

SECTION 19

FORESTS, FISHERIES, AND MINING

This section presents data on forests and forest products, commercial fishing, and mining and mineral products.

The most recent available statistics show 1.2 million acres of forest reserve and 938,000 acres of commercial forest in the State, most of it on the Big Island. Almost 49,000 acres had been planted in eucalyptus and other species of trees by 1975. Primary forest products harvested in 1969 had a value of \$331,000. Forty-five forest and brushland fires burned 3,438 acres in 1975.

The commercial fish catch in fiscal 1975 was 10.8 million pounds and had a value of \$6.2 million. *Aku* (Skipjack) accounted for more than half of the total value. Other important species were *ahi*, *akule*, *opelu*, and *opakapaka*. Commercial fishermen numbered 1,992; they operated 1,163 fishing vessels, serving 28 fishery wholesaling and processing establishments.

The value of mineral production reached \$42 million in 1975, most of it in cement and stone. This was almost identical to the all-time high, recorded in 1974.

Important sources of data on these subjects are the United States Census of Agriculture, United States Census of Mineral Industries, and reports of the Hawaii State Department of Land and Natural Resources, Fish and Game Division and Forestry Division. Comparable Mainland statistics are reported in the *Statistical Abstract of the United States: 1975*, Sections 24, 25, and 26.

Table 270.—FOREST RESERVE, TREES PLANTED, AND FOREST FIRES: 1958 TO 1975

Year	Forest reserve ¹ (1,000 acres)	Acres planted in trees ²	Forest and brushland fires ³	
			Number	Acres burned
1958	1,198	189	5	1,276
1959	...	357	42	469
1960	1,196	258	34	26,397
1961	...	...	34	1,941
1962	1,196	1,131	26	3,452
1963	1,196	3,173	7	5,783
1964	1,196	2,057	8	47
1965	1,196	1,318	6	4,097
1966	1,196	2,553	37	2,120
1967	1,196	2,404	16	6,572
1968	1,196	2,039	25	13,339
1969	1,196	1,499	34	45,523
1970	1,196	1,539	62	14,245
1971	1,196	776	49	1,951
1972	1,196	361	67	8,190
1973	1,196	162	75	17,968
1974	1,196	88	36	2,640
1975	1,196	137	45	3,438

¹As of June 30. Effective July 10, 1961, the area previously known as the forest and water reserve was designated the forest and water reserve within the conservation district. Data include both governmental and private land.

²Calendar years through 1960; years ended June 30, 1962 and thereafter. Refers to acreage planted in forest reserves.

³Calendar years.

Source: Hawaii State Department of Land and Natural Resources, Division of Forestry, records.

Table 271.—AREA OF FOREST LAND, 1970, AND PLANTED FOREST, 1975, BY ISLAND
(In acres)

Island	Forest land, 1970		Area of planted forest, to 1975 ³
	Total ¹	Commercial ²	
State total	1,986,400	938,300	48,965
Niihau	31,100	—	—
Kauai	219,900	145,300	5,280
Oahu	205,300	124,400	7,195
Molokai	78,100	33,500	2,847
Lanai	43,900	4,500	512
Kahoolawe	15,800	—	—
Maui	239,800	63,400	10,669
Hawaii	1,152,500	567,200	22,462

¹Includes commercial (938,300 acres), unproductive (933,700), and productive-reserved (114,400).

²Includes Federal military (12,300), State (428,100), miscellaneous corporate (294,900), and miscellaneous individual (203,000).

³Chiefly Eucalyptus, other hardwoods, and conifers. Includes arboretum plantings.

Source: Hawaii State Department of Land and Natural Resources, Forestry Division, records; U.S. Forest Service, Institute of Pacific Islands Forestry, records.

Table 272.—PRIMARY FOREST PRODUCTS HARVESTED: 1958 TO 1969

Subject	Total	Sawlogs	Craftwood	Veneer logs	Fuelwood	Posts	Treefern
Production:¹							
1958 .....	...	405	510	—	1,300	65.0	100
1960 .....	...	850	100	30	1,500	37.0	115
1963 .....	...		913	—	847	22.0	118
1967 .....	...	3,925	196	—	720	7.1	143
1969 .....	...	1,650	422	1,056	1,720	10.1	55
Average unit value (\$):							
1958 .....	...	100	240	—	14.50	0.83	0.35
1960 .....	...	70	200	300	30.00	0.60	0.38
1963 .....	...		160	—	22.43	1.05	0.33
1967 .....	...	40	300	—	38.89	1.69	0.52
1969 .....	...	52	230	47	31.40	1.58	0.49
Total value (\$1,000):							
1958	269	40	121	—	19	54	35
1960	197	57	20	9	45	22	44
1963	230		149	—	19	23	39
1967	334	161	58	—	28	12	75
1969	331	86	98	50	54	16	27

¹Sawlogs, craftwood, and veneer logs in 1,000 board feet, fuelwood in cords, posts in 1,000 pieces, and treefern in 1,000 cubic feet.
 Source: U.S. Department of Agriculture, Pacific Southwest Forest and Range Experiment Station, *Forest Products Harvested in Hawaii—1969*, Research Note PSW-239 (1971), p.2.

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¹Sawlogs, craftwood, and veneer logs in 1,000 board feet, fuelwood in cords, posts in 1,000 pieces, and treefern in 1,000 cubic feet. Source: U.S. Department of Agriculture, Pacific Southwest Forest and Range Experiment Station, *Forest Products Harvested in Hawaii—1969*, Research Note PSW-239 (1971), p.2.

Table 273.—LARGEST REPORTED TREES OF SPECIFIED NATIVE AND EXOTIC SPECIES: 1974

Species	Circum. at 4½ ft. (ft., in.)	Height (feet)	Spread (feet)	Location
NATIVE				
Acacia koa (koa) ¹	37-4	140	128	Keauhou, Ka'u
Aleurites moluccana (kukui)	10-7	67	59	Pahala, Ka'u
Calophyllum inophyllum (kamani)	18-6	59	81	Malama-ki, Puna
Metrosideros collina ('ohi'a-lehua)	17-10	84	78	Waipunalei, Hilo
Pandanus tectorius (hala)	4-6	35	40	Keaau, Hilo
Santalum pilgeri ('ili'-ahi, or sandalwood) ...	7-8	65	48	Honomolino, S. Kona
Sapindus saponaria (wingleaf soapberry)	10-1	106	84	Hawaii Vol. Nat. Park
Sophora chrysophylla (mamani)	12-2	39	42	Mauna Kea For. Res.
EXOTIC				
Araucaria hetrophylla (Norfolk I. pine)	16-6	140	75	Lanai City, Lanai
Carica papaya (papaya)	4-10	60	12	Kailua, N. Kona
Cassia grandis (pinkshower)	10-11	55	40	Reed's Island, Hilo
Casuarina cunninghamiana (river-oak ironwood)	6-9	80	42	Kohala Forest Res.
Cocos nucifera (coconut)	4-8	94	28	Arboretum, Hilo
Delonix regia (royal poinciana)	13-6	48	62	Maunawili, Koolaupoko
Eucalyptus deanei	11-0	157	60	Honaunau For. Res.
Eucalyptus saligna	12-11	203	70	Kailua, N. Kona
Ficus benghalensis (Indian banyan)	44-2	80	231	Lahaina
Ficus retusa (Chinese banyan)	90-1	104	195	Keaau, Puna
Macadamia tetraphylla	2-9	50	36	Kainaliu, N. Kona
Mangifera indica (mango)	24-8	71	70	Rainbow Falls, Hilo
Plumeria rubra (frangipani)	4-10	35	38	Arboretum, Hilo
Prosopis pallida (kiawe)	13-5	91	81	Puako, S. Kohala
Roystonea regia (royalpalm)	7-0	70	30	Honokea, Hawaii

¹Circumference measured above bulge.

Source: L. W. Bryan, "Champion Trees of Hawaii," *American Forests*, May 1974.

Table 274.—FISHERY OPERATING UNITS AND LANDINGS: 1958 TO 1974

Year	Fishermen ¹			Motor vessels ²		Boats ²		Fishery establishments ³	Landings ⁴	
	Total	On vessels ²	On boats and shore ²	Number	Gross tonnage	Motor	Other		Quantity (1,000 lb.)	Value (\$1,000)
1958 ⁵ .....	...	...	...	...	...	...	...	...	11,361	2,632
1959	688	343	345	64	1,066	224	39	...	16,570	3,179
1960	598	330	268	63	1,775	193	9	22	11,118	2,704
1961	589	320	269	65	1,908	195	20	20	14,472	2,897
1962	817	273	544	60	1,745	318	35	19	13,157	2,820
1963	820	266	554	56	1,728	360	23	16	11,735	2,679
1964	743	233	510	57	1,722	350	24	17	12,685	2,848
1965	744	264	480	57	1,762	324	23	24	19,588	3,602
1966	744	271	473	65	1,852	312	11	26	13,014	3,128
1967	677	237	440	61	1,811	305	17	29	11,842	3,077
1968	1,032	292	740	63	1,844	466	14	32	12,896	3,451
1969	1,338	315	1,023	61	1,923	599	32	36	9,543	3,483
1970	1,436	333	1,103	80	2,278	637	49	37	11,051	3,900
1971	1,533	355	1,178	89	2,475	773	39	44	16,873	5,238
1972	1,732	396	1,336	101	2,769	828	11	40	14,443	5,743
1973	2,091	357	1,734	101	2,884	1,095	2	27	14,034	6,114
1974 ⁶	1,992	...	...	97	...	1,066		28	10,991	6,029

¹Persons licensed as commercial fishermen by the Hawaii State Department of Land and Natural Resources, Fish and Game Division. Data refer to June 30 of the following year.

²A vessel is defined as a craft having a capacity of five net tons or over; a boat, as a craft having a capacity of less than five net tons. Data on vessels and boats refer to June 30 of the following year.

³Data through 1972 include all fishery wholesaling and processing establishments in the State. Data for later years include only processing plants. All totals are as of June 30 of the year indicated.

⁴Data may differ from corresponding totals reported by the State Fish and Game Division, which, unlike the NMFS series shown here, include unsold fish.

⁵Fishery operating units not reported by NMFS before 1959.

⁶Methods of collecting data on operating units were changed in 1974.

Source: U.S. Department of the Interior, Fish and Wildlife Service, Bureau of Commercial Fisheries, *Fishery Statistics of the United States* (annual through 1967); U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, *Fishery Statistics of the United States* (annual, 1968-1972), and records.

Table 275.—COMMERCIAL FISHING: 1958 TO 1975

Years ended June 30	Fishing boats	Fishermen	Commercial fish landings	
			Pounds	Value (dollars)
1958	533	1,245	10,568,761	2,512,121
1959	508	1,112	13,178,933	2,841,168
1960	437	1,022	14,266,795	2,994,033
1961	443	941	13,730,912	2,898,380
1962	423	940	13,931,171	2,873,274
1963	366	808	10,879,389	2,566,045
1964	373	805	12,099,123	2,738,323
1965	387	717	17,192,431	3,355,553
1966	365	715	15,987,978	3,319,917
1967	397	801	12,354,658	3,147,566
1968	387	760	12,829,326	3,253,622
1969	509	1,028	11,096,116	3,378,553
1970	670	1,264	9,786,726	3,584,936
1971	738	1,373	15,176,525	4,633,877
1972	(NA)	1,544	15,577,302	5,536,385
1973	(NA)	1,857	14,029,491	5,676,780
1974	(NA)	2,051	13,997,435	6,234,933
1975	(NA)	1,931	10,801,380	6,242,572

NA Not available.

Source: Hawaii State Department of Land and Natural Resources, Division of Fish and Game, *Commercial Fish Landings* (semi-annual and annual report), and records.

**Table 276.—COMMERCIAL FISH LANDINGS, BY SPECIES AND ISLAND:
YEAR ENDED JUNE 30, 1975**

Island and species	Pounds caught	Value (dollars)
Total landings	10,801,380	6,242,572
ISLAND		
Hawaii	2,163,858	1,439,043
Maui	751,975	213,378
Lanai	16,790	8,993
Molokai	40,021	26,246
Oahu	7,541,627	4,427,260
Kauai	287,109	127,652
SPECIES¹		
Sea catch, total ²	10,775,501	6,219,522
Aku (Skipjack)	6,533,748	2,562,118
Ahi (Yellowfin)	1,367,884	1,141,396
Akule	476,320	237,726
Ahi (Bigeye)	369,392	717,146
Opelu	303,518	227,602
Stripe Marlin	216,860	118,830
Pacific Blue Marlin	146,409	27,878
Opakapaka	130,925	150,687
Mahimahi	123,210	120,337
Hahalalu	115,183	80,117
Ono	87,591	43,835
Uku	77,094	74,449
Ulua	75,236	60,870
Limu	61,650	34,655
Hapuupuu	56,722	57,626
Crab (Kuahonu)	53,293	70,245
Kawakawa	50,291	13,614
Ulaula Koa (Onaga)	46,578	90,007
Pond catch, total	25,879	23,050

¹Shown separately for all species over 40,000 pounds or \$50,000.

²Includes species not shown separately.

Source: Hawaii State Department of Land and National Resources, Division of Fish and Game, *Commercial Fish Landings for Fiscal Year—July, 1974 through June, 1975* (January 1976).

Table 277.—COMMERCIAL LIMU HARVEST: 1963 TO 1975

Calendar year	Pounds taken	Pounds sold	Value (dollars)
1963	4,738	4,738	1,729
1964	12,271	12,266	2,956
1965	3,230	3,230	700
1966	—	—	—
1967	2,421	2,421	542
1968	355	355	112
1969	74,139	74,012	19,128
1970	49,427	49,302	16,166
1971	88,813	88,813	28,366
1972	96,563	96,460	34,838
1973	97,140	96,987	35,909
1974	46,366	45,885	23,899
1975	64,502	63,587	39,207

Source: Hawaii State Department of Land and Natural Resources, Division of Fish and Game records.

Table 278.—MINERAL OPERATIONS: 1958 TO 1972

Kind of operation and year	Establishments		All employees		Production, development, and exploration workers			Value added in mining (\$1,000)	Cost of supplies, etc. ¹ (\$1,000)	Value of shipments and receipts ² (\$1,000)	Capital expenditures ³ (\$1,000)
	Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Man-hours (1,000)	Wages (\$1,000)				
MINERAL INDUSTRIES ONLY											
1958	20	8	421	1,724	367	746	1,426	4,550	2,001	5,847	704
1963	44	4	315	1,658	228	560	1,451	4,909	2,136	6,525	520
1967 ⁴	12	3	200	1,600	200	400	1,300	5,000	2,300	5,500	1,800
1972 ⁴	15	5	300	2,400	200	400	1,800	9,000	4,100	11,000	2,000
INCLUDING OPERATIONS IN MANUFACTURES											
1958	24	8	445	1,820	391	793	1,522	4,887	1,356	6,207	704
1963	49	4	339	1,758	312	607	1,551	5,677	1,985	7,462	520
1967	18	5	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
1972	21	5	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)

D Withheld to avoid disclosing figures for individual companies.

¹Data for mineral industries only include purchased machinery installed. Data including mineral operations in manufacturing establishments exclude purchased machinery installed.

²For crushed and broken stone, sand and gravel mining operations in manufacturing establishments, includes the estimated value of minerals produced and used in the same establishment in making manufactured products.

³Excludes data for crushed and broken stone, sand and gravel mining operations in manufacturing establishments.

⁴Excludes data for companies without paid employees. In 1963, there were 16 single-unit establishments without paid employees in Hawaii; these establishments accounted for approximately 3 percent of value added.

Source: U.S. Bureau of the Census, *U.S. Census of Mineral Industries* for 1963, MIC63(2)-10, table 1; 1967, MIC67(2)-10, table 1; and 1972, MIC72(2)-9, table 1.

Table 279.—MINERAL PRODUCTION: 1960 TO 1975

(Production as measured by mine shipments, sales, or marketable production, including consumption by producers.)

Year	Quantity (1,000 short tons)		Value (\$1,000)			
	Cement	Stone	Total	Cement	Stone	Other minerals ¹
1960	21	3,535	9,254	571	6,443	2,240
1961	202	4,429	14,588	5,574	7,656	1,358
1962	212	4,071	14,844	6,055	6,883	1,906
1963	279	3,844	15,307	7,125	6,480	1,702
1964	323	5,282	19,605	8,877	8,765	1,963
1965	294	5,172	20,835	8,297	9,353	3,185
1966	329	5,079	21,253	9,046	9,482	2,725
1967	262	4,100	16,936	7,360	7,207	2,369
1968	346	5,211	23,225	9,254	11,273	2,698
1969	390	6,534	29,539	10,544	16,059	2,936
1970	406	6,331	28,965	10,334	15,538	3,093
1971	386	6,056	28,107	10,627	14,357	3,123
1972	415	5,005	28,074	11,116	13,494	3,464
1973	469	7,180	35,147	13,750	18,466	2,931
1974	502	7,638	42,042	17,111	21,370	3,561
1975 ²	457	8,040	41,942	16,213	23,235	2,494

¹Chiefly sand and gravel; pumice, pumicite, and volcanic cinder; and lime.

²Preliminary.

Source: U.S. Bureau of Mines, *Minerals Yearbook* (annual) and "The Mineral Industry in Hawaii," *Mineral Industry Surveys* (annual preliminary and advance summary reports).