

Section 20

FORESTRY, FISHERIES, AND MINING

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

Important sources of data on these subjects are *the United States Census of Mineral Industries* and *Mineral Industry Surveys*, U.S. Census Bureau, *1997 Economic Census, Geographic Area Series, Mining*, and reports and records of the Hawaii State Department of Land and Natural Resources, Division of Aquatic Resources and Division of Forestry and Wildlife. *Historical Statistics of Hawaii*, Section 14, summarizes the data for earlier periods. Comparable national statistics are reported in the *Statistical Abstract of the United States: 2001*, Sections 18.

**Table 20.01-- FOREST AND NATURAL AREA ACREAGE, BY ISLANDS:
JUNE 30, 2001**

Island	Conservation district forest land		Natural areas 3/	
	Forest reserve land 1/	Private forest land 2/	Number of areas	Acres
2001				
State total	643,134	328,742	19	109,164
Hawaii	438,416	106,745	8	82,535
Maui	73,227	53,180	4	17,123
Kahoolawe	-	-	-	-
Lanai	-	6,150	-	-
Molokai	16,030	-	2	2,950
Oahu	32,462	88,817	3	1,770
Kauai	82,999	73,850	2	4,786
Niihau	-	-	-	-

Note: data have remain constant since 1996.

1/ State-owned and privately-owned lands under surrender agreement in forest reserve system.

2/ Private forest land within conservation district. The majority of these lands were previously in the forest reserve system.

3/ Includes Waimanu Research Reserve (3,600 acres) and Alakai Wilderness Preserve (9,939 acres).

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

Table 20.02-- WOODLAND ON FARMS, 1987 TO 1997, AND BY COUNTIES, 1997

[Acres]

Use	1987	1992	1997				
			State total	Hawaii	Maui	Honolulu	Kauai
Total	99,135	109,391	108,704	75,821	(D)	209	(D)
Pastured	27,517	40,909	31,844	14,645	(D)	-	(D)
Not pastured	71,618	68,482	76,860	61,176	(D)	20	(D)

D Withheld to avoid disclosing data for individual farms.

Source: U.S. Bureau of the Census, *1997 Census of Agriculture, Hawaii*, AC97-A-11 (March 1999), pp. 19 and 158.

**Table 20.03-- FOREST AND BRUSHLAND FIRES, BY COUNTIES:
1999 TO 2001**

[Years ended June 30]

County	Number of Fires			Acres burned		
	1999	2000	2001	1999	2000	2001
State total	161	107	116	22,051	22,483	288
Hawaii	64	71	48	2,551	21,031	88
Maui	63	11	53	17,743	319	103
Honolulu	15	12	12	1,615	1,100	97
Kauai	19	13	3	142	33	1

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

**Table 20.04-- FOREST AND BRUSHLAND FIRES, BY CAUSE OF FIRE:
1999 TO 2001**

County	Number of Fires			Acres burned		
	1999	2000	2001	1999	2000	2001
State total	132	125	108	20,375.8	2,931.3	1,080.3
Lighting	1	1	-	20.0	2.0	-
Campfire	3	3	8	1.6	0.3	6.3
Smoking	5	13	13	83.7	9.7	16.3
Debris burning	14	22	7	290.9	241.7	17.7
Arson	25	18	13	14,173.9	74.1	117.6
Equipment	8	11	5	572.3	2,197.6	61.5
Railroads	-	-	-	-	-	-
Children	4	13	3	7.4	12.7	11.6
Miscellaneous	72	44	59	5,226.0	393.2	849.3

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

Table 20.05-- COMMERCIAL FISHING: 1989 TO 2001

[Years ended June 30]

Year	Number of commercial fishermen	Commercial fish catch 1/		
		Pounds landed	Pounds sold	Value to primary producers (dollars)
1989	3,491	14,008,279	13,524,731	29,815,290
1990	3,551	16,663,945	16,090,478	39,902,182
1991	4,043	22,218,099	21,331,184	53,769,946
1992	3,800	23,578,601	22,761,039	55,381,574
1993	3,836	25,209,513	24,562,796	61,059,027
1994	4,060	24,028,693	23,310,535	57,999,092
1995	3,827	23,970,722	22,945,408	55,283,593
1996	3,672	23,968,916	23,018,189	52,443,466
1997	3,632	25,319,795	24,589,553	53,343,330
1998	3,648	26,191,724	25,264,158	55,854,728
1999	3,796	26,874,045	25,845,545	54,848,585
2000 2/	3,898	26,844,548	26,064,726	60,473,528
2001	3,465	20,328,390	19,600,065	43,702,502

1/ Represents the total catches of all licensed commercial fishers. Includes both sea and pond catches.

2/ Revised from previous Data Book.

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 20.06-- COMMERCIAL FISH CATCH, BY SPECIES: 2000

[Revised from previous year databook. Year ended June 30, 2000]

Species	Pounds caught	Pounds sold	Value (dollars)
Total catch	26,844,548	26,064,726	60,473,528
Sea catch, all species	26,843,099	26,063,466	60,469,474
Tunas	14,644,914	14,416,859	34,873,695
Aku (Skipjack)	1,416,271	1,336,628	1,841,859
Tombo	3,186,004	3,174,557	3,618,885
Bigeye (ahi)	6,085,372	6,063,364	20,527,141
Yellowfin (ahi)	3,929,673	3,817,472	8,776,905
Billfishes	6,230,299	6,085,416	13,665,516
Blue marlin	1,009,965	906,769	1,013,877
Shortnose spearfish	385,155	370,123	422,479
Striped marlin	701,218	687,485	1,105,305
Swordfish	4,111,018	4,100,506	11,098,050
Miscellaneous pelagic species	3,340,273	3,190,331	6,141,586
Mahimahi	1,412,383	1,325,293	2,896,623
Monchong	241,069	240,680	448,612
Ono	673,151	612,455	1,451,296
Opah	950,944	950,765	1,243,056
Deep bottom fishes	474,200	420,576	1,555,532
Ehu	25,411	23,101	101,686
Hapuupuu	12,805	12,038	43,599
Opakapaka	162,541	152,757	675,957
Uku	89,359	84,216	217,939
Ulaula (onaga)	69,589	64,027	371,043
Akule/opelu	1,476,025	1,366,139	2,123,603
Akule	1,166,840	1,083,538	1,623,155
Opelu	256,186	245,483	442,389
Jacks	35,150	26,728	58,178
Inshore fishes	278,950	261,789	552,825
Sharks	184,543	142,896	269,563
Lobsters	74,706	73,593	851,995
Spiny	33,972	32,931	479,326
Slipper	40,734	40,662	372,669
Crabs	30,925	25,945	104,965
Shrimps	16,301	7,916	53,261
Seaweeds	8,221	7,504	24,843
Miscellaneous	48,592	37,774	193,913
Pond landings, all species	1,449	1,260	4,054

Source: Hawaii State Department of Land and Natural Resources, Division of Aquatic Resources, *Commercial Fish Landings, State of Hawaii--Fiscal Years 2000* and records.

Table 20.07-- COMMERCIAL FISH CATCH, BY SPECIES: 2001

[Year ended June 30, 2001]

Species	Pounds caught	Pounds sold	Value (dollars)
Total catch	20,328,390	19,600,065	43,702,502
Sea catch, all species	20,318,331	19,590,011	43,685,595
Tunas	12,746,884	12,536,041	30,419,831
Aku (Skipjack)	1,515,854	1,436,181	1,813,731
Tombo	2,768,872	2,756,851	3,314,222
Bigeye (ahi)	4,213,137	4,204,405	14,610,538
Yellowfin (ahi)	4,240,026	4,133,077	10,669,880
Billfishes	2,456,521	2,309,385	4,092,496
Blue marlin	965,386	861,776	953,952
Shortnose spearfish	271,909	254,960	243,217
Striped marlin	558,116	533,610	785,609
Swordfish	632,280	631,941	2,079,360
Miscellaneous pelagic species	2,997,803	2,822,197	5,023,078
Mahimahi	1,230,321	1,147,584	2,139,220
Monchong	186,622	185,902	322,199
Ono	891,313	800,958	1,527,874
Opah	572,251	572,036	848,777
Deep bottom fishes	382,913	338,317	1,268,270
Ehu	25,097	22,748	99,427
Hapuupuu	15,038	14,379	49,775
Opakapaka	118,150	110,440	494,038
Uku	64,510	61,540	165,311
Ulaula (onaga)	59,061	55,285	326,022
Akule/opelu	1,209,303	1,110,940	1,773,745
Akule	938,871	850,226	1,307,667
Opelu	254,186	245,266	438,536
Jacks	41,310	33,999	69,173
Inshore fishes	253,693	240,166	505,506
Sharks	122,295	118,199	112,232
Lobsters	8,703	7,752	89,887
Spiny	8,589	7,645	88,876
Slipper	114	107	1,011
Crabs	18,318	14,381	51,064
Shrimps	6,436	6,395	53,266
Seaweeds	14,093	13,109	35,323
Miscellaneous	60,059	39,130	191,723
Pond landings, all species	10,059	10,054	16,908

Source: Hawaii State Department of Land and Natural Resources, Division of Aquatic Resources, *Commercial Fish Landings, State of Hawaii--Fiscal Years 2001* and records.

Table 20.08-- COMMERCIAL SEA LANDINGS, BY ISLANDS: 2000 AND 2001

[Years ended June 30]

Island	Pounds landed	Pounds sold	Value (dollars)
2000 1/			
State total	26,843,099	26,063,466	60,469,474
Hawaii	3,874,661	3,678,247	6,824,323
Maui	579,553	452,918	1,373,787
Lanai	17,956	12,921	31,461
Molokai	48,407	36,983	124,906
Oahu	21,548,334	21,215,842	50,521,281
Kauai and Niihau	774,188	666,555	1,593,717
2001			
State total	20,318,331	19,590,011	43,685,595
Hawaii	2,850,529	2,644,551	5,289,382
Maui	522,437	391,329	1,191,983
Lanai	16,447	13,452	32,803
Molokai	30,366	24,049	92,038
Oahu	16,284,439	16,013,805	35,737,305
Kauai and Niihau	614,113	502,825	1,342,085

1/ Revised from previous year Data Book.

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

**Table 20.09-- COMMERCIAL SEA LANDINGS, BY FISHING METHOD:
2000 AND 2001**

[Years ended June 30]

Fishing method	Pounds landed	Pounds sold	Value (dollars)
2000 1/			
All methods	26,843,099	26,063,466	60,469,474
Aku pole and line	1,019,507	1,018,649	1,417,696
Longline	17,463,802	17,400,020	43,062,089
Handline	4,128,242	3,967,835	8,309,494
Trolling	2,692,193	2,260,621	4,582,451
Net	1,276,131	1,180,840	1,759,296
Trap	147,371	138,345	919,996
All other methods	115,853	97,156	418,453
2001			
All methods	20,318,331	19,590,011	43,685,595
Aku pole and line	973,796	962,987	1,397,560
Longline	12,671,943	12,652,159	29,800,237
Handline	2,813,498	2,713,012	6,118,315
Trolling	2,640,542	2,157,024	4,396,936
Net	1,049,496	961,088	1,452,874
Trap	48,277	47,602	135,673
All other methods	120,779	96,139	384,000

1/ Revised from previous year Data Book.

Source: Hawaii State Department of Land and Natural Resources, Division of Aquatic Resources, *Commercial Fish Landings, State of Hawaii--Fiscal Years 2000-2001* and records.

**Table 20.10-- FISH POPULATIONS AROUND SELECTED SHORELINE
AREAS: YEAR ENDED JUNE 30, 2001**

Location	Species	Fish per acre	Pounds per acre
Marine Life Conservation Districts:			
Hanauma Bay, Oahu:			
Inshore	59	3,067	1,473
Offshore	87	3,166	943
Pupukea, Oahu	89	8,123	1,717
Waikiki, Oahu	42	1,230	246
Molokini Shoal, Maui	58	4,234	623
Honolua-Mokuleia Bay, Maui	37	5,190	682
Manele-Hulopoe Bays, Lanai	62	7,462	1,368
Kealakekua Bay, Hawaii	43	2,138	274
Lapakahi, Hawaii	41	2,617	118
Wailea Bay, Hawaii	41	1,976	255
Old Kona Airport, Hawaii	19	2,003	208
Artificial reefs:			
Maunalua Bay Tire Reef, Oahu	32	5,056	810
Maunalua Bay "Cee Bee 24 Barge," Oahu	45	2,821	321
Maunalua Bay "Mud Scow Barge," Oahu	39	3,906	273
Maunalua Bay "Keehi Barge," Oahu	39	5,148	525
Maunalua Bay "Landing Craft," Oahu	25	833	82
Waianae "Z-Slabs," Oahu	34	1,368	155
Waianae "Landing Craft," Oahu	27	1,098	135
Waianae "Mahi," Oahu	42	7,227	881
Keawakapu Tire Reef, Maui	(NA)	3,814	540
Fisheries Management Areas:			
Waikiki-Diamond Head, Oahu 1/	44	461	56
Waikiki-Diamond Head, Oahu 2/	66	1,304	217
Puako Bay and Pualo Reef, Hawaii	34	1,973	336
Red Hill, Hawaii	29	5,017	184
Kiholo Bay, Hawaii	36	2,091	200
Papawai Bay, Hawaii	34	4,957	449
Other areas:			
Honaunau Bay	28	1,588	167

1/ Survey taken on December 28, 2000, during the open fishing period.

2/ Survey taken on June 25, 2001, during the closed fishing period.

Source: Hawaii State Department of Land and Natural Resources, Division of Aquatic Resources, *Statewide Marine Research and Surveys, Survey of Fish and Habitat, July 1, 2000 to June 30, 2001*.

Table 20.11-- MOST ABUNDANT AND HEAVIEST FISH SPECIES AT SPECIFIED LOCATIONS: YEAR ENDED JUNE 30, 2001

[Three leading species at each location, based on both individuals per acre and pounds per acre]

Location and species	Individuals per acre		Pounds per acre	
	Rank	Number	Rank	Number
Hanauma Bay MLCD (inshore):				
Manini (<i>Acanthurus triostegus</i>)	1	958	3	137
Yellow-eye damsel (<i>Eupomacentrus fasciolatus</i>)	2	221	(1/)	(NA)
Aholehole (<i>Kuhlia sandvicensis</i>)	3	203	9	48
Redlipped parrot (<i>Scarus rubroviolaceus</i>)	(1/)	(NA)	1	414
Clown tang (<i>Naso lituratus</i>)	10	78	2	212
Honolua-Mokuleia Bay MLCD:				
Maiii/lavender tang (<i>Acanthurus nigrofuscus</i>)	1	1,416	1	127
Saddle-back wrasse (<i>Thalassoma duperrey</i>)	2	1,325	4	54
Kole (<i>Ctenochaetus strigosus</i>)	3	647	3	92
Clown tang (<i>Naso lituratus</i>)	(1/)	(NA)	2	102
Kealakekua Bay MLCD:				
Kole (<i>Ctenochaetus strigosus</i>)	1	303	6	15
Agile damsel (<i>Chromis agilis</i>)	2	283	3	30
Blackfin damsel (<i>Chromis vanderbilti</i>)	3	277	(1/)	(NA)
Yellow tang (<i>Zebrasoma flavescens</i>)	4	277	1	34
Parrotfishes (Family Scaridae)	(1/)	(NA)	2	33

NA Not available.

MLCD Marine Life Conservation District.

1/ Not in first 10.

Source: Hawaii State Department of Land and Natural Resources, Division of Aquatic Resources, *Statewide Marine Research and Surveys, Survey of Fish and Habitat, July 1, 2000 to June 30, 2001.*

Table 20.12-- MINERAL INDUSTRIES: 1972 TO 1997

Subject	1972	1977	1982	1987	1992	1997
Number of establishments	15	7	12	9	7	7
With 20 employees or more	5	2	4	4	4	2
All employees:						
Number (1,000)	.3	.1	.2	.2	.2	.1
Payroll (million dollars)	2.4	1.9	3.8	7.4	9.4	5.6
Production, development, and exploration workers:						
Number (1,000)	.2	.1	.1	.2	.2	.1
Hours (millions)	.4	.2	.2	.4	.4	.2
Wages (million dollars)	1.8	1.5	2.6	5.7	8.1	4.7
Value added by mining (million dollars)	9.0	8.1	9.7	23.5	27.3	22.0
Cost of supplies used, purchased machinery installed, etc. (million dollars)	4.1	2.9	5.9	10.4	11.3	(D)
Value of shipments and receipts (million dollars)	11.0	9.7	12.8	31.1	33.7	33.3
Capital expenditures (million dollars)	2.0	1.3	2.7	2.8	4.8	(D)

D Withheld to avoid disclosing data for individual companies.

Source: U.S. Census Bureau, *1987 Census of Mineral Industries, Geographic Area Series, Pacific States*, MIC87-A-9 (October 1990), Hawaii table 1; *1992 Census of Mineral Industries, Geographic Area Series, Pacific States*, MIC92-A-9 (May 1996), Hawaii table 1; *1997 Economic Census, Mining, Geographic Area Series, Hawaii*, EC97N21A-HI (May 2000), table 1.

Table 20.13-- NONFUEL MINERAL PRODUCTION: 1998 TO 2000

[Estimated production as measured by mine shipments, sales, or marketable production, including consumption by producers, Data are rounded to three significant digits; may not add to totals shown]

Minerals	1998	1999 1/	2000 2/
QUANTITY (1,000 METRIC TONS)			
Cement:			
Masonry	3	3	3
Portland	251	254	280
Gemstones	(NA)	(NA)	(NA)
Sand and gravel (construction)	368	508	500
Stone (crushed)	5,500	5,870	6,000
VALUE (\$1,000)			
Total	84,500	86,400	91,400
Cement:			
Masonry 3/	329	298	300
Portland 3/	25,600	24,700	27,000
Gemstones	77	55	113
Sand and gravel (construction)	4,590	5,840	5,900
Stone (crushed)	53,900	55,500	58,100

NA Not available.

1/ Revised.

2/ Preliminary.

3/ For 1998 to 2000, data have been estimated.

Source: U.S. Geological Survey, Bureau of Mines, "The *Mineral Industry of Hawaii*"

<<http://minerals.er.usgs.gov/minerals/pubs/state/hi.html>>.