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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, *2002 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: 2006*, Sections 18.

**Table 20.01-- FOREST AND NATURAL AREA ACREAGE, BY ISLAND:
JUNE 30, 2005**

[Data have remained constant since 1996]

Island	Conservation district forest land		Natural areas 3/	
	Forest reserve land 1/	Private forest land 2/	Number of areas	Acres
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	-	-	-	-

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, 1992, 1997, AND 2002, AND BY COUNTY, 2002

[Acres]

Use	1992	1997	2002				
			State total	Hawaii	Honolulu	Kauai	Maui
Total	109,391	108,704	117,685	86,632	6,675	(D)	(D)
Pastured	40,909	31,844	41,467	(D)	787	(D)	461
Not pastured	68,482	76,860	76,218	(D)	5,888	(D)	(D)

D Withheld to avoid disclosing data for individual farms.

Source: U.S. Department of Agriculture, *1997 Census of Agriculture, Hawaii*, (March 1999), pp. 19 and 158. *2002 Census of Agriculture, Hawaii*, (June 2004), p. 195.

**Table 20.03-- FOREST AND BRUSHLAND FIRES, BY CAUSE OF FIRE:
2001 TO 2003**

Cause of Fire	Number of Fires			Acres burned		
	2001	2002	2003	2001	2002	2003
State total	108	191	107	1,080.3	2,383.4	16,585.4
Lighting	-	1	-	-	0.1	-
Campfire	8	9	5	6.3	0.8	12.2
Smoking	13	13	5	16.3	28.7	2.4
Debris burning	7	23	9	17.7	9.0	372.5
Arson	13	16	15	117.6	139.4	2.6
Equipment	5	7	8	61.5	0.7	302.5
Railroads	-	-	-	-	-	-
Children	3	5	1	11.6	1.8	0.1
Miscellaneous	59	117	64	849.3	2,202.9	15,893.1

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

Table 20.04-- COMMERCIAL FISHING: 2003 TO 2005

[Fiscal year ending June 30. Represents the total sea catches of all licensed commercial fishers. Excludes pond catches, The Aquaculture and Development Program, Department of Agriculture surveys pond harvest market information]

Year	Number of commercial fishermen	Commercial fish catch		
		Pounds landed	Pounds sold	Value to primary producers (dollars)
2003	3,434	1/ 24,054,939	(2/)	(2/)
2004	2,971	1/ 21,947,577	(2/)	(2/)
2005	3,248	24,427,261	(2/)	(2/)

1/ Revised from previous *Data book*.

2/ Due to revisions to the commercial fishing report forms in October 2002, licensed commercial fishers no longer report ex-vessel landing values. The latter information is collected from a fish dealer reporting system. The Division of Aquatic Resources is developing an application to integrate the fishing and fish dealer reporting systems to summarize landings with ex-vessel landing value information. Therefore, only total landings reported by commercial fishers are available at this time.

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

Table 20.05-- COMMERCIAL FISH CATCH, BY SPECIES: 2003 TO 2005

[Fiscal year ending June 30, pounds landed, excludes pond catches. Due to revisions to the commercial fishing report forms in 2002, data may not be comparable to previous years]

Species	2003 1/	2004 1/	2005
Total catch	24,054,939	21,947,577	24,427,261
Tunas	15,423,719	12,542,662	13,882,111
Aku (skipjack)	1,415,346	991,506	959,232
Tombo	1,722,908	480,044	1,168,346
Bigeye (ahi)	9,119,838	8,791,720	8,435,954
Yellowfin (ahi)	3,129,477	2,219,343	3,286,472
Billfishes	2,502,908	2,808,647	4,395,492
Blue marlin	899,298	940,157	771,447
Shortnose spearfish	474,607	411,394	449,176
Striped marlin	853,729	1,216,117	980,836
Swordfish	257,523	222,085	2,173,692
Miscellaneous pelagic species	3,970,620	4,558,275	4,059,011
Mahimahi	1,359,459	1,833,717	1,378,753
Monchong	486,968	599,690	653,532
Ono	931,011	845,747	865,753
Opah	938,079	925,773	777,401
Walu	234,472	329,629	345,851
Deep bottom fishes	574,664	508,596	604,429
Ehu	26,151	28,761	34,877
Hapuupuu	55,080	38,323	43,399
Opakapaka	170,721	107,981	138,320
Uku	127,018	137,838	158,109
Ulaula (onaga)	119,994	128,095	156,409
Akule/opelu	953,208	924,676	893,581
Akule	569,416	568,017	699,681
Opelu	368,358	338,388	187,293
Jacks	86,037	63,789	61,063
Inshore fishes	269,618	271,417	239,395
Sharks	183,372	185,099	155,749
Mako	122,206	102,652	100,428
Lobsters	7,345	6,992	10,356
Crabs	23,746	26,200	17,890
Shrimps	5,004	2,785	52,229
Seaweeds	7,801	11,331	16,320
Miscellaneous	46,897	37,108	39,635

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 2003-2005* and records.

Table 20.06-- COMMERCIAL SEA LANDINGS, BY ISLAND: 2003 TO 2005

[Fiscal year ending June 30, pounds landed]

Island	2003 1/	2004 1/	2005
State total	24,054,939	21,947,577	24,427,261
Hawaii	3,247,053	2,574,191	2,926,169
Maui	522,461	642,059	571,555
Lanai	21,207	22,592	21,945
Molokai	16,250	26,880	35,096
Oahu	19,601,398	18,090,956	20,294,107
Kauai and Niihau	646,570	590,899	578,389

1/ Revised from previous *Data Book*.

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

**Table 20.07-- COMMERCIAL SEA LANDINGS, BY FISHING METHOD:
2003 TO 2005**

[Fiscal year ending June 30, pounds landed]

Fishing method	2003 1/	2004 1/	2005
All methods	24,054,939	21,947,577	24,427,261
Aku pole and line	934,867	713,584	737,156
Longline	16,645,599	14,868,196	17,793,249
Handline	2,494,349	1,844,189	1,879,169
Trolling	2,517,912	2,963,710	2,347,348
Net	811,292	843,306	892,314
Trap	58,213	51,957	76,709
All other methods	592,707	662,635	701,316

1/ Revised from previous *Data Book*.

Source: Hawaii State Department of Land and Natural Resources, Division of Aquatic Resources, *Commercial Fish Landings, State of Hawaii--Fiscal Years 2003-2005* and records.

**Table 20.08-- FISH POPULATIONS AROUND SELECTED SHORELINE
AREAS: YEAR ENDING 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

NA Not available.

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 20.09-- MOST ABUNDANT AND HEAVIEST FISH SPECIES AT SPECIFIED LOCATIONS: YEAR ENDING 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 20.10-- MINERAL INDUSTRIES (NAICS 21): 1977 TO 2002

[Includes establishments with payroll. Statistics based on the North American Industry Classification System (NAICS) which replaced the Standard Industrial Classification (SIC) system used in Economic Censuses prior to the 1997 Economic Census]

Subject	1977	1982	1987	1992	1997	2002
Number of establishments	7	12	9	7	7	8
With 20 employees or more	2	4	4	4	2	1
All employees:						
Number (1,000) 1/	.1	.2	.2	.2	.1	.1
Annual payroll (million dollars)	1.9	3.8	7.4	9.4	5.6	7.3
Production, development, and exploration workers:						
Number (1,000) 1/	.1	.1	.2	.2	.1	.1
Annual hours (millions)	.2	.2	.4	.4	.2	.2
Annual wages (million dollars)	1.5	2.6	5.7	8.1	4.7	5.1
Value added (million dollars)	8.1	9.7	23.5	27.3	22.0	20.7
Total cost of supplies (million dollars)	2.9	5.9	10.4	11.3	(D)	6.6
Total value of shipments and receipts for services (million dollars)	9.7	12.8	31.1	33.7	33.3	25.6
Capital expenditures (million dollars)	1.3	2.7	2.8	4.8	(D)	1.7

D Withheld to avoid disclosing data for individual companies.

1/ For pay period including March 12.

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; *2002 Economic Census, Mining, Geographic Area Series, Hawaii*, EC02-21A-HI (April 2005), table 1.

Table 20.11-- NONFUEL MINERAL PRODUCTION: 2002 TO 2004

[Production as measured by mine shipments, sales, or marketable production (including consumption by producers), Data are rounded to no more than three significant digits; may not add to totals shown]

Minerals	2002	2003	2004
QUANTITY (1,000 METRIC TONS)			
Cement, masonry	(D)	1/ (D)	-
Gemstones	(NA)	(NA)	(NA)
Sand and gravel (construction)	610	1/ 808	1,260
Stone (crushed)	6,380	1/ 5,620	5,190
VALUE (\$1,000)			
Total	72,300	1/ 75,100	71,200
Cement, masonry	(D)	-	-
Gemstones	109	119	262
Sand and gravel (construction)	7,010	1/ 9,560	12,100
Stone (crushed)	65,100	1/ 65,400	58,900

NA Not available.

D Value excluded to avoid disclosing company proprietary data.

1/ Revised from previous *Data Book* .

Source: U.S. Geological Survey, Minerals Information, "The *Mineral Industry of Hawaii*" , *Hawaii 2004*, <<http://minerals.er.usgs.gov/minerals/pubs/state/hi.html>> accessed June 13, 2006.