

### 5.3 Description of the Economic and Social Environment

#### 5.3.1 Introduction

In September 2006, the Working Group on Caribbean spiny lobster of the Western Central Atlantic Fishery Commission (WECAFC) met in Merida, Mexico, to attend the Regional Workshop on the Assessment and Management of Caribbean Spiny Lobster. The primary objective of the workshop was to “review and update the status of Caribbean spiny lobster resource at national and regional levels to seek regional agreement on strategies to address management problems” (WECAFC 2007, p. 2). At the workshop were representatives from The Bahamas, Belize, Brazil, Columbia, Costa Rica, Cuba, Dominican Republic, France (Martinique and Guadeloupe), Haiti, Honduras, Jamaica, Mexico, Nicaragua, the Turks and Caicos Islands, United States of America (also representing Puerto Rico and the U.S. Virgin Islands), and Venezuela, as well as the Caribbean Fishery Management Council (CFMC) and Caribbean Regional Fishery Mechanism (CRFM). The estimated status of the national populations of Caribbean spiny lobster of the participating countries is presented in the Table 5.3.1.

In keeping with the recommendation to allow about 50 percent of the stock to reach maturity, the national representatives at the workshop agreed to a minimum harvest size of 74 mm (2.91 inches) cephalothorax length. Nations with minimum size limits greater than 76 mm were encouraged to retain the larger minimum size limits because of the additional conservation and economic benefits they provide.

**Table 5.3.1.** Estimated status of national populations of Caribbean spiny lobster of participating countries. *Source:* WECAFC 2007).

Status of Stock	Countries
Under-exploited	Venezuela (some areas)
Fully-exploited or stable	Antigua & Barbuda, Belize, Costa Rica, Cuba, Mexico, Puerto Rico & U.S. Virgin Islands, Turks & Caicos, USA (Florida), Venezuela (some areas)
Over-exploited	Nicaragua, Jamaica, Dominican Republic, Brazil, Columbia, Honduras
Unknown	Bahamas, Guadeloupe, Haiti, Martinique, other Less Antilles countries



### 5.3.2. Global Commercial Production of Lobster & Caribbean Spiny Lobster

Since 1962, average annual global harvest of Caribbean spiny lobster has been less than such harvest for American and rock lobster (*Jasus* spp.). See Table 5.3.2. Annual global production of Caribbean spiny lobster averages about 54 percent of all spiny lobster production (*Panulirus* spp. and *Palinurus* spp.) and about 17 percent of global production of all lobster.

**Table 5.3.2.** Global Production of Lobster, including Caribbean Spiny Lobster (CSL), 1962 through 2003. *Source:* FAO Fishstats, reported landings.

Year	Metric Tons Landed							Total Lob	% CSL of Total Lob	% CLS of Spiny Lob
	CSL (Panulirus argus)	Spiny Lob (Panulirus & Palinurus).	Am Lob (Homarus americanus)	Eur Lob (Homarus gammanus)	Rock Lob. (Jasus)	Norway Lob (Nephrops norvegicus)	Other Lob			
1962	16,324	34,859	34,479	3,100	26,700	23,500	0	122,638	13.31%	46.83%
1963	15,426	33,591	33,833	2,600	25,600	27,700	0	123,324	12.51%	45.92%
1964	15,347	32,050	32,915	4,800	30,100	29,900	0	129,765	11.83%	47.88%
1965	18,658	35,876	32,119	2,500	30,400	28,300	0	129,195	14.44%	52.01%
1966	17,827	35,449	30,400	2,300	32,800	30,700	100	131,749	13.53%	50.29%
1967	16,502	34,506	28,029	2,300	28,900	31,100	100	124,935	13.21%	47.82%
1968	19,497	37,939	31,755	2,300	33,600	33,000	100	138,694	14.06%	51.39%
1969	25,239	42,979	33,513	2,000	26,200	37,600	100	142,392	17.73%	58.72%
1970	25,400	43,949	33,100	2,172	24,400	35,716	1,801	141,138	18.00%	57.79%
1971	24,500	44,445	32,600	2,307	20,856	37,574	1,702	139,484	17.56%	55.12%
1972	25,600	48,931	29,700	2,108	20,457	42,010	1,802	145,008	17.65%	52.32%
1973	25,500	47,016	29,200	1,915	20,062	42,025	1,602	141,820	17.98%	54.24%
1974	28,759	50,459	27,203	1,889	19,548	37,916	1,831	138,846	20.71%	56.99%
1975	26,184	49,866	31,185	1,864	17,044	41,293	1,855	143,107	18.30%	52.51%
1976	24,573	52,586	30,308	1,885	16,667	43,314	1,795	146,555	16.77%	46.73%
1977	24,449	49,755	32,215	1,950	16,823	44,666	3,315	148,724	16.44%	49.14%
1978	30,020	54,979	34,790	1,810	17,123	45,947	2,750	157,399	19.07%	54.60%
1979	32,855	58,778	38,447	1,739	17,459	45,625	2,491	164,539	19.97%	55.90%
1980	29,165	54,860	36,851	1,844	17,288	44,271	1,683	156,797	18.60%	53.16%
1981	29,353	52,845	38,703	1,844	18,863	47,193	2,143	161,591	18.16%	55.55%
1982	29,655	51,016	40,698	2,041	17,663	50,146	1,856	163,420	18.15%	58.13%
1983	28,704	52,820	47,707	2,287	17,501	54,008	1,230	175,553	16.35%	54.34%
1984	34,820	58,167	48,637	2,442	18,571	53,531	1,708	183,056	19.02%	59.86%
1985	36,994	62,128	53,574	2,229	18,971	61,724	2,220	200,846	18.42%	59.54%
1986	34,637	63,503	58,861	1,971	16,937	58,832	2,419	202,523	17.10%	54.54%
1987	33,303	61,380	60,095	2,285	17,650	60,826	2,821	205,057	16.24%	54.26%
1988	32,535	63,640	62,576	2,575	17,132	61,566	2,395	209,884	15.50%	51.12%
1989	34,340	65,886	67,964	2,916	12,176	56,699	3,014	208,655	16.46%	52.12%
1990	32,881	62,327	75,534	2,823	11,308	56,162	3,446	211,600	15.54%	52.76%
1991	40,240	66,666	77,222	2,527	9,119	57,708	3,244	216,486	18.59%	60.36%
1992	36,805	65,502	67,134	2,259	11,366	55,825	3,796	205,882	17.88%	56.19%
1993	36,206	62,439	66,552	2,276	11,418	59,238	4,695	206,618	17.52%	57.99%
1994	39,066	65,953	71,663	2,851	10,627	61,468	4,726	217,288	17.98%	59.23%

Appendix A. Spiny Lobster Fishery and Communities (Spiny Lobster Amendment 4 June 2008)

1995	39,833	65,359	70,631	2,981	11,266	63,774	5,863	219,874	18.12%	60.94%
1996	38,468	62,826	71,866	2,589	10,625	58,990	6,055	212,951	18.06%	61.23%
1997	36,756	69,990	78,146	3,219	12,582	61,596	7,848	233,381	15.75%	52.52%
1998	34,165	61,887	77,155	2,933	10,227	57,379	7,545	217,126	15.74%	55.21%
1999	38,098	66,051	83,105	3,285	10,396	61,770	3,995	228,602	16.67%	57.68%
2000	37,631	69,134	83,062	2,600	10,280	56,628	5,892	227,596	16.53%	54.43%
2001	31,863	62,144	83,803	2,781	9,944	56,317	6,760	221,749	14.37%	51.27%
2002	38,344	64,952	82,422	2,727	10,672	57,228	6,882	224,883	17.05%	59.03%
2003	33,327	64,545	83,682	2,801	10,741	55,210	7,095	224,074	14.87%	51.63%
Ave	29,758	54,382	51,510	2,443	17,811	48,238	2,873	177,257	16.71%	54.27%

According to the Food and Agriculture Organization of the United Nations (FAO), world capture of Caribbean spiny lobster has greatly increased from 1950 through 2005, starting at a low of 2,957 metric tons in 1950 to 35,540 metric tons in 2005 (<http://www.fao.org/fishery/species/3445>). Twice annual global production has exceeded 40,000 metric tons; and since 1984, annual global production has varied between 30,000 and 41,000 metric tons. See Figure 5.3.2.

Among the countries that harvested Caribbean spiny lobster from 1996 through 2005 and reported those landings to the FAO, the Bahamas had the largest average annual landings, followed by Cuba, Brazil, Nicaragua, and the United States. See Figure 5.3.3 and Table 5.3.3. U.S. imports of frozen spiny lobster represented an average of 87 percent of reported annual Caribbean spiny lobster landings from countries other than the U.S. and Cuba. See Figure 5.3.4.

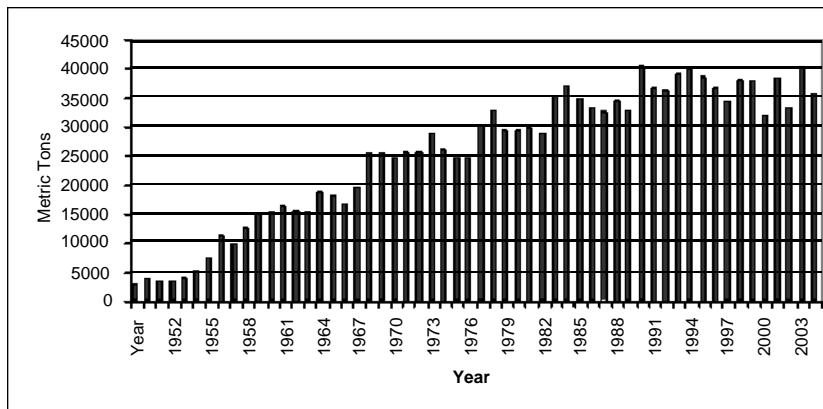


Figure 5.3.2. World Capture of Caribbean Spiny Lobster. Source: FAO Fishstats data.

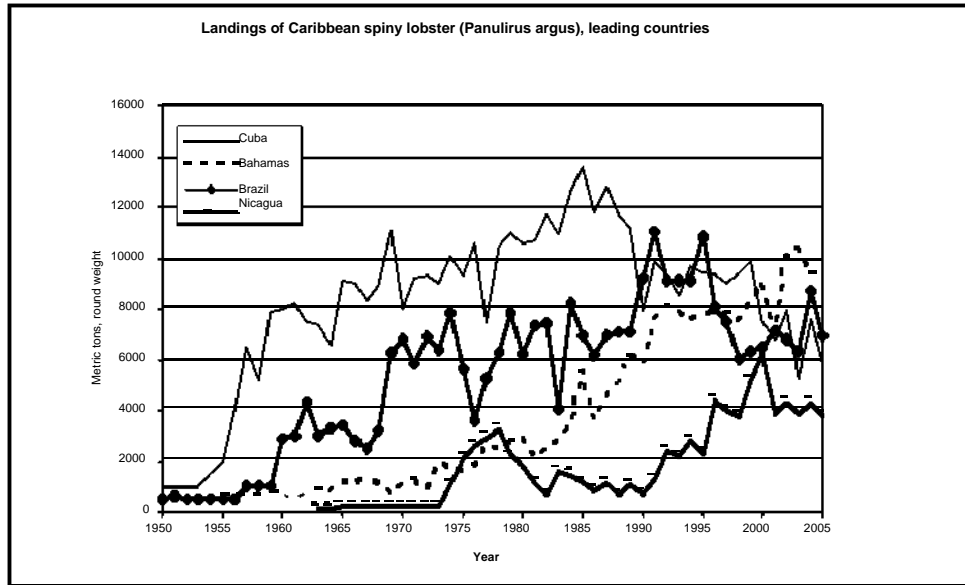


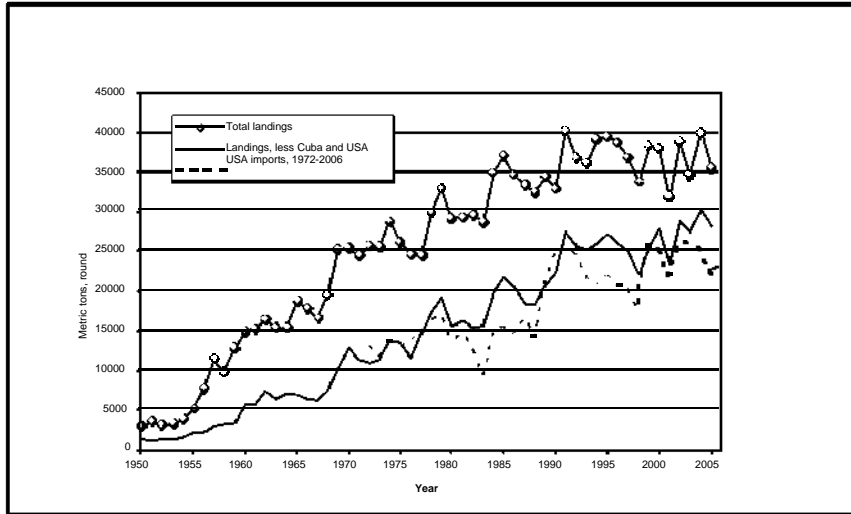
Figure 5.3.3. Top 4 Producers of Caribbean Spiny Lobster, 1950 – 2005. Source: FAO Fishstats.

Table 5.3.3. Reported Landings of Caribbean Spiny Lobster, Metric Tons, 1996 – 2005. \*\* Source: FAO Fishstats.

Country	10-yr Ave	% Total
Anguilla	60	0.16%
Antigua and Barbuda	254	0.69%
Bahamas	8,660	23.61%
Belize	496	1.35%
Bermuda	28	0.08%
Brazil	7,022	19.14%
British Virgin Islands	57	0.16%
Colombia	439	1.20%
Costa Rica	111	0.30%
Cuba	7,859	21.43%
Dominican Republic	1,089	2.97%
Grenada	31	0.08%
Haiti	499	1.36%
Honduras	1,054	2.87%
Jamaica	373	1.02%
Martinique	156	0.43%
Mexico	797	2.17%
Nicaragua	4,350	11.86%
Puerto Rico	183	0.50%
Saint Kitts and Nevis	25	0.07%
Trinidad and Tobago	7	0.02%
Turks and Caicos Is.	269	0.73%
USA	2,308	6.29%
US Virgin Islands	106	0.29%
Venezuela, Boliv Rep of	507	1.38%
Total	36,681	100.00%

\*\* Panama was among the countries that did not report its landings.

Total, excluding USA	34,373	
Total, ex. USA & Cuba	26,514	
U.S. imports froz spiny	22,982	86.68%



**Figure 5.3.4.** Global Landings of Caribbean Spiny Lobster and U.S. Imports of Frozen Spiny Lobster. Source: FAO Fishstats.

In 2003, the top five countries with landings of *Panulirus*, *Palinurus*, and *Janus* species were Australia (21.83 percent), The Bahamas (13.78 percent), which combined to produce approximately 35 percent of the world metric ton capture, Indonesia (8.80 percent), Brazil (8.27 percent), and Cuba (8.16 percent) (FAO Fishstats).

Five species of lobster are both commercially and recreationally harvested in U.S. waters. These species are: American lobster (*Homarus americanus*), California spiny lobster (*Panulirus interruptus*), Caribbean spiny lobster (*Panulirus argus*), banded or Hawaiian spiny lobster (*Panulirus marginatus*), and Spanish slipper lobster (*Scyllarides aequinoctialis*). The American lobster is a “true” lobster, whereas the others are members of the spiny/rock lobster group. In the southeast, spotted lobster<sup>††</sup> (*Panulirus guttatus*), ridged slipper lobster (*Scyllarides nodifer*), and smooth tail lobster (*Panulirus laevicauda*) are taken by recreational fishermen only. Since 2000, commercial landings of Hawaiian spiny lobster, which is also known as banded spiny lobster (*Panulirus marginatus*), have declined from 10,394 pounds in 2000 to 4,870 pounds in 2004.

All of the domestic catch of California spiny lobster is taken in California; however, most of the catch has been marketed in Asia and France because dealers from foreign markets have paid lobster fishers prices ranging from \$6.75 to \$8.00 per pound (California Department of Fish & Game, 2003; Cascorbi, 2004).<sup>‡‡</sup> However, since 2000, California

<sup>††</sup> *Panulirus guttatus* is also called a spotted spiny lobster, Guinea lobster, rock lobster, and spotted crawfish.

<sup>‡‡</sup> The species is also harvested along Mexico’s west coast; however, most of the catch occurs in California.

lobster fishers have attempted to reestablish domestic markets for California spiny lobster because of depressed overseas markets.

From 1962 through 2003, continental U.S. commercial landings of Caribbean spiny lobster have ranged from a low of 1,424 metric tons in 1962 to a high of 5,358 metric tons in 1972. See Table 4. Since 1992, an average of 2,626 metric tons has been landed in the continental U.S. annually. Puerto Rico had no reported commercial landings of Caribbean spiny lobster from 1962 through 1998 and the U.S. Virgin Islands had no such landings from 1962 through 1974. Prior to 1999, over 95 percent of commercial landings occurred in the contiguous U.S.; however, since 1999 landings in Puerto Rico have increased resulting in its productive share rising from zero up to a high of over 10 percent in 2001. See Table 5.3.4.

Commercial landings of Caribbean spiny lobster in the contiguous United States have been reported in Alabama, Georgia, Florida, Mississippi, South Carolina, and Texas since 1962; however, Florida dominates. In 35 of the 45 years from 1962 through 2006, Florida landings accounted for all of the annual commercial landings; and in each of the other 10 years, annual landings in Florida represented at least 94 percent of the total pounds commercially landed that year. This explains why the species is also called the Florida spiny lobster. See Table 5.3.5.

**Table 5.3.4.** U.S., U.S. Virgin Islands and P.R. Commercial Production of Caribbean Spiny Lobster, 1962 – 2003. *Source:* FAO Fishstats.

Year	Metric Tons			Pounds			% of Landings		
	US	USVI	PR	US	USVI	PR	US	USVI	PR
1962	1,424	0	0	3,139,383	0	0	100.00%	0.00%	0.00%
1963	1,626	0	0	3,584,717	0	0	100.00%	0.00%	0.00%
1964	1,647	0	0	3,631,014	0	0	100.00%	0.00%	0.00%
1965	2,608	0	0	5,749,657	0	0	100.00%	0.00%	0.00%
1966	2,427	0	0	5,350,620	0	0	100.00%	0.00%	0.00%
1967	2,002	0	0	4,413,655	0	0	100.00%	0.00%	0.00%
1968	3,247	0	0	7,158,411	0	0	100.00%	0.00%	0.00%
1969	3,839	0	0	8,463,548	0	0	100.00%	0.00%	0.00%
1970	460	0	0	1,014,266	0	0	100.00%	0.00%	0.00%
1971	3,900	0	0	8,598,030	0	0	100.00%	0.00%	0.00%
1972	5400	0	0	11,904,964	0	0	100.00%	0.00%	0.00%
1973	5100	0	0	11,243,577	0	0	100.00%	0.00%	0.00%
1974	4938	0	0	10,886,428	0	0	100.00%	0.00%	0.00%
1975	3363	22	0	7,414,147	48,502	0	99.35%	0.65%	0.00%
1976	2430	39	0	5,357,234	85,980	0	98.42%	1.58%	0.00%
1977	2318	59	0	5,110,316	130,073	0	97.52%	2.48%	0.00%
1978	2080	71	0	4,585,616	156,528	0	96.70%	3.30%	0.00%
1979	2699	74	0	5,950,277	163,142	0	97.33%	2.67%	0.00%
1980	2959	49	0	6,523,479	108,027	0	98.37%	1.63%	0.00%
1981	2463	42	0	5,429,986	92,594	0	98.32%	1.68%	0.00%
1982	2649	58	0	5,840,046	127,868	0	97.86%	2.14%	0.00%
1983	2053	29	0	4,526,091	63,934	0	98.61%	1.39%	0.00%
1984	2369	35	0	5,222,752	77,162	0	98.54%	1.46%	0.00%

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1985 1	667	35	0	3,675,107	77,162	0	97.94%	2.06%	0.00%
1986 2	362	54	0	5,207,320	119,050	0	97.76%	2.24%	0.00%
1987 2	169	30	0	4,781,827	66,139	0	98.64%	1.36%	0.00%
1988 2	438	48	0	5,374,871	105,822	0	98.07%	1.93%	0.00%
1989 2	438	57	0	5,374,871	125,664	0	97.72%	2.28%	0.00%
1990 2	606	60	0	5,745,248	132,277	0	97.75%	2.25%	0.00%
1991 2	878	74	0	6,344,905	163,142	0	97.49%	2.51%	0.00%
1992 1	792	70	0	3,950,684	154,324	0	96.24%	3.76%	0.00%
1993 2	548	70	0	5,617,379	154,324	0	97.33%	2.67%	0.00%
1994 3	420	70	0	7,539,811	154,324	0	97.99%	2.01%	0.00%
1995 2	934	80	0	6,468,364	176,370	0	97.35%	2.65%	0.00%
1996 3	373	80	0	7,436,193	176,370	0	97.68%	2.32%	0.00%
1997 2	783	80	0	6,135,466	176,370	0	97.21%	2.79%	0.00%
1998 2	343	90	0	5,165,432	198,416	0	96.30%	3.70%	0.00%
1999 2	749	94	209	6,060,509	207,235	460,766	90.07%	3.08%	6.85%
2000 2	571	100	212	5,668,086	220,462	467,380	89.18%	3.47%	7.35%
2001 1	527	110	190	3,366,459	242,509	418,878	83.58%	6.02%	10.40%
2002 2	047	120	158	4,512,863	264,555	348,330	88.04%	5.16%	6.80%
2003 1	887	130	196	4,160,124	286,601	432,106	85.27%	5.87%	8.86%

**Table 5.3.5.** Commercial Landings of Caribbean Spiny Lobster, 1962 – 2006, in Pounds. *Source:* NMFS Accumulated Landings System.

Year	Pounds Landed by State						TOTAL
	FL	GA	MS	AL	SC	TX	
1962	3,107,000	32,200	0	0	0	0	3,139,200
1963	3,585,200	0	0	0	0	0	3,585,200
1964	3,631,100	0	0	0	0	0	3,631,100
1965	5,714,100	35,000	0	0	0	0	5,749,100
1966	5,350,200	0	0	0	0	0	5,350,200
1967	4,413,600	0	0	0	0	0	4,413,600
1968	6,154,900	1,004,200	0	0	0	0	7,159,100
1969	7,581,200	882,200	0	0	0	0	8,463,400
1970 9	869,500	0	212,700	0	33,000	0	1,115,200
1971 8	206,000	0	373,500	132,600	0	0	712,100
1972 11	416,800	0	191,000	39,000	165,100	0	1,111,900
1973 11	171,700	0	21,000	1,500	0	0	119,200
1974 10	882,600	0	0	800	0	0	1,083,400
1975 7	408,400	0	0	100	0	0	740,500
1976	5,345,600	0	0	0	0	0	5,345,600
1977	6,344,100	0	0	0	0	0	6,344,100
1978	5,601,903	0	0	0	0	0	5,601,903
1979	7,828,269	0	0	0	0	0	7,828,269
1980	6,694,842	0	0	0	0	0	6,694,842
1981	5,894,005	0	0	0	0	0	5,894,005
1982	6,496,804	0	0	0	0	0	6,496,804
1983	4,317,000	0	0	0	0	0	4,317,000
1984	6,251,917	0	0	0	0	0	6,251,917



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1985	5,739,393	0	0	0	0	0	5,739,393
1986	5,006,704	0	0	0	0	0	5,006,704
1987	6,082,439	0	0	1,141	0	67,608	6,083,647
1988	6,308,430	0	0	0	0	0	6,308,430
1989	7,673,159	0	0	0	0	0	7,673,159
1990	5,986,170	0	0	0	0	0	5,986,170
1991	7,022,809	0	0	0	0	0	7,022,809
1992	4,486,421	0	0	0	0	0	4,486,421
1993	5,378,807	0	0	0	0	0	5,378,807
1994	7,104,204	0	0	0	0	0	7,104,204
1995	7,023,938	0	0	0	0	0	7,023,938
1996	7,868,547	0	0	0	0	0	7,868,547
1997	7,107,518	0	0	0	0	0	7,107,518
1998	5,829,132	0	0	0	0	0	5,829,132
1999	7,529,605	0	0	0	0	0	7,529,605
2000	5,772,670	0	0	0	0	0	5,772,670
2001	3,411,253	0	0	0	0	0	3,411,253
2002	4,484,598	0	0	0	0	0	4,484,598
2003	4,269,831	0	0	0	0	0	4,269,831
2004	5,006,383	0	0	0	0	0	5,006,383
2005	3,369,856	0	0	0	0	0	3,369,856
2006	4,773,995	0	0	0	0	0	4,773,995

The commercial value of a Caribbean spiny lobster is found entirely in its tail. As such, most international trade of the species has been in frozen lobster tails. However, whole cooked frozen lobsters, live lobsters, and meat are traded as well. Although there is a small live market in the U.S., most is sold as frozen tails. Spiny lobsters imported into the U.S. that originate from the Caribbean basin are typically tailed, sorted by weight, packed in 10-pound boxes, and shipped frozen to the U.S. for consumption. Size is the critical element in the pricing of lobster tails. Caribbean lobster tails are sorted by the industry into the following sizes: 4 oz, 5 oz, 6 oz, 7 oz, 8 oz, 9 oz, 10 oz, 11 oz, 12 – 14 oz, 14 – 16 oz, 16 – 20 oz, and 20 – 24 oz. A 5-oz tail weighs from 4.5 to 5.4 oz, while a 6-oz tail weighs from 5.9 to 6.4 oz.

The Harmonized Commodity Description and Code System (HS) defines rock lobster as lobster within the family *Palinuridae*, which includes *Jasus* species (spp.), *Justitia* spp., *Linuparus* spp., *Palinurus* spp., *Palinustus* spp., *Panulirus* spp., *Projasus* spp., and *Puerulus* spp. The experiences of NOAA law enforcement officers suggest that boxes of frozen lobster that originate from the Caribbean basin are almost exclusively Caribbean spiny lobster (*Panulirus argus*) tails, with the exception being boxes from shipped from Brazil. Brazil also exports Brazilian spiny lobster (*Panulirus lauviceuda*), and some shipments have contained both Caribbean and Brazilian spiny lobsters. The Government of Brazil is acting to implement a rule that would not allow the two species to be exported in the same box.

Caribbean spiny lobster, Cape rock lobster (*Jasus lalandii*) and Australian spiny lobster (*Panulirus cygnus*) make up most, but not all, of the spiny and rock lobster found on the

U.S. mainland market. California spiny lobster makes up about 2 percent of U.S. landings of spiny lobster. From 1997 through 2006 imports of spiny lobster have comprised more than 90 percent of U.S. supply. See Table 5.3.6.

**Table 5.3.6.** U.S. Supply of Spiny Lobsters, 1997 – 2006. *Source:* Fisheries of the United States 2006.

Year	U.S. Commercial Landings, in lbs	Imports(1), in lbs	Total, in lbs	Exports(2), in lbs	Total Supply, in lbs	Imports as % Supply	Net Imports, in lbs
Round weight							
1997	7,240,000	74,120,000	81,360,000	5,842,000	75,518,000	91.10%	68,278,000
1998	5,935,000	95,801,000	101,736,000	1,802,000	99,934,000	94.17%	93,999,000
1999	6,692,000	86,240,000	92,932,000	2,346,000	90,586,000	92.80%	83,894,000
2000	6,463,000	94,433,000	100,896,000	1,571,000	99,325,000	93.59%	92,862,000
2001	4,082,000	76,667,000	80,749,000	2,158,000	78,591,000	94.94%	74,509,000
2002	5,188,000	86,923,000	92,111,000	4,890,000	87,221,000	94.37%	82,033,000
2003	4,863,000	94,423,000	99,286,000	6,047,000	93,239,000	95.10%	88,376,000
2004	5,938,000	94,720,000	100,658,000	7,506,000	93,152,000	94.10%	87,214,000
2005	4,144,000	86,987,000	91,131,000	7,766,000	83,365,000	95.45%	79,221,000
2006	5,605,000	85,752,000	91,357,000	14,670,000	76,687,000	93.86%	71,082,000

From 2002 through 2007, total U.S. imports of frozen rock lobster and other sea crawfish (*Palinurus* spp., *Panulirus* spp. and *Jasus* spp.) averaged 12,374.2 metric tons with a value of about \$355.5 million, annually.<sup>§§</sup> The top 5 countries of origin of those imports by volume (metric tons) are Brazil, The Bahamas, Australia, Honduras and Nicaragua, who collectively represent about 68 percent of the total volume of those imports. See Table 5.3.7. Those same countries account for about 78 percent of the total dollar value of those imports. Of the top 10 countries of origin by volume of frozen rock lobster and other sea crawfish imports, 6 of those countries (Brazil, The Bahamas, Honduras, Nicaragua, Columbia and Belize) export Caribbean spiny lobster to the U.S.

Rock lobster and other sea crawfish are also imported not frozen; however, frozen imports dominate. From 2002 through 2007, U.S. imports of not frozen rock lobster (HS 0036210000) averaged 164 metric tons with a value of \$2.9 million annually, as compared with about 12,372 metric tons with a value of \$355.5 million for frozen. The top five countries of origin during those years by volume were Mexico (122 metric tons), Australia (10 metric tons), Peoples Republic of China (5.5 metric tons), Taiwan (4.6 metric tons), and the United Kingdom (3.3 metric tons). Mexico is exporting increasing numbers of live Caribbean spiny lobster, and it is assumed that the bulk of its exports of not frozen rock lobster are these live specimens.

§§ Harmonized import code HS 03 includes fish, crustaceans, mollusks, and aquatic invertebrates. HS

0306 includes crustaceans only. HS 030611000 includes rock lobster and other sea crawfish, frozen. HS 0306210000 includes rock lobster and other sea crawfish, not frozen.

**Table 5.3.7.** Top 20 Countries of Origin for Imports of Frozen Rock Lobster and Other Sea Crawfish (HS 0036110000), 6-Year Average, 2002 – 2007. Source: U.S. Customs Data.

Trading Partner	MT	% Total	Combined %	1000s \$	% Value	Combined %
BRAZIL	2,926.6	23.65%	23.65%	75,739	21.30%	21.30%
BAHAMAS, THE	1,518.1	12.27%	35.92%	50,135	14.10%	35.41%
AUSTRALIA(*)	1,492.6	12.06%	47.99%	64,635	18.18%	53.59%
HONDURAS	1,281.4	10.36%	58.34%	42,124	11.85%	65.44%
NICARAGUA	1,239.2	10.02%	68.36%	39,101	11.00%	76.44%
CHINA, PEOPLES REPUB	626.6	5.06%	73.42%	3,741	1.05%	77.49%
SOUTH AFRICA, REPUB	520.6	4.21%	77.63%	16,250	4.57%	82.06%
UNITED ARAB EMIRATES	484.0	3.91%	81.54%	10,374	2.92%	84.98%
COLOMBIA	320.2	2.59%	84.13%	8,700	2.45%	87.43%
BELIZE	222.3	1.80%	85.93%	7,488	2.11%	89.53%
MEXICO	194.1	1.57%	87.50%	6,039	1.70%	91.23%
OMAN	190.8	1.54%	89.04%	4,329	1.22%	92.45%
THAILAND	184.9	1.49%	90.53%	2,486	0.70%	93.15%
TAIWAN	133.0	1.07%	91.61%	1,771	0.50%	93.65%
PANAMA	131.7	1.06%	92.67%	2,615	0.74%	94.38%
NEW ZEALAND(*)	118.5	0.96%	93.63%	3,175	0.89%	95.27%
JAMAICA	113.3	0.92%	94.55%	3,496	0.98%	96.26%
DOMINICAN REPUBLIC	85.5	0.69%	95.24%	1,803	0.51%	96.76%
CHILE	67.7	0.55%	95.78%	979	0.28%	97.04%
SPAIN	66.1	0.53%	96.32%	494	0.14%	97.18%

\*: denotes a country that is a summarization of its component countries. Australia(\*) includes Australia, Christmas Island, Cocos (Keeling) Island, Heard Island and McDon, and Norfolk Island. New Zealand(\*) includes Cook Islands, New Zealand, Niue, and Tokelau.

### 5.3.3 Federal Management of Caribbean Spiny Lobster under the MSA

The Caribbean spiny lobster in the U.S. Exclusive Economic Zone (EEZ) of the Atlantic Ocean and Gulf of Mexico is jointly managed by the South Atlantic and Gulf of Mexico Fishery Management Councils through the Fishery Management Plan for Spiny Lobster (Spiny Lobster FMP) in the Gulf of Mexico and South Atlantic. In the U.S. EEZ of the Caribbean Sea surrounding Puerto Rico and the U.S. Virgin Islands, the resource is managed by the Caribbean Fishery Management Council (Caribbean FMC) through its Spiny Lobster FMP. In the Gulf and South Atlantic, the commercial fishery and, to a large extent, the recreational fishery occurs off South Florida, primarily in the Florida Keys. In order to streamline a management process that involves both state and federal jurisdictions, the Gulf and South Atlantic Spiny Lobster FMP basically extends the Florida Fish and Wildlife Commission's rules regulating the state fishery to the southeastern U.S. EEZ from North Carolina to Texas.

The Gulf and South Atlantic Spiny Lobster FMP was implemented on July 26, 1982 (47 *Federal Register (FR)* 29203). The FMP, for the most part, extended Florida's rules of regulating the fishery to the EEZ throughout the range of the fishery; and since 1982, it has been amended seven times.



The Gulf and South Atlantic Spiny Lobster FMP was first amended on July 15, 1987 (52 *FR* 22659) with certain rules deferred and implemented on May 11, 1998 (53 *FR* 17196) and on July 30, 1990 (55 *FR* 26448). This amendment (Amendment 1) updated the rules to be more compatible with Florida law. Amendment 1 required a commercial permit, limited possession of undersized lobsters as attractants, required a live well, modified recreational possession and seasonal regulations, modified closed season regulations, required the immediate release of egg-bearing lobsters, modified the minimum size limit, required a permit to separate the tail at sea and prohibited possession or stripping of egg-bearing slipper lobsters.

Amendment 2 was approved on October 27, 1989 (54 *FR* 48059) and provided a regulatory amendment procedure for instituting future compatible state and federal rules without amending the Spiny Lobster FMP to ensure federal-state compatibility. Amendment 2 modified the problems/issues and objectives of the FMP, modified the statement of optimum yield, established a protocol and procedure for an enhanced cooperative management system, and added to the vessel safety and habitat sections of the FMP.

Amendment 3 was implemented on March 25, 1991 (56 *FR* 12357) and contained provisions for adding a scientifically measurable definition of overfishing; an action plan to prevent overfishing, should it occur, as required by the National Standards of the Magnuson-Stevens Fisheries Conservation and Management Act (50 *CFR* Part 600); and the requirement for collection of fees for the administrative cost of issuing permits.

The first Regulatory Amendment to the Spiny Lobster FMP was implemented on December 30, 1992 (Regulatory Amendment 1). Regulatory Amendment 1 addressed: 1) the extension of the Florida spiny lobster trap certificate system for reducing the number of traps in federal waters off Florida, 2) the revision of the FMP's commercial permitting requirements, 3) the limitation of the number of live undersize lobster used as attractants for baiting traps, 4) the specification of gear allowed for commercial fishing in the U.S. EEZ off Florida, 5) the specification of the possession limit of spiny lobsters by persons diving at night, 6) the requirement of lobsters harvested by divers to be measured without removing from the water, and 7) the specification of uniform trap and buoy numbers for federal waters off Florida. All of these changes were implemented through the framework procedure of the FMP as established by Amendment 2.

The second Regulatory Amendment (Regulatory Amendment 2) was approved in March 1993 and implemented in August 1993 (58 *FR* 38978). Regulatory Amendment 2 addressed: 1) a change in the days for the special recreational season in federal waters off Florida, 2) a prohibition on night-time harvest off Monroe County, Florida, during that season, 3) specifies allowable gear during that season, and 4) provides for different bag limits during that season off the Florida Keys and federal waters off other areas of Florida.



Amendment 4 was implemented on September 13, 1995 (60 *FR* 41828). It provided a bag limit of 2 lobsters per day for all fishers in federal waters off North Carolina, South Carolina, and Georgia (50 *CFR* §640.23).

Amendment 5 of the Spiny Lobster FMP was part of the Comprehensive Amendment Addressing Essential Fish Habitat in Fishery Management Plans of the South Atlantic Region, which the National Marine Fisheries Service (NMFS) approved on June 3, 1999. Amendment 6 was part of the Comprehensive Amendment Addressing Sustainable Fishery Act Definitions and Other Required Provisions in FMPs of the South Atlantic Region. NMFS approved the Comprehensive Amendment in October 1998 and it was implemented on December 2, 1999 (64 *FR* 59126). Similarly, the Gulf of Mexico Fishery Management Council developed Generic Amendments to address Essential Fish Habitat and Sustainable Fishery Act. The former described the distribution and relative abundance of juvenile and adult spiny lobster for offshore, near-shore, and estuarine habitats of the Gulf; and the latter updated the description of the spiny lobster fisheries and provided fishing community assessment information for Monroe County, Florida.

Amendment 7 was implemented under a Generic Amendment that created the two Tortugas Marine Reserves: Tortugas North (120 square nautical miles) and Tortugas South (60 square nautical miles). This amendment prohibits fishing for or possession of spiny lobster in either of the two reserves. It was implemented on July 19, 2002 (67 *FR* 47467).

Currently, harvest or possession of spiny lobsters in the U.S. South Atlantic EEZ is regulated in 50 *CFR* 640. According to 50 *CFR* 640.4, anyone who sells, trades, or barter or attempts to sell, trade, or barter spiny lobster that was harvested or possessed in the EEZ off Florida, or harvested in the EEZ other than off Florida and landed in Florida must have licenses and certificates specified to be a commercial harvester, as defined in Rule 46-24.002(a), Florida Administrative Code. Similarly, any person who sells, trades, or barter or attempts to sell, trade, or barter a Caribbean spiny lobster harvest in the U.S. EEZ other than off Florida, a Federal vessel permit must be issued and on board the harvesting vessel (50 *CFR* §640.4(a)(1)(ii)).

The commercial and recreational fishing season for spiny lobster in the EEZ off Florida and the EEZ off the Gulf States, other than Florida, begins on August 6 and ends on March 31 (50 *CFR* §640.20(b)). No person may possess a Caribbean spiny lobster in or from the Gulf and South Atlantic EEZ with a carapace length of 3.0 inches (7.62 cm) or less or a separated tail with a length less than 5.5 inches (13.97 cm) (50 *CFR* §640.21(b)). Current regulation prohibits the possession of a spiny lobster or parts thereof in or from the Gulf and South Atlantic EEZ from which the eggs, swimmerettes or pleopods have been removed (50 *CFR* §640.21(a)); and requires any berried spiny lobster to be returned immediately to the water (50 *CFR* §640.7(g)).

The Caribbean Fishery Management Council manages the Caribbean spiny lobster fishery in the U.S. Caribbean EEZ and territorial seas of Puerto Rico and the U.S. Virgin Islands through the FMP for the Spiny Lobster Fishery of Puerto Rico and the U.S.





Virgin Islands. The Caribbean Spiny Lobster FMP was implemented in 1985. The associated regulations include that no person may possess a Caribbean spiny lobster in or from the Caribbean EEZ with a carapace length less than 3.5 inches (8.9 cm) (50 CFR §622.37(b)).

On July 26, 2007, a Notice of Intent was published in the *Federal Register* (72 FR 41063) announcing the Caribbean Fishery Management Council's intent to prepare a draft environmental impact statement to describe and analyze management alternatives to be included in an amendment to its Spiny Lobster FMP and the Gulf and South Atlantic Spiny Lobster FMP. The Caribbean, Gulf and South Atlantic Fishery Management Councils have expressed concern about the effects of imports of spiny lobster that are smaller than the size limits in the U.S. spiny lobster FMPs. In many instances, imports are also undersized based on size limits established in the country of origin. The Caribbean FMC has expressed intent to amend its Spiny Lobster FMP of a minimum size limit on imported spiny lobster. NOAA Fisheries believes amendment of the Gulf and South Atlantic Spiny Lobster FMP should be addressed concurrently.

### **5.3.4 Other Federal Laws and Regulations that Protect Spiny Lobster**

#### **Lacey Act**

The Lacey Act, as amended in 1981 (16 USC §§ 3372 et seq.) prohibits any person from importing, exporting, transporting, selling, receiving, acquiring, or purchasing in interstate or foreign commerce any fish or wildlife taken, possesses, transported, or sold in violation of any law or regulation of any state or in violation of any foreign law. For example, it is a violation of the Lacey Act to import Caribbean spiny lobster that is in violation of the exporting country's minimum harvest-size standard. Many of the countries that harvest Caribbean spiny lobster have minimum harvest size standards. See Table 5.3.8.

NOAA's Office of Law Enforcement, Southeast Region, has made several significant Lacey Act cases against individuals involved in importing undersized lobsters from Honduras, Nicaragua, The Bahamas, and Brazil.

In July 2003, a Miami man pleaded guilty to importing more than \$2.8 million worth of undersized spiny lobster from Nicaragua. The man and others illegally shipped into the U.S. about 190,000 pounds of frozen spiny lobsters below Nicaragua's minimum legal size of 5 ounces (Associated Press July 3, 2003).



Appendix A. Spiny Lobster Fishery and Communities (Spiny Lobster Amendment 4 June 2008)

**Table 5.3.8.** Minimum Size Restrictions of Caribbean Spiny Lobster for Harvesting Countries. *Source:* FAO.

Country	Carapace Length	Tail Length	Tail Weight	Total Weight	Total Length	CRFM Member	% 2003 World Harvest	Agreed to 74 mm (2.91 in.) cephalothorax length*
Anguilla	95 mm					Yes	0.18	
Antigua and Barbuda						Yes	0.73	
Bahamas	82.5 mm <sup>a</sup>	5.5 in. or 139.7 mm				Yes	31.14	Yes
Barbados						Yes	0.00	
Belize	76.2 mm or 3 in.	113 mm <sup>a</sup>	4 oz.			Yes	1.63	Yes
Bermuda	3 5/8 in. or 92 mm		12 oz. or 340 g			No	0.09	
Brazil	75 mm <sup>a</sup>	130 mm <sup>a</sup>					16.02	Yes
British Virgin Islands	3.5 in.			1 lb.		Yes	0.01	
Columbia-San Andres	80.1 mm <sup>a,c</sup> 140 mm <sup>a</sup>					No	0.8	Yes
Columbia-Guajira	68.9 mm <sup>a</sup>	210 mm <sup>a</sup>		385 g <sup>a</sup>		No		
Costa Rica						No	0.08	Yes
Cayman						No	0.00	
Cuba	69 mm <sup>a</sup>	150 mm <sup>a</sup>			210 mm <sup>a</sup>		15.80	Yes
Dominica						Yes	0.00	
Dominican Republic	80.5 mm <sup>a</sup>	120 mm <sup>a,b</sup>			240 mm <sup>a</sup> No		2.41	Yes
Grenada	3.7 in.					Yes	0.08	
Guadaleupe						No	0.00	
Gautemala						No	0.00	
Guyana						Yes	0.00	
Haiti						Yes	0.60	Yes
Honduras	80.1 mm <sup>a</sup>	145 mm <sup>a</sup> 142 g <sup>a</sup>				No	3.06	Yes
Jamaica	7.62 cm or 3 in.					Yes	1.50	Yes
Martinique						No	0.57	Yes
Mexico	74.6 mm <sup>a</sup>	135 mm <sup>a</sup>			223 mm <sup>a</sup> No		3.15	Yes
Monserrat						Yes	0.00	
Nicaragua	75 mm <sup>a</sup>	135 mm <sup>a</sup> 142 g <sup>a</sup>			230 mm <sup>a</sup> No		11.56	Yes
Panama						No	0.00	
Puerto Rico	3.5 in.					No	0.59	Yes
St. Kitts & Nevis	9.5 cm or 3.75 in.					Yes	0.03	
St. Lucia	95 <sup>a</sup>		340 g <sup>a</sup>			Yes	0.00	
Saint Vincent and the Grenadines	95 mm or 3.5 in.			1.5 lb.	9 in.	Yes	0.00	
Turks and Caicos	3.57 in. or 83 mm		7 oz. or 142 g			Yes	0.74	Yes
Trinidad and Tobago						Yes	0.01	
USA (Florida)	3 in. or 76 mm	5.5 in.				No	5.66	Yes
U.S. Virgin Islands	3.5 in.					No	0.39	Yes
Venezuela	120 mm <sup>a</sup>			900 - 1,000 g <sup>a</sup>		No	3.18	Yes

a: FAO Fisheries Report No. 715, page 257.

b: Without telson.

c: Converted from another measurement.

\*: At the September 2006 Regional Workshop on the Assessment and Management of Caribbean Spiny Lobster of the Working Group on Caribbean spiny lobster of the WECAFC.

In December 2003, a Norfolk, Virginia-based seafood company and its vice president pleaded guilty in federal court in Miami to conspiracy to import more than \$2 million worth of undersized spiny lobster from Nicaragua to the United States. The company purposely mislabeled boxes of frozen undersized lobster to conceal that the boxes held 2-, 3-, and 4-ounce tails, all of which were below Nicaragua's legal 5-ounce limit for lobster processing and trade (South Florida Business Journal, December 15, 2003).

In May 2006, Winn-Dixie, Inc. pleaded guilty to illegal possession, transportation, and sale of undersized Caribbean spiny lobster contrary to Florida laws and regulations and the Lacey Act. On October 29, 2002, Winn-Dixie received a shipment at one of its Florida facilities of about 6,000 pounds of Caribbean spiny lobster imported from Brazil that it purchased through a broker in Illinois. It was determined that about 4,600 pounds of lobster tail failed to meet Florida and Brazil size standards (States News Service; May 22, 2006).

### **Florida Keys National Marine Sanctuary and Protection Act**

In November 1990, Congress passed the Florida Keys National Marine Sanctuary and Protection Act that established the Florida Keys National Marine Sanctuary (FKNMS) (Pub.L 101-605).\*\*\* The FKNMS is comprised of 9,660 square kilometers (about 2,900 square nautical miles) of coastal waters off the Florida Keys. It extends approximately 220 miles southwest of the southern tip of the Florida peninsula and includes the world's third largest coral barrier reef. Within the Sanctuary are 24 no-take zones. Fifty-eight percent of the Sanctuary resides in Florida waters and 48 percent is in federal waters. Both NOAA and the State of Florida manage the Sanctuary. The waters of the FKNMS are within the jurisdiction of both the South Atlantic and Gulf of Mexico fishery management councils.

### **Biscayne Bay National Park**

Originally established as a national monument by Congress in 1968, Biscayne Bay National Park was re-designated as a national park in 1980. The Park's purpose is to preserve and protect its rare combination of terrestrial and aquatic natural resources. The Park includes approximately 173,000 acres in Miami-Dade County, and is about 22 miles long. The park extends from shore about 14 miles to the 60-foot contour and contains about 72,000 acres of coral reefs. Under existing Supervisor's rules for the Park, several areas are closed year-round to public entry to protect sensitive resources and wildlife. This also means not taking Caribbean spiny lobster in those areas.

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\*\*\* The National Marine Sanctuary System was created in 1972. Two areas in the Florida Keys were designated as sanctuaries, the first in 1975 and the second in 1981. These areas were included in the Florida Keys National Marine Sanctuary in November 1990.



### **Buck Island Reef National Monument**

Buck Island Reef National Monument (Buck Island NM) in St. Croix was established in 1961 and expanded more than twenty times in size in 2001, from 880 acres to over 19,000 acres. Its area is mostly underwater and it encompasses 7 percent of the shelf around St. Croix. Federal regulation prohibits the harvest or collection of Caribbean spiny lobster within the boundaries of the national monument (36 CFR § 7.73(a)). Virgin Islands Coral Reef National Monument (Virgin Islands NM) in St. John was established in 2001 and its area encompasses 3 percent of the St. John/St. Thomas shelf. Harvest or collection of Caribbean spiny lobster is prohibited (36 CFR § 7.46(a)). The National Park Service manages both of these national monuments.

### **Virgin Islands National Park**

Virgin Islands National Park on St. John was established by Congress in 1956 and today is managed by the National Park Service. It comprises more than half of the island of St. John and almost 9 square miles of water surrounding the island. Virgin Islands National Park attracts almost one million visitors a year, most of them arriving on cruise ships or smaller boats. Caribbean spiny lobster may be taken by hand or hand held hook within the park (36 CFR § 7.74(e)(3)).

### **Dry Tortugas National Park**

The Dry Tortugas National Park was established by Congress in 1992 (Public Law 102-525). Possession of Caribbean spiny lobster is prohibited within boundaries of the park unless the individual took the lobster outside the park waters and the person in possession has proper State/Federal licenses and permits (36 CFR § 7.27(b)(4)(i)). The presence of lobster aboard a vessel in park waters, while one or more persons from such vessel are overboard constitutes prima facie evidence that the lobsters were harvested from park waters in violation of the above regulation.

### **Past Federal Actions**

Indirect, but related, past federal actions that greatly affected the Caribbean spiny lobster fishery were the Migration and Refugee Assistance Act of 1962 and Cuban Refugee Adjustment Act of 1966. The Migration and Refugee Assistance Act authorized assistance to or in behalf of refugees in the United States, which included business loans. The Cuban Refugee Adjustment Act adjusted the status of Cuban refugees to that of lawful permanent residents, which enabled them to acquire commercial fishing vessels.<sup>†††</sup> According to Moe (1991), many of the 300,000 Cubans who fled Cuba used those government loans to obtain boats to fish lobster in Bahamian waters.<sup>†††</sup> When Bahamian

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<sup>†††</sup> As of August 1, 1966, there were 165,000 refugees from Cuba in the U.S. without legal permanent resident status (Immigration Information, vol. 19, Interim Decision #3069).

<sup>†††</sup> The Bartlett Act of 1964 excluded foreign fishing vessels from fishing within the United States's territorial sea, which was defined as all ocean waters within 3 miles from the coast of the United States, its territories and possessions and the Commonwealth of Puerto Rico" (Public Law 88-308). Two years later



waters were closed to U.S. fishermen, those lobster fishermen moved their operations into U.S. waters.

### **5.3.5 State & Territory Spiny Lobster Laws and Fisheries Histories**

#### **5.3.5.1 Florida**

Up until the twentieth century, landings of spiny lobster were low because the fishery was largely a bait fishery that supported Florida's finfish industry (Labisky et al., 1980).<sup>§§§</sup> However, at the turn of the century a spiny lobster commercial fishery began to develop due to the construction of the Overseas Railroad in 1912, which allowed dealers to ship spiny lobsters to northern hotels and restaurants (ibid., p. 30). The first legislation enacted by the State of Florida (State) to conserve the supply of spiny lobster in response to the growing commercial retail trade was in 1919 when it implemented a seasonal closure from March 1 to June 1, but which allowed the taking of lobster for research, fish bait, or propagation throughout the year. Two years later the closed season was changed to March 21 to June 21.

In the nineteenth century and up until the early twentieth century, spiny lobsters were typically harvested in shallow waters of Key West with cast nets, gill nets, haul seines, and grains (Labisky et al., 1980). Continuous increases in commercial demand in the early 1900s, however, stimulated expansion of the fishery so that by 1922 the primary fishing grounds extended from the shallow waters surrounding Key West to a "25-mile linear zone that encompassed the southern shores of the lower Florida Keys and the shallow Atlantic reef area both east and west of Key West" (Labisky et al., 1980). The expansion of the fishery into deeper waters necessitated gear changes from cast nets, gill nets, haul seines and grains to increasing use of bully nets and wire traps.

From 1925-26 to 1927-28 total landings increased from 88,000 pounds to 873,000 pounds, an almost 900 percent increase. The State amended its lobster regulations in 1929 to increase the length of the closed season from three to four months (March 21 to July 21) and set, for the first time, a minimum legal size limit, which was one pound (Labisky *et al.*, 1980; Prochaska and Baarda, 1975).

Despite declines in landings and prices per pound during the 1930s, the development of deep-freeze processing techniques enabled further expansion of the commercial retail market for spiny lobster in the 1940s. From 1940 to 1949 total commercial landings increased from 0.4 million pounds to 3.58 million pounds and price per pound increased from \$0.07 to \$0.22. By the 1940s, the most popular commercial fishing gears were wooden slat-traps, bully nets, and ice-can traps in that order. Slat-traps were used primarily in deeper waters "associated with the offshore reef on the Atlantic side of the Keys; bully nets were used in the shallow waters of Florida Bay; and ... ice cans were used in shallow inshore waters" (Labisky *et al.*, 1980, p. 33). Traps were still pulled by

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Congress passed the Contiguous Fisheries Zone Act (Public Law 89-658), which created a 9-mile contiguous zone extending out from the 3-mile limit from which foreign fishing vessels would be excluded.  
§§§ According to Moe (1991, p. 39), spiny lobsters are "excellent bait for large snapper and grouper".





hand, however, which limited their numbers and use in deep waters (Moe, 1991). Also in the 1940s, there was an increase in imports of spiny lobster tails from the Caribbean, South Africa, and Australia (Labisky *et al.*, 1980).

The south Florida spiny lobster fishery continued to grow in the 1950s. From 1952 to 1959 the number of boats/vessels in the fishery expanded from 102 to 254; the price per pound increased from \$0.18 per pound in 1950 to \$0.30 per pound in 1959; the number of traps increased from 17,000 in 1951 to approximately 52,000 in 1959; and commercial landings increased from 1.56 million pounds in 1950 to 3.18 million pounds in 1959.<sup>\*\*\*\*</sup> With that growth came more State action to protect the supply of spiny lobster. In 1953, the Florida Legislature changed the timing of the closed season from the period of March 21 to July 21 to the period of April 15 to August 15, and redefined the legal size limit from one pound to a minimum tail size of 6 inches; however, in 1955, it reestablished the closed season from March 31 to August 1 (Labisky *et al.*, 1980). In 1954, the State began to require lobster permits and fishers to report the number of traps fished (Florida Marine Fisheries Commission, December 5, 1991).

Moe (1991) notes three developments in the 1950s that had a significant impact on the spiny lobster fishery. First, the development of skin and SCUBA diving, especially around the Florida Keys, provided easy opportunities to hunt lobster with spear guns, which was legal at that time. Second, the development of hydraulic systems to haul traps eventually eliminated pulling traps in by hand. Third, lobster fishers began to keep 2 or 3 undersized lobsters, known as “shorts”, in traps as attractants because the use of shorts increased catches significantly.<sup>††††</sup> In a short period of time, “every fisherman used shorts whenever possible as well as the standard cowhide bait” (Moe, 1991, p. 385.).

According to Labisky *et al.*, the south Florida spiny lobster fishery radically changed in the 1960s with the influx of thousands of Cubans into the country. Many of the approximately 300,000 Cuban immigrants obtained U.S. government loans and bought boats to fish for lobster in Bahamian waters (Moe, 1991; Labisky *et al.*, 1980). Most of these immigrants’ boats were Miami based. In 1975 when Bahamian waters were closed to foreign fishing, these Miami-based boats began to fish locally.

The first gear restriction occurred in 1965, which specified the types of gear that could be used to harvest lobster (Prochaska and Baarda, 1975; Williams, 1976). Wood traps could be used, provided that they were not greater than 3 x 2 x 2 feet or the equivalent in cubic feet.<sup>††††</sup> Permit numbers had to be placed permanently on each trap or other device used

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<sup>\*\*\*\*</sup> According to Labisky *et al.*, there were 376 boats/vessels in 1950 and 319 boats/vessels in 1951 that were engaged in spiny lobster fishing. It is unclear why the number of boats/vessels fell to 102 in 1952, or if the 1950 and 1951 figures are questionable estimates. A boat is a watercraft with carrying capacity less than 5 tons, whereas a vessel is a watercraft with a carrying capacity of 5 tons or greater.

<sup>††††</sup> Experiments have shown that traps baited with short lobsters catch approximately three times more lobster than traps baited with any other method (Moe, 1991; Heatwole *et al.*, 1988).

<sup>†††</sup> As stated by Prochaska and Baarda (p. 26): The 1965 law “requires that the constructed traps be of wood slats so that when a trap is lost it will be broken up with time and thus will not continue to catch lobsters which would then be lost for both breeding stock or human consumption. The wood slat traps can be protected on the sides by reinforcement with 16 gauge, one inch poultry wire, though the bottom and top



to catch lobsters, as well as on the buoy that was used to mark the traps (Prochaska and Baarda, 1975). Also, traps and buoys had to be color-coded; and up to 20 traps could be attached to a trot-line. That same year the State set the minimum carapace size to 3 inches and minimum tail measurement to 5.5 inches.

In 1968 the minimum carapace length was reduced to 3 inches. About the same time, the fishery in the Florida Keys had expanded from the Key West area to the middle keys (FWRI 2007). A 1969 act allowed a 6-inch minimum on tails separated under special permit.

In 1971, the State changed its regulations to establish a \$50 permit fee and allow landings of spiny lobsters harvested from international waters during the State's closed season (Labisky *et al.*, 1980). By this time there were increasing conflicts between commercial fishers and recreational divers who harvested spiny lobster, so in 1975 the State enacted legislation that created the special 2-day sport season that is scheduled the last consecutive Wednesday and Thursday of July each year, one week before the start of the commercial season. During the special 2-day sport season, recreational lobster fishers are allowed up to 6 lobsters per person per day in the Monroe County and Biscayne Bay National Park and up to 12 lobsters per person per day in other areas of the state. The bag limit during the regular lobster-fishing season is 6 lobsters per person per day, or 24 per boat per day, whichever is greater.<sup>§§§§</sup>

The Florida Marine Fisheries Commission (FMFC) adopted its first fisheries management plan (FMP) for spiny lobster on July 2, 1987. For the most part, the management plan continued existing practices; however, among the new requirements was the provision of having on board live wells with re-circulating water when transporting short lobsters (Florida Marine Fisheries Commission (FMFC), December 5, 1991). In 1988, a three-year moratorium on the issue of new permits was established in an effort to limit total commercial effort. In July 1990, the FMP was amended, and among its changes was the designation of spiny lobster as a restricted species (RSE) after July 1993. The following year the Florida legislature enacted laws, which prohibited the FMFC from adopting rules that would prohibit the possession of undersized lobsters or require traps to have escape gaps before April 1998.

In 1991, Florida instituted a recreational spiny lobster license (also known as a crawfish permit), which was purchased as an additional endorsement to the state's recreational saltwater fishing license. Also that year the State began to use two annual mail surveys of persons with a lobster license/permit to estimate the number and landings of lobsters

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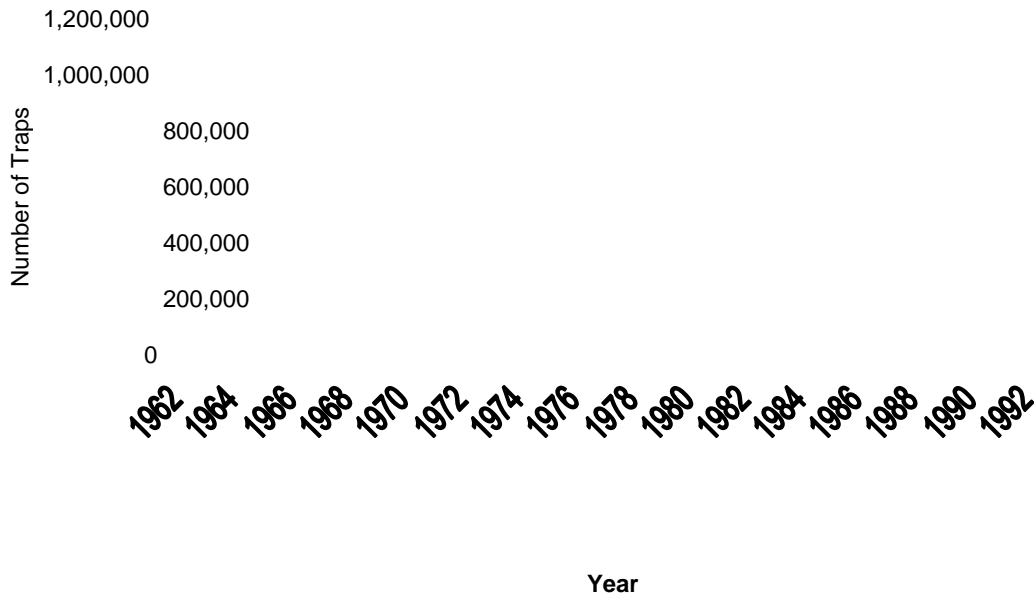
cannot be so reinforced. Partial wire reinforcing is allowed to protect the trap from the 'ravages of turtles'. Ice cans, drums and other similar devices are permitted provided that they are not equipped with grains, spears, grabs, hooks or similar devices."

§§§§ Recreational fishers are not allowed to use traps to capture lobster. Bully nets and diving (breath-hold, SCUBA, or hookah) are the only legal recreational fishing methods.



harvested by recreational fishers who take lobsters during the special 2-day sport season and from opening day to the first Monday in September of the regular fishing season. \*\*\*\*

The number of traps increased greatly from the mid 1970s through the 1980s, rising from 219,100 in 1970 to 979,766 in 1991. This rapid growth resulted in increased user conflicts on the water, excessive mortality of shorts, declining yield per trap, and concerns about trap debris (FFWCC 2007). See Figure 5.3.5.

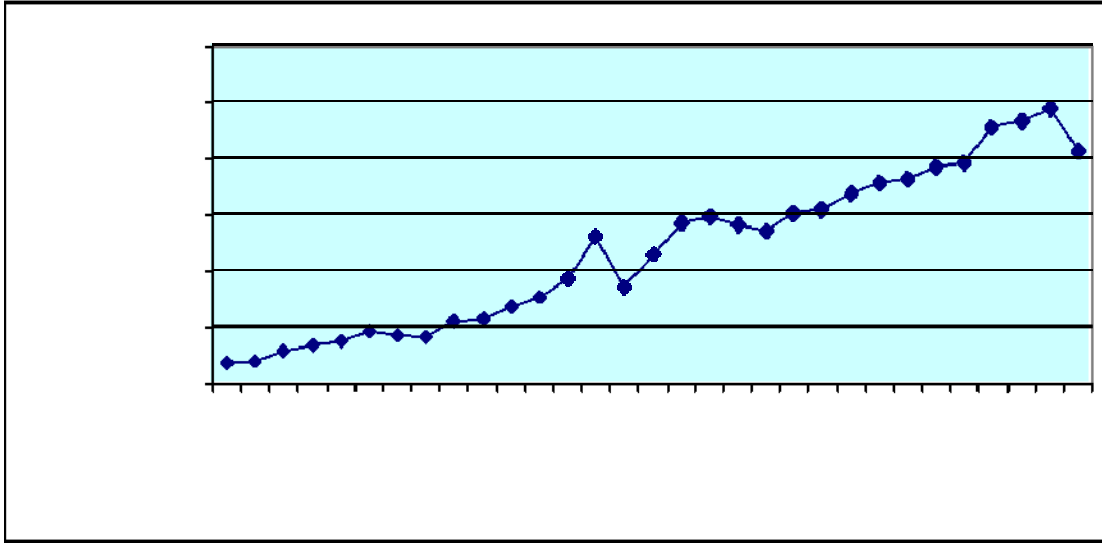


**Figure 5.3.5.** Annual Numbers of Traps, 1962 – 1993.

In 1992, Florida implemented the spiny lobster Trap Certificate Program (TCP), which regulated the total number of traps by requiring a certificate for each trap and setting a limit on the number of certificates. When first implemented, the initial certificate allocation was based on the trap use that had been reported for the three preceding years (Larkin and Milon).

The FFMFC is authorized to reduce the total number of certificates by decreasing the number of each individual’s traps by no more than 10 percent annually. In 1993, Caribbean spiny lobster fishermen set 704,234 traps. That same year, the Florida Fish and Wildlife Commission (FFWCC) implemented the Lobster Trap Certificate Program to reduce the number of lobster traps allowed in the fishery. Since the initial allocation of certificates, the Florida Fish and Wildlife Conservation Commission (FFWCC or FWC) has decreased the number of certificates four times at 10 percent reductions: 1994, 1995, 1996, and 1999. In 2001, the FFWCC set the target number of spiny lobster traps at 400,000 and implemented a 4 percent annual reduction in traps. The FFWCC suspended

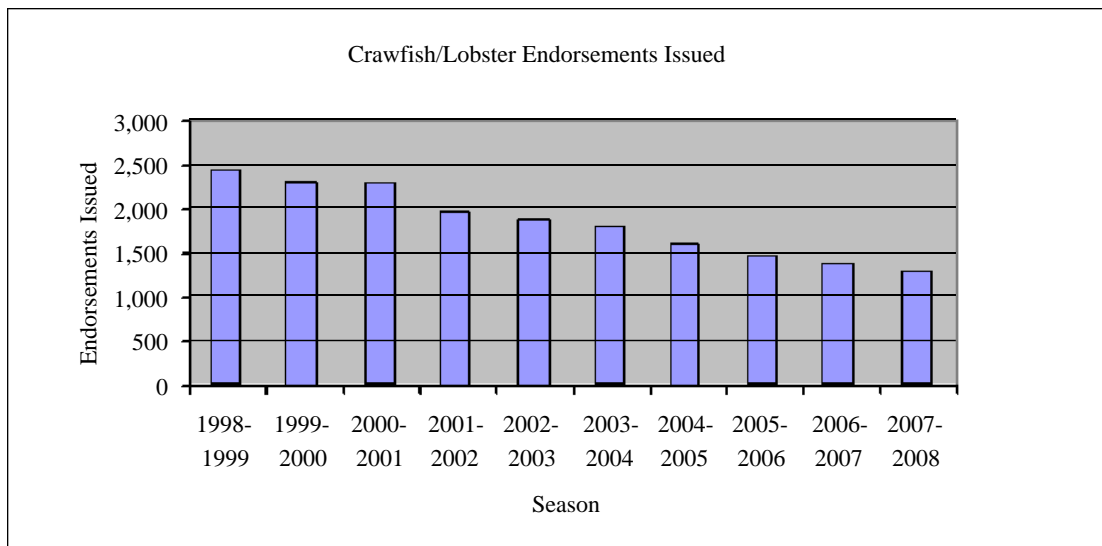
\*\*\*\* The survey of recreational fishers who harvest during the regular fishing season focuses on the first month of the season because the majority of fishing effort occurs during the first month of the season (Sharp *et al.*, 2005).



the annual trap reduction in 2003; nonetheless, the program has resulted in a significant reduction in the annual numbers of traps set. During the 2005 - 2006 season, 497,042 trap tag certificates were issued; followed by 473,943 for the 2006 - 2007 season and as of December 21, 2007, there were a total of 475,320 trap tag certificates for the 2007 - 2008 season.

No one who owns one or more lobster trap certificates can be issued a commercial dive permit (68B-24.0055(2)(b)). As of January 1, 2005, and until January 1, 2010, no new commercial dive permits will be issued and no commercial dive permit will be renewed or replaced except those that were active during the 2004 – 2006 fishing season. Existing permits may only be issued to a single saltwater products license with a valid crawfish endorsement and a valid restricted species endorsement (68B-24.005(2)(c)). Failure to renew the commercial dive permit by September 30 of each year results in forfeiture of the permit.

A crawfish endorsement or crawfish license, also known as a trap number, is required for any person to use traps to harvest spiny lobster or take spiny lobster in commercial quantities (68B-24.0055(1)). The number of Crawfish Endorsements issued has declined since the 1998 -1999 season. See Figure 5.3.6. The number of individuals holding Crawfish Endorsements has also declined. During the 2005 – 2006 season, there were 1,402 endorsement holders, followed by 1,303 for 2006 – 2007, and as of December 1, 2007, there were 1,241 endorsement holders for the 2007 – 2008 season.



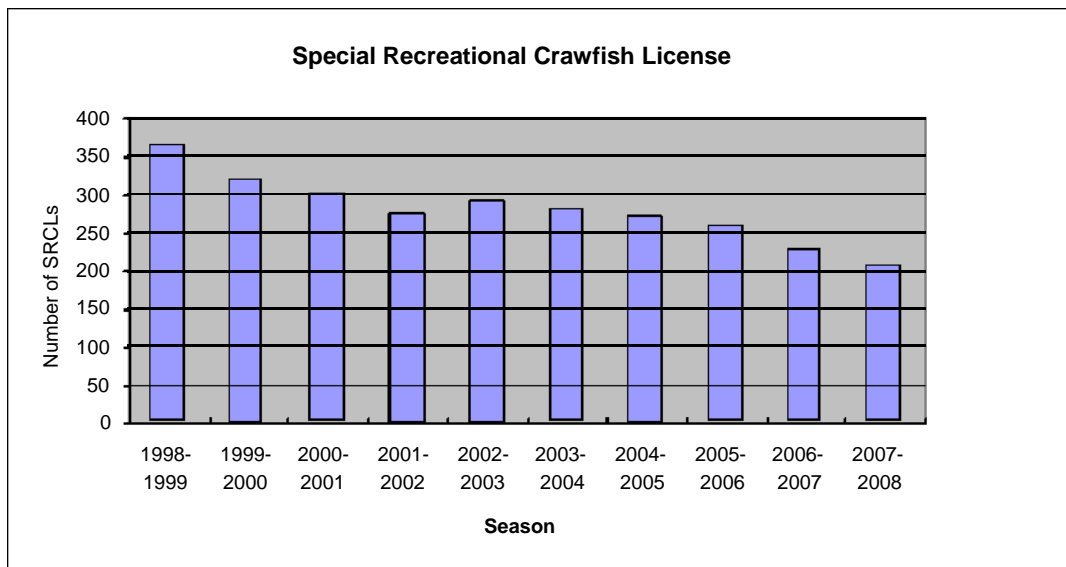
**Figure 5.3.6.** Number of Crawfish/Lobster Endorsements Issued. Source: Florida Fish and Wildlife Conservation Commission, Marine Fisheries Information System.

On August 5, 1994, the Special Recreational Crawfish License (SRCL) was issued after the implementation of the commercial spiny lobster trap certificate program (68B-24.0035, Florida Administrative Code). The SRCL was intended to reduce the adverse impact on recreational fishers who were commercially licensed and using traps, but were



prohibited from using lobster traps because they did not meet the qualifications that were established from the commercial lobster trap certificate program.<sup>††††</sup> SRCLs are not issued to persons who did not possess a crawfish trap number (Crawfish Endorsement) and a Saltwater Products License during the 1993 – 1994 license year (68B-24.0035(2)(b), F.A.C.). No person issued a SRCL may also possess a Crawfish Endorsement. An SRCL is not valid unless the holder also possesses a valid Recreational Crawfish Permit required by Section 372.57(8)(d), Florida Statutes. Moreover, if the SRCL is not renewed every year, the holder loses the license. The SRCL applies to recreational fishers in state, not federal, waters, and does not permit harvesting lobsters during the 2-day sport season. License holders are required to file quarterly reports with the Florida Fish and Wildlife Conservation Commission detailing the amount of spiny lobster harvested in the previous quarter together with the amount harvested by other recreational harvesters aboard the license holder’s vessel (68B-24.0035(2)(e), F.A.C.).

The number of SRCLs has declined since the 1998 – 1999 season. See Figure 5.3.7. Beginning with the 2012 – 2013 license year and every year thereafter, no SRCL will be issued or renewed (68B-24.0035(2)(g), F.A.C.).



**Figure 5.3.7.** Number of Special Recreational Crawfish Licenses, 1998 – 1999 to 2007 – 2008 season. Source: Florida Fish and Wildlife Conservation Commission, Marine Fisheries Information System.

Currently, Florida law requires anyone who commercially harvests or sells spiny lobster to have a Saltwater Products License (SPL).<sup>†††††</sup> An SPL may be issued in the name of

<sup>†††††</sup> A commercial license was/is required because traps were/are not legally acceptable gear in the recreational spiny lobster fishery.

<sup>†††††</sup> A Saltwater Products License (SPL) is required to harvest saltwater species in excess of the recreational bag limits, with the intent to sell, or with certain gears. For species that have no established bag limit, the bag limit is 100 pounds or 2 fish per person per day, or whichever is greater.

an individual or a valid vessel registration number issued in the name of the licensed applicant. The State also requires anyone who sells spiny lobster to have a Restricted Species Endorsement (RS) and Crawfish Endorsement.<sup>§§§§§</sup>

Spiny lobster harvested in Florida waters must remain in a whole condition while on or below state waters and the practice of separating the tail from the body is prohibited (68B-24.003(4)). Possession of spiny lobster tails that have been separated lobster tails on or below state waters is prohibited unless the spiny lobster is being imported pursuant to 68B-24.0045, F.A.C., or were harvested outside state waters and the separation was pursuant to a federal permit allowing such separation. If tails are separated from the body, tails must be at least 5.5 inches in length,<sup>\*\*\*\*\*</sup> otherwise, if whole, the carapace must be greater than 3 inches long (68B-24.003(1), F.A.C.).

In Florida, the harvest or possession of egg-bearing spiny lobster is prohibited and any egg-bearing lobster found in traps must be immediately returned to the water free, alive and unharmed (68B-24.007 F.A.C.). The practice of stripping or otherwise molesting egg-bearing spiny lobster in order to remove the eggs is prohibited and the possession of spiny lobster or spiny lobster tails from which the eggs, swimmerets or pleopods have been removed or stripped is prohibited (68B-24.007 F.A.C.).

Possession of undersized lobster is prohibited, except in the spiny lobster trap fishery, where fishermen use undersized lobsters to attract legally sized ones.<sup>†††††</sup> Allowable gears are traps, hand-held net, hoop net (diameter no larger than 10 feet), bully net (diameter no larger than 3 feet), and by diving. The vessel limit for harvest with a bully net is 250 lobsters per vessel per day, for the trap fishery there is no bag or trip limit, and limits for the dive fishery are regional. Additional restrictions and requirements depend on the method of harvest.

For those in the spiny lobster trap fishery, trap certificates and tags are required for all traps. A tag must be securely attached to each trap; spiny lobster trap specifications and trap, buoy, and vessel marking requirements apply; and traps, buoys, and vessels must display the Crawfish endorsement.<sup>†††††</sup> Florida law authorizes FWC to retrieve traps

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§§§§§ Species designated as Restricted include African pompano, amberjack, black drum, black (striped) mullet, bluefish, blue crab, clams (Brevard County only), crawfish/lobster, cobia, Florida pompano, flounder, grouper, hogfish, king mackerel, permit, red porgy, cobia, sea bass, sheepshead, shrimp, snapper, Spanish mackerel, spotted sea trout, stone crab, triggerfish, tripletail, and tropical marine fish and plants including ornamental sponges.

\*\*\*\*\* No less than 5.5 inches not including any protruding muscle tissue.

††††† A person aboard a vessel with a Crawfish endorsement and trap certificates may harvest and possess while on the water 50 undersized spiny lobster (shorts) and one short per trap aboard the boat. Shorts must be released alive and unharmed upon leaving trap lines.

††††† Traps must be constructed of wood or plastic and be no larger than 3 feet by 2 feet or the volumetric equivalent (12 cubic feet) with the entrance located on top of the trap. Each plastic trap must have a degradable panel. Traps must be baited and placed in the water beginning August 1. Traps may be worked during daylight hours only. Traps may not be placed within 100 feet of the intercoastal waterway or any



left in the water after the close of the season and fines the traps' owners to cover the costs of retrieving the traps.

All vessels used by persons commercially harvesting lobster by diving, scuba, or snorkel must display the Commercial Dive Permit on the vessel SPL. A person with a Commercial Dive Permit cannot have a trap certificate. After January 1, 2005, no diver permits were issued, renewed or replaced except those that were active in 2004-05. Dive permits that are not renewed by September 30 of each year are forfeited. A 250-lobster daily vessel limit applies in Broward, Dade, Monroe, Collier, and Lee counties and adjoining federal waters. §§§§§§

The commercial CSL and regular recreational CSL season starts on August 6 and ends on March 31 (68B-24.005(1)). No person can harvest, attempt to harvest, or have in his possession, regardless of where taken, any spiny lobster during the closed season of April 1 through August 5 of each year, except during the 2-day sport season, for storage and distribution of lawfully possessed inventory stocks or by special permit issued by the Florida Fish and Wildlife Conservation Commission (68B-24.005(1)). During the 2-day sport season no person can harvest spiny lobster by any means other than by diving or with the use of a bully net or hoop net.

A Wholesale Dealer License is required for any person, firm or corporation that sells spiny lobster to any person, firm, or corporation except to the consumer and who may buy spiny lobster from any person pursuant to section 370.06(2) of the Florida Statutes or any licensed wholesale dealer.

Each spiny lobster imported into Florida must comply with the minimum size requirements and the prohibitions relating to eggbearing spiny lobster (68B-24.0045(3) F.A.C.). During the open season (August 6 through March 31), a person may possess wrung spiny lobster tails or possess spiny lobster in excess of the bag limit while on state waters if such person also possesses appropriate receipt(s), bill(s) of sale, or bill(s) of lading to show that the spiny lobster were purchased in a foreign country and are entering the state in international commerce (68B-24.0045(1)).

### **5.3.5.1.2 Florida County Ordinances**

Zoning laws have indirectly affected the spiny lobster fishery in south Florida. In August 1986, Monroe County changed its zoning laws by implementing the Monroe County Land Use Plan (Plan). Under the Plan, commercial fishers must store, build, repair, and dip traps in industrial or commercially zoned areas, within areas designated as

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bridge or seawall. Traps must be removed from the water by April 5 each year. Harvest is prohibited in designated areas of John Pennekamp Coral Reef State Park.

§§§§§§ Divers must permanently and conspicuously display a 'divers down flag' placard on the vessel and affix the Commercial Dive Permit to the diagonal stripe with 10-inch numbers visible from the air and 4-inch numbers visible from the water. Harvest from artificial habitat is prohibited. Divers must possess a carapace measuring device and measure lobster in the water. The use of bleach or chemical solutions or simultaneous possession of spiny lobster and any plastic container capable of ejecting liquid is prohibited.



commercial fishing villages or in areas termed specific fishing districts (Johnson & Orbach, 1990).\*\*\*\*\* Prior to the zoning change, fishers could store and work on traps on residential property. Under Article V, Section 9.5 – 143(f) of the Monroe County Ordinances, where a nonconforming use of land or structure is discontinued or abandoned for 6 months or 1 year in the case of stored lobster traps, then such use may not be reestablished or resumed, and subsequent use must conform to provisions detailed in the chapter of the ordinances.

### 5.3.5.2 Puerto Rico

Puerto Rico law requires commercial lobster fishermen to have a Common Lobster Fishing Permit (12 L.P.R.A § 25e(b)(2)). Regulation 6768, Article 8(o) states no person can fish, possess, sell or offer for sale the common lobster (*P. argus*) with a carapace length less than 3.5 inches.”

Most spiny lobster are taken by scuba diving and fish pots. See Table 5.3.9.

**Table 5.3.9.** Puerto Rico Commercial Lobster Fishery Gear Types. *Source:* SEDAR 2005.

Gear Type	Landings (1000s lbs)	Percent
Scuba Diving	2,110.40	43.3
Fish Pot	1,859.00	38.1
Lobster Pot	442.7	9.1
Trammel Net	162.2	3.3
Bottom Line	78.7	1.6
Spear Fishing	77.4	1.6
Skin Diving	58.3	1.2
Gill Net	52.6	1.1
Other	34	0.7

### 5.3.5.3 U.S. Virgin Islands

Title 12, Chapter 9A, §319(b) of the Virgin Islands Code (V.I.C.) states “No person, firm, or corporation shall take or have in his possession at any time, regardless of where taken, any spiny lobster (crawfish or crayfish) of the species *Panulirus Argus* unless such spiny lobster ... shall have a carapace length of more than three and one-half (3 ½) inches.” According to 12 V.I.C. §319(c), lobsters must remain in a whole condition at all times while being transferred on, above or below the waters of the territory and the practice of wringing or separating the tail from the body is prohibited on the waters of the territory.

\*\*\*\*\* Traps used to be dipped in recycled oil to protect them from the marine environment. However, that practice was prohibited beginning in 1995. Now fishermen soak traps in a brine solution to extend the life of their traps.

Egg-bearing lobsters of any species shall not be taken, possessed or sold at any time, except that egg-bearing lobsters may be returned to pots and traps in which they have been captured, provided such egg-bearing lobsters are returned to such pots or traps in a live or unharmed condition, are provided with adequate food, and are immediately returned into the water (12 V.I.C. §319(c)). Such egg-bearing lobsters as are returned to pots or traps as aforementioned, shall not be taken or possessed or sold until the eggs have been naturally released into the water; provided they are of at least the minimum size forth in §319(b). The practice of stripping, shaving, scraping, clipping, or otherwise molesting egg-bearing lobsters in order to remove the eggs is prohibited (12 V.I.C. §319(e)).

It is unlawful for any person to spear, hook or otherwise impale any lobster in the process of capture. Lobsters may only be captured by hand, snare, pot or trap, so that short or egg-bearing lobsters may be released unharmed or returned to the pot or trap as permitted (12 V.I.C. §319(f)). The great majority of spiny lobster landings are taken by scuba gear and traps and lines. See Table 5.3.10.

**Table 5.3.10.** U.S. Virgin Islands Spiny Lobster Percent Landings by Gear Category, 1994 – 2003.  
*Source:* SEDAR 2005.

Gear Type	Percent Reported Landings
Scuba	61.51
Traps/Lines	33.23
Free Diving	2.24
Gillnets	1.16
Seine Nets	0.46
Scuba/Free Diving	0.31
Unknown	0.29
Line Fishing	0.24

Title 12, Chapter 9A, §324 of the V.I.C. states that no person shall sell, or represent for the purpose of sale, in any form, any seafood as local or native seafood unless the same shall have been originally caught or taken in this territory; nor shall any person so sell, or represent for the purpose of sale, in any form, any crustacean as local or native lobster unless the same is the species known as *Panulirus argus*; nor shall any person so sell, or represent for the purpose of sale, in any form, any meat as local or native lobster meat unless such meat is wholly from crustaceans of *Panulirus argus*.

### 5.3.6 Foreign Laws and International Agreements

On August 1, 1975, the Commonwealth of The Bahamas enacted a law that declared spiny lobster a creature of its Continental Shelf, which is similar to the U.S. law (16

U.S.C. 1857(2)(B)) that considers American lobster a part of our Continental Shelf (Vanderbilt Television News Archive, September 11, 1975). Consequently, Bahamian territorial waters were closed to U.S. spiny lobster fishers on and after that date. The closure had a dramatic impact on landings of spiny lobster in the southeast: pounds landed in 1975 were 32 percent less than the previous year's landings, and pounds landed in 1976 were 28 percent less than 1975 landings.<sup>+++++</sup> In Florida, pounds landed on the east coast in 1975 were 44 percent less than pounds landed in 1974, and pounds landed in 1976 were about 57 percent less than pounds landed in 1975.<sup>+++++</sup> Pounds of spiny lobster landed on the west coast declined from approximately 6.7 million in 1974 to about 4.4 million in 1976. East coast Florida fishers have landed less spiny lobster annually since the closure of Bahamian waters in 1975; however, landings on the west coast of the state have exceeded those landed in 1974, before the closure, for four years. To mitigate the losses caused by the closure of Bahamian waters, domestic fishers began to increase the number of traps after 1975 (Shivlani & Milon, 2000).

In 1972, the Treaty between the Government of the United States of America and the Government of the Republic of Columbia Concerning the Status of Quita Sueño, Roncador and Serrana was signed, which allowed U.S. fishing vessels to operate in Columbian waters. As a result of that treaty, U.S. vessels fishing in Columbian Treaty Waters are prohibited from possessing Caribbean spiny lobster smaller than 5.5 inches (19.97 cm) tail length (50 *CFR* § 300.126(m)). Also, a berried (egg-bearing) spiny lobster caught in treaty waters cannot be retained on board, and a berried lobster may not be stripped, scraped, shaved, clipped or in any manner molested to remove the eggs (50 *CFR* §300.132).

In an international fishery like that of spiny lobster, “consensus” on addressing concerns is important, as are U.S. efforts to engage other countries in negotiations/agreements. FAO/WECAFC has organized five workshops on spiny lobster in cooperation with most regional agencies and institutions, dealing with various projects: Belize City, Belize (1997); Merida, Mexico (1998, 2000, and 2006); and Havana, Cuba (2002). A representative from the Caribbean Council attended all the workshops. A staff member of NOAA Fisheries Service's Southeast Region attended the 2006 workshop in Merida.

The participating countries of the September 2006 workshop of the Working Group on Caribbean spiny lobster of the WECAFC agreed that there were management problems across the region, which included growth of fishing effort; weak enforcement and compliance; illegal, unreported and unregulated fishing; increasing use of artificial habitats (casitas); conflicts between trap fishers and dive fishers; open access fisheries; and reports that in some Central American countries of leaving lobster traps in the water

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<sup>+++++</sup> According to Labisky et al. (1980), less than half of the spiny lobster landed was harvested in domestic waters and most of the foreign catch was taken from Bahamian waters. Noetzel & Wojnowski report that in 1973, about one-fifth of landings on Florida's west coast came from spiny lobsters that were harvested in Caribbean waters off the coasts of Nicaragua and Honduras (1975, p. 25). According to Williams (1975), the closing of Bahamian waters to U.S. spiny lobster fishers represented a loss of approximately 90 percent of foreign water landings.

<sup>+++++</sup> On the east coast of Florida, 4,147,200 pounds were landed in 1974; 2,319,300 pounds were landed in 1975; and 987,300 pounds were landed in 1976.





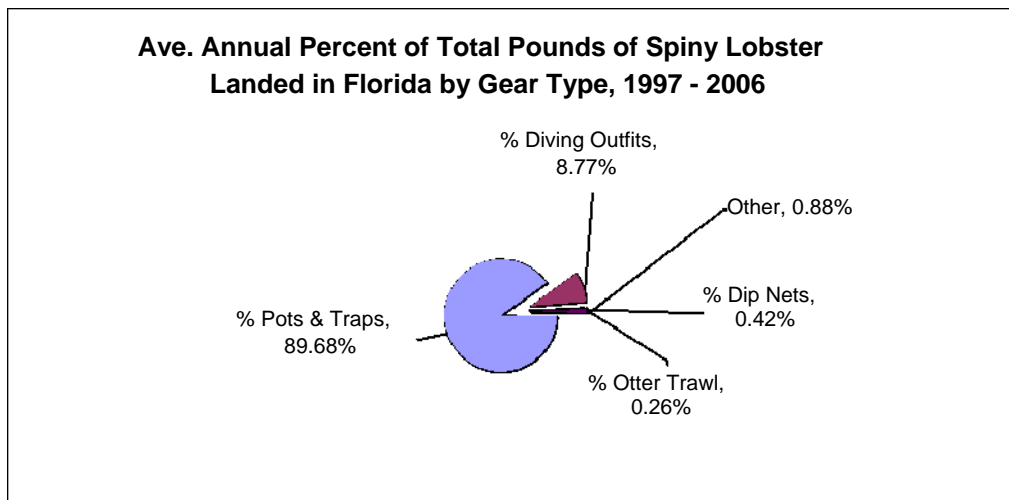
during the countries' closed seasons. The countries also agreed that countries that did not have a minimum harvest-size in their regulations that is equal to or greater than 74 millimeters carapace-length should make efforts to do so (WECAFC 2007, p. 3).

The WECAFC member countries who attended the Merida Workshop in 2007 agreed. According to the United Nations' Food and Agricultural Organization (FAO), Belize, Bermuda, Columbia, Guyana, and Jamaica did not have minimum size-regulations as of December 31, 2007.

### 5.3.7 Florida Commercial and Recreational Harvest

Caribbean spiny lobsters are harvested by both commercial and recreational fishermen. Florida law allows commercial fishermen to harvest spiny lobster by diving or using wooden, plastic or metal traps, or bully or hoop nets (68B-24.006(1)); however, wooden traps are the most popular gear type.<sup>§§§§§§§§</sup> These traps are weighted with cement and include a self-deteriorating escape panel that degrades over time. Fishermen commonly string traps along a trap line, with each end of the trap line marked by a buoy. All traps must be removed by April 5 of each year (68B-24.005(4) F.A.C.). Strong coastal storms can damage and destroy the traps.

The predominant gear type used to catch spiny lobster in Florida is a pots or trap. From 1997 through 2006, about 90 percent of annual total state landings have been caught in pots and traps. See Figure 5.3.8. Diving is the second most popular gear type and takes about 9 percent of the total pounds landed annually.

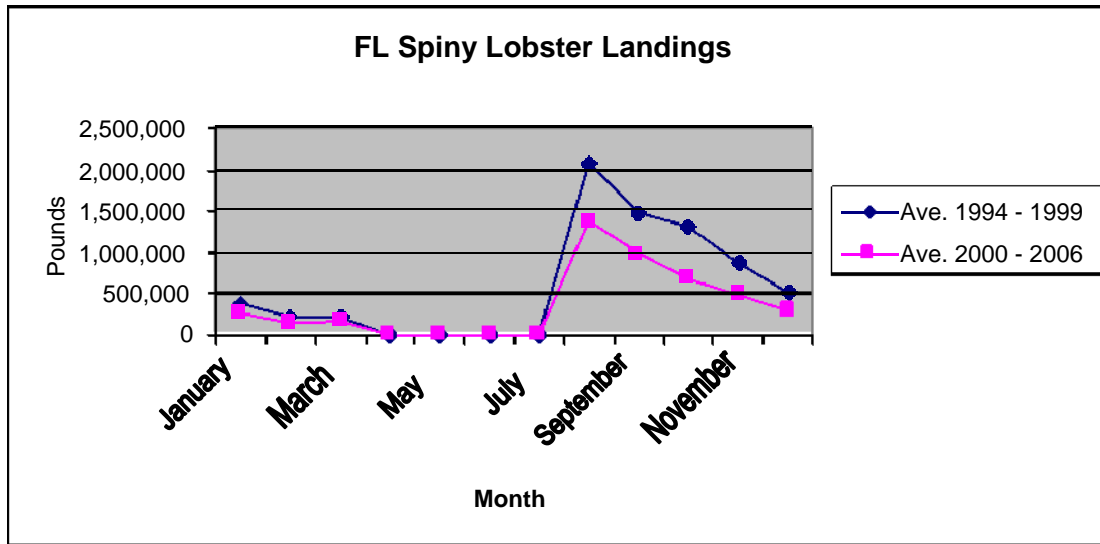


<sup>§§§§§§§§</sup> A bully net used to directly harvest spiny lobster can not have a diameter greater than 3 feet and similarly, a hoop net can not have a diameter larger than 10 feet (68B-24.007(5)). Spiny lobster taken by the use of any non-hand-held net or trawl as incidental bycatch of legally harvested targeted species is allowed if the combined whole weight of all spiny lobster does not exceed 5 percent of the total whole weight of all species legally possessed at the time.

**Figure 5.3.8.** Average Annual Percent of Total Pounds of Spiny Lobster Landed in Florida by Gear Type, 1997 – 2006. *Source:* National Marine Fisheries Service, Accumulated Landings System.

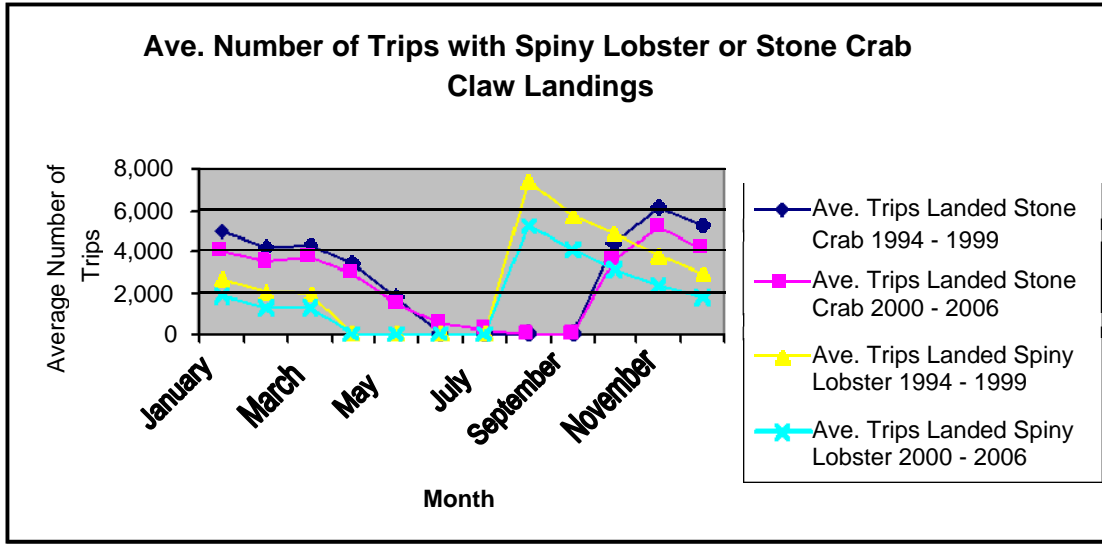
Commercial fishermen use live undersized CSL, commonly known as “shorts”, instead of cowhide or fish heads as bait to attract CSL into their traps. Florida law allows the holder of a valid Crawfish Endorsement, lobster trap certificates, and valid saltwater products license to harvest and possess, while on the water, undersized spiny lobster not exceeding 50 per boat and 1 per trap aboard each boat is used exclusively for luring, decoying, or otherwise attracting noncaptive spiny lobster into traps. Such undersized spiny lobster must be kept alive while in possession, in a shaded continuously circulating live well with a pump capacity to totally replace the water at least every 8 minutes and large enough to provide at least 0.75 gallon of seawater per lobster (68B-24.003(3) F.A.C.).

Usually each season’s landings peak in August then sharply decrease thereafter. See Figure 5.3.9. Effort and landings also decrease after the opening of the stone crab claw fishery on October 5 (FWRI 2007).\*\*\*\*\* See Figure 5.3.10.



**Figure 5.3.9.** Florida Landings of Spiny Lobster, 1994 – 2006. *Source:* Florida Fish and Wildlife Conservation Commission, Marine Fisheries Information System.

\*\*\*\*\* Stone crab was originally a bycatch caught in spiny lobster traps; however, in the 1970s, it became a fishery. Today, many spiny lobster fishermen are also stone crab fishermen as well.



**Figure 5.3.10.** Average Number of Monthly Trips that Landed Either Spiny Lobster or Stone Crab Claws, 1994 – 1999 and 2000 – 2006. *Source:* Florida Fish and Wildlife Conservation Commission, Marine Fisheries Information System.

During the 2-day sport season, no person can harvest spiny lobster by any means other than by diving or using a bully net or hoop net (68B-24.005 F.A.C.).

Bully and hoop nets and diving (breath-hold, scuba, or hookah) are the only legal recreational fishing methods (Recreational fishermen primarily dive to harvest the species; however, they also use bully nets and hoop nets). A bully net is a circular frame attached at right angles to the end of a pole and that supports a conical bag of webbing. The webbing is usually held up by means of a cord, which is released when the net is dropped over a lobster. A hoop net is a frame, circular or otherwise, that supports a shallow bag of webbing and is suspended by a line and bridles. The net is baited and lowered to the ocean bottom, to be raised rapidly at a later time to prevent the escape of the lobster.

It is estimated that the numbers of lobsters landed by recreational fishers represent an average of 23 percent of the total annual recreational and commercial numbers landed from the 1978-79 through 2003-04 fishing seasons. See Table 5.3.11.

**Table 5.3.11.** Florida Landings of Caribbean Spiny lobster, 1978-79 through 2003-2004 Fishing Seasons. *Source:* Florida Fish & Wildlife Conservation Commission.

Fishing Season	Rec. Landings	Com. Landings	Bait Landings	Total Landings	% Rec	% Comm	% Bait
1978-79	1,032,818	4,712,160	1,489,053	7,234,031	14.28%	65.14%	20.58%
1979-80	1,332,146	6,384,958	1,766,902	9,484,006	14.05%	67.32%	18.63%
1980-81	1,653,054	5,074,434	1,450,653	8,178,141	20.21%	62.05%	17.74%
1981-82	1,438,200	4,673,563	1,389,579	7,501,342	19.17%	62.30%	18.52%
1982-83	1,487,598	5,192,189	1,440,506	8,120,293	18.32%	63.94%	17.74%
1983-84	1,114,641	3,516,013	1,205,460	5,836,114	19.10%	60.25%	20.66%
1984-85	1,218,015	5,077,610	1,458,513	7,754,138	15.71%	65.48%	18.81%
1985-86	1,176,734	4,586,067	932,611	6,695,412	17.58%	68.50%	13.93%

Appendix A. Spiny Lobster Fishery and Communities (Spiny Lobster Amendment 4 June 2008)

1986-87	1,098,768	3,955,795	1,321,591	6,376,154		17.23%	62.04%	20.73%
1987-88	1,305,427	4,657,778		521,939	6,485,144	20.13%	71.82%	8.05%
1988-89	1,743,948	6,381,104		499,015	8,624,067	20.22%	73.99%	5.79%
1989-90	1,718,020	6,650,042		587,191	8,955,253	19.18%	74.26%	6.56%
1990-91	1,496,810	5,154,258	1,061,504	7,712,572		19.41%	66.83%	13.76%
1991-92	1,990,623	5,784,865		662,668	8,438,156	23.59%	68.56%	7.85%
1992-93	1,242,648	4,567,843		565,406	6,375,397	19.49%	71.64%	8.87%
1993-94	1,787,054	4,662,274		422,617	6,871,945	26.01%	67.85%	6.15%
1994-95	1,751,298	6,229,495		492,439	8,473,232	20.67%	73.52%	5.81%
1995-96	1,673,330	5,666,412		513,035	7,852,777	21.31%	72.16%	6.53%
1996-97	1,778,889	6,646,664		583,692	9,009,245	19.75%	73.78%	6.48%
1997-98	2,186,058	6,796,820		621,140	9,603,518	22.76%	70.77%	6.47%
1998-99	1,185,036	4,522,875		275,976	5,983,387	19.81%	75.58%	4.61%
1999-00	2,292,304	6,581,944		498,148	9,372,396	24.46%	70.23%	5.32%
2000-01	1,848,447	4,469,964		423,038	6,741,449	27.42%	66.31%	6.28%
2001-02	1,091,022	2,307,262		323,096	3,721,380	29.32%	62.00%	8.68%
2002-03	1,223,197	3,818,081		347,857	5,389,135	22.70%	70.85%	6.45%
2003-04	1,142,960	3,419,929		329,668	4,892,557	23.36%	69.90%	6.74%

The Florida Department of Environmental Protection (FDEP) has conducted annual mail surveys of recreational lobster fishers for the two-day sport season and the first month of the regular season since 1991 in order to estimate recreational lobster harvest and fisher participation (FDEP, 1996). Since 1985, recreational fishers have taken an average of approximately 1.5 million spiny lobsters annually through Labor Day. Statewide recreational landings for the most recent available survey that was conducted in 2006 were estimated to be 947,353 pounds (FWRI 2007). That estimate was 36 percent lower than the average landings in the previous available five years, from 2000 through 2004, and was 37 percent lower than the available historic average landings from 1992 through 2006.

### 5.3.8 Florida Counties with Commercial Landings of Spiny Lobster

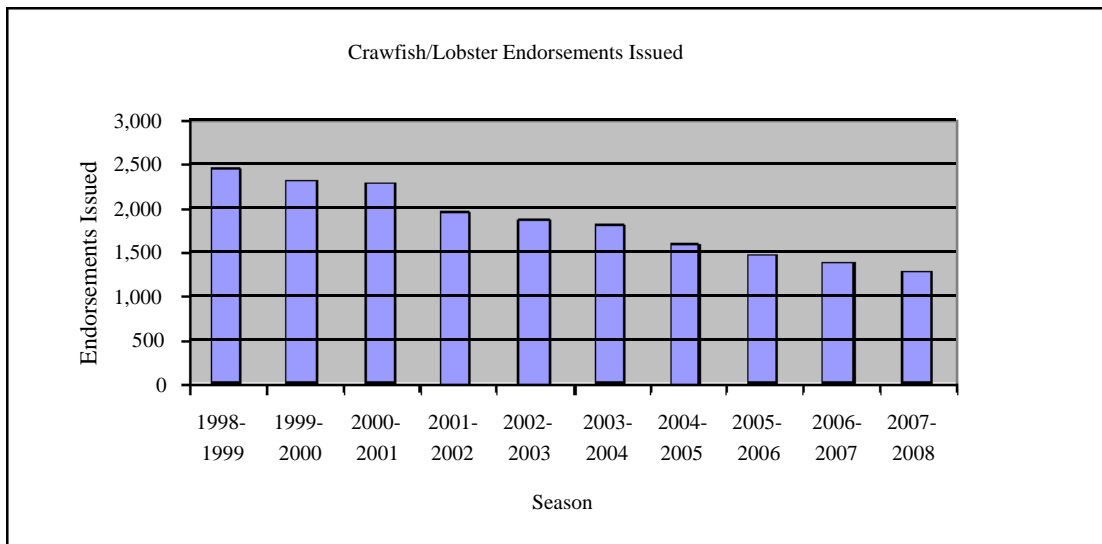
#### 5.3.8.1 Introduction

Seven counties account for about 99.5 percent of Florida's annual commercial landings of Caribbean spiny lobster, with Monroe County dominating by taking about 90 percent of the landings year after year. See Table 5.3.12. Both Monroe and Dade (Miami-Dade) Counties combined account for about 96 percent of the state's annual commercial landings. According to the FWRI (2007), most of the lobsters landed outside Monroe and Dade Counties from 1992 through 2006 were caught in the Keys and sold to wholesale dealers operating in Palm Beach County.

**Table 5.3.12.** Top 7 Counties in Commercial Landings of Caribbean Spiny Lobster, 1994 – 2006. Source: FL Fish and Wildlife Conservation Commission, Marine Fisheries Information System.

County	Ave. Annual CSL Landings	Portion of Ave. Annual FL CSL Landings	Combined Portions of FL Landings
Monroe	5,070,122	89.658%	89.6584%
Dade	366,385	6.479%	96.1375%
Palm Beach	69,507	1.229%	97.3666%
Broward	46,460	0.822%	98.1882%
Collier	34,981	0.619%	98.8068%
Brevard	20,837	0.368%	99.1753%
Duval	17,067	0.302%	99.4771%

The number of lobster/crawfish licenses has been in decline in Florida since fiscal year 1998-1999.<sup>††††††††</sup> See Figure 5.3.11.



**Figure 5.3.11.** Florida Lobster/Crawfish License Endorsements Issued. Source: Florida Fish & Wildlife Commission.

### 5.3.8.2 Monroe County

Monroe County leads the state in landings of Caribbean spiny lobster year after year. From 1994 through 2006 Monroe County led the state in commercial landings of Caribbean spiny lobster, averaging about 90 percent of the state’s commercial landings year each year. See Table 5.3.13.

<sup>††††††††</sup> The fiscal year is from July 30 to June 1.

**Table 5.3.13.** Monroe County Commercial Landings of Caribbean Spiny Lobster. *Source:* FL Fish and Wildlife Conservation Commission, Marine Fisheries Information System.

Year	County CSL Landings (lbs)	FL CSL Landings (lbs)	Portion of FL Landings
1994	6,239,090	7,087,357	88.03%
1995	6,245,472	7,001,661	89.20%
1996	7,138,859	7,865,678	90.76%
1997	6,461,282	7,107,684	90.91%
1998	5,268,000	5,831,407	90.34%
1999	6,794,915	7,578,321	89.66%
2000	5,114,237	5,763,470	88.74%
2001	2,904,035	3,405,509	85.27%
2002	4,035,905	4,483,426	90.02%
2003	3,855,401	4,268,277	90.33%
2004	4,500,913	4,983,400	90.32%
2005	3,026,574	3,365,221	89.94%
2006	4,326,907	4,755,048	91.00%
<i>Average</i>	<i>5,070,122.31</i>	<i>5,653,473.77</i>	<i>89.58%</i>

Over 78 percent of the state’s trap-tag certificates are held by individuals in Monroe County. See Table 5.3.14.

**Table 5.3.14.** Monroe County Trap Tag Certificates and Endorsement Figures, as of December 31, 2007. *Source:* FL Fish and Wildlife Commission.

2006			
	County	State	% State
Endorsement Holders	695	1,402	49.57%
Endorsement Accounts	403	615	65.53%
Endorsements Issued	826	1,638	50.43%
Revenue Collected	\$94,300	\$182,050	51.80%
Trap Tag Certificates	380,237	485,709	78.28%

2007			
	County	State	% State
Endorsement Holders	632	1,303	48.50%
Endorsement Accounts	365	582	62.71%
Endorsements Issued	751	1,512	49.67%
Revenue Collected	\$85,575	\$167,700	51.03%
Trap Tag Certificates	369,780	473,943	78.02%

2008			
	County	State	% State
Endorsement Holders	623	1,241	50.20%
Endorsement Accounts	353	550	64.18%
Endorsements Issued	739	1,443	51.21%
Revenue Collected	\$84,200	\$160,200	52.56%
Trap Tag Certificates	371,780	475,320	78.22%

The number of crawfish/lobster license holders has declined steadily since the 1998-99 season, and the 651 license holders for the 2006-07 season represents a 43 percent decline since the 1998-99 season. See Table 5.3.15.

**Table 5.3.15.** Monroe County Crawfish/Lobster License Holders. *Source:* FL Fish and Wildlife Commission.

Monroe County	
Season	License Holders
1998 - 1999	1,137
1999 - 2000	1,091
2000 - 2001	1,056
2001 - 2002	923
2002 - 2003	883
2003 - 2004	850
2004 - 2005	783
2005 - 2006	703
2006 - 2007	651
2007 - 2008	640

Wholesale seafood dealers in the county have not similarly declined. See Table 5.3.16.

**Table 5.3.16** Monroe County Wholesale Seafood Dealers. *Source:* FL Fish and Wildlife Commission.

Season	Wholesale Dealers
1998 - 1999	104
1999 - 2000	110
2000 - 2001	107
2001 - 2002	107
2002 - 2003	110
2003 - 2004	117
2004 - 2005	116
2005 - 2006	116
2006 - 2007	105
2007 - 2008	106

The recreational spiny lobster fishery is very important to the County as well. In 2003, recreational landings of Caribbean spiny lobster were about 1.1 million pounds, and sales of recreational lobster fishing permits exceed 100,000 annually. Sharp *et al.* (2005) estimate approximately \$24 million was spent on recreational lobster fishing in the Florida Keys from the opening of the recreational season through the first Monday in September in 2001. Recreational fishers who resided outside the Keys accounted for about \$22 million (92 percent) of that \$24 million spent on recreational lobster fishing in the Keys. In addition to the regular recreational season there is the Special Two-Day Sport Season, which occurs on the last consecutive Wednesday and Thursday in July. Those two days are the busiest boating days of the year in the County. From the 1993

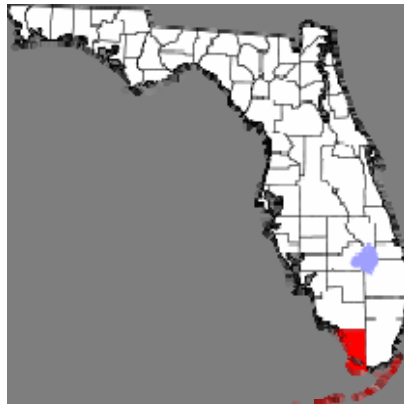


through 2001 Special Two-Day Sport Seasons, the average annual number of spiny lobsters caught in Monroe County represented about 66 percent of the annual statewide total. The number of special recreational crawfish (spiny lobster) permits has increased since the 1998 – 1999 season.

Monroe County is the southernmost county in Florida and the United States. See Figure 5.3.11. It has a total area of 9,679 km<sup>2</sup> (3,737 square miles), with 2,582 km<sup>2</sup> being land and the remaining 7,097 km<sup>2</sup> (about 73 percent) being water (U.S. Census Bureau). See Figure 2-6. The County is made up of the Florida Keys and portions of Big Cypress National Preserve and Everglades National Park. The Florida Keys are a series of islands that extend over 220 miles in length and make up the third largest barrier reef ecosystem in the world and the only one of its kind in the country. The State of Florida has designated the Florida Keys as an Area of Critical State Concern to protect the area's ecological richness, cultural significance, and environmentally sensitive nature (Florida Statute 1986; Florida Administrative Code §28-29, 1975). Over 60 percent of the Keys land mass is owned by the government and the vast majority of public land has been set aside for conservation. The County has only one highway, U.S. Highway 1, which is also called the Overseas Highway. Commercial activities and residential development are mostly concentrated along that route (National Research Council, 2002). Among the County's cities are Key West, Key Largo, Big Pine Key, Marathon and Plantation Key.

**Figure 5.3.12.** Monroe County. *Image Source:* Wikipedia.

More than 99.9 percent of the County's population lives on the Florida Keys. According to U.S. Census Bureau estimates, the population of the County fell 6.1 percent from April 1, 2000 to July 1, 2006, with approximately 74,737 people in 2006. During that period, there was a natural increase in population of 195 (4,642 births less 4,447 deaths) coupled with a net out-migration of 4,668 persons leaving the county (2,612 net international migration less 7,280 net internal out-migration). The number of housing units increased from 51,617 in 2000 to 52,911 in 2005, an increase of 2.5 percent. Median household income in 2004 was \$42,195 and 9.2 percent of the persons in the county lived below poverty, in comparison to the statewide median household income of \$40,900 and poverty rate of 11.9 percent.



Tourism is the largest sector in the county. There are more establishments in the Retail Trade (NAICS 44) and Accommodation & Food Services (NAICS 72) sectors than any other sectors, and these two sectors employ the most persons. In 2005, 35 percent of the county's employees were in Accommodation & Food Services and 21 percent in Retail Trade. See Table 5.3.17. Of the employer establishments in the Accommodation (NAICS 721) subsector, 164 (or 91) percent were in Traveler Accommodation (NAICS 7211) and 14 (or 8 percent) were in RV Parks & Recreational Camps (NAICS 7212). Similarly, of the nonemployer firms in the Accommodation subsector, 83 (or 87 percent) were in Traveler Accommodation and 4 (or 4 percent) were in RV Parks & Recreational Camps.

**Table 5.3.16.** 2005 Nonemployer and Employer Business Statistics, Monroe County.  
*Source:* U.S. Census, 2005 County Business Patterns and Nonemployer Statistics.

NAICS Code	Industry Code Description	Non-Employer Firms	Non-Employer Receipts (\$1,000)	Employer Establishments	No. of Employees	Annual Payroll (\$1,000)
11	Forestry, fishing, hunting & ag. support	992	34,476	16	20 - 99	*
21	Mining	5	160	1	0 - 19	*
22	Utilities	9	1,254	2	100 - 249	*
23	Construction	1,177	82,123	359	1,693	55,733
31	Manufacturing	107	5,337	80	338	9,652
42	Wholesale trade	136	15,495	112	480	18,964
44	Retail trade	601	44,847	723	6,422	145,298
48	Trans. & warehousing	393	19,220	141	942	25,076
51	Information	91	3,781	53	504	21,220
52	Finance & insurance	301	28,942	152	953	38,252
53	Real estate & rental & leasing	1,766	154,010	355	1,031	30,557
54	Professional, sci. & tech. services	1,219	68,691	334	1,320	51,592
55	Management of comps. & enterprises	0	0	6	91	5,136

Appendix A. Spiny Lobster Fishery and Communities (Spiny Lobster Amendment 4 June 2008)

56	Admin, support, waste mgt, remediation services	895	33,503	192	796	21,627
61	Ed. services	104	2,520	33	222	6,860
62	Health care & social assistance	421	21,970	214	2,373	97,625
71	Arts, entertainment & recreation	866	41,944	135	1,103	24,086
72	Accommodation & food services	255	41,226	523	10,852	210,466
81	Other services (except public adm.)	1,362	43,583	308	1,331	29,204
99	Unclassified establishments	0	0	7	0 - 19	*
	TOTAL	10,700	643,082	3,746	30,631	

\* : Stated as zero in 2005 County Business Patterns.

The Monroe County Tourist Development Council estimates more than 3.49 million people visited the County in 2003 and 3.2 million visited the Florida Keys in 2006. Of visitors surveyed from March 2005 through February 2006, 80 percent were in the Florida Keys for recreation or vacation purposes. Of those surveyed, about 84 percent reported beach activities, 75 percent viewing wildlife, 57 percent diving and snorkeling, and 30 percent fishing as activities they participated in during their visit (Monroe County Tourist Development Council, Visitor Profile Survey). See Table 5.3.17.

**Table 5.3.17.** Recreational Activities of Florida Keys Visitors, March 2005 – February 2006. *Source:* Monroe County Tourist Development Council, Visitor Profile Survey.

Recreational Activity	Frequency	Percent of Responses	Percent of Cases
Diving	548	3.2	18
Snorkeling	1,171	6.8	38.6
Fishing	913	5.3	30.1
Viewing Wildlife	2,260	13.1	74.5
Boating	1,390	8.1	45.8
Beach Activities	2,547	14.8	83.9
Dine Out/Night Life	2,879	16.7	94.9
Museums/Historic Areas	1,659	9.6	54.7
Sightseeing & Attractions	2,727	15.8	89.9
Cultural Events	1,170	6.8	38.5
Total	17,264	100	

In 2002, there were 42 business establishments in the Charter-Fishing and Party-Fishing-Boats subsector (NAICS 4872102) with total annual revenue of about \$5.5 million and 73 employees (U.S. Census, 2002 Transportation and Warehousing Subject Series). That same year there were 23 establishments in the Excursion-and Sightseeing-Boats subsector (NAICS 4872101) with total annual revenue of \$17.3 million and 224 employees.

Leeworthy and Wiley (2002) estimate for the time period of June 2000 through May 2001, the general visitor population spent over 12.1 million person days in Monroe County.

Over 80 percent of those who visit the Keys arrive by automobile. From March 2005 to February 2006, 82 percent of those who visited the Keys arrived by automobile, 16 percent by air, and 2 percent by other means (Monroe County Tourist Development Council, Visitor Profile Survey). The Port of Key West is a small port; however, it serves cruise ships with itineraries in the Eastern and Western Caribbean and the Bahamas. The Key West Chamber of Commerce estimates 881,183 cruise passenger arrivals in the Port of Key West in 2006, up from 656,866 in 2000 ([www.keywestchamber.org/cominfo/trends.pdf](http://www.keywestchamber.org/cominfo/trends.pdf)). In 2006, imports with a value of \$36,283 and exports with a value of \$11.7 million transited through the Port of Key West. There are two commercial airports in the Florida Keys: Key West International Airport and Florida Keys Marathon Airport. Key West International Airport had 276,154 arrivals in 2006, up from 275,386 in 2000 and remains the Keys primary airport for commercial activity. At present, only one commercial carrier, Delta Airlines, serves the Marathon Airport, and on July 13, 2007, the airline announced that it was suspending flights to the airport.

Fishing is another sector that is important to the Monroe County economy. In 2005, there were 971 nonemployer firms with annual receipts of \$34.5 million in the fishing sector (NAICS 1141), which represent 9.1 percent of all nonemployer firms and 5.4 percent of annual receipts for all nonemployer firms in the County that year.

### 5.3.8.3 Dade (Miami-Dade) County

Dade County ranks second in the state in commercial landings of Caribbean spiny lobster, averaging over 6 percent of Florida’s annual landings, and the two counties combined produce 96 percent of the state’s commercial landings. See Table 5.3.18. Over 15 percent of FL trap-tag certificates are held by individuals in Dade County. See Table 5.3.19.

**Table 5.3.18.** Dade County Landings of Caribbean Spiny Lobster, 1994 – 2006. Source: FL Fish and Wildlife Conservation Commission, Marine Fisheries Information System.

Year	County CSL Landings (lbs)	FL CSL Landings (lbs)	County Portion of FL Landings
1994	611,769	7,087,357	8.63%

Appendix A. Spiny Lobster Fishery and Communities (Spiny Lobster Amendment 4 June 2008)

1995	511,983	7,001,661	7.31%
1996	456,166	7,865,678	5.80%
1997	429,838	7,107,684	6.05%
1998	377,816	5,831,407	6.48%
1999	512,157	7,578,321	6.76%
2000	328,144	5,763,470	5.69%
2001	215,947	3,405,509	6.34%
2002	242,047	4,483,426	5.40%
2003	273,557	4,268,277	6.41%
2004	329,370	4,983,400	6.61%
2005	197,510	3,365,221	5.87%
2006	276,701	4,755,048	5.82%
<i>Average</i>	<i>366,385.00</i>	<i>5,653,573.77</i>	<i>6.40%</i>

**Table 5.3.19.** Dade County Trap Tag Certificates and Endorcements, 2006 – 2008.

2006			
	County	State	% State
Endorcement Holders	217	1,402	15.48%
Endorcement Accounts	112	615	18.21%
Endorcements Issued	255	1,638	15.57%
Revenue Collected	\$28,850	\$182,050	15.85%
Trap Tag Certificates	71,087	485,709	14.64%

2007			
	County	State	% State
Endorcement Holders	219	1,303	16.81%
Endorcement Accounts	118	582	20.27%
Endorcements Issued	253	1,512	16.73%
Revenue Collected	\$28,500	\$167,700	16.99%
Trap Tag Certificates	74,166	473,943	15.65%

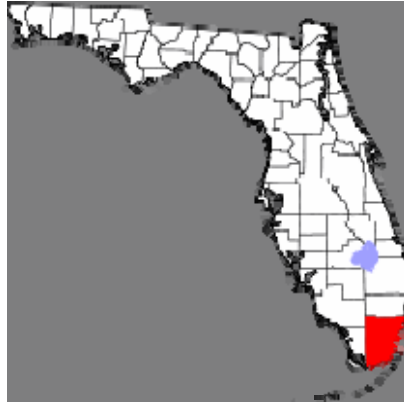
2008			
	County	State	% State
Endorcement Holders	207	1,241	16.68%
Endorcement Accounts	105	550	19.09%
Endorcements Issued	246	1,443	17.05%
Revenue Collected	\$27,525	\$160,200	17.18%
Trap Tag Certificates	78,472	475,320	16.51%

Dade County has a total area of 6,297 km<sup>2</sup> (2,431 square miles), with 5,040 km<sup>2</sup> being land and the remaining 1,257 km<sup>2</sup> (about 20 percent) being water (U.S. Census Bureau). Most of the area of water is Biscayne Bay, and another significant portion is adjacent waters of the Atlantic Ocean. Among its cities are Miami, Miami Beach, Coral Gables, and Key Biscayne. See Figure 5.3.11.

**Figure 5.3.11.** Dade County. *Image Source:* Wikipedia.

Dade County is the most populous county in Florida and the 8<sup>th</sup> most populous county in the nation. According to U.S. Census Bureau estimates, the population of the County grew 6.6 percent from April 1, 2000 to July 1, 2006, with approximately 2.4 million people in 2006. During that same period, the natural increase in population was 87,668 (204,079 births less 116,411 deaths) and net migration was 66,896 (257,492 net international migration less the 190,596 net internal out-migration). The number of housing units also increased from 852,414 in 2000 to 928,715 in 2005, an increase of about 9 percent. Median household income in 2004 was \$34,682 and 17.1 percent of the persons in the county lived below poverty, in comparison to the statewide median household income of \$40,900 and poverty rate of 11.9 percent.

Tourism is an important sector to the County economy and is the largest sector of Miami's economy. According to the Greater Miami Convention and Visitors Bureau, in 2007, 12 million overnight visitors spent \$17.1 billion, an increase of \$1.7 billion since 2005. Overnight visitors generated an economic impact of \$13.9 billion. The Dante B. Fascell Port of Miami-Dade ranks as the world's busiest cruise/passenger port in the world. In 2006, over 3.7 million cruise passengers passed through and over 9 million tons of cargo transited through the port (Port of Miami). The combination of cruise and cargo activity supports about 98,000 jobs and generates an economic impact of \$12 billion. Miami International Airport (MIA) handled 32.5 million passengers in 2006 (MIA website). Among U.S. airports, MIA ranks first in international freight, third in international passengers, and fourth in total freight.





In 2005, the County had 381 employer establishments in the industry subsector Traveler Accommodation (NAICS 7211) with 25,226 employees; 12 employer establishments in RV (Recreational Vehicle) Parks and Recreational Camps with 39 employees (U.S. Census Bureau, 2005 County Business Patterns). That same year there were 290 non-employer firms in Traveler Accommodation with annual sales of about \$27.7 million and 14 non-employer firms in RV Parks & Recreational Parks with annual sales of \$284,000 in the County (U.S. Census, 2005 Nonemployer Statistics). See Table 18. The largest sector by number of employees is Retail Trade (NAICS 44), which is followed by Health Care & Social Assistance (NAICS 62), Administrative and Support and Waste Management and Remediative Services (NAICS 56), Professional, Scientific & Technical Services (NAICS 54), and so on. See Table 5.3.20. Among nonemployers, the largest sector is Real Estate and Rental and Leasing (NAICS 53), which is followed by Professional, Scientific & Technical Services, Other Services (Except Public Administration), Construction, and so forth. See Table 5.3.21.

**Table 5.3.20.** 2005 Nonemployer and Employer Construction Statistics, Dade County. *Source:* U.S. Census Bureau, 2005 County Business Patterns and Nonemployer Statistics.

Industry Code	Industry Code Description	Non-Employer Firms	Non-Employer Receipts (\$1,000)	Employer Establishments	No. of Employees
<b>23</b>	Construction	30,690	1,165,256	4,618	38,417
<b>236</b>	Construction of buildings	5,622	290,129	1,317	10,422
2361	Residential construction	4,601	240,578	1,054	6,278
2362	Nonresidential construc.	1,021	49,551	263	4,124
<b>237</b>	Heavy and civil engineering construction	630	28,338	374	4,800
2371	Utility system construction	121	3,664	65	974
2372	Land subdivision	92	9,868	223	1,017
2373	Highway, street, and bridge construction	85	2,879	58	2,452
2379	Other heavy and civil engineering construction	332	11,927	28	357
23799	Other heavy and civil engineering construction	332	11,927	28	357
<b>238</b>	Specialty trade contractors	24,438	846,789	2,927	23,195

**Table 5.3.21.** 2005 Nonemployer and Employer Business Statistics, Miami-Dade County. *Source:* U.S. Census, 2005 County Business Patterns and Nonemployer Statistics.

NAICS Code	Industry Code Description	Non-Employer Firms	Non-Employer Receipts (\$1,000)	Employer Establishments	No. of Employees	Annual Payroll (\$1,000)
11	Forestry, fishing, hunting & ag. support	1,015	38,961	35	500 - 999	
21	Mining	38	2,187	29	1,073	62,003
22	Utilities	274	3,944	29	2,500 - 4,999	
23	Construction	30,690	1,165,256	4,618	38,417	1,482,470
31	Manufacturing	3,669	2,073	2,378	46,621	1,561,117
42	Wholesale trade	7,658	814,973	8,514	67,342	2,884,026
44	Retail trade	16,420	765,506	10,335	118,182	2,870,980
48	Trans. & warehousing	23,596	1,000,767	2,725	51,193	1,936,735
51	Information	3,457	152,330	1,444	21,956	1,283,285
52	Finance & insurance	9,005	561,580	4,728	47,057	2,889,919
53	Real estate & rental & leasing	33,897	2,666,341	4,950	23,462	1,055,582
54	Professional, scientific & tech. serv.	31,153	1,381,648	11,047	60,355	3,488,485
55	Management of comps. & enterprises	0	0	291	17,005	1,311,656
56	Admin, support, waste mgt, remediation services	29,597	550,415	3,489	76,326	2,301,355
61	Ed. services	3,719	63,432	727	28,162	1,019,920
62	Health care & social assistance	26,415	905,533	7,715	114,198	4,439,517
71	Arts, entertainment & recreation	8,962	280,307	971	12,553	378,867
72	Accommodation & food services	3,906	208,302	4,188	89,680	1,506,700
81	Other services (except public adm.)	62,985	1,270,636	5,895	38,989	884,694
99	Unclassified establishments	0	0	158	100 - 249	

	TOTAL	296,456	12,044,191	74,266	858,080
*: Zero in 2005	County Business Patterns				

#### 5.3.8.4. Palm Beach County

Palm Beach County ranks third in the state’s commercial landings of Caribbean spiny lobster, averaging over 1 percent of FL’s landings. See Table 5.3.22.

**Table 5.3.22.** Palm Beach County Commercial Landings of Caribbean Spiny Lobster, 1994 – 2006.  
*Source:* FL Fish and Wildlife Conservation Commission, Marine Fisheries Information System.

Year	County CSL Landings (lbs)	FL CSL Landings (lbs)	County Portion of FL Landings
1994	73,037	7,087,357	1.03%
1995	72,546	7,001,661	1.04%
1996	77,906	7,865,678	0.99%
1997	61,941	7,107,684	0.87%
1998	66,251	5,831,407	1.14%
1999	94,843	7,578,321	1.25%
2000	115,767	5,763,470	2.01%
2001	64,776	3,405,509	1.90%
2002	51,519	4,483,426	1.15%
2003	51,009	4,268,277	1.20%
2004	56,652	4,983,400	1.14%
2005	54,297	3,365,221	1.61%
2006	63,052	4,755,048	1.33%
<i>Average</i>	<i>69,507.38</i>	<i>5,653,573.77</i>	<i>1.28%</i>

Palm Beach County is the largest county in the state by size with a total area of 6,181 km<sup>2</sup> (2,386 squared miles), with 5,113 km<sup>2</sup> being land and the remaining 1,068 km<sup>2</sup> (about 17.3 percent) being water, much of which is in the Atlantic Ocean and Lake Okeechobee (U.S. Census Bureau). It has 47 miles of coastline. See Figure 5.3.12.

**Figure 5.3.12.** Palm Beach County, Florida. *Image Source:* Wikipedia.

The U.S. Census Bureau estimates the population of Palm Beach County grew over 12 percent from 2000 to 2005, with approximately 1.27 million people in 2005. The County's population growth has been dominated by in-migration from other parts of the country. From April 1, 2000 to July 1, 2006, it is estimated that there was a natural increase in the population of 6,431 (91,093 births less 88,806 deaths) and net migration of 139,754 (50,948 from net international migration plus 88,806 from net internal migration). Much of the population growth is attributable to the County being a popular destination for retirees. About 21 percent of the County's population was 65 years and over in 2005, as compared to that age group representing about 12 percent of the U.S. population and approximately 17 percent of Florida's population that year.

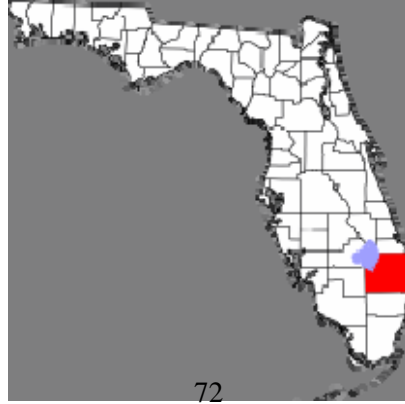
Accompanying the increase in population has been an increase in employment. From 2000 to 2004, there was an increase of 77,553 full- and part-time jobs (U.S. Bureau of Economic Analysis). The increases in population and employment have generated increases in demand for homes, commercial and institutional buildings, and infrastructure. Median household income in the county 2004 was \$44,186 and 10.1 percent lived below poverty, as compared to the statewide median household income of \$40,900 and poverty rate of 11.9 percent.

The three major multi-billion dollar industries in the county are tourism, construction, and agriculture, with tourism being number one (Palm Beach County government website, [www.pbc.com/publicaffairs/facts1.htm](http://www.pbc.com/publicaffairs/facts1.htm)). In 2004, over 7.2 million people visited the county, which supported \$1.51 billion in wages and 7 percent of the jobs and generated an economic impact of \$2.83 billion (Palm Beach County Tourist Development Council).<sup>\*\*\*\*\*</sup>

In 2005, the top three industrial sectors by number of employees were Retail Trade (NAICS 44), Health Care & Social Assistance (NAICS 62), and Accommodation & Food Services (NAICS 72), the latter being a principal component of tourism. See Table 5.3.23. In 2005, the County had 154 employer establishments in the industry subsector Traveler Accommodation (NAICS 7211) with 5,000 to 9,999 employees; 14 employer

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<sup>\*\*\*\*\*</sup> A hotel visitor survey has found that the climate/weather, beaches/ocean, and beautiful area are what visitors like best about Palm Beach County (Palm Beach County Tourist Development Council).



establishments in RV (Recreational Vehicle) Parks and Recreational Camps with 63 employees (U.S. Census Bureau, 2005 County Business Patterns). See Table 21. That same year there were 229 non-employer firms in Traveler Accommodation with annual sales of about \$27.3 million and 10 non-employer firms in RV Parks & Recreational Parks with annual sales of over \$1 million in the County (U.S. Census, 2005 Nonemployer Statistics). Other important industrial sectors of the County economy include Professional, Scientific & Technical Services (NAICS 54), Retail Trade (NAICS 44), and Health Care and Social Assistance (NAICS 62).

**Table 5.3.23.** 2005 Nonemployer Firms and Employer Establishments, Palm Beach County. *Source:* U.S. Census Bureau, 2005 County Business Patterns and Nonemployer Statistics.

NAICS Code	Industry Code Description	Non-Employer Establishments	Non-Employer Receipts (\$1,000)	Employer Establishments	No. of Employees	Annual Payroll (\$1,000)
11	Forestry, fishing, hunting & agricultural support	636	27,851	78	1,398	20,666
21	Mining	18	1,971	24	234	12,828
22	Utilities	48	1,813	30	3,969	412,927
23	Construction	10,593	688,604	4,266	37,576	1,544,242
31	Manufacturing	1,221	74,104	975	15,769	753,088
42	Wholesale trade	2,793	251,624	2,436	19,902	1,052,622
44	Retail trade	7,849	453,732	5,458	73,486	1,831,500
48	Transportation & warehousing	4,172	215,349	773	8,935	326,350
51	Information	1,577	83,540	738	15,530	770,340
52	Finance & insurance	7,523	603,238	3,175	25,748	1,934,633
53	Real estate & rental & leasing	21,153	1,774,645	2,766	14,731	636,205
54	Professional, scientific & technical services	17,586	946,661	6,746	36,406	2,206,725
55	Management of companies & enterprises	0	0	217	16,799	1,268,578
56	Admin, support, waste mgt, remediation services	9,542	291,528	3,000	43,417	1,316,027
61	Educational services	2,106	43,080	469	9,864	301,140
62	Health care & social assistance	9,958	367,559	4,511	65,692	2,630,989
71	Arts, entertainment & recreation	4,906	189,810	796	16,627	453,617
72	Accommodation & food services	1,462	121,315	2,478	54,686	853,655
81	Other services (except public adm.)	16,293	554,540	3,625	23,587	564,578
99	Unclassified establishments	0	0	87	115	2,561
	TOTAL	119,436	6,690,964	42,648	484,471	18,893,271

### 5.3.8.5. Broward County

Broward County ranks fourth in annual landings of Caribbean spiny lobster. From 1994 through 2006 its landings represented 0.81 percent of the average annual landings during those years. County landings have dropped since reaching a peak of over 57,000 pounds in 2000. See Table 5.3.24.

**Table 5.3.24.** Broward County Landings of Caribbean Spiny Lobster, in Pounds, 1994 – 2006.  
Source: FFWCC.

Year	Spiny Lob	State Total Lbs	% of State Pounds
1994	67,891	7,087,357	0.96%
1995	71,723	7,001,661	1.02%
1996	94,219	7,865,678	1.20%
1997	56,600	7,107,684	0.80%
1998	43,121	5,831,407	0.74%
1999	50,921	7,578,321	0.67%
2000	53,619	5,763,470	0.93%
2001	57,617	3,405,509	1.69%
2002	25,394	4,483,426	0.57%
2003	16,711	4,268,277	0.39%
2004	28,664	4,983,400	0.58%
2005	21,067	3,365,221	0.63%
2006	16,435	4,755,048	0.35%
Average	46,460.15	5,653,573.77	0.81%

Broward County has a total area of 3,418 km<sup>2</sup> (1,320 square miles), with 3,122 km<sup>2</sup> being land and the remaining 296 km<sup>2</sup> (about 9 percent) being water (U.S. Census Bureau). Approximately 64 percent of the country's total area lies within the Everglades conservation area, and development is restricted to 410 square miles (Broward County Planning Services Division). Major Cities include Coral Springs, Fort Lauderdale, Hollywood and Pembroke Pines. See Figure 5.3.13.

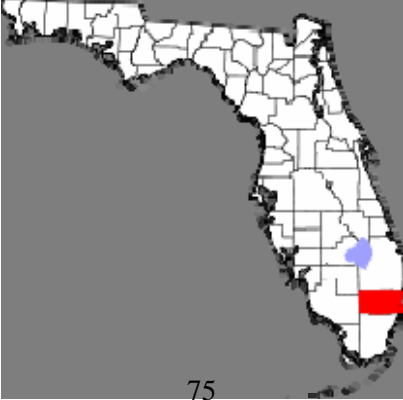
**Figure 5.3.13.** Broward County. *Image Source:* Wikipedia.

Broward County is the second most populated county in Florida and is the 15<sup>th</sup> most populous county in the nation. According to U.S. Census Bureau estimates, the population of Broward County grew 10.1 percent from April 1, 2000 to July 1, 2006, with approximately 1.79 million people in 2006. During that same period, the natural increase in population was 43,623 (142,787 births less 99,164 deaths) and net migration was 120,768 (100,986 net international migration plus 19,782 net internal migration), for a total increase of 164,391 people. The increase in population has resulted in increased demand for homes, retail and commercial buildings and infrastructure. Housing units increased from 741,043 in 2000 to 790,308 in 2005, an increase of less than 7 percent (U.S. Census). Median household income in the county in 2004 was \$43,136 in 2004 and 11.6 percent of the persons in the county lived below poverty, as compared to the statewide median household income of \$40,900 and the poverty rate of 11.9 percent. Service industries and retail trade dominate the county's economic environment. In 2005, there were more establishments in the Professional, Scientific & Technical Services sector (NAICS 54) than any other sector, and there were more paid employees in Retail Trade than any other sector. See Table 5.3.25.

Tourism's contribution is significant. In 2005, the county had a record of over 10 million visitors, a 6.3 percent increase from 2004 (Broward County Department of Urban Planning and Redevelopment, 2006). Tourism generates more than \$8.4 billion and employs more than 112,000 people in the county. In 2005, Fort Lauderdale-Hollywood International Airport's over 22 million passengers broke the previous year's record of travelers passing through the facility.

In 2005, the County had 344 employer establishments in the industry subsector Traveler Accommodation (NAICS 7211) with 10,000 to 24,999 employees; 15 employer establishments in RV Parks and Recreational Camps (NAICS 7212) with 20 to 99 employees (U.S. Census Bureau, 2005 County Business Patterns). That same year there were 318 non-employer firms in Traveler Accommodation with annual sales of about \$23.8 million and 17 non-employer firms in RV Parks & Recreational Parks with annual sales of \$486,000 in the County (U.S. Census, 2005 Nonemployer Statistics).





**Table 5.3.24.** 2005 Nonemployer and Employer Business Statistics, Broward County.  
*Source:* U.S. Census, 2005 County Business Patterns and Nonemployer Statistics.

NAICS Code	Industry Code Description	Non-Employer Firms	Non-Employer Receipts (\$1,000)	Employer Establishments	No. of Employees	Annual Payroll (\$1,000)
11	Forestry, fishing, hunting & agricultural support	467	20,022	50	100 - 249	*
21	Mining	18	2,536	9	133	11,972
22	Utilities	87	4,369	26	500 - 999	*
23	Construction	15,482	824,796	4,729	45,489	1,915,366
31	Manufacturing	1,791	118,443	1,679	29,655	1,160,990
42	Wholesale trade	4,383	439,736	4,710	41,514	1,976,541
44	Retail trade	11,293	579,188	7,374	102,197	2,625,584
48	Transportation & warehousing	7,821	382,114	1,346	21,480	811,196
51	Information	2,504	106,506	1,117	19,503	1,123,875
52	Finance & insurance	7,825	487,869	3,969	40,480	2,335,984
53	Real estate & rental & leasing	25,240	1,843,848	3,670	18,422	704,456
54	Professional, scientific & technical services	22,385	1,035,758	9,187	41,852	2,212,225
55	Management of comps. & enterprises	0	0	273	10,999	983,114
56	Admin, support, waste mgt, remediation services	14,601	386,155	3,869	65,367	1,833,766
61	Ed. services	2,782	55,593	603	15,046	450,758
62	Health care & social assistance	17,572	544,595	5,496	84,111	3,212,404
71	Arts, entertainment & recreation	6,714	222,151	960	9,728	316,824
72	Accommodation & food services	2,312	155,492	3,568	68,512	1,016,954
81	Other services (except public adm.)	27,791	808,376	4,847	30,422	753,542
99	Unclassified establishments	0	0	140	176	4,134
	TOTAL	171,068	8,017,547	57,622	646,067	23,509,177
*	Zero in 2005 County Business Patterns					

Port Everglades infuses more than \$2.4 billion annually to the county's economy (ibid). It handles about 4 million cruise passengers and over 26 million tons of cargo annually, and nearly 6,400 cargo and cruise ships call at the port each year (ibid). According to Broward County Department of Urban Planning and Redevelopment, Port Everglades has been ranked as one of the five fastest growing container ports among the nation's 20 largest seaports. It handles more than 22.1 percent of the entire state of Florida's waterborne imports and exports.

Fishing is another sector that is important to the Broward County economy, and coral reefs are important habitat for species targeted by commercial and recreational fishermen. In 2002, there were 26 business establishments in the charter-fishing-&-party-fishing-boat subsector (NAICS 4872102) in the County (2002 Economic Census, Transportation and Warehousing Subject Series).