

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-1984. 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 8,000 acres in fiscal 1984.

The commercial fish catch in fiscal year 1983 amounted to 7.8 million pounds and had a value of \$11 million. Ahi (yellowfin) and aku (skipjack) accounted for about 44 percent of the total value. Other important species are mahimahi, opakapaka, ono, akule, opelu and Pacific blue marlin. Commercial fishermen numbered 2,480; they operated some 1,300 fishing vessels, serving about 119 fishery wholesaling and processing establishments.

The value of mineral production reached \$54 million in 1984, most of it in cement (\$20 million) and stone (\$31 million). The 1984 total was well below the all-time high reached in 1979.

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: 1985, Sections 25, 26 and 27.

Table 553.-- FOREST ACREAGE, BY ISLANDS: 1970-1984

Island	Forest and water reserve, 1984 ^{1/} (acres)	Forest land, 1970 (acres)			Planted forest, June 30, 1984 (acres)	
		Total	Commer- cial ^{2/}	Noncommer- cial ^{3/}	Planted in preced- ing year	Total standing
State total	1,169,922	1,986,400	947,800	1,038,600	246	46,525
Hawaii	691,745	1,152,500	569,400	583,100	202	18,037
Maui	146,500	239,800	67,500	172,300	43	11,589
Kahoolawe	-	15,800	-	15,800	-	-
Lanai	6,150	43,900	4,500	39,400	-	512
Molokai	45,831	78,100	34,000	44,100	-	3,205
Oahu	117,726	205,300	126,500	78,800	-	7,036
Kauai	161,970	219,900	145,900	74,000	1	6,146
Niihau	-	31,100	-	31,100	-	-
Other islands ..	-	-	-	-	-	-

^{1/} Forest and water reserve within conservation district, as of June 30.

^{2/} Includes federal military, state, miscellaneous corporate, and miscellaneous individual forest land.

^{3/} Unproductive or productive-reserved.

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

Table 554.-- 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: 1985, p. 675.

Table 555.-- FOREST AND BRUSSLAND FIRES: 1983 AND 1984

[Years ended June 30]

County	Number of fires		Acres burned	
	1983	1984	1983	1984
State total	170	172	19,130	8,137
Hawaii	55	38	15,373	2,079
Mau i	74	82	851	4,010
Honolulu	26	35	2,697	1,997
Kauai	15	17	210	53

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

Table 556.-- COMMERCIAL FISHING: 1962 TO 1984

[Years ended June 30]

Year	Number of commercial fishermen	Commercial fish catch ^{1/}		
		Pounds caught	Pounds sold	Value to primary producers (dollars)
1962	940	13,800,761	13,173,259	2,870,702
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	9,812,619	9,335,366	13,527,277

^{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 557.-- COMMERCIAL FISH CATCH, BY SPECIES: 1984

[Year ended June 30, 1984]

Species <u>1/</u>	Pounds caught	Pounds sold	Value (dollars)
Total catch	9,835,919	9,358,567	13,570,478
Sea catch, all species <u>2/</u>	9,812,619	9,335,366	13,527,277
Aku (Skipjack)	3,304,367	3,234,646	2,903,117
Ahi (Yellowfin)	2,030,337	1,928,669	3,096,791
Akule	646,348	616,489	676,263
Ahipalaha	388,466	347,578	284,413
Pacific blue marlin	327,503	291,380	242,181
Shrimp (laevigatus)	316,287	316,167	527,407
Opelu	316,107	305,341	414,127
Mahimahi	275,836	255,580	835,782
Ono	257,924	241,175	649,722
Ahi (Bigeye)	243,798	242,276	577,827
Opakapaka	228,817	223,030	756,716
Uku	144,829	141,031	349,810
Ulua	102,842	96,767	157,965
Striped marlin	93,418	84,518	124,178
Onaga	87,607	84,387	314,333
Lobster	69,849	59,831	312,184
Ehu	36,998	35,038	110,983
Pond catch, all species	23,300	23,201	43,201

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

2/ Including species not shown separately.

Source follows next table.

Table 558.-- COMMERCIAL FISH LANDINGS, BY ISLANDS: 1984

[Year ended June 30, 1984]

Island	Pounds caught	Pounds sold	Value (dollars)
State total	9,835,919	9,358,567	13,570,478
Hawaii	2,700,799	2,583,311	3,698,171
Maui	824,047	753,440	1,000,518
Lanai	21,867	19,904	23,147
Molokai	43,801	36,913	59,986
Oahu	5,254,324	5,030,027	7,404,588
Kauai	991,081	934,972	1,384,068

Source: Hawaii State Department of Land and Natural Resources, Division of Aquatic Resources, Commercial Fish Landings for Fiscal Year -- July, 1983 through June, 1984.

Table 559.-- VOTES CAST FOR DESIGNATION OF A STATE FISH: 1984

Fish	Votes cast
All choices	60,151
Humuhumu nukunuku a pua'a	16,577
Manini	8,742
Lau wiliwili nukunuku 'oi'oi	8,543
Hinalea lauwili	6,206
Uhu uliuli	5,363
Kumu	5,360
Kala	4,815
'Aweoweo	2,650
Write-in votes (60 nominations)	1,895

Source: University of Hawaii, Report to the 1985 Legislature on H.R.5, table 1.

Table 560.-- FISH POPULATIONS AROUND SELECTED SHORELINE AREAS:
YEAR ENDED JUNE 30, 1984

Location	Species	Abundance (fish per acre)	Estimated standing crop (lb. per acre)
Marine Life Conservation Districts:			
Hanauma Bay, Oahu: Inshore	72	5,553	3,161
Offshore	86	2,403	296
Pupukea, Oahu	99	1,732	153
Molokini Shoals, Maui 1/	46	3,974	444
Kealakekua Bay, Hawaii	104	3,372	764
Manele-Hulopoe, Lanai	93	1,973	529
Artificial reefs:			
Waianae, Oahu: Car body/concrete pipes	43	683	162
Minesweeper <u>Mahi</u> ..	33	1,465	641
Kualoa, Oahu	41	2,495	227
Shoreline Fisheries Management Areas:			
Waikiki-Diamond Head, Oahu	83	(NA)	750
Olowalu, Maui (potential SFMA)	37	5,432	629
Others:			
Barbers Point, Deep-Draft Harbor, Oahu	74	1,411	142
Puako, Hawaii	30	1,149	230
Honaunau, Hawaii	69	2,027	359

NA Not available.
Source follows next table.

Table 561.--MOST ABUNDANT FISH SPECIES AT HANAUMA BAY AND KEALAKEKUA BAY: YEAR ENDED JUNE 30, 1984

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

Location and species	Abundance		Standing crop	
	Rank	Fish per acre	Rank	Pounds per acre
Hanauma Bay, inshore:				
Manini	1	1,729.3	2	296.9
Hinalea lauwili	2	541.1	9	69.7
Jenkin's damsel fish	3	366.0	(T)	(T)
Nenuë	5	323.9	1	1,093.5
Blue parrot fish (uhu)	(T)	(T)	3	256.4
Hanauma Bay, offshore:				
Kole	1	294.4	1	23.3
Hinalea lauwili	2	230.6	4	19.2
Vanderbilt's damsel fish	3	221.9	(T)	(T)
Blue parrot fish (uhu)	(T)	(T)	2	20.2
Na'ena'e	11	60.9	3	20.1
Kealakekua Bay:				
Lau'ipala	1	524.2	1	93.7
Kole	2	447.0	4	50.7
Surgeon fish (Acanthurus nigrofuscus)	3	237.6	3	51.9
Surgeon fish (Ctenochaetus hawaiiensis)	8	134.3	2	82.1

T Not among top 20.

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, 1983 to June 30, 1984.

Table 562.-- LIFE FORMS IN HAWAIIAN WATERS

Life form	Approximate number
Species of fish	700
Species of seaweed (algae)	400
Species of mollusks	1,000
Other known taxa of invertebrates	1,350

Source: Hawaii State Department of Land and Natural Resources, Division of Aquatic Resources, Hawaii Fisheries Statistics System Design Study (draft report, August 1983), p. 7.

Table 563.-- 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
Median age (years)	34.8
Median family income (dollars)	41,400
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). Quoted with permission.

Table 564.-- 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 565.-- NONFUEL MINERAL PRODUCTION SUMMARY: 1974 TO 1984

[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
1974	502	7,638	42,042	17,111	21,370	3,561
1975	469	7,569	49,710	20,704	25,319	3,687
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 <u>1/</u> ..	222	5,532	52,411	21,314	29,706	1,391
1984 <u>2/</u> ..	210	6,000	54,354	20,460	31,200	2,694

1/ Revised from Data Book 1984, table 601.

2/ Preliminary.

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

Table 566.-- NONFUEL MINERAL PRODUCTION: 1983 AND 1984

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

Mineral	Quantity (1,000 short tons)		Value (\$1,000)	
	1983 <u>1/</u>	1984 <u>2/</u>	1983 <u>1/</u>	1984 <u>2/</u>
Total	(X)	(X)	52,411	54,354
Cement:				
Masonry	216	200	20,673	19,400
Portland	6	10	641	1,060
Sand and gravel (construction)	440	600	1,000	2,400
Stone:				
Crushed	5,532	6,000	29,703	31,200
Dimension	(Z)	-	3	-
Other nonmetals <u>3/</u>	(X)	(X)	391	294

X Not applicable.

Z Less than 500 short tons.

1/ Revised from Data Book 1984, table 602.

2/ Preliminary.

3/ Gem stones, lime, and pumice.

Source: U.S. Bureau of Mines, "The Mineral Industry of Hawaii in 1984," Mineral Industry Surveys (January 25, 1985).