

Red snapper landings by the US recreational fishery in the  
Gulf of Mexico 1981-2002 (TXPW, MRFSS, and  
Headboats catch data)

by

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Sustainable Fisheries Division Contribution No. SFD 2004 -

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Coefficient of variations (CV) for the estimated MRFSS landings (Table 1) are provided in Table 2. MRFSS estimates of red snapper released alive (Type B2) are given in Table 3 and Figure 2. Associated CV for type B2 catches are provided in Table 4. Proportions of live releases to the total number of red snapper caught ( $B2 / A+B1+B2$ ) by year and state were estimated and are presented in Table 5.

A new method to estimate charterboat effort was adopted beginning in 2000. Charterboat landing estimates from the 'new' and 'old' methods are not comparable. All the charterboat estimates included in Tables 1-4 were obtained using the 'old' method. Preliminary conversion factors between the 'old' and the 'new' method were estimated using strata (year, state, fishing area, wave) where effort estimates from both methods were available. The state of FL was analyzed separately from the other states (LA, AL, MS). Results from a GLM procedure showed 'fishing area' and 'wave' as the only significant variables for the states of LA, AL, and MS (model 1). A GLM on data from FL indicated that 'fishing-area' was the only significant variable. Predicted values of ratios between effort estimates for each strata (area-wave) were obtained using SAS LSMEANS. Table 6 shows the observed and predicted ratio for each strata (fishing area and wave), residuals are presented in Figure 3.

Given the low numbers of red snapper landings from 'Inshore' fishing areas, a second model was run without including the 'Inshore' fishing area. In this case, the only significant variable was 'wave' (model 2). Table 7 shows the predicted ratio for each wave, residuals are presented in Figure 4.

Estimated Headboat landings by state and year are shown in Table 10 and Figure 5. Texas landings estimated by TXPW are presented in Table 11. Landings by mode are year (3 data sets combined) are shown in Table 12.

Table 2: Coefficient of variation of MRFSS estimated number of red snapper landed and released dead (Type A + Type B1) by state and year.

Year	State				
	TX	LA	MS	AL	FL
1981	0.53	0.29		0.36	0.34
1982		0.24	0.43	0.49	0.17
1983	0.76	0.21	0.68	0.33	0.23
1984	0.76	0.19	1.00	0.28	0.27
1985	0.27	0.22	1.00	0.25	0.22
1986		0.16	0.57	0.25	0.20
1987		0.26	0.52	0.23	0.32
1988		0.18	0.31	0.25	0.19
1989		0.26	0.58	0.35	0.21
1990		0.29	0.29	0.20	0.24
1991		0.32	0.29	0.18	0.22
1992		0.16	0.14	0.13	0.14
1993		0.12	0.18	0.12	0.09
1994		0.13	0.23	0.10	0.11
1995		0.16	0.36	0.12	0.24
1996		0.19	0.31	0.12	0.23
1997		0.16	0.22	0.12	0.12
1998		0.17	0.27	0.12	0.07
1999		0.18	0.26	0.11	0.06
2000		0.21	0.43	0.10	0.06
2001		0.34	0.47	0.10	0.07
2002		0.15	0.27	0.09	0.06

Table 3: MRFSS estimated number of red snapper live releases (Type B2) by state and year.

Year	State					TOTAL
	TX	LA	MS	AL	FL	
1981	1,714	8,721		18,766	25,952	55,153
1982		7,577	1,979	828	12,010	22,394
1983	0	1,566	0	416	0	1,982
1984	0	0	0	0	22,008	22,008
1985	125,655	39,840	0	0	13,714	179,209
1986		5,485	0	5,610	36,568	47,663
1987		6,598	8,075	23,789	36,691	75,153
1988		127,883	2,617	231	65,824	196,555
1989		98,961	49,895	9,518	138,500	296,875
1990		131,249	75,000	268,003	64,641	538,893
1991		163,685	96,569	397,172	212,314	869,741
1992		148,091	306,213	248,375	233,365	936,044
1993		208,172	231,831	412,284	111,454	963,742
1994		257,779	110,646	371,091	166,169	905,684
1995		387,767	30,729	248,979	86,304	753,779
1996		112,794	97,669	414,598	379,901	1,004,962
1997		93,682	349,922	817,897	596,383	1,857,883
1998		99,237	107,462	487,002	666,212	1,359,913
1999		198,475	35,524	618,233	1,145,202	1,997,434
2000		111,569	39,564	767,813	816,091	1,735,038
2001		45,569	59,717	1,012,365	1,036,769	2,154,420
2002		41,552	163,118	1,124,206	1,180,289	2,509,166
TOTAL	127,369	2,296,253	1,766,530	7,247,178	7,046,360	18,483,689

Table 4: Coefficient of variation of MRFSS estimated number of red snapper live releases (Type B2) by state and year.

Year	State				
	TX	LA	MS	AL	FL
1981	1.00	0.51		0.78	0.51
1982		0.69	0.71	0.87	0.67
1983		0.73		1.00	
1984					0.76
1985	0.32	0.68			0.49
1986		0.56		0.48	0.30
1987		0.65	1.0	0.40	0.30
1988		0.41	0.58	0.83	0.27
1989		0.36	0.61	0.65	0.38
1990		0.34	0.41	0.38	0.37
1991		0.26	0.45	0.22	0.24
1992		0.17	0.16	0.19	0.15
1993		0.17	0.19	0.17	0.27
1994		0.18	0.27	0.16	0.20
1995		0.18	0.51	0.13	0.26
1996		0.21	0.26	0.13	0.15
1997		0.20	0.20	0.12	0.11
1998		0.21	0.23	0.11	0.06
1999		0.17	0.23	0.11	0.04
2000		0.26	0.28	0.11	0.06
2001		0.26	0.29	0.10	0.05
2002		0.17	0.26	0.10	0.07

Table 5: Proportion of animal released alive (Type B2) to all catches (Type A+Type B1+Type B2) based on MRFSS catch estimates by year and state.

Year	State					TOTAL
	TX	LA	MS	AL	FL	
1981	0.01	0.01		0.04	0.08	0.03
1982		0.01	0.05	0.002	0.04	0.02
1983		0.001				0.001
1984					0.27	0.03
1985	0.52	0.12			0.06	0.17
1986		0.02		0.05	0.07	0.05
1987		0.07	0.29	0.15	0.06	0.09
1988		0.37	0.15	0.001	0.17	0.22
1989		0.37	0.27	0.05	0.40	0.30
1990		0.61	0.79	0.56	0.45	0.58
1991		0.53	0.60	0.62	0.53	0.58
1992		0.41	0.59	0.39	0.58	0.49
1993		0.39	0.58	0.43	0.2	0.39
1994		0.52	0.53	0.48	0.37	0.47
1995		0.57	0.45	0.43	0.41	0.49
1996		0.40	0.65	0.60	0.66	0.59
1997		0.38	0.76	0.64	0.60	0.62
1998		0.43	0.73	0.57	0.46	0.51
1999		0.71	0.54	0.60	0.62	0.62
2000		0.51	0.80	0.70	0.57	0.62
2001		0.47	0.75	0.70	0.61	0.65
2002		0.43	0.77	0.65	0.57	0.60
TOTAL	0.32	0.26	0.61	0.50	0.47	0.45

Table 6: Predicted and observed conversion factors from model 1.

Area	Wave	Predicted	Observed
> 3 miles	1	0.419	0.351
	2	0.535	0.365
	3	1.528	1.225
	4	2.027	1.331
	5	1.465	0.634
	6	0.545	0.307
< 3 miles	1	0.918	0.482
	2	0.809	0.419
	3	1.081	0.877
	4	1.99	1.45
	5	0.606	0.449
	6	0.604	0.114
Inshore	1	1.304	0.91
	2	1.406	1.047
	3	4.716	2.285
	4	5.185	2.469
	5	3.857	1.329
	6	1.559	1.709
> 10 miles (FL)	-	0.606	0.610
<10 miles (FL)	-	1.012	0.916
Inshore (FL)	-	4.989	3.893

Table 6: Predicted and observed conversion factors from model 1.

Wave	Predicted	Observed
1	0.595	0.366
2	0.667	0.374
3	1.320	1.161
4	2.009	1.356
5	1.102	0.594
6	0.565	0.258

Table 7: MRFSS Charterboat landing estimates obtained using the 'old' method by year and state.

Year	LA	MS	AL	FL	TOTAL
1986	84,288	52	70,704	424,932	579,976
1987	58,641	85	56,527	441,049	556,302
1988	10,750	6,478	137,769	212,757	367,753
1989	19,096	1,772	152,989	110,225	284,083
1990	44,140	4,272	55,346	33,622	137,381
1991	140,881	1,417	92,218	122,628	357,144
1992	84,287	2,583	108,402	113,826	309,099
1993	133,272	26,332	222,298	404,587	786,488
1994	106,640	20,080	132,418	250,189	509,327
1995	125,683	2,143	146,726	109,267	383,819
1996	72,526	10,452	152,056	175,978	411,012
1997	51,022	23,508	246,845	384,334	705,709
1998	43,608	6,349	255,856	769,451	1,075,264
1999	7,501	8,411	175,822	596,246	787,979
2000	14,298	2,407	156,348	461,429	634,483
2001	2,801	2,920	209,490	420,586	635,796
2002	37,417	10,602	278,005	592,657	918,680
<b>TOTAL</b>	<b>1,036,850</b>	<b>129,864</b>	<b>2,649,820</b>	<b>5,623,762</b>	<b>9,440,295</b>

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Table 7: MRFSS Charterboat landing estimates obtained using the 'old' method by year and state.

Table10: Headboat estimated red snapper landings by state and year.

Year	State				TOTAL
	TX	LA	AL	FL	
1986	301,843	14,247	14,903	1,565	332,558
1987	309,638	9,710	9,256	552	329,156
1988	394,618	28,406	12,881	2,175	438,080
1989	360,165	12,308	10,357	691	383,521
1990	173,149	13,857	15,393	1,386	203,785
1991	236,126	28,560	15,349	474	280,509
1992	371,716	41,340	33,832	340	447,228
1993	411,039	47,733	36,735	965	496,472
1994	450,416	47,322	28,771	1,107	527,616
1995	319,642	34,908	22,980	465	377,995
1996	309,488	39,778	28,314	221	977,801
1997	313,020	34,404	48,398	299	396,121
1998	219,644	25,904	76,455	454	321,647
1999	77,729	20,970	64,725	2,881	166,305
2000	97,357	14,053	56,399	1,355	169,164
2001	102,774	13,584	50,343	999	167,700
2002	124,793	13,682	74,945	213	213,633
TOTAL	4,573,157	439,956	600,036	16,142	5,629,291

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1996	309,488	39,778	28,314	221	977,801
1997	313,020	34,404	48,398	299	396,121
1998	219,644	25,904	76,455	454	321,647
1999	77,729	20,970	64,725	2,881	166,305
2000	97,357	14,053	56,399	1,355	169,164
2001	102,774	13,584	50,343	999	167,700
2002	124,793	13,682	74,945	213	213,633
TOTAL	4,573,157	439,956	600,036	16,142	5,629,291

Table 11: TXPW estimated red snapper landings.

Year	TX
1983	254,713
1984	233,793
1985	45,945
1986	34,597
1987	49,007
1988	71,848
1989	97,644
1990	26,445
1991	49,099
1992	118,645
1993	292,264
1994	199,598
1995	72,029
1996	42,464
1997	87,383
1998	97,394
1999	54,171
2000	56,735
2001	67,320
2002	91,216
TOTAL	2,042,310

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Year	TX
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1984	233,793
1985	45,945
1986	34,597
1987	49,007
1988	71,848
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1994	199,598
1995	72,029
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1998	97,394
1999	54,171
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2001	67,320
2002	91,216
TOTAL	2,042,310

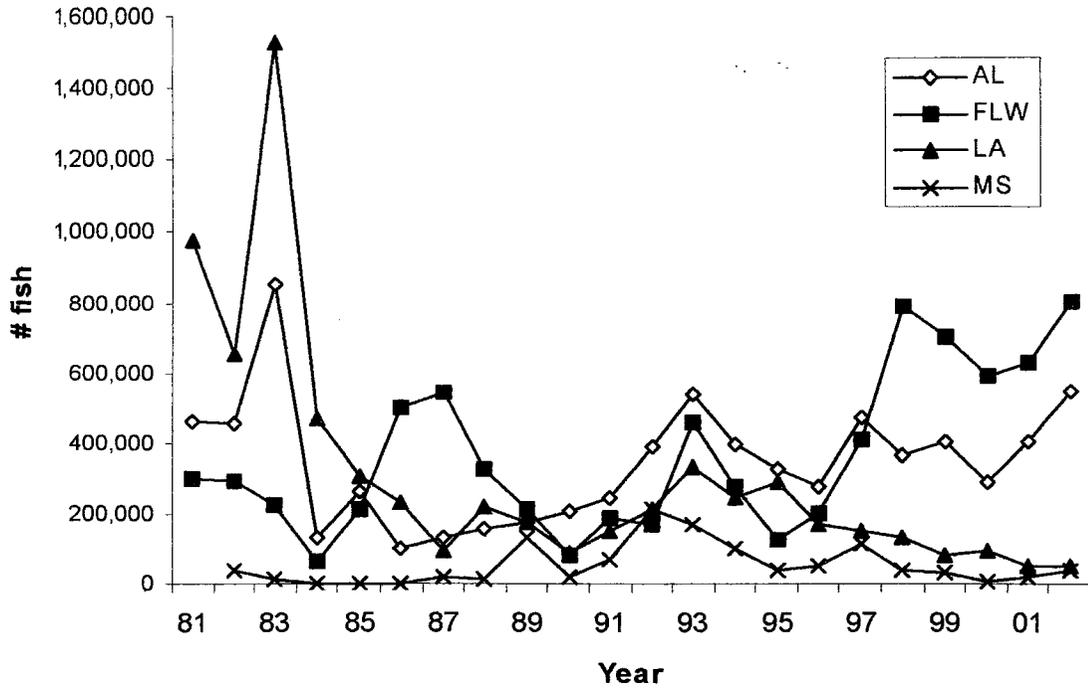


Figure 1: Estimated red snapper MRFSS landings (Type A+B1) by state and year (TX not included).

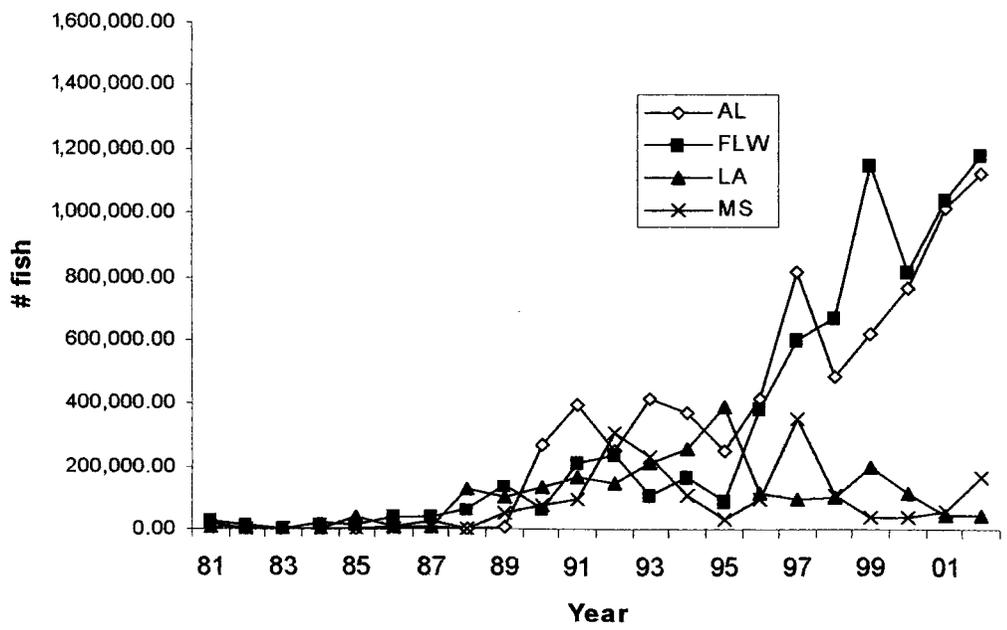


Figure 2: Estimated red snapper MRFSS live releases (Type B2) by state and year (TX not included).

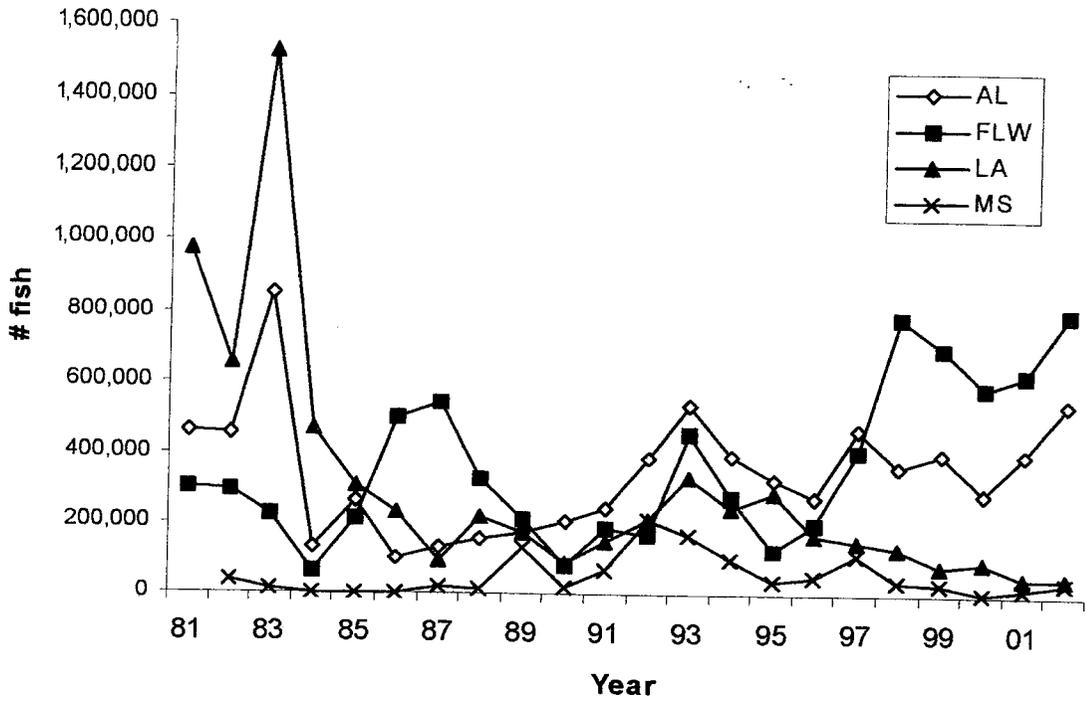


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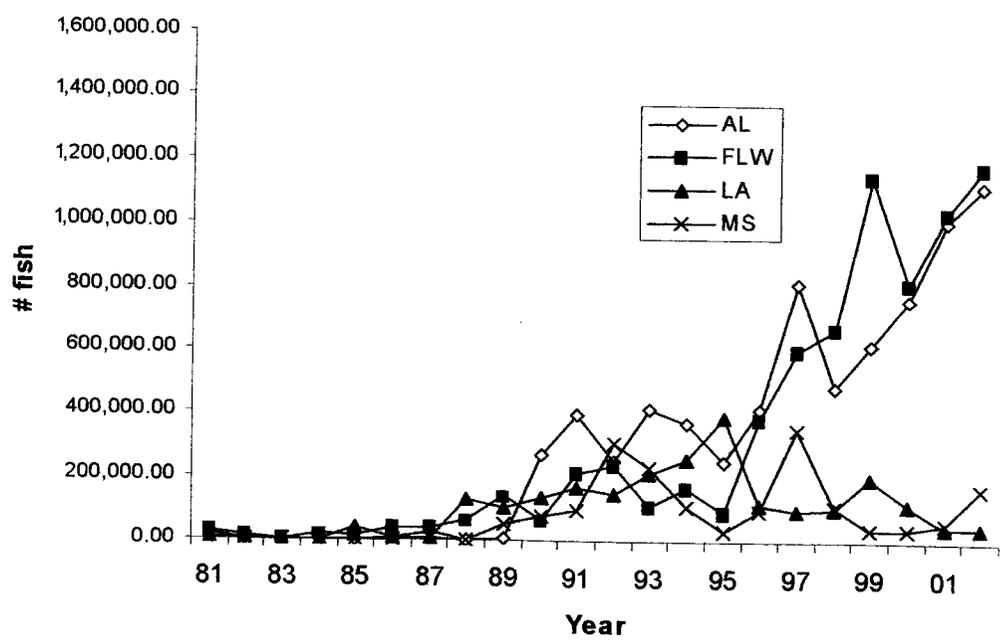


Figure 2: Estimated red snapper MRFSS live releases (Type B2) by state and year (TX not included).

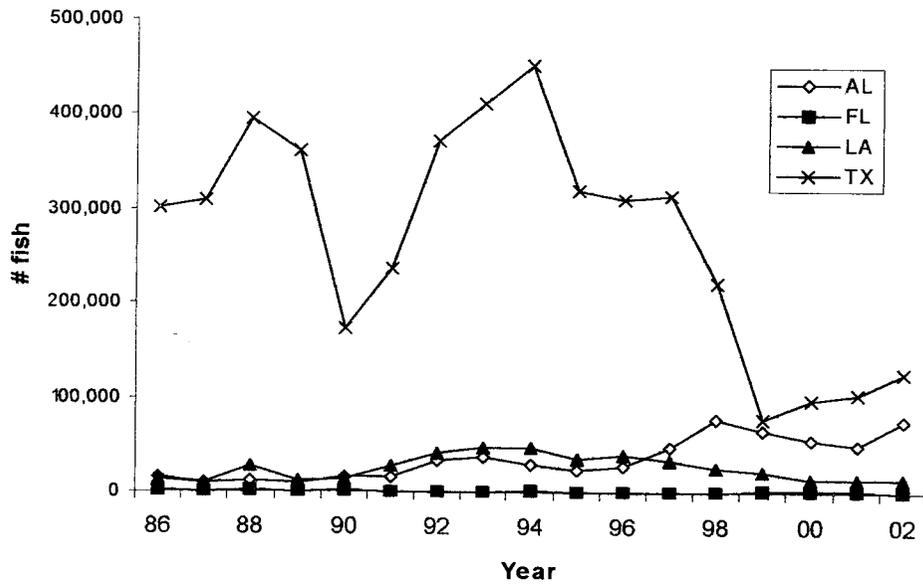


Figure 5: Estimated red snapper Headboat landings by state and year.