

Section 20

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 and water reserve and 948,000 acres of commercial timberland in the State, most of it on the Big Island. Over 46,000 acres had been planted in eucalyptus and other species of trees by mid-1986. Forest products harvested in 1977 had a value of \$3.5 million, including \$2.3 million from logs for fiber. Forest and brushland fires burned 40 square miles in fiscal 1986.

The commercial fish catch in fiscal year 1986 amounted to 9.5 million pounds and had a value of \$19 million. Ahi (yellowfin) and aku (skipjack) accounted for one-third of the total value. Other important species are lobster, opakapaka, mahimahi, and ono. Commercial fishermen numbered 2,880. The charter fishing fleet made 16,700 passenger trips in 1983, chiefly serving visitors. Their average catch per full-day trip was 0.6 fish per patron.

The value of mineral production reached \$68 million in 1986, most of it in cement (\$24 million) and stone (\$42 million). The 1986 total was an all-time high.

Important sources of data on these subjects are the United States Census of Mineral Industries and reports and records of the U.S. Bureau of Mines and Hawaii State Department of Land and Natural Resources, Aquatic Resources Division and Forestry and Wildlife Division. Historical Statistics of Hawaii, Section 14, summarizes the data for earlier periods. Comparable Mainland statistics are reported in the Statistical Abstract of the United States: 1987, Sections 24, 25 and 26.

Table 601.-- FOREST ACREAGE, BY ISLANDS: 1970-1986

Island	Conservation district forest land, 1986		Forest land, 1970		Planted forest, June 30, 1986	
	Forest reserve land <u>1/</u>	Private forest land <u>2/</u>	Commercial <u>3/</u>	Noncommercial <u>4/</u>	Planted in preceding year	Total standing
State total	840,540	327,845	947,800	1,038,600	463	46,700
Hawaii	585,000	106,745	569,400	583,100	404	18,099
Maui	93,320	53,180	67,500	172,300	52	11,682
Kahoolawe	-	-	-	15,800	-	-
Lanai	-	6,150	4,500	39,400	-	512
Molokai	44,290	-	34,000	44,100	-	3,205
Oahu	29,810	87,920	126,500	78,800	3	7,039
Kauai	88,120	73,850	145,900	74,000	4	6,163
Niihau	-	-	-	31,100	-	-
Other islands ..	-	-	-	-	-	-

1/ State owned and privately owned lands under surrender agreement in forest reserve system as of June 30, 1986.

2/ Private forest land within conservation district as of June 30, 1986. Majority of these lands were previously in the forest reserve system.

3/ Includes federal military, state, miscellaneous corporate, and miscellaneous individual forest land.

4/ Unproductive or productive-reserved.

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

Table 602.-- LAND AREA, BY VEGETATION TYPE AND FOREST RESERVE STATUS, FOR MOLOKAI, OAHU, AND KAUAI: 1986

[In acres. Excludes land in forest plantations]

Vegetation type	Molokai		Oahu		Kauai	
	Total	Forest reserve	Total	Forest reserve	Total	Forest reserve
Total, all types	163,214	44,288	370,002	34,931	347,088	88,127
Tree type:						
Ohia lehua	32,833	30,161	37,563	9,524	109,040	50,702
Koa	-	-	28,548	6,601	13,438	6,223
Kukui	4,773	4,009	2,775	617	7,634	2,029
Kiawe	33,215	-	17,354	241	10,358	116
Eucalyptus	1,527	954	1,131	411	3,157	1,288
Guava	5,918	4,200	10,287	1,421	12,143	3,099
Other trees	2,673	573	36,700	6,776	32,763	6,043
Shrub type	16,417	1,527	33,974	2,965	36,061	7,189
Forb type	191	-	11,338	2,718	4,120	2,043
Grassland	38,751	764	45,102	3,261	34,168	5,198
Cultivated land	18,325	-	55,770	-	64,741	387
No vegetation	3,819	-	822	-	6,709	3,810
Urban and other	4,772	2,100	88,638	396	12,756	-

Source: Hawaii State Department of Land and Natural Resources, Division of Forestry and Wildlife, multi-resource inventory reports.

Table 603.-- COMMERCIAL TIMBERLAND OWNERSHIP AND VOLUME OF
SAWTIMBER AND GROWING STOCK: 1977

Subject	Amount
Commercial timberland (1,000 acres)	948
Federally owned or managed	12
State or county	442
Private	494
Sawtimber net volume (million board feet)	1,047
Softwood only	17
Growing stock, net volume (million cubic feet)	202
Softwood only	4

Source: U. S. Forest Service study cited in Statistical Abstract of the United States: 1987, p. 655.

Table 604.-- FOREST AND BRUSHLAND FIRES, BY COUNTIES: 1985 AND 1986
[Years ended June 30]

Subject	State total	Counties			
		Hawaii	Maui	Hono- lulu	Kauai
Number of fires:					
1985	218	75	98	32	13
1986	140	73	32	22	13
Acres burned:					
1985	3,657	280	3,073	195	109
1986	25,329	25,246	17	58	8

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

Table 605.-- COMMERCIAL FISHING: 1963 TO 1986

[Years ended June 30]

Year	Number of commercial fishermen	Commercial fish catch <u>1/</u>		
		Pounds caught	Pounds sold	Value to primary producers (dollars)
1963	808	10,685,604	10,629,701	2,539,189
1964	805	12,013,869	11,970,398	2,732,125
1965	717	17,105,515	17,053,925	3,340,651
1966	715	15,985,626	15,924,854	3,318,803
1967	801	12,344,555	12,274,531	3,146,177
1968	760	12,828,387	12,740,307	3,253,538
1969	1,028	10,065,623	9,974,455	2,798,424
1970	1,264	9,786,726	9,588,319	3,585,166
1971	1,373	15,176,525	14,945,539	4,633,875
1972	1,544	15,577,669	15,246,519	5,536,521
1973	1,677	14,029,491	13,719,284	5,676,783
1974	2,085	13,997,774	13,660,574	6,234,924
1975	1,991	10,801,441	10,404,019	6,242,614
1976	2,283	11,893,141	11,332,659	7,508,395
1977	2,368	15,298,515	14,763,816	9,433,781
1978	2,574	13,672,061	13,139,142	11,115,964
1979	2,447	12,310,524	11,890,241	12,673,328
1980	2,525	10,418,964	9,946,065	10,497,456
1981	2,577	10,890,468	10,465,731	11,828,575
1982	2,525	9,178,789	8,824,348	10,754,276
1983	2,480	7,841,959	7,529,178	10,506,860
1984	2,940	9,819,800	9,344,200	13,556,184
1985	2,638	9,436,591	9,077,357	15,901,656
1986	2,880	9,503,193	9,081,881	18,557,533

1/ Represents the total catches of all licensed commercial fishers. Includes both sea and pond catch, but excludes coral harvests. Particularly for years since 1979, data may be incomplete due to unreported aku (skipjack tuna) boat and flagline boat catches.

Source: Hawaii State Department of Land and Natural Resources, Division of Aquatic Resources, Commercial Fish Landings for Fiscal Year (annual), as revised, and records.

Table 606.-- COMMERCIAL FISH CATCH, BY SPECIES: 1986

[Year ended June 30, 1986]

Species <u>1/</u>	Pounds caught	Pounds sold	Value (dollars)
Total catch	9,528,785	9,104,696	18,576,881
Sea catch, all species <u>2/</u>	9,503,294	9,079,945	18,531,701
Aku (Skipjack)	2,183,960	2,105,930	2,168,048
Ahi (Yellowfin)	2,895,654	2,766,727	4,017,853
Ahi (Bigeye)	265,980	263,372	565,567
Striped marlin	87,345	84,490	111,729
Pacific blue marlin	371,737	341,649	343,930
Mahimahi	400,197	376,504	1,105,089
Ono	415,571	392,074	1,001,127
Hapuupuu	93,201	92,450	154,651
Opakapaka	286,083	274,308	880,311
Uku	69,325	66,045	196,724
Ehu	71,744	68,054	194,058
Onaga	223,447	216,226	790,438
Akule	230,307	216,230	364,594
Opelu	244,515	232,088	399,951
Uu	44,729	42,497	101,652
Lobster	396,960	394,009	3,040,278
Slipper lobster	325,155	321,854	1,811,419
Pond catch, all species	25,491	24,751	45,180

1/ Shown separately for all species over 100,000 lb. or \$100,000.

2/ Including species not shown separately.

Source follows next table.

Table 607.-- COMMERCIAL FISH LANDINGS, BY ISLANDS: 1986

[Year ended June 30, 1986]

Island	Pounds caught	Pounds sold	Value (dollars)
State total	9,528,785	9,104,696	18,576,881
Hawaii	2,644,335	2,550,256	3,830,814
Maui	937,785	856,889	1,531,354
Lanai	19,793	16,373	25,280
Molokai	49,677	42,375	103,086
Oahu	4,979,633	4,846,666	11,644,402
Kauai	897,312	791,907	1,441,423
Niihau	250	230	522

Source: Hawaii State Department of Land and Natural Resources, Division of Aquatic Resources, Commercial Fish Landings for Fiscal Year -- July, 1985 through June, 1986.

Table 608.-- CHARTER FISHING PATRONS, FOR OAHU: 1983

Subject	Amount
Passenger trips by charter fishing fleet	16,700
Residence (percent): Hawaii	17
U.S. Mainland	61
Foreign	22
Average number of Hawaii charter fishing trips in past 5 years:	
By residents	3.5
By visitors	1.2
Average expenditure per passenger trip (dollars):	
By residents	89
By visitors	128
Average catch per full-day trip:	
Per patron	0.6
Per boat	2.5

Source: Karl C. Samples and Donald M. Schug, Charter Fishing Patrons in Hawaii: A Study of Their Demographics, Motivations, Expenditures and Fishing Values. Final Report (National Marine Fisheries Service, Honolulu Laboratory, Administrative Report H-85-8C, May 1985).

Table 610.--MOST ABUNDANT FISH SPECIES AT HANAUMA BAY
AND MOLOKINI SHOAL: YEAR ENDED JUNE 30, 1986

[Three leading species in each area, based on
individuals per acre]

Location and species	Abundance	
	Rank	Fish per acre
Hanauma Bay, inshore:		
Manini (<u>Acanthurus triostegus</u>)	1	743
Hinalea lau wili (<u>Thalassoma duperrey</u>)	2	379
Aholehole (<u>Kuhlia sandvicensis</u>)	3	306
Hanauma Bay, offshore:		
Hinalea lau wili (<u>Thalassoma duperrey</u>)	1	393
Maiii (<u>Acanthurus nigrofuscus</u>)	2	356
Kole (<u>Ctenochaetus strigosus</u>)	3	263
Molokini Shoal:		
Uhu (<u>Scarus</u> sp.)	1	281
Oiilepa (<u>Pervagor spilosoma</u>)	2	277
Kikakapu (<u>Chaetodon miliaris</u>)	3	208

Source: Hawaii State Department of Land and Natural Resources, Division of Aquatic Resources, Job Progress Report, Statewide Marine Research and Surveys, Survey of Fish and Habitat, July 1, 1985 to June 30, 1986.

Table 611.-- MINERAL INDUSTRIES: 1958 TO 1982

[Excluding mines at manufactures]

Subject	1958	1963	1967	1972	1977	1982
Number of establishments ^{1/}	20	44	12	15	7	12
With 20 employees or more	8	4	3	5	2	4
All employees:						
Number (1,000) .....	.4	.3	.2	.3	.1	.2
Payroll (million dollars)	1.7	1.7	1.6	2.4	1.9	3.8
Production, development, and ex- ploration workers:						
Number (1,000) .....	.4	.2	.2	.2	.1	.1
Hours (millions) .....	.7	.6	.4	.4	.2	.2
Wages (million dollars)	1.4	1.5	1.3	1.8	1.5	2.6
Value added in mining (million dollars)	4.6	4.9	5.0	9.0	8.1	9.7
Cost of supplies used, purchased machinery installed, etc. (million dollars)	2.0	2.1	2.3	4.1	2.9	5.9
Value of shipments and receipts (million dollars)	5.8	6.5	5.5	11.0	9.7	12.8
Capital expenditures (million dollars) .....	.7	.5	1.8	2.0	1.3	2.7

^{1/} After 1963, data for single-unit establishments without paid employees were excluded from the census of mineral industries. Eight of the 12 establishments reported, including all 4 with 20 employees or more, were in SIC 142, crushed and broken stone, including riprap.

Source: U.S. Bureau of the Census, 1982 Census of Mineral Industries, Geographic Area Series, Pacific States, MIC82-A-9 (April 1985), tables 1 and 2a.

Table 612.-- NONFUEL MINERAL PRODUCTION SUMMARY: 1976 TO 1986

[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 (crushed)	Total	Cement	Stone (crushed)	Other minerals
1976	339	6,092	42,252	18,410	21,193	2,649
1977	330	5,759	39,980	16,922	19,880	3,178
1978	452	6,027	52,743	26,454	23,840	2,449
1979	481	6,869	63,904	30,423	28,969	4,512
1980	371	6,341	59,676	24,682	30,645	4,349
1981	312	6,036	58,727	23,831	31,407	3,489
1982	233	4,500	46,889	18,676	26,604	1,609
1983	222	5,532	52,411	21,314	29,706	1,391
1984	191	5,400	51,247	19,074	29,700	2,473
1985 <u>1/</u> ..	221	5,627	53,272	16,638	34,183	2,451
1986 <u>2/</u> ..	310	7,100	68,422	23,960	42,100	2,362

1/ Revised from Data Book 1986, table 585.

2/ Preliminary.

Source: U.S. Department of the Interior, Bureau of Mines,
"The Mineral Industry of Hawaii," Mineral Industry Surveys (annual).

Table 613.-- NONFUEL MINERAL PRODUCTION: 1985 AND 1986

[Production as measured by mine shipments, sales, or marketable production, including consumption by producers]

Mineral	Quantity (1,000 short tons)		Value (\$1,000)	
	1985 <u>1/</u>	1986 <u>2/</u>	1985 <u>1/</u>	1986 <u>2/</u>
Total	(X)	(X)	53,272	68,422
Cement:				
Masonry	6	10	588	860
Portland	215	300	16,050	23,100
Sand and gravel (construction)	500	400	2,100	2,100
Stone (crushed)	5,627	7,100	34,183	42,100
Other minerals <u>3/</u>	(X)	(X)	351	262

X Not applicable.

1/ Revised from Data Book 1986, table 586.

2/ Preliminary.

3/ Gem stones and lime pumice.

Source: U.S. Bureau of Mines, "The Mineral Industry of Hawaii in 1986," Mineral Industry Surveys (January 15, 1987).