Western Pacific

■ Hawaii

Western Pacific Summary

Management Context

The Western Pacific region includes the state of Hawaii.[1] Federal fisheries in this region are managed by the Western Pacific Fishery Management Council (WPFMC) and the National Marine Fisheries Service (NMFS) under five fishery management plans (FMPs).

Western Pacific Fishery Management Plans
1. Bottomfish and Seamount Groundfish Fisheries
2. Coral Reef Ecosystem
3. Crustacean Fisheries
4. Pelagic Fisheries
5. Precious Coral Fisheries

Of the stocks covered in these fishery management plans, currently the Hancock Seamount groundfish complex is considered overfished. The bottomfish multispecies complex in the Hawaiian Archipelago is considered subject to overfishing.

In addition to the WPFMC and NMFS, pelagic fish species such as bigeye and yellowfin tunas which migrate across international boundaries are also managed by the Western and Central Pacific Fisheries Commission (WCPFC). The WCPFC is a regional fishery management organization with diverse membership that includes the U.S., Australia, Fiji, France, New Zealand, and Palau. Catch levels that are recommended by the WCPFC are considered by the WPFMC and NMFS but these catch levels are suggestions and not binding.

Commercial Fisheries

Fishermen in Hawaii earned $66 million from their harvest (29 million pounds) in 2006. Tunas comprised two-thirds of ex-vessel value ($44 million), followed by swordfish ($5.1 million) and mahimahi ($3.6 million). Lobsters commanded the highest price per pound ($9.66) in 2006, followed by snappers ($4.62 per pound) and tunas ($3.01 per pound). Overall, the commercial fishing industry generated $496 million in sales, $254 million of income, and over 11,000 jobs.

Key Western Pacific Commercial Species

Commercially-important species and species groups in the Western Pacific include: lobsters, mahimahi (dolphinfish), marlin, moonfish (opah), pomfret, scad, snappers, swordfish, tunas, and wahoo.

[1]The Western Pacific region also includes the U.S. territories of American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands. However, due to data availability, only information from Hawaii is reported here.

Coastline view of the Kohala Mountains on the northwest tip of Hawaii

Economic Impacts

The commercial fishing industry generated $496 million in sales, $254 million in income, and over 11,000 jobs. The seafood-related retail sector generated $274 million in sales, $166 million in income, and over 7,300 jobs. Commercial harvest operations resulted in instate sales of $131 million for Hawaiian businesses and over 2,800 jobs.

Landings Revenue

Overall, ex-vessel revenue increased 7% between 1997 and 2006. After adjusting for inflation, however, real ex-vessel revenues declined 9%. Landings of finfish and other fishery products stayed relatively flat, increasing only 1% during this period, with ex-vessel revenues ($66 million in 2006) increasing 10% (a decline of 7% in real terms). Ex-vessel revenue for shellfish dropped sharply from $1.5 million in 1997 to $106,000 in 2006, a 93% drop in revenue (94% in real terms) largely due to declining lobster revenues. Tuna landings revenue increased $12 million (39% nominally, 18% in real terms) during this period, followed by mahimahi, which increased $2 million (118% nominally, 85% in real terms).

Landings

Over the 10 year period, landings averaged 28 million pounds, ranging from a low of 25,000 pounds (2001) to a high of 31,000 pounds (2005). Tunas contribute more to the Western Pacific's total landings than any other species or group, averaging 16 million pounds or 56% of total landings. Tuna landings have remained relatively stable over the time period, increasing 4%. In contrast, tuna prices had an average annual increase of 4%.

Commercial Fish Facts

Landings revenue
- On average, the key species of groups accounted for 96% of the total revenue for this region.
- Eight of the top ten species or groups had average annual ex-vessel revenue in excess of $1.2 million.
- Tunas have an average ex-vessel revenue of over $38 million, about 63% of total revenue.

Landings
- Overall, finfish and other fishery products accounted for over 99% of total landings in the Western Pacific region.
- On average, the key species or species groups accounted for 94 % of the total landings.
- Tunas averaged 16 million pounds over the time period, contributing 56% to total landings.
- Landings for swordfish increased 580% from 2004-2005, the largest increase in landings in the 10 year period. This species also had the largest annual decrease in landings, declining 91% from 2000-2001.

Prices
- Lobsters, snappers, and tunas had the highest average ex-vessel prices per pound at $11.44, $4.03, and$2.50, respectively.
- Marlin, moonfish, and pomfret had the lowest average ex-vessel prices per pound at $1.16, $1.42, and $1.69 per pound, respectively.

Prices

From 1997-2006, ex-vessel prices increased for all key species except swordfish and lobsters, which declined 33% (43% in real terms) and 18% (31% in real terms), respectively. Marlin prices remained flat (nominally) but decreased 15% in real terms. However, ex-vessel prices for moonfish (51% nominally, 28% in real terms), pomfret (50% nominally, 27% in real terms), and mahimahi (48% nominally, 25% in real terms) increased substantially. These species averaged $1.42 per pound, $1.69 per pound, and $2.18 per pound, respectively, over the time period.

Recreational Fishing

In the state of Hawaii, there were 369,000 recreational anglers in 2006. These anglers took a total of 2.6 million saltwater fishing trips, spending $136 million on recreational fishing trips and $615 million on durable fishing-related equipment. These expenditures contributed $773 million in total sales to the regional economy, added over 7,000 jobs, and generated $381 million in value-added impacts.

Participation Rates

Overall, the total number of anglers (resident and non-resident) in the Western Pacific region decreased from 440,000 (2003) to 369,000 (2006) anglers, a 16% drop in participation. Participation by residents was highest in 2003 (261,000 anglers) but by 2006 this number dropped 33% (173,000 anglers). Out-of state angler numbers increased from 2003-2006 from 180,000 to 224,000 anglers. By 2006, the number of out-of-state anglers was higher than resident anglers.

Key Western Pacific Recreational Fishing Species

The Western Pacific's recreationally-important species or species groups are: blue marlin, mahimahi, goatfishes, bigeye and mackerel scad, skipjack tuna, smallmouth bonefish, snappers, trevally and other jacks, wahoo, and yellowfin tuna.

Recreational Fishing Trips

The number of fishing trips taken by anglers in Hawaii averaged 2.6 million annually from 2003-2006, ranging from 2.4 million (2003) to 2.9 million (2004), increasing 10% between 2003 and 2006. Fishing trips taken from shore comprised the majority of trips taken, averaging 77% of total fishing trips annually. In 2006, there were 2.1 million shore-based fishing trips (78% of total trips) compared to 570,000 trips made by a private or rental boat.

Expenditures and Economic Impacts

In 2006, recreational anglers in Hawaii spent a total of $751 million on fishing trip expenditures and purchases of durable equipment. Residents spent $119 million on all trip-related expenses, compared to non-residents who spent $17 million. Expenditures on fishing tackle ($199 million) accounted for 32% of all durable equipment expenditures in 2006. Fishing tackle was followed by vehicle expenses ($135 million) and boat expenses ($128 million).

Recreational angling contributed $159 million in sales from just trip-related expenses. Expenditures for shore-based trips accounted for over $100 million in sales, $53 million in value-added impacts, and supported over a thousand jobs. Durable equipment expenditures generated over 5,000 jobs, $613 million in total sales, and $297 million in value-added impacts across the region.

Recreational Harvest and Released Catch

In 2006, Hawaiian recreational anglers caught 829,000 goatfishes and 812,000 scad. These two species were the most caught by recreational anglers in this region and the majority of these fish were harvested rather than released. Trevally (bluefin, giant) and other jack species (greater amberjack, island jack and others) were also caught in large numbers (420,000 fish), but only about half of these were harvested.

Recreational Fishing Facts

Participation

- Hawaiian anglers, all of whom are coastal county residents, comprised, on average, 54% of total anglers annually.
- In 2006, out-of-state anglers made up 61% of the total number of recreational anglers who fished in Hawaii: a 35% increase in out-of-state angler participation from the previous year.

Recreational trips

- More fishing trips were taken in 2004 than in any other year: almost 2.9 million trips were taken from shore or from a private/rental boat.
- An average of 2.6 million fishing trips were taken annually between 2003-2006.

Economic impacts

- Hawaiian residents spent $83 million on shore-based fishing trips, $36 million on private boat trips, and $30,000 on for-hire trips.
- Non-residents spent $7.0 million on for-hire fishing trips, more than was spent on private boat trips ($5.7 million) and shore-based fishing trips ($4.3 million).

Catch data for key species

- Between 2003 and 2006, catch of barracuda, mahimahi, jacks, and goatfishes increased 124%, 99%, 42%, and 3%, respectively. Catch of all other species and groups reported double digit declines between these years.
- In 2005, Hawaiian anglers harvested a record number of blue marlin, 19,000 fish. The annual harvest of blue marlin did not exceed 5,000 fish in 2003, 2004, and 2006.

Marine Coastal Economy

Overall, Hawaii's establishment and employee numbers, annual payroll, employee compensation, and gross domestic product all increased in 2005 relative to 1998 levels. The gross state product and annual payroll increased the most, 46% and 43%, respectively. The smallest percentage change was seen for establishment (9%) and employee numbers (18%).

The Commercial Fishing Location Quotient for Hawaii decreased 37% from 7.26 in 2002 to 4.55 in 2006. Despite this, Hawaii's commercial fishing-related employment was still higher than the national baseline of 1.0.

Seafood Sales and Processing

The number of non-employer firms and employer establishments engaged in seafood retail varied over the time period. Non-employer firms ranged from 23 firms (2000) to 37 firms (1998) and receipts for this industry increased 23% (9% in real terms) from $2.8 million in 1998 to $3.5 million in 2005. Employer establishments engaged in seafood retail ranged from 21 establishments (1998 and 1999) to 31 establishments (2003 and 2004). Payroll for this industry increased 70% (51% in real terms), from $2.9 million in 1998 to $5 million in 2005.

The number of employer establishments engaged in seafood product preparation and packaging remained stable from 1998-2005. Non-employer firms engaged in this industry fluctuated, from 3 firms in 2000 to 11 firms in 2004. Annual receipts for these non-employer firms increased 809% between 1998 and 2005.

Employer establishments primarily engaged in seafood wholesale steadily decreased over time, dropping 43% between 1998 and 2005. Employee numbers also decreased from 507 employees (1998) to 485 employees (2005), a 4% decline. Annual payroll increased 1% (declining 10% in real terms) between 1998 and 2005, ranging from $14 million in 2004 to $18 million in 2001.

Transport, Support, and Marine Operations

The marine cargo handling industry had the most complete information in this sector, showing relatively steady establishment numbers despite increasing annual payroll over the time period. Annual payroll increased 61% (43% in real terms) between 1998 and 2005, ranging from $25 million (2001) to $53 million (2005). Employee number varied between 426 employees in 2001 to 756 employees in 2002.

Overall, establishment numbers for most industries in this sector remained stable over the time period. However, marina operations were an exception to this, fluctuating between 6 establishments (1999) and 11 establishments 2003 and 2004). Annual payroll for this industry increased from $1.1 million in 1998 to $3.4 million in 2005, a 193% increase (160% in real terms). The number of individuals employed by this industry also increased from 66 employees (1998) to 181 employees (2005), a 174% increase.

2006 Economic Impacts of Commercial Fishing Industry *(thousands of dollars)*

	Sales Impacts	Income Impacts	Employment Impacts
Total Impacts	496,227	254,252	11,148
Commercial Harvesters	130,649	39,738	2,849
Seafood Processors and Dealers	35,719	19,339	441
Seafood Wholesalers and Distributors	56,220	29,072	546
Retail Sectors	273,639	166,103	7,312

Total Landings Revenue and Landings Revenue of Key Species/Species Groups *(thousands of dollars)*

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Total Revenue	61,571	61,041	62,900	68,196	48,134	52,398	52,713	57,675	71,034	66,119
Finfish & Other	60,111	58,932	61,557	67,833	47,912	52,092	52,451	57,270	70,670	66,013
Shellfish	1,460	2,109	1,343	363	222	306	262	405	364	106
Lobsters	1,172	1,099	835	98	97	122	69	90	111	61
Mahimahi (Dolphin)	1,668	1,698	2,564	3,187	2,264	2,627	2,934	4,909	3,597	3,642
Marlin	2,411	2,187	2,314	2,235	2,139	2,011	1,985	2,472	2,512	2,558
Moonfish (Opah)	814	878	1,297	1,100	999	1,219	1,509	1,343	1,897	1,873
Pomfret	242	331	432	499	386	675	777	1,316	1,440	1,311
Scad	1,625	1,996	1,971	1,440	881	1,066	1,094	943	838	1,017
Snappers	2,420	2,113	2,202	2,478	2,033	2,077	2,059	2,235	2,033	1,780
Swordfish	16,386	14,327	14,244	12,280	1,368	1,381	702	1,225	7,768	5,125
Tunas	31,630	32,399	32,850	41,214	34,526	37,599	37,374	38,483	46,071	44,084
Wahoo	1,285	1,469	1,695	1,663	1,657	1,452	1,917	2,201	2,253	2,329

Total Landings and Landings of Key Species / Species Groups *(thousands of pounds)*

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Total Landings	28,405	29,563	30,018	29,394	24,819	25,248	24,928	26,657	31,099	28,729
Finfish & Other	28,236	29,214	29,836	29,345	24,765	25,199	24,879	26,597	30,931	28,646
Shellfish	169	349	183	49	54	49	49	60	168	83
Lobsters	101	112	74	10	9	11	7	9	12	8
Mahimahi (Dolphin)	979	804	1,212	1,528	1,248	1,382	1,335	2,304	1,628	1,528
Marlin	2,438	1,983	2,017	1,582	2,490	1,652	2,520	1,983	2,395	2,662
Moonfish (Opah)	709	849	1,105	687	773	913	1,101	799	1,100	1,089
Pomfret	161	231	314	277	275	492	462	775	677	596
Scad	1,082	1,546	1,383	1,375	945	946	867	1,003	889	875
Snappers	673	619	647	698	600	555	554	600	497	451
Swordfish	5,435	6,284	5,635	6,368	581	726	327	534	3,629	3,200
Tunas	15,052	14,914	15,056	15,032	15,579	16,263	14,819	15,757	17,359	15,609
Wahoo	713	746	925	654	949	682	1,036	910	900	1,005

Average Annual Price for Key Species / Species Groups

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Lobsters	11.80	10.08	11.51	12.14	12.61	12.66	11.88	11.08	10.99	9.66
Mahimahi (Dolphin)	1.83	2.30	2.26	2.09	1.82	1.91	2.21	2.21	2.50	2.71
Marlin	1.07	1.15	1.22	1.41	0.96	1.34	0.85	1.34	1.15	1.07
Moonfish (Opah)	1.16	1.04	1.17	1.60	1.31	1.34	1.38	1.71	1.75	1.75
Pomfret	1.52	1.44	1.38	1.80	1.42	1.38	1.69	1.72	2.23	2.28
Scad	1.64	1.43	1.57	1.65	1.75	1.87	1.74	1.97	2.11	2.31
Snappers	3.81	3.65	3.64	3.98	3.67	3.98	4.03	4.31	4.60	4.62
Swordfish	3.02	2.29	2.53	1.93	2.39	1.93	2.21	2.36	2.26	2.04
Tunas	2.15	2.22	2.23	2.74	2.26	2.37	2.59	2.57	2.86	3.01
Wahoo	2.00	2.16	2.01	2.54	1.83	2.20	1.94	2.58	2.75	2.61

Recreational Fishing Effort by Mode *(thousands of trips)*[1]

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Private / Rental							509	709	578	570
Shore							1,893	2,162	1,892	2,074
Total Trips							2,402	2,871	2,470	2,644

Recreational Anglers by Residential Area *(thousands of anglers)*[1]

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Coastal							261	223	204	173
Non-Coastal[2]							NA	NA	NA	NA
Out of State							180	183	166	224
Total Anglers							440	407	370	369

2006 Angler Trip & Durable Equipment Expenditures *(thousands of dollars)*

Fishing Mode	Trip Expenditures		Durable Equipment Expenditure Category	Expenditures
	Non-Residents	*Residents*	Fishing Tackle	198,844
Private Boat	5,672	36,197	Other Equipment	108,782
Shore	4,257	83,267	Boat Expenses	128,270
For-Hire	7,003	30	Vehicle Expenses	135,316
Total Trip Expenditures	16,932	119,494	Second Home Expenses	43,314
			Total Durable Equipment Expenditures	614,527
Total State Trip and Durable Equipment Expenditures				**750,953**

2006 Economic Impacts of Recreational Fishing Expenditures *(thousands of dollars)*

Impact Category	Jobs	Total Sales	Value Added
Trip Impacts by Fishing Mode:			
Private Boat Mode Trip Impacts	466	49,166	25,141
Shore Mode Trip Impacts	1,176	100,489	53,049
Party/Charter Mode Trip Impacts	101	9,685	5,325
Total Durable Equipment Impacts	5,279	613,480	297,099
Total State Trip and Durable Equipment Economic Impacts	7,023	772,819	380,614

Harvest (H) and Release (R) of Key Species / Species Groups *(number of fish in thousands)*[1,3]

Species		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Barracuda (Smallmouth Bonefish)	H							25	61	25	63
	R							4	9	12	2
Dolphinfish (Mahimahi)	H							109	225	178	219
	R							1	(1)	1	(1)
Goatfishes[4]	H							794	715	447	813
	R							10	17	8	16
Jacks (Trevallys and Other Jacks[5])	H							125	331	257	210
	R							171	146	182	210
Marlin, Blue	H							4	5	19	3
	R							(1)	(1)	(1)	(1)
Scad, Bigeye and Mackerel[6]	H							1,951	179	726	812
	R							2	(1)	14	(1)
Snappers[7]	H							233	236	223	177
	R							16	19	57	36
Tuna, Skipjack	H							440	420	302	201
	R							1	6	1	1
Tuna, Yellowfin	H							184	268	231	124
	R							5	(1)	9	1
Wahoo	H							105	97	54	62
	R							(1)	(1)	(1)	(1)

[1]Effort (number of trips), participation (number of anglers) and catch (number of fish harvested or released) data for Hawaii was not available for 1997-2002.
[2]All Hawaii residents are considered coastal residents; NA = not applicable.
[3]In this table, "1" = 1000-1499 fish were harvested or released and "(1)" = less than 1000 fish were harvested or released.
[4]Goatfishes include: Yellowstripe, Yellowfin, Pflugers, Bandtail, Doublebar, Sidespot, Whitesaddle, Manybar, Blue, and "Goatfish Family/Genus."
[5]Trevally and other jacks include: Bluefin Trevally, Giant Trevally, Bigeye Trevally, Black Trevally, African Pompano, Greater Amberjack, Island Jack, and "Other Jack Family/Genus."
[6]Scad (Jacks) include: Bigeye Scad and Mackerel Scad.
[7]Snappers include: Bluestip, Blacktail, Ruby, Longtailed, Pink, VonSiebolds, Binghams, Green Jobfish, Ironjaw, and Smalltooth Jobfish.

State Economy (% of national total)						
	Establishments	**Employees**	**Annual Payroll** *($ millions)*	**Employee Compensation** *($ millions)*	**Gross State Product** *($ millions)*	**Commercial Fishing Location Quotient**
1998	29,603 (0.43%)	416,571 (0.39%)	11,292 (0.34%)	24,568 (0.41%) (2001)[1]	37,549 (0.43%)	7.26 (2002)[2]
2005	32,244 (0.43%)	490,682 (0.42%)	16,163 (0.36%)	32,314 (0.46%)	54,773 (0.44%)	4.55 (2006)[2]
% change	8.9	17.8	43.1	31.5	45.9	-37.3

Seafood Sales and Processing – Non-Employer Firms and Annual Receipts (*thousands of dollars*)

		1998	1999	2000	2001	2002	2003	2004	2005
Seafood sales, retail	Firms	37	29	23	34	F	36	33	29
	Receipts	2,829	2,829	3,670	2,497	F	4,753	2,875	3,487
Seafood product preparation & packaging	Firms	6	8	3	7	7	9	11	5
	Receipts	45	160	44	231	1,566	1,034	1,309	409

Seafood Sales and Processing – Employer Establishments, Employees, and Annual Payroll (*thousands of dollars*)

		1998	1999	2000	2001	2002	2003	2004	2005
Seafood sales, retail	Establishments	21	21	23	27	29	31	31	29
	Employees	178	181	183	235	229	317	321	326
	Payroll	2,947	3,063	2,969	3,773	3,737	5,187	5,038	5,007
Seafood sales, wholesale	Establishments	56	50	49	51	44	33	36	32
	Employees	507	493	510	812	525	654	404	485
	Payroll	14,958	16,186	17,805	17,656	15,203	12,653	13,949	15,163
Seafood product preparation & packaging	Establishments	3	3	3	3	4	4	4	3
	Employees	F	F	F	F	86	F	F	F
	Payroll	F	F	F	F	2,584	F	F	F

Transport, Support, and Marine Operations – Employer Establishments, Employees, and Annual Payroll (*thousands of dollars*)

		1998	1999	2000	2001	2002	2003	2004	2005
Deep sea freight transportation	Establishments	2	2	2	2	2	1	M	M
	Employees	F	F	F	F	F	F	M	M
	Payroll	F	F	F	F	F	F	M	M
Coastal & Great Lakes freight transportation	Establishments	10	13	13	11	11	10	11	13
	Employees	F	F	507	463	F	F	F	F
	Payroll	F	F	30,087	25,782	F	F	F	F
Marine cargo handling	Establishments	7	7	7	6	7	8	8	8
	Employees	601	673	663	426	756	F	F	694
	Payroll	33,008	32,743	37,306	24,920	49,975	F	F	53,061
Navigational services to shipping	Establishments	6	6	6	5	7	7	6	6
	Employees	F	126	63	103	F	F	F	F
	Payroll	F	6,601	2,637	5,926	F	F	F	F
Ship & boat building	Establishments	17	19	17	17	16	14	17	16
	Employees	F	F	F	F	F	480	589	F
	Payroll	F	F	F	F	F	22,053	20,908	F
Marinas	Establishments	7	6	10	7	8	11	11	10
	Employees	66	76	F	F	56	177	178	181
	Payroll	1,145	1,257	F	F	1,414	3,285	3,439	3,354
Port and harbor operations	Establishments	2	2	2	2	2	2	2	2
	Employees	F	F	F	F	F	F	F	F
	Payroll	F	F	F	F	F	F	F	F

F = Data is suppressed due to confidentiality restrictions. M = Data is not available.

[1] Employee Compensation data is currently available from 2001-2005.
[2] Commercial Fishing Location Quotient data is available from 2001-2006 for most states. Data from other years is displayed when 2001 and/or 2006 data is unavailable.