summary:	12	169	250	208	10359	9789
			Flindersia brayleyana			
	4	23	6.7	1	5	0
	6	45	1.7	0	5	0
FB summary:	4	27	8.3	1	11	0
			Toona ciliata			
	2	6	2.2	0	0	0
	4	24	2.2	0	1	0
	7	48	0.6	0	2	0
	10	83	0.6	0	8	7
	22	140	0.6	2	67	66
TC summary:	8	36	6.1	2	81	74
			Casuarina equisetifolia			
	6	42	1.1	0	3	0
	7	53	1.1	0	5	0
	10	79	2.2	1	35	32
CE summary:	9	63	4.4	2	45	32

Appendix C (continued).

Forest Type ES66: (continued).

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus robusta			
	2	28	33.3	1	6	0
	4	47	6.7	1	7	0
	6	65	1.7	0	6	0
	7	66	0.6	0	2	0
	8	72	1.7	1	11	0
	9	76	1.7	1	16	14
	10	67	1.7	1	17	15
	11	84	1.1	1	17	15
	12	88	1.7	1	32	30
	13	91	0.6	0	12	11
	14	94	0.6	1	16	15
	16	100	1.7	2	63	60
	17	63	0.6	1	15	14
	18	82	1.1	2	44	43
	20	109	0.6	1	35	34
	22	123	1.1	3	96	94
	23	115	1.1	3	98	95
	27	128	0.6	2	74	72
ER summary:	8	57	57.8	22	577	519
			Eucalyptus microcorys			
	2	6	4.4	0	1	0
	4	24	4.4	0	3	0
	8	65	0.6	0	4	3
	12	107	0.6	0	14	13
	26	195	0.6	2	112	110
EM summary:	7	32	10.6	3	135	127
			Grevillia robusta			
	6	62	1.1	0	5	0
	7	70	1.1	0	8	0
	8	78	1.1	0	9	0
	9	84	1.1	0	13	12
	10	98	2.2	1	40	37
	11	94	2.2	1	47	44
	14	105	0.6	1	22	21
	16	111	1.1	2	56	54
	21	121	1.7	4	157	152
	22	122	0.6	2	59	58
	25	126	0.6	2	77	75
	32	128	0.6	3	124	121
GR summary:	15	97	13.9	17	623	578

Appendix C (continued).

Forest Type ES66: (continued).

	DBH (in)	Average Height (ft)	Number of trees	Basal Area	Gross	Merch
			Eriobotrya japonica			
	2	9	4.4	0	0	0
	4	33	24.4	2	25	0
	6	59	5.6	1	23	0
	7	72	8.3	2	55	0
	8	76	4.4	2	40	0
	9	83	1.7	1	20	18
	10	95	2.2	1	39	36
	11	102	2.2	2	51	48
	12	100	1.7	1	46	43
	13	125	1.1	1	43	41
	14	116	1.7	2	65	63
	20	135	0.6	1	50	49
	22	145	1.1	3	132	128
	25	146	0.6	2	89	87
	26	145	0.6	2	92	90
	27	150	0.6	2	102	100
	32	156	0.6	3	148	145
EJ summary:	9	78	61.7	28	1028	853
			-- Type Level Summary--			
All trees:	11.2		412	283	12858	11973
Merch trees:	16.8		167	256		

Appendix C (continued).

Forest type ES77: Very high volume *Eucalyptus saligna* saw timber.

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Flindersia brayleyana			
	2	7	2.5	0	0	0
	4	24	2.5	0	2	0
	7	57	15.0	4	81	0
	8	65	20.0	7	160	138
	9	75	20.0	9	231	206
	10	80	5.0	3	75	69
FB summary:	8	72	65	23	552	415
			Grevillia robusta			
	7	60	5.0	1	28	0
	10	77	2.5	1	36	33
	11	83	2.5	2	46	43
	14	95	5.0	5	170	162
	16	101	5.0	7	233	225
GR summary:	12	84	20	17	516	465
			Cryptomeria japonica			
	17	77	2.5	4	90	85
CJ summary:	17	77	2.5	4	90	86
			Eucalyptus saligna			
	4	14	10.0	1	6	0
	6	34	2.5	0	6	0
	7	45	2.5	1	11	0
	8	50	5.0	2	32	27
	9	66	5.0	2	52	46
	11	85	2.5	2	48	45
	12	95	2.5	2	64	60
	13	101	5.0	5	159	151
	17	157	2.5	4	202	197
	20	142	2.5	5	252	246
	23	155	5.0	14	713	698
	27	168	2.5	10	521	511
	28	171	2.5	11	567	556
	29	174	2.5	11	614	603
	32	181	2.5	14	767	753
	33	183	2.5	15	821	807
	34	176	2.5	16	835	821
	35	187	2.5	17	935	919
	40	196	2.5	22	1247	1228
	43	200	2.5	25	1452	1430
	44	153	2.5	26	1163	1139
	47	206	2.5	30	1745	1718
	56	255	2.5	43	2957	2920
ES summary:	26	178	75	278	15179	14885
			Eucalyptus robusta			
	45	90	2.5	27	572	550
ER summary:	45	90	2.5	27	572	550
			-- Type Level Summary--			
All trees:	19.7		165	348	16910	16401
Merch trees:	22.4		125	341		

Appendix C (continued).

Forest type EB33: Moderate volume *Eucalyptus globulus* pole and saw timber.

	DBH (in)	Average Height (ft)	Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus robusta			
	7	70	0.2	0	1	0
ER summary:	7	33	0.2	0	1	0
			Metrosideros polymorpha			
	4	45	0.8	0	1	0
MP summary:	4	45	0.8	0	1	0
			Eucalyptus globulus			
	2	22	230.8	5	46	0
	4	45	198.5	17	275	0
	6	68	53.3	10	296	0
	7	70	35.2	9	278	0
	8	79	28.7	10	332	300
	9	87	26.7	12	430	398
	10	98	24.8	14	548	517
	11	102	18.1	12	501	477
	12	117	12.9	10	479	460
	13	133	9.8	9	481	465
	14	120	7.9	8	407	394
	15	109	4.8	6	258	250
	16	130	2.7	4	193	188
	17	134	2.1	3	176	172
	18	139	1.0	2	92	90
	19	143	1.0	2	105	103
	20	147	0.4	1	47	46
	21	151	0.2	0	26	26
	22	155	0.2	1	29	29
EB summary:	6	124	658.8	135	5007	3922
			Myrica faya			
	2	33	46.2	1	12	0
	4	43	50.0	4	63	0
	6	53	14.2	3	52	0
	7	48	6.7	2	31	0
	8	74	1.3	0	11	0
	9	54	0.8	0	6	5
	10	61	0.6	0	6	6
MF summary:	4	49	119.8	11	185	12
			-- Type Level Summary--			
All trees:	5.9		779	147	3934	19496
Merch trees:	11.0		142	94		

Appendix C (continued).

Forest type EB44: Moderate to high volume *Eucalyptus globulus* pole and saw timber.

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus globulus			
	2	8	5.0	0	0	0
	4	33	5.0	0	5	0
	6	67	7.5	1	39	0
	7	76	10.0	3	87	0
	8	61	15.0	5	140	125
	9	95	10.0	4	174	161
	10	108	2.5	2	66	63
	11	108	15.0	10	444	424
	12	123	7.5	6	297	286
	13	130	10.0	9	489	473
	14	136	5.0	5	276	268
	15	142	5.0	6	351	342
	16	182	7.5	10	742	726
	17	112	5.0	8	364	354
	18	155	5.0	9	540	529
	19	159	2.5	5	309	303
	20	163	7.5	16	1018	998
	22	186	5.0	13	913	898
	23	172	2.5	7	469	461
	24	174	2.5	8	524	515
	26	183	2.5	9	637	627
	27	181	2.5	10	654	644
	30	185	2.5	12	804	792
	32	190	2.5	14	943	929
	38	189	2.5	20	1319	1300
EB summary:	16	169	147.5	194	11616	11228
			Acacia koa			
	7	35	2.5	1	8	0
AK summary:	7	35	2.5	1	8	0
			-- Type Level Summary--			
All trees:	15.4		150	195	11624	11228
Merch trees:	17.0		120	190		

Appendix C (continued).

Forest type EM77: Very high volume *Eucalyptus microcorys* saw timber.

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus saligna			
	12	78	0.8	1	17	16
	20	111	0.8	2	66	64
	22	116	0.8	2	83	81
	27	130	1.7	7	272	265
ES summary:	22	113	4.2	11	440	428
			Eucalyptus robusta			
	13	94	0.8	1	20	18
	14	96	0.8	1	23	22
	17	100	0.8	1	35	34
	18	101	0.8	1	40	39
	22	145	0.8	2	83	81
	23	120	0.8	2	75	73
	24	123	0.8	3	83	81
	30	65	1.7	8	138	131
	36	116	0.8	6	166	162
	40	118	0.8	7	208	202
ER summary:	26	104	9.2	33	875	847
			Eucalyptus microcorys			
	2	10	44.2	1	6	0
	4	34	14.2	1	13	0
	6	67	3.3	1	13	0
	7	70	1.7	0	9	0
	8	80	0.8	0	7	6
	9	95	4.2	2	54	48
	10	93	3.3	2	52	48
	11	68	2.5	2	35	33
	12	110	2.5	2	66	62
	13	112	3.3	3	105	100
	14	120	1.7	2	65	62
	15	125	2.5	3	115	111
	16	129	2.5	3	135	131
	17	70	1.7	3	57	54
	18	137	3.3	6	239	232
	19	205	2.5	5	291	285
	21	172	4.2	10	498	487
	22	156	2.5	7	298	291
	23	151	5.0	14	630	616
	24	154	4.2	13	577	565
	25	158	2.5	9	384	376
	26	181	6.7	25	1255	1232
	27	160	7.5	30	1346	1320
	28	170	3.3	14	678	665
	29	187	3.3	15	793	779
	30	165	2.5	12	563	552
	32	168	3.3	19	860	844
	34	171	1.7	11	488	479
	36	173	2.5	18	824	809
	38	176	1.7	13	613	602
	39	120	0.8	7	225	219
	41	187	0.8	8	373	367
	42	183	0.8	8	382	375
EM summary:	18	169	147.5	267	12063	11765

Appendix C (continued).

Forest Type EM77: (continued).

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Grevillia robusta			
	6	50	0.8	0	2	0
	7	64	1.7	0	10	0
GR summary:	7	59	2.5	1	13	0
			Casuarina equisetifolia			
	2	6	10.0	0	2	0
	4	23	3.3	0	2	0
	7	43	0.8	0	3	0
	8	75	0.8	0	7	6
CE summary:	4	16	15	1	17	7
			Syzgium jambos			
	6	44	0.8	0	2	0
	9	65	0.8	0	7	7
2SJ..	7	54	1.7	0	10	7
			-- Type Level Summary--			
All trees:	17.9		180	313	13054	75200
Merch trees:	23.9		99	309		

Appendix C (continued).

Forest type E022: Low to moderate volume *Eucalyptus rostrata* saw timber.

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Lophostemon confertus			
	9	78	1.7	1	19	17
	10	80	1.7	1	24	22
	12	85	1.7	1	39	37
	13	87	1.7	2	47	45
	22	96	1.7	4	136	132
LC summary:	14	85	8.3	9	268	255
			Eucalyptus rostrata			
	4	36	6.7	1	7	0
	6	53	5.0	1	22	0
	7	60	1.7	0	10	0
	8	67	8.3	3	84	76
	9	75	5.0	2	73	68
	10	74	3.3	2	55	51
	11	80	10.0	6	213	201
	12	83	6.7	5	186	178
	13	71	8.3	8	226	215
	14	86	5.0	5	187	180
	16	90	3.3	5	170	164
	17	92	5.0	8	281	271
	20	108	5.0	11	469	457
	21	98	1.7	4	152	147
	22	99	1.7	4	166	162
	24	79	1.7	5	159	154
	25	102	1.7	6	228	222
	28	115	5.0	21	929	907
	31	106	1.7	9	340	331
	33	108	1.7	10	396	386
EO summary:	16	94	88.3	117	4364	4179
			Metrosideros polymorpha			
	7	41	1.7	0	6	0
	9	50	1.7	1	13	11
MP summary:	8	46	3.3	1	20	12
			-- Type Level Summary--			
All trees:	15.2		99	127	4652	4446
Merch trees:	16.4		84	124		

Appendix C (continued).

Forest type EO55: Moderate volume *Eucalyptus rostrata* saw timber.

	DBH (in)	Average Height (ft)	Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus rostrata			
	8	67	2.5	1	24	22
	9	71	2.5	1	33	30
	10	78	2.5	1	44	41
	11	83	7.5	5	171	162
	12	88	5.0	4	143	136
	13	93	2.5	2	87	84
	14	97	2.5	3	105	101
	16	102	12.5	17	714	692
	18	110	7.5	13	576	561
	19	112	7.5	15	650	633
	20	129	5.0	11	547	535
	21	117	7.5	18	821	801
	22	119	7.5	20	910	888
	24	123	2.5	8	367	359
	26	121	2.5	9	422	413
	27	127	5.0	20	949	929
EO summary:	18	119	82.5	148	6574	6396
			Flindersia brayleyana			
	4	33	20.0	2	21	0
	7	54	2.5	1	13	0
	8	65	15.0	5	120	103
	9	64	12.5	6	125	111
	10	77	12.5	7	182	167
	11	74	17.5	12	296	274
	12	81	17.5	14	383	359
	13	79	7.5	7	188	177
	14	79	10.0	11	287	272
	15	84	2.5	3	87	83
FB summary:	10	80	117.5	66	1705	1551
			-- Type Level Summary--			
All trees:	14.0		200	214	7947	40750
Merch trees:	14.8		177	212		

Appendix C (continued).

Forest type EX22: Low to moderate volume mixed eucalyptus saw timber.

	DBH (in)	Average Height (ft)	Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus saligna			
	6	37	1.0	0	2	0
	8	49	2.0	1	11	0
	9	55	1.0	0	9	8
	10	60	2.0	1	23	21
	11	66	1.0	1	16	15
	12	46	2.0	2	28	26
	13	98	2.0	2	65	63
	15	86	1.0	1	36	34
	18	99	1.0	2	61	59
ES summary:	12	65	13	10	257	229
			Eucalyptus robusta			
	4	39	4.0	0	3	0
	6	60	3.0	1	9	0
	7	56	5.0	1	21	0
	8	69	3.0	1	20	16
	9	60	2.0	1	15	13
	10	58	4.0	2	36	32
	11	43	4.0	3	34	30
	12	65	3.0	2	43	40
	13	76	2.0	2	39	37
	14	80	3.0	3	71	68
	15	81	2.0	2	55	52
	16	84	2.0	3	64	61
	18	88	2.0	4	84	81
	21	93	2.0	5	120	116
	27	120	1.0	4	122	119
	41	116	1.0	9	250	243
ER summary:	14	68	43	43	996	915
			Metrosideros polymorpha			
	2	6	20.0	0	0	0
	4	17	24.0	2	18	0
	6	51	20.0	4	70	0
	7	32	9.0	2	31	0
	8	48	12.0	4	74	63
	9	56	3.0	1	26	23
	11	67	1.0	1	15	14
MP summary:	6	47	89	15	237	102
			Myrica faya			
	2	5	8.0	0	0	0
	4	17	8.0	1	5	0
	7	42	1.0	0	4	0
MF summary:	4	13	17	1	10	0
			-- Type Level Summary--			
All trees:	8.9		161	69	1501	1246
Merch trees:	13.4		57	56		

Appendix C (continued).

Forest type EX44: Moderate to high volume mixed eucalyptus pole and saw timber.

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus saligna			
	6	48	2.0	0	6	0
	7	73	6.2	2	42	0
	8	20	5.2	2	17	13
	9	70	11.4	5	124	112
	10	99	15.2	8	283	262
	11	99	9.0	6	202	190
	12	88	8.2	6	195	184
	13	148	6.2	6	281	270
	14	114	15.0	16	615	592
	15	107	16.4	20	729	702
	16	98	8.0	11	371	357
	17	152	2.0	3	157	153
	18	52	4.2	7	136	128
	19	163	1.0	2	103	101
	21	172	1.0	2	132	130
	22	152	1.0	3	128	126
	25	187	1.0	3	200	196
ES summary:	13	109	113	104	3729	3523
			Eucalyptus robusta			
	2	6	16.0	0	3	0
	4	24	32.0	3	22	0
	6	56	16.0	3	48	0
	7	69	14.0	4	71	0
	8	48	21.2	7	105	85
	9	51	8.0	4	53	45
	10	58	8.8	5	81	72
	11	71	4.2	3	56	51
	12	101	3.6	3	78	73
	14	112	2.4	3	78	75
ER summary:	7	62	126.2	34	600	404
			Eucalyptus microcorys			
	4	17	8.0	1	5	0
	6	36	3.0	1	8	0
	7	41	4.0	1	16	0
	8	52	3.0	1	16	0
EM summary:	6	31	18	3	46	0
			Fraxinus uhdei			
	2	18	200.0	4	36	0
	4	31	36.0	3	36	0
	6	43	15.0	3	45	0
	7	45	6.0	2	26	0
	8	48	1.0	0	6	5
	10	55	1.0	1	10	9
FU summary:	3	38	259	13	162	15
			-- Type Level Summary--			
All trees:	7.4		516	154	4537	3942
Merch trees:	12.2		154	126		

Appendix C (continued).

Forest type EX55: Moderate volume mixed eucalyptus saw timber.

	DBH (in)	Average Height (ft)	Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus saligna			
	2	25	8.3	0	1	0
	4	44	6.7	1	8	0
	6	62	3.0	1	12	0
	7	100	1.7	0	15	0
	8	46	1.3	0	7	6
	9	73	2.5	1	28	25
	10	65	2.9	2	36	33
	11	84	1.7	1	32	30
	12	95	0.8	1	21	20
	13	90	0.4	0	11	11
	14	92	2.2	2	73	69
	15	118	1.7	2	81	78
	16	100	1.3	2	58	56
	17	102	2.1	3	113	109
	18	52	0.8	1	27	25
	19	95	1.3	3	83	80
	20	110	1.3	3	99	96
	21	112	2.1	5	184	179
	22	130	1.7	4	185	180
	23	145	2.1	6	279	273
	26	118	0.8	3	116	113
	27	124	0.4	2	64	63
	28	125	0.4	2	70	68
	30	128	0.4	2	81	80
	33	157	0.4	2	118	116
	35	136	1.3	8	344	336
	37	138	0.4	3	129	126
	38	130	1.3	10	384	375
	44	146	0.4	4	185	181
ES summary:	16	93	51.5	75	2858	2739
			Eucalyptus rostrata			
	2	58	1.7	0	0	0
	9	97	0.4	0	7	6
	10	99	0.4	0	9	8
	11	102	0.8	1	23	21
	13	106	0.4	0	16	15
	15	109	0.4	1	22	21
	18	113	0.8	1	65	64
	19	115	1.3	2	111	108
	21	150	0.4	1	57	56
	26	121	0.4	2	70	68
	28	122	0.4	2	81	79
	31	90	0.4	2	72	70
	34	135	0.8	5	257	251
	41	130	0.4	4	174	170
EO summary:	21	105	9.2	21	970	946

Appendix C (continued).

Forest type EX55: (continued).

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus robusta			
	2	23	58.3	1	9	0
	4	39	25.0	2	23	0
	6	55	5.4	1	16	0
	7	51	6.2	2	24	0
	8	80	3.9	1	30	25
	9	97	4.5	2	53	46
	10	46	2.7	1	20	17
	11	70	2.1	1	27	25
	12	60	2.6	2	35	32
	13	50	2.9	3	39	36
	14	78	2.1	2	48	46
	15	82	1.8	2	49	46
	16	82	2.2	3	69	66
	17	85	0.4	1	15	14
	18	85	1.3	2	51	49
	19	100	2.3	5	124	119
	20	90	0.4	1	22	21
	21	70	1.3	3	61	58
	22	105	0.9	2	67	65
	23	95	0.8	2	60	58
	24	97	2.2	7	173	167
	25	98	0.4	1	36	35
	26	99	0.4	2	39	38
	27	82	0.8	3	71	68
	28	95	0.9	4	96	92
	29	146	0.8	4	140	137
	30	104	1.3	6	162	157
	31	105	0.4	2	57	56
	32	107	0.4	2	61	60
	33	110	0.4	2	67	65
	34	109	0.8	5	140	136
	36	111	1.3	9	254	247
	39	113	0.4	3	93	90
ER summary:	11	84	137.8	93	2245	2084
			Eucalyptus microcorys			
	23	115	0.4	1	40	39
	28	120	0.4	2	60	59
EM summary:	26	118	0.8	3	102	99
			Eucalyptus globulus			
	6	104	0.4	0	2	0
	10	70	0.8	0	13	12
	11	122	0.4	0	13	13
	25	136	0.4	1	74	72
EB summary:	14	101	2.1	2	104	98
			Fraxinus uhdei			
	6	45	0.5	0	1	0
	7	52	0.4	0	2	0
	9	61	0.4	0	3	3
	9	61	0.5	0	4	4
FU summary:	8	55	1.8	1	12	7

Appendix C (continued).

Forest type EX55: (continued).

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Metrosideros polymorpha			
	2	9	26.7	1	4	0
	4	27	15.0	1	13	0
	6	40	3.0	1	8	0
	7	56	2.6	1	13	0
	8	45	1.3	0	7	6
	9	56	0.4	0	3	3
	10	60	1.3	1	14	13
	11	63	0.4	0	6	5
	12	62	0.4	0	7	6
	14	72	0.4	0	11	10
	19	78	0.4	1	21	20
MP summary:	5	27	51.9	6	113	67
			Acacia koa			
	2	9	3.3	0	0	0
	6	42	0.5	0	1	0
	20	80	0.5	1	29	27
AK summary:	7	21	4.3	1	31	28
			Grevillia robusta			
	2	15	1.7	0	0	0
	4	38	1.7	0	1	0
	6	58	1.3	0	5	0
	7	60	2.5	1	14	0
	8	67	2.5	1	20	17
	9	67	1.3	1	13	11
	10	70	0.4	0	5	5
	11	57	0.8	1	11	10
	12	75	0.4	0	8	7
	13	77	0.4	0	10	9
GR summary:	8	54	12.9	4	91	63
			Casuarina equisetifolia			
	6	46	0.4	0	1	0
CE summary:	6	46	0.4	0	1	0
			Persea americana			
	8	55	0.4	0	2	0
PA summary:	8	55	0.4	0	3	0
			Myrica faya			
	8	40	0.4	0	2	1
	9	60	0.5	0	4	4
MF summary:	9	51	0.9	0	7	6
			Araucaria excelsa			
	7	37	0.4	0	1	0
	11	55	0.4	0	5	5
	17	71	0.4	1	14	13
AE summary:	12	54	1.3	1	22	19

Appendix C (continued).

Forest type EX55: (continued).

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Cryptomeria japonica			
	2	21	23.3	1	3	0
	4	33	6.7	1	6	0
	6	45	2.8	0	9	0
	7	46	0.9	0	5	0
	8	41	0.4	0	2	0
	9	51	1.3	1	11	10
	11	56	0.8	1	11	10
	12	53	0.4	0	6	5
	13	57	0.4	0	7	7
	14	62	0.5	1	11	10
	15	64	1.4	2	36	34
	16	65	1.4	2	40	38
	19	65	1.8	3	65	61
	21	80	1.7	4	85	80
	22	73	0.4	1	20	19
	23	74	0.8	2	46	43
	26	85	0.5	2	41	38
CJ summary:	9	38	45.7	21	415	363
			Sequoia sempervirens			
	6	32	0.5	0	1	0
	7	34	0.4	0	1	0
	8	37	0.4	0	2	2
	10	40	0.4	0	3	3
	11	42	0.4	0	4	4
	12	45	0.4	0	5	4
	13	47	0.4	0	6	6
	14	49	0.8	1	14	13
	16	55	0.4	1	10	9
	22	55	0.4	1	18	16
SS summary:	13	44	4.7	4	69	60
			Cupressus macrocarpa			
	2	22	23.3	1	4	0
	4	35	38.3	3	39	0
	6	46	3.8	1	14	0
	7	52	5.0	1	28	0
	8	47	2.1	1	14	12
	10	57	0.8	0	9	8
	12	65	0.4	0	7	7
	14	65	0.8	1	19	18
	15	67	0.4	1	11	10
	16	68	0.8	1	24	23
	18	71	0.4	1	15	14
CM summary:	5	42	76.3	11	189	95
			-- Type Level Summary--			
All trees:	10.6		401	245	7231	6673
Merch trees:	18.5		119	224		

Appendix C (continued).

Forest type EX66: High volume mixed eucalyptus saw timber.

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus grandis			
	15	110	0.3	0	13	13
	17	160	0.3	0	24	24
	20	143	0.3	1	30	29
	23	149	0.3	1	41	40
	26	154	0.3	1	53	52
	30	159	0.3	1	71	70
EG summary:	22	146	1.5	4	235	230
			Eucalyptus saligna			
	2	17	6.0	0	1	0
	4	39	13.3	1	15	0
	6	63	4.8	1	20	0
	7	71	4.0	1	26	0
	8	86	2.9	1	29	25
	9	85	3.5	2	45	41
	10	93	2.8	1	48	44
	11	98	2.3	1	49	46
	12	84	2.0	2	46	43
	13	110	1.0	1	34	32
	14	110	1.5	2	59	57
	15	131	2.5	3	133	129
	16	87	1.6	2	67	64
	17	130	0.8	1	50	49
	18	151	1.3	2	111	108
	19	156	2.0	4	199	195
	20	126	1.8	4	157	153
	21	138	1.5	4	162	158
	22	130	2.0	5	223	217
	23	159	1.0	3	146	143
	24	151	0.5	2	75	73
	25	174	1.5	5	279	274
	26	184	1.1	4	237	233
	27	170	0.6	2	131	129
	28	169	0.5	2	112	110
	29	172	0.4	2	91	89
	30	174	0.5	2	131	129
	31	177	0.6	3	177	173
	32	179	0.5	3	152	149
	33	210	0.3	1	93	92
	35	185	1.0	7	369	363
	36	185	0.3	2	97	95
	37	236	0.3	2	129	128
	38	193	0.3	2	111	109
	42	200	0.5	5	278	273
	49	216	0.3	3	197	194
	51	215	0.3	4	210	207
	68	216	0.3	6	343	337
ES summary:	16	128	67.8	99	4850	4679

Appendix C (continued).

Forest type EX66: (continued).

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus robusta			
	2	12	27.0	1	3	0
	4	39	29.0	3	27	0
	6	65	8.3	2	28	0
	7	64	7.5	2	35	0
	8	73	8.3	3	60	49
	9	86	3.6	2	37	33
	10	98	5.5	3	82	74
	11	101	2.8	2	51	47
	12	98	3.3	3	70	66
	13	112	2.3	2	64	60
	14	123	4.2	4	149	143
	15	116	4.5	6	174	167
	16	125	2.3	3	106	102
	17	119	3.0	5	154	149
	18	110	4.1	7	211	204
	19	121	2.3	4	144	139
	20	124	2.3	5	160	156
	21	115	1.3	3	91	88
	22	125	1.0	3	86	83
	23	127	0.5	1	47	46
	24	130	1.4	4	142	139
	25	130	0.5	2	57	55
	26	131	0.5	2	65	63
	27	160	1.0	4	164	161
	28	133	1.0	4	144	141
	29	134	0.3	1	38	37
	30	125	0.8	4	115	112
	31	140	0.3	1	45	44
	33	150	0.5	3	109	107
	34	139	0.5	3	107	104
	35	139	0.5	4	119	116
	39	142	0.3	2	70	68
	52	135	0.3	4	112	110
	54	145	0.3	4	126	123
ER summary:	12	120	130.9	104	3209	3000
			Eucalyptus microcorys			
	10	80	0.5	0	6	6
	14	115	0.3	0	9	8
	15	119	0.5	1	22	21
	16	123	0.3	0	12	12
	29	140	0.3	1	45	44
	30	152	0.3	1	52	51
EM summary:	19	116	2	4	149	144
			Melaluca quinquenervia			
	13	61	0.3	0	4	4
	16	71	0.3	0	7	7
	18	76	0.3	0	10	9
	20	80	0.3	1	13	12
MQ summary:	17	72	1.1	2	36	34

Appendix C (continued).

Forest type EX66: (continued).

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Lophostemon confertus			
	2	19	8.0	0	1	0
	4	50	3.0	0	4	0
	6	65	1.3	0	5	0
	7	79	2.0	1	14	0
	8	85	1.0	0	10	8
	9	91	0.5	0	6	6
	11	99	0.5	0	11	10
LC summary:	5	44	16.3	2	54	26
			Eucalyptus globulus			
	10	75	0.3	0	4	4
	21	102	0.3	1	23	22
EB summary:	16	88	0.5	1	28	27
			Flindersia brayleyana			
	2	17	2.0	0	0	0
	4	45	6.0	1	7	0
	6	63	2.1	0	8	0
	7	70	1.6	0	10	0
	8	76	0.8	0	6	5
	9	80	0.5	0	6	5
	11	90	0.8	0	15	14
	12	92	0.3	0	6	5
	18	104	0.3	0	15	14
FB summary:	6	54	14.2	3	77	46
			Toona ciliata			
	4	44	3.0	0	3	0
	6	70	0.8	0	3	0
	7	72	1.0	0	6	0
	8	80	1.3	0	12	10
	9	94	0.5	0	7	6
	10	99	0.8	0	13	12
	11	110	0.3	0	6	5
	12	128	0.5	0	16	15
	13	124	0.5	0	18	18
	14	131	0.5	1	23	22
	20	165	0.3	1	28	27
	28	199	0.3	1	64	63
TC summary:	10	83	9.6	5	206	183
			Metrosideros polymorpha			
	2	9	2.0	0	0	0
	4	24	1.0	0	0	0
	6	42	2.5	0	7	0
	7	55	0.5	0	2	0
	8	67	1.8	1	14	12
MP summary:	6	38	7.8	1	26	13
			Araucaria excelsa			
	15	90	0.3	0	9	9
	23	112	0.3	1	22	21
AE summary:	19	101	0.5	1	32	30

Appendix C (continued).

Forest type EX66: (continued).

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Grevillia robusta			
	2	21	4.0	0	0	0
	4	39	2.0	0	2	0
	6	57	1.0	0	4	0
	7	57	1.0	0	5	0
	8	55	0.5	0	3	0
	9	72	0.8	0	8	7
	10	87	1.8	1	28	26
	11	85	0.5	0	9	9
	12	86	0.5	0	11	11
	13	90	1.0	1	28	27
	14	93	1.0	1	34	32
	15	82	0.3	0	8	8
	16	100	0.5	1	24	23
	17	103	0.5	1	27	26
	18	106	0.8	1	46	44
	19	104	0.9	2	61	59
	21	115	0.3	1	22	21
	23	124	0.5	1	58	57
	26	126	0.3	1	35	34
GR summary:	11	67	17.9	13	422	390
			Casuarina equisetifolia			
	2	23	21.0	0	4	0
	4	40	3.0	0	3	0
	6	55	1.5	0	5	0
	7	69	2.0	1	12	0
	8	47	0.6	0	3	3
	9	69	1.0	0	10	9
	10	73	0.3	0	3	3
	11	76	0.3	0	4	4
	12	80	0.3	0	5	5
	13	75	1.0	1	23	22
	14	86	0.5	1	15	14
	15	89	0.3	0	9	8
	16	90	0.8	1	31	30
	17	80	0.8	1	31	30
	18	97	0.3	0	14	13
	20	102	0.3	1	18	17
	23	125	0.3	1	31	30
CE summary:	7	39	33.9	8	231	194
			Cryptomeria japonica			
	11	45	0.8	1	9	8
	12	65	0.5	0	9	9
	14	67	0.3	0	6	6
CJ summary:	12	55	1.7	1	26	24
			-- Type Level Summary--			
All trees:	12.2		305	248	9579	9021
Merch trees:	17.9		133	232		

Appendix C (continued).

Forest type EX77: Very high volume mixed eucalyptus saw timber.

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus saligna			
	2	8	52.5	1	9	0
	4	27	17.5	2	16	0
	6	55	4.4	1	16	0
	7	51	5.0	1	24	0
	8	70	3.8	1	32	27
	9	76	2.5	1	29	26
	10	85	1.3	1	20	18
	11	88	3.7	2	74	69
	12	100	2.5	2	67	63
	13	103	0.6	1	20	19
	14	109	0.6	1	24	23
	15	114	1.3	2	58	56
	16	145	2.1	3	137	133
	17	123	1.4	2	92	89
	18	127	1.3	2	92	89
	20	155	1.3	3	136	133
	21	120	0.6	2	59	57
	22	141	1.9	5	224	219
	23	144	0.6	2	83	81
	24	146	0.6	2	91	89
	26	152	2.2	8	397	389
	27	154	2.1	8	396	388
	28	155	1.3	5	258	253
	29	145	0.6	3	129	126
	30	161	0.6	3	152	149
	32	164	0.6	3	175	172
	33	166	1.4	9	431	423
	34	168	0.6	4	200	196
	36	202	1.4	10	610	601
	39	187	0.6	5	284	279
	40	155	0.6	5	248	243
	41	178	1.9	17	891	875
ES summary:	13	126	119.4	117	5488	5301
			Toona ciliata			
	7	67	0.6	0	4	0
TC summary:	7	67	0.6	0	4	0
			Metrosideros polymorpha			
	13	75	1.3	1	28	26
MP summary:	13	75	1.3	1	28	26
			Grevillia robusta			
	8	75	1.3	0	11	9
	12	84	0.6	0	14	13
	13	83	1.9	2	48	46
	17	75	1.3	2	50	47
GR summary:	13	79	5	5	124	117

Appendix C (continued).

Forest type EX77: (continued).

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus robusta			
	4	19	2.5	0	1	0
	8	58	0.8	0	4	0
	9	68	2.7	1	24	21
	10	68	3.1	2	32	28
	11	80	2.1	1	30	28
	12	86	6.7	5	129	121
	14	97	2.9	3	83	79
	15	102	3.9	5	139	133
	16	90	3.5	5	121	115
	17	120	5.4	9	274	264
	18	120	2.9	5	165	160
	19	117	1.4	3	87	84
	20	155	2.1	4	179	174
	21	90	2.2	5	130	125
	22	126	1.3	3	108	105
	24	131	0.6	2	67	66
	25	133	0.6	2	72	70
	26	138	2.5	9	326	318
	28	139	0.6	3	95	93
	29	141	1.3	6	208	203
	31	135	0.6	3	107	105
	32	146	0.6	4	127	124
	33	147	0.8	5	179	175
	34	149	2.2	15	528	517
	37	160	0.6	5	179	175
	38	177	0.6	5	206	203
	41	156	0.6	6	210	206
	42	157	0.6	6	220	216
ER summary:	20	120	55.9	122	4043	3921
			Myrica faya			
	6	26	2.5	1	5	0
	7	32	1.9	0	6	0
	8	39	1.9	1	10	8
	9	15	1.9	1	6	5
	11	43	2.5	2	27	24
MF summary:	8	32	10.6	4	56	39

Appendix C (continued).

Forest type EX77: (continued).

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus microcorys			
	2	16	2.5	0	0	0
	4	36	7.5	1	7	0
	6	48	5.6	1	16	0
	7	67	0.6	0	3	0
	8	70	0.6	0	4	4
	9	78	2.5	1	27	24
	10	101	5.0	3	85	78
	11	79	1.3	1	20	19
	12	98	3.8	3	89	83
	13	103	0.6	1	18	17
	14	89	4.4	5	128	122
	15	114	2.5	3	106	102
	16	138	3.1	4	180	174
	17	124	1.3	2	73	71
	18	146	2.5	4	190	185
	19	134	1.9	4	146	142
	20	138	2.5	5	221	215
	21	150	4.4	11	460	449
	22	110	1.9	5	160	156
	23	167	1.9	5	259	254
	25	158	2.5	9	383	375
	27	164	1.9	7	345	339
	28	168	0.6	3	125	123
	29	190	0.6	3	150	148
	30	174	0.6	3	147	145
	32	180	1.3	7	343	337
	34	186	2.5	16	792	778
	36	191	1.3	9	452	444
	38	196	1.3	10	511	503
	39	195	0.6	5	266	262
EM summary:	19	144	69.4	130	5721	5560
			-- Type Level Summary--			
All trees:	16.3		262	380	15466	14965
Merch trees:	20.7		158	371		

Appendix C (continued).

Forest type CE22: Low to moderate volume *Casuarina equisetifolia* saw timber.

	DBH (in)	Average Height (ft)	Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus saligna			
	16	95	1.3	2	59	56
	27	110	1.3	5	173	168
ES summary:	22	102	2.5	7	233	226
			Metrosideros polymorpha			
	12	62	1.3	1	21	19
MP summary:	12	62	1.3	1	22	20
			Eucalyptus robusta			
	17	72	1.3	2	37	35
	37	119	1.3	10	277	270
	51	177	1.3	18	696	682
	58	159	1.3	23	771	754
ER summary:	44	132	5	53	1783	1743
			Melaluca quinquenervia			
	19	31	2.5	5	47	42
	20	32	1.3	3	26	23
	25	42	1.3	4	50	46
	33	53	1.3	7	102	95
MQ summary:	24	38	6.3	19	227	208
			Grevillia robusta			
	9	65	1.3	1	11	10
	13	81	1.3	1	33	32
	15	81	1.3	2	42	40
	23	113	1.3	3	126	122
GR summary:	16	85	5	7	214	205
			Casuarina equisetifolia			
	2	7	170.0	4	34	0
	4	24	45.0	4	38	0
	6	44	8.8	2	27	0
	7	59	16.3	4	91	0
	8	47	10.0	3	60	51
	9	57	7.5	3	68	60
	10	65	5.0	3	63	57
	11	70	3.8	2	60	55
	12	74	3.8	3	75	70
	13	74	6.3	6	147	139
	14	85	3.8	4	115	110
	15	83	1.3	2	43	41
	16	84	11.3	16	447	427
	17	105	5.0	8	273	264
	18	90	1.3	2	66	63
	19	100	6.3	12	405	391
	20	94	2.5	5	168	163
	21	84	1.3	3	83	80
	22	97	6.3	16	522	504
	23	99	1.3	4	115	111
	25	102	3.8	13	414	401
	27	103	1.3	5	162	157
CE summary:	8	95	321.3	124	3485	3152
			-- Type Level Summary--			
All trees:	10.6		341	211	5963	5555
Merch trees:	18.9		101	197		

Appendix C (continued).

Forest type CJ33: Moderate volume *Cryptomeria japonica* pole and saw timber.

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Metrosideros polymorpha			
	7	47	0.6	0	3	0
	10	57	0.6	0	7	6
MP summary:	9	52	1.3	1	10	7
			Acacia koa			
	2	5	2.5	0	0	0
	4	12	2.5	0	1	0
	7	28	1.9	0	5	0
	8	33	0.6	0	3	2
	9	48	1.9	1	15	13
	10	25	1.3	1	7	6
	11	46	0.6	0	6	5
	13	53	0.6	1	10	9
	15	82	2.5	3	85	81
	17	49	0.6	1	17	16
	18	66	0.6	1	26	24
	19	68	0.6	1	28	26
	22	73	0.6	2	41	40
AK summary:	11	39	16.9	12	250	228
			Cryptomeria japonica			
	2	24	7.5	0	1	0
	4	37	5.0	0	5	0
	6	49	10.0	2	40	0
	7	50	11.9	3	66	0
	8	52	25.6	9	189	166
	9	59	22.5	10	229	208
	10	61	19.4	11	243	224
	11	57	27.5	18	384	356
	12	64	23.8	19	422	395
	13	62	10.0	9	198	185
	14	71	16.9	18	427	403
	15	68	16.9	21	456	430
	16	68	13.8	19	408	385
	17	62	10.0	16	301	281
	18	68	7.5	13	266	250
	19	70	7.5	15	295	277
	20	93	3.8	8	205	196
	21	76	1.9	5	92	87
	22	76	3.1	8	165	155
	24	80	1.9	6	121	113
	26	92	1.3	5	106	100
	27	82	1.3	5	104	98
	29	98	0.6	3	69	66
	34	105	0.6	4	103	99
CJ summary:	13	73	250	226	4908	4482

Appendix C (continued).

Forest type CJ33: (continued).

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3): Gross	Merch
			Chamaecyparis lawsoniana			
	4	51	17.5	2	24	0
	6	57	15.0	3	69	0
	7	66	14.4	4	102	0
	8	54	9.4	3	71	63
	9	60	8.1	4	83	76
	10	60	4.4	2	54	49
	11	52	8.1	5	104	96
	12	64	3.1	2	55	52
	13	65	1.9	2	39	36
	14	64	1.3	1	28	27
	15	51	0.6	1	13	12
	17	88	1.9	3	76	73
CL summary:	8	59	85.6	32	724	487
			-- Type Level Summary--			
All trees:	11.8		353	271	5892	5204
Merch trees:	13.3		264	256		

Forest type FB11: Low volume *Flindersia brayleyana* pole and saw timber.

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3): Gross	Merch
			Flindersia brayleyana			
	6	57	5.0	1	17	0
	8	65	10.0	4	86	75
	9	67	10.0	5	111	100
	10	70	5.0	3	66	60
	12	74	5.0	4	100	94
	14	78	5.0	5	134	127
	16	81	5.0	7	196	187
	17	82	5.0	8	228	219
FB summary:	12	73	50	36	942	865
			Metrosideros polymorpha			
	2	5	60.0	1	0	0
	4	11	20.0	2	13	0
	7	52	10.0	3	50	0
	8	37	10.0	3	50	42
	9	44	15.0	7	108	94
	10	55	5.0	3	54	48
	11	56	5.0	3	65	60
	13	66	5.0	5	105	99
	14	70	5.0	5	130	122
	15	52	10.0	12	226	211
	16	79	10.0	14	372	355
	17	55	5.0	8	151	142
	19	89	5.0	10	290	279
MP summary:	9	67	165	76	1618	1457
			-- Type Level Summary--			
All trees:	9.8		214	112	2561	2322
Merch trees:	12.7		120	106		

Appendix C (continued).

Forest type FU22: Low to moderate volume *Fraxinus uhdei* saw timber.

	DBH (in)	Average Height (ft)	Number of trees	Basal Area	Gross	Merch
			Values per acre		Volume (ft^3)	
			Fraxinus uhdei			
	2	26	173.3	4	38	0
	4	39	113.3	10	133	0
	6	60	28.3	6	116	0
	7	55	13.3	3	65	0
	8	50	15.0	5	96	82
	9	49	11.7	5	97	86
	10	52	10.0	5	102	92
	11	59	5.0	3	66	61
	12	61	1.7	1	28	26
	13	66	6.7	6	141	132
	14	76	6.7	7	190	180
	15	65	3.3	4	95	90
	21	72	1.7	4	95	91
	23	74	1.7	5	112	108
	24	80	1.7	5	136	131
	25	75	1.7	6	140	134
	26	76	1.7	6	148	142
	48	87	1.7	21	521	499
	60	91	1.7	32	780	746
FU summary:	8	68	400	140	3108	2606
			Metrosideros polymorpha			
	2	9	6.7	0	1	0
	4	24	13.3	1	11	0
	6	45	15.0	3	47	0
	7	41	5.0	1	20	0
	8	40	15.0	5	80	67
	9	46	6.7	3	50	44
	10	57	6.7	4	74	67
	11	54	6.7	4	84	77
	12	56	8.3	7	130	120
	13	50	3.3	3	55	51
	14	82	5.0	5	149	142
	15	61	1.7	2	43	41
	16	65	6.7	9	209	197
	19	66	1.7	3	73	70
	20	67	3.3	7	164	156
	21	67	1.7	4	90	85
	25	71	1.7	6	131	125
	30	70	1.7	8	181	173
MP summary:	11	63	110	77	1600	1422
			-- Type Level Summary--			
All trees:	8.8		510	216	4708	4027
Merch trees:	15.6		141	188		

Appendix C (continued).

Forest type GR22: Low to moderate volume *Grevillia robusta* saw timber.

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Melaluca quinquenervia			
	27	75	1.7	6	127	122
MQ summary:	27	75	1.7	6	128	122
			Metrosideros polymorpha			
	8	47	3.3	1	20	17
	10	54	1.7	1	17	15
	11	55	1.7	1	21	19
	12	59	1.7	1	27	25
	13	61	1.7	2	33	30
	18	69	1.7	3	69	66
	20	72	1.7	4	87	83
	21	73	1.7	4	97	93
	55	90	1.7	27	667	637
MP summary:	22	63	16.7	44	1042	991
			Acacia koa			
	6	32	1.7	0	3	0
	28	80	1.7	7	180	173
AK summary:	20	56	3.3	7	185	174
			Acacia melanoxylon			
	8	50	1.7	1	10	9
	13	67	1.7	2	35	33
	19	78	1.7	3	86	82
	26	86	1.7	6	169	163
AM summary:	18	70	6.7	12	302	288
			Grevillia robusta			
	8	42	1.7	1	9	7
	18	79	1.7	3	78	74
	19	72	1.7	3	79	76
	21	85	1.7	4	112	107
	23	88	5.0	14	413	398
	25	91	1.7	6	165	160
	26	92	1.7	6	180	174
	27	106	1.7	7	221	214
	29	96	3.3	15	458	443
	30	97	3.3	16	492	476
	34	100	1.7	11	317	306
	35	100	1.7	11	333	322
GR summary:	26	88	26.7	97	2862	2764
			Cryptomeria japonica			
	15	57	1.7	2	40	37
CJ summary:	15	57	1.7	2	40	37
			-- Type Level Summary--			
All trees:	23.4		56	169	4558	4376
Merch trees:	23.7		55	168		

Appendix C (continued).

Forest type LC66: High volume *Lophostemon confertus* saw timber.

	DBH (in)	Average Height (ft)	Number of trees	Basal Area	Gross	Merch
			Values per acre		Volume (ft^3)	
			Lophostemon confertus			
	2	28	9.0	0	2	0
	4	63	1.0	0	1	0
	6	83	7.0	1	38	0
	7	74	3.0	1	20	0
	8	101	4.0	1	48	41
	9	113	5.0	2	84	77
	10	110	5.0	3	102	94
	11	115	4.0	3	103	97
	12	110	5.0	4	147	140
	13	110	6.0	6	207	198
	14	115	5.0	5	207	199
	15	117	5.0	6	240	232
	16	132	7.0	10	427	414
	17	120	5.0	8	314	304
	18	104	10.0	18	618	598
	19	141	11.0	22	998	973
	20	124	8.0	17	707	688
	21	111	8.0	19	700	680
	22	126	8.0	21	861	839
	23	126	3.0	9	353	344
	24	123	7.0	22	871	849
	25	133	4.0	14	578	564
	26	129	1.0	4	150	147
	27	129	2.0	8	325	317
	28	125	1.0	4	168	164
LC summary:	17	123	134	207	8280	7970
			Eucalyptus rostrata			
	9	81	1.0	0	13	12
	10	85	1.0	1	19	18
	14	94	1.0	1	41	39
	16	96	1.0	1	54	52
	17	100	1.0	2	62	61
	19	104	1.0	2	83	81
	24	110	2.0	6	267	261
	25	110	1.0	3	143	140
	32	117	1.0	5	234	228
EO summary:	20	101	10	22	921	895
			Flindersia brayleyana			
	4	24	4.0	0	3	0
	12	70	2.0	2	37	34
	16	82	1.0	1	36	35
FB summary:	9	45	7	3	77	70
			-- Type Level Summary--			
All trees:	16.8		150	233	9278	8935
Merch trees:	18.2		127	230		

Appendix C (continued).

Forest type TC33: Moderate volume *Toona ciliata* pole and saw timber.

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3) Gross	Volume (ft^3) Merch
			Eucalyptus saligna			
	7	82	0.6	0	4	0
	10	92	0.6	0	9	8
	12	95	0.6	0	14	13
	19	109	1.1	2	79	76
	24	114	0.6	2	64	62
	37	125	0.6	4	157	153
ES summary:	21	104	3.9	9	329	315
			Eucalyptus robusta			
	8	66	0.6	0	3	2
	10	79	0.6	0	6	6
	11	85	1.1	1	17	16
	13	94	0.6	1	13	12
ER summary:	11	82	2.8	2	41	38
			Flindersia brayleyana			
	2	21	22.2	0	4	0
	4	39	22.2	2	26	0
	6	61	13.6	3	56	0
	7	55	12.8	3	67	0
	8	60	14.8	5	109	92
	9	78	8.3	4	99	89
	10	66	5.7	3	71	65
	11	91	10.3	7	211	197
	12	78	4.4	3	94	88
	13	77	3.6	3	86	82
	14	128	5.7	6	255	245
	15	92	2.3	3	88	84
	16	99	1.1	2	51	49
	17	95	1.1	2	55	53
	18	104	1.1	2	67	65
	19	107	1.1	2	76	74
FB summary:	8	90	130.3	50	1422	1187
			Metrosideros polymorpha			
	8	47	1.1	0	6	5
	9	51	1.1	0	9	8
	10	55	1.8	1	19	17
	12	61	1.7	1	28	26
	13	53	2.8	3	48	45
	14	80	3.4	4	100	95
	15	68	2.4	3	70	66
	16	70	1.1	2	37	35
	17	72	1.1	2	43	41
	18	78	1.1	2	51	49
	19	73	0.6	1	26	25
	20	67	0.6	1	30	28
	32	87	0.6	3	83	80
MP summary:	15	66	19.4	23	556	526

Appendix C (continued).

Forest type TC33: (continued).

	DBH (in)	Average Height (ft)	Values per acre: Number of trees	Basal Area	Volume (ft^3): Gross	Volume (ft^3): Merch
			Toona ciliata			
	2	18	20.0	0	3	0
	4	46	31.1	3	41	0
	6	63	21.1	4	90	0
	7	69	17.6	5	112	0
	8	79	18.1	6	173	149
	9	86	11.7	5	152	137
	10	94	10.9	6	190	175
	11	95	9.7	6	206	192
	12	73	6.2	5	124	116
	13	86	6.8	6	183	173
	14	98	8.4	9	298	285
	15	105	8.3	10	357	343
	16	85	3.0	4	120	114
	17	109	4.0	6	227	219
	18	103	3.9	7	233	225
	19	104	1.2	2	82	79
	20	112	1.7	4	132	128
	21	109	2.8	7	235	228
	22	101	1.1	3	96	93
	24	109	0.6	2	60	59
	25	110	1.1	4	132	128
	26	111	0.6	2	71	69
	27	111	0.6	2	77	75
TC summary:	10	102	190.3	109	3404	2994
			Acacia koa			
	6	46	0.6	0	1	0
	8	58	0.6	0	4	3
	9	64	1.1	0	11	9
	12	74	0.6	0	11	10
	14	80	1.1	1	32	30
	15	82	1.1	1	37	36
AK summary:	12	70	5	4	98	91
			Myrica faya			
	4	19	2.2	0	1	0
	7	42	0.6	0	2	0
	8	50	0.6	0	3	3
	16	88	0.6	1	22	21
MF summary:	8	37	3.9	1	30	24
			Araucaria bidwillii			
	2	32	11.1	0	2	0
	4	48	22.2	2	29	0
	6	62	8.9	2	44	0
	7	59	10.6	3	68	0
	8	75	6.7	2	68	61
	9	59	2.8	1	28	25
	10	80	0.6	0	8	8
	11	75	0.6	0	9	9
AB summary:	6	60	63.3	11	261	104
			-- Type Level Summary--			
All trees:	9.6		418	209	6142	5280
Merch trees:	12.8		201	181		