

Trends in Catch Data and Estimated Static SPR Values
for Fifteen Species of Reef Fish Landed Along the
Southeastern United States

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METHODS

Council staff requested that the NOAA, NMFS, Beaufort Laboratory's Fish Biology Team provide graphical and tabular data reflecting trends in catches of fifteen species: black sea bass, white grunt, gray triggerfish, red porgy, vermilion snapper, red snapper, gag, scamp, red grouper, greater amberjack, black grouper, speckled hind, snowy grouper, yellowedge grouper, and tilefish. Weight of landings (kg), mean fish size, and headboat fishery catch per unit effort are presented for each species compiled for the entire southeastern United States fishing area: North Carolina through the east coast of Florida, including the Florida Keys and Dry Tortugas. Three data bases, each with a landings and fish size (bioprofiles) component, were utilized: Headboat, Commercial, and Marine Recreational Fisheries Statistical Survey (MRFSS).

Following are descriptions of the data and various limitations:

Headboat - Landings were available for the entire region for 1981-1999; restricted to NC and SC for 1972-1975; NC through North Florida for 1976-1977, and partial coverage of South Florida for 1978-1980. Headboat data are part of the "For Hire" recreational data.

Mean weights were obtained from bioprofiles data for 1972-1999 with the same geographic restrictions as the landings.

CPUE was calculated in terms of number of fish caught as well as kilograms of fish caught, all per angler day. CPUE trends were plotted in terms of one data point per year per species. For a given species, CPUE calculation were done only for those areas in which the species was a common and frequent occurrer. This was done to avoid negatively biasing the CPUE calculation (i.e., inclusion of areas of infrequent or rare occurrence would involve including both low landings data and high effort data, resulting in low and inaccurate CPUE values).

Commercial - Landings were available from 1986-1999. 1986 was the first year that most fish were identified to species. Before 1992 greater amberjack were included in an unclassified category only, which contained four *Seriola* species, the majority of which were probably greater amberjack. Since 1992, greater amberjack landings were identified to species in Florida, but still unclassified in NC, SC, and GA. Landings of gray triggerfish and white grunt were lumped into unclassified categories and could not be broken out easily.

Mean weights were generated from intercept (TIP) lengths, which were then applied to weight-length relationships for each species, 1983-1999.

MRFSS - Landings data were available for 1981-1999, and were recorded as charter boat ("For Hire") landings and other recreational platforms (e.g., private boat, pier, shore, etc.). However, 1981-1985 data provide crude estimates of charter boat landings because they were combined with party boats (headboats) landings for those years. To adjust, we used the intercept data to obtain the proportion of charter boat and party boat samples for each species. We then applied those proportions to the landings data of each species, and discarded the party boat segment because it was already included in the official headboat data. Monroe County, FL landings are not included because county codes are not included in the landings data, and could not be easily broken out.

Mean weights for each species were obtained from the intercept data. For the samples with no weight recorded, the weight-length relationship for each species was used to convert the lengths to weights.

Estimates of SPR - Static spawning potential ratio (SPR) values were estimated for those species that have not had recent VPA analysis done on them: gray triggerfish, tilefish, red grouper, black grouper, snowy grouper, yellowedge grouper, and speckled hind. SPR's for the other species are reported from the full assessments. The models are stochastic in that we used different estimates of natural mortality (M), varying proportion of females and males for the protogynous species, and in one case, different maturity schedules. The most up-to-date studies on age and growth and reproduction for each species were used in the analysis. The percent reduction in fishing mortality (F) and increase in fish minimum length needed to obtain 30% and 40% SPR are included by species. The species are listed in order of confidence that we place in the data used to derive the estimates.

General Comments:

Some of the data points look very questionable. These typically appear as peaks in the landings or mean weights. In some instances sample sizes are very small, such as for the mean weights of commercially caught gray triggerfish in 1983, greater amberjack in 1983, and black grouper in 1983 and 1984. In other instances unusually large landings were reported, such as for white grunt in 1998 commercial catch, and red snapper charter boat landings in 1992. Both we believe to be related to species identification. For white grunt, 1998 was the first year that the species was identified and separated from miscellaneous grunts, thus the unusually large number. And, the large catch of red snapper recorded for charter boat anglers in 1992 probably reflects vermilion snapper misidentified as red snapper.

Management Regulations Impacting Trends:

Since the Snapper Grouper Fishery Management Plan was implemented in 1983, nine

amendments have been made to it through 1999. Many of the regulations impact trends in landings and mean size of the various species in this report. Listed below are gear restrictions that impact all of the species listed in the report. Specific regulations such as size limits, bag limits, seasonal closures, and quotas are listed at the bottom of each species table. In addition, an Emergency Rule closing the red porgy fishery was put in place in September 1999.

1989 - Trawl gear used in directed snapper grouper fishery was prohibited from Cape Hatteras, NC through Cape Canaveral, FL.

1992 - Fish traps were prohibited except black sea bass pots when used north of Cape Canaveral, FL.

Entanglement nets (including trammel and gill) were prohibited.

Longline gear inside 50 fathoms was prohibited when used in the snapper grouper fishery. Powersticks and bangsticks were prohibited in special management zones off the South Carolina coast.

Black sea bass data (landings, mean weights, and CPUE-Wt are in kilograms).

Year	Commercial			Headboat				Charter boat			Other recreational			
	Landings	Mean Wt	N	Landings	Mean Wt	N	CPUE-# NC - NEFL	CPUE-Wt	Landings	Mean Wt	N	Landings	Mean Wt	N
72														
73				150904	0.27	1		2.61						
74				486815	0.44	592	13.44	5.77						
75				338986	0.37	519	9.96	3.67						
76				287705	0.39	479	5.51	2.45						
77				287646	0.31	1622	8.78	2.45						
78				249028	0.36	1168	3.42	1.77						
79				271717	0.31	822	8.68	2.46						
80				293863	0.26	1197	11.26	2.64						
81				322621	0.27	1510	8.62	2.13	25424	0.15	49	128601	0.19	171
82				333613	0.29	1849	8.01	2.06	733	0.37	3	507045	0.29	433
83		0.32	333	328363	0.28	2895	7.73	1.89	132560	0.24	33	197614	0.21	165
84		0.42	2352	314446	0.32	3073	5.91	1.62	48675	0.35	93	828732	0.34	222
85		0.44	1792	270223	0.27	2984	5.53	1.36	53085	0.43	47	417996	0.28	453
86	623906	0.41	2398	255335	0.26	3368	5.16	1.19	25455	0.16	152	189919	0.28	275
87	363779	0.44	2068	293254	0.27	3254	4.98	1.25	49840	0.37	134	418843	0.24	519
88	684746	0.39	2545	288132	0.31	2159	4.40	1.24	425111	0.42	196	242583	0.28	344
89	576724	0.39	1090	216831	0.32	3840	3.47	1.00	205022	0.45	90	318751	0.27	444
90	662497	0.37	2227	172171	0.24	6209	3.26	0.85	71489	0.52	172	181540	0.25	301
91	487755	0.41	3011	129836	0.22	5381	2.58	0.66	29316	0.52	56	357748	0.35	334
92	476537	0.39	2958	97920	0.22	5195	1.97	0.50	101038	0.43	296	228647	0.34	412
93	425012	0.65	2326	64875	0.28	3959	1.16	0.35	106048	0.47	138	125861	0.31	255
94	435346	0.44	2697	60074	0.26	4225	1.24	0.36	60776	0.48	199	212779	0.32	198
95	310589	0.50	1038	57889	0.24	3331	1.16	0.35	156969	0.56	177	109424	0.28	211
96	324009	0.42	1177	66471	0.28	3133	1.54	0.48	123224	0.46	226	168628	0.33	169
97	798971	0.41	2313	67015	0.30	3565	1.37	0.44	78358	0.41	129	159599	0.33	238
98	394190	0.45	2147	64639	0.30	4067	1.29	0.42	51696	0.45	301	126349	0.29	128
99	355531	0.45	2552	87348	0.35	4003	1.57	0.61	38856	0.48	326	118852	0.40	219

1983 - 8" TL minimum size limit, all fisheries

1989 - Gear restrictions as listed in text

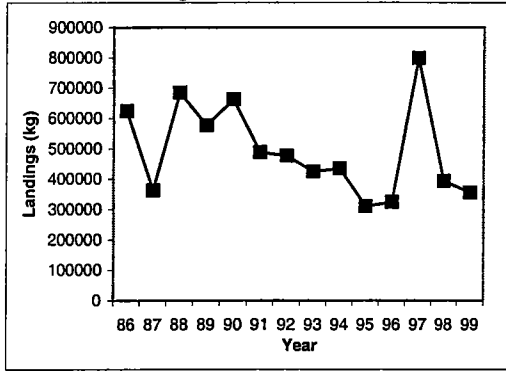
1992 - Gear restrictions as listed in text

1999 - 10" TL minimum size limit, all fisheries

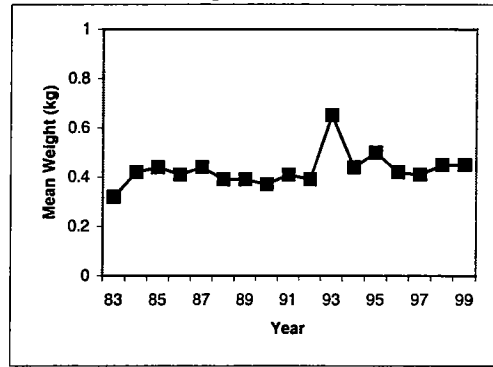
- Recreational bag limit 20 BSB/person/day

Black sea bass

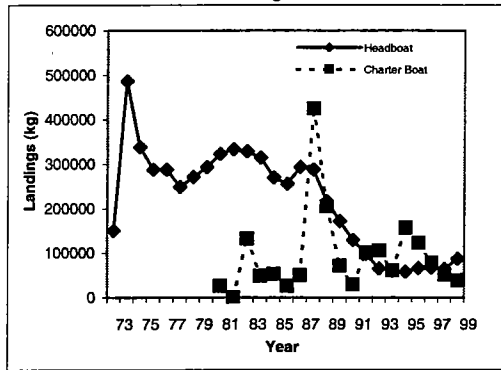
Commercial Landings



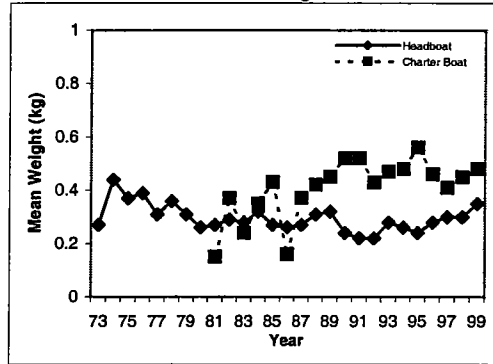
Commercial Mean Weights



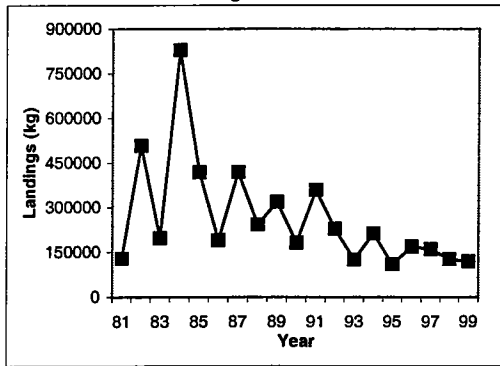
"For Hire" Recreational Landings



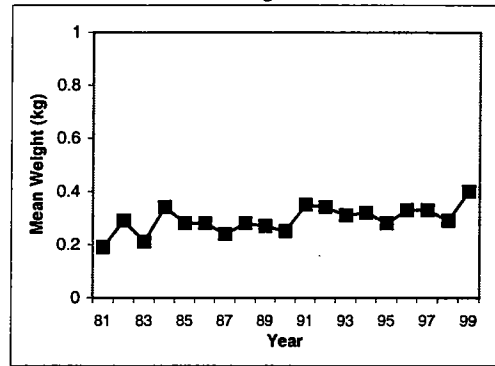
"For Hire" Recreational Mean Weights



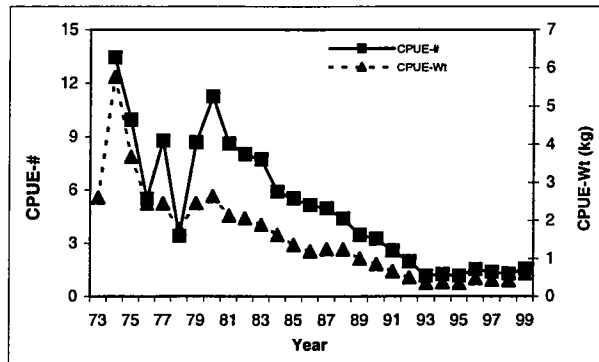
Other Recreational Landings



Other Recreational Mean Weights



Headboat CPUE: North Carolina - North Florida



White grunt (landings, mean weights, and CPUE-Wt are in kg. (Commercial landings do not include grunts unclassified.)

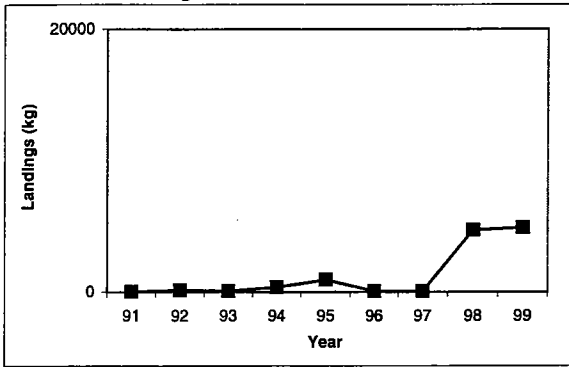
Year	Commercial			Headboat					Charter boat			Other Recreational				
	Landings	Mean Wt	N	Landings	Mean Wt	N	CPUE-#		CPUE-Wt	SEFL & Keys	Landings	Mean Wt	N	Landings	Mean Wt	N
							NC & SC	CPUE-Wt								
72				103517	0.83	2109	2.78	2.11								
73				64235	0.91	1515	1.36	1.11								
74				77269	0.93	930	1.47	0.92								
75				69665	0.84	1053	1.87	0.75								
76				64852	0.86	1264	1.87	0.71								
77				52217	0.84	704	0.73	0.56								
78				36156	0.62	754	0.44	0.39								
79				38528	0.58	465	0.57	0.46								
80				39913	0.73	744	0.47	0.45								
81				98023	0.66	783	0.93	0.80								
82				123125	0.53	2306	1.04	0.87	0.48	0.17				76092	0.25	69
83		0.94	75	93426	0.44	3043	0.79	0.78	0.43	0.12				213881	0.24	89
84		0.85	604	64631	0.48	3151	0.51	0.40	0.45	0.14			12319	270046	0.24	64
85		0.85	610	80687	0.43	3397	0.70	0.50	0.58	0.17			63395	216549	0.29	63
86		0.88	310	89248	0.47	2761	0.70	0.49	0.64	0.20			6764	296489	0.28	44
87		0.81	656	113641	0.47	3259	0.92	0.48	0.95	0.27			63164	85407	0.28	32
88		0.86	408	123221	0.45	2611	0.80	0.45	1.25	0.36			33904	232106	0.51	63
89		0.84	359	111116	0.49	2202	1.02	0.51	0.92	0.28			32707	181801	1.16	20
90		0.61	667	122979	0.41	2234	1.28	0.63	0.99	0.27			20996	32960	0.87	29
91	35	0.66	425	140284	0.85	2261	1.13	1.00	0.59	0.16			113438	333243	0.87	13
92	145	0.72	612	95762	0.46	1995	1.11	0.54	0.81	0.22			19174	614548	0.53	43
93	71	0.77	1132	97876	0.45	2608	1.09	0.54	0.89	0.24			44329	33128	0.48	80
94	358	0.72	541	105286	0.45	2512	1.22	0.64	0.80	0.22			27842	259097	0.43	70
95	939	0.81	477	100239	0.47	3398	1.11	0.59	0.88	0.27			78408	207984	0.34	77
96	40	0.79	641	88566	0.39	2633	0.73	0.44	1.11	0.32			19331	122187	0.37	61
97	42	0.72	1278	85599	0.41	2896	0.83	0.49	1.14	0.31			24413	123752	0.32	61
98	4713	0.57	1513	79050	0.41	3206	0.72	0.42	1.28	0.35			24030	60272	0.33	32
99	4896	0.71	1844	71377	0.42	2914	0.77	0.47	0.76	0.20			10619	61293	0.32	120
													16360	43711	0.31	200

1989 - Gear restrictions as listed in text

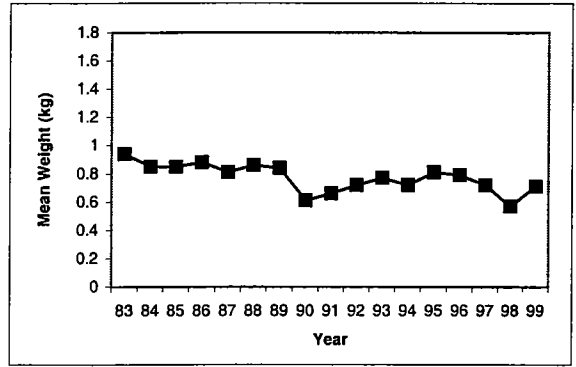
1992 - Gear restrictions as listed in text

White grunt

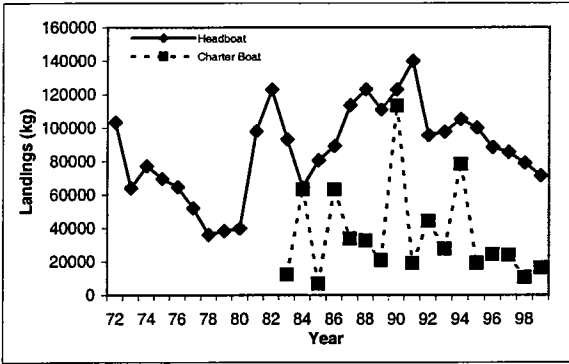
Commercial Landings



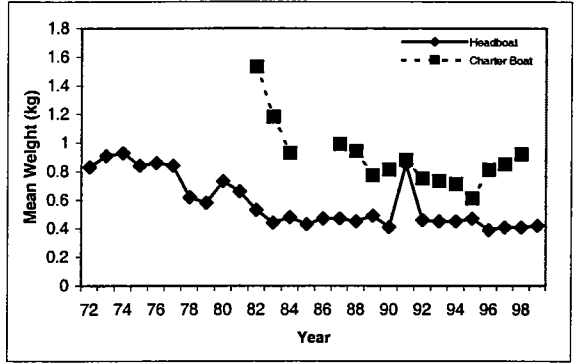
Commercial Mean Weights



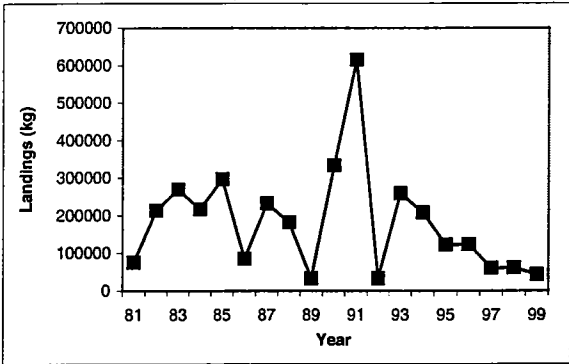
"For Hire" Recreational Landings



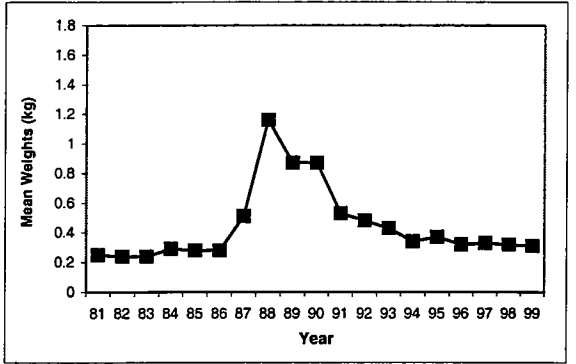
"For Hire" Recreational Mean Weights



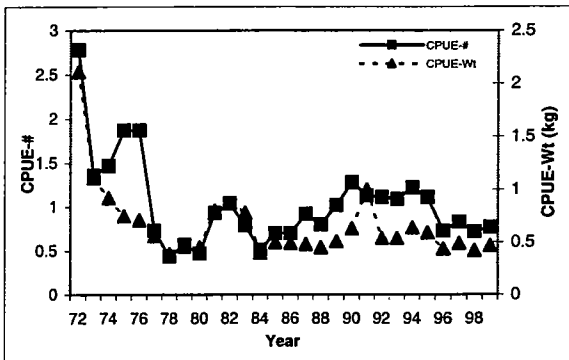
Other Recreational Landings



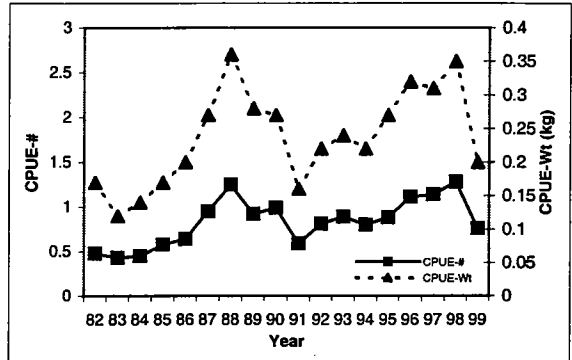
Other Recreational Mean Weights



Headboat CPUE: North Carolina - South Carolina



Headboat CPUE: Southeast Florida - Dry Tortugas



Gray triggerfish data (landings, mean weights, and CPUE-Wt are in kg. Commercial landings not included because of unclassified category.)

Year	Commercial		Headboat				Charter boat		Other Recreational			
	Landings	Mean Wt	Landings	Mean Wt	N	CPUE-#	CPUE-Wt	Landings	Mean Wt	Landings	Mean Wt	N
						NC - SEFL						
72			29044	2.18	112							
73			52679	2.32	120	0.22	0.50					
74			44811	2.15	315	0.30	0.62					
75			33431	2.14	394	0.22	0.48					
76			37534	1.94	427	0.17	0.36					
77			29515	1.92	445	0.19	0.41					
78			32518	1.74	587	0.15	0.32					
79			26551	1.82	346	0.16	0.39					
80			37158	1.85	419	0.13	0.30					
81			44156	1.37	447	0.07	0.10					
82			37638	1.56	532	0.08	0.11					
83	3.20	10	39676	1.32	975	0.08	0.10	59	1.11	1	1.46	6
84	1.95	277	47437	1.41	849	0.07	0.10	2304	2.52	1	1.21	14
85	1.87	561	36259	1.32	961	0.09	0.13	148	0.87	1	0.41	8
86	1.94	230	31874	1.39	707	0.07	0.09	991	1.55	1	0.50	10
87	1.93	415	31670	1.41	549	0.07	0.07	317	1.55	2	0.40	22
88	1.70	239	38725	1.16	424	0.08	0.08	5648	1.61	4	0.92	18
89	1.56	328	52469	1.10	683	0.09	0.09	2285	1.46	17	0.73	15
90	1.45	653	72405	0.88	736	0.17	0.12	237811	1.20	14	0.80	15
91	1.33	644	77256	0.86	602	0.22	0.19	8745	1.26	11	0.93	40
92	1.24	500	109479	0.86	631	0.25	0.21	17557	1.18	30	1.12	22
93	1.27	1111	86166	0.95	752	0.31	0.32	263193	1.04	31	1.00	14
94	1.17	1474	82513	0.93	1018	0.26	0.25	340665	1.05	202	0.88	26
95	1.20	1345	74245	0.87	838	0.31	0.27	22103	0.89	88	0.72	52
96	1.29	258	87277	0.84	1013	0.31	0.26	28705	0.99	167	1.01	42
97	1.08	388	61111	0.82	1554	0.39	0.32	39387	0.85	66	0.63	10
98	1.01	1071	33785	0.86	922	0.26	0.24	11816	0.91	45	0.92	61
99	1.20	1580		0.88	697	0.13	0.12	25241	1.02	116	0.77	28
											1.08	17
											0.96	49

1989 - Gear restrictions as listed in text

1992 - Gear restrictions as listed in text

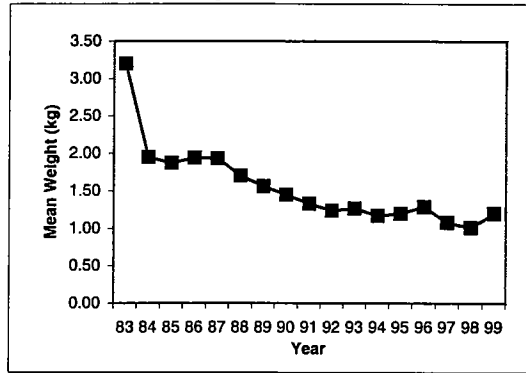
1995 - 12" TL minimum size limit in EEZ off the Atlantic coast of Florida, all fisheries

Gray triggerfish

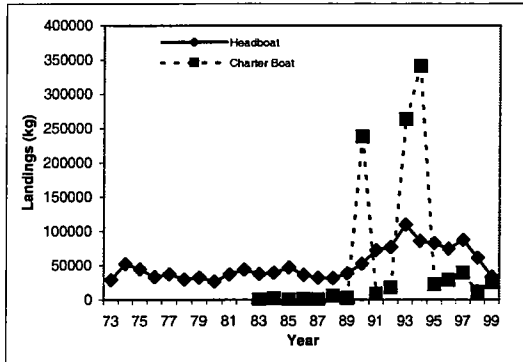
Commercial Landings

No data available

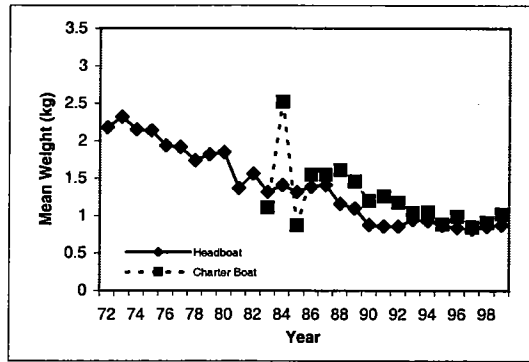
Commercial Mean Weights



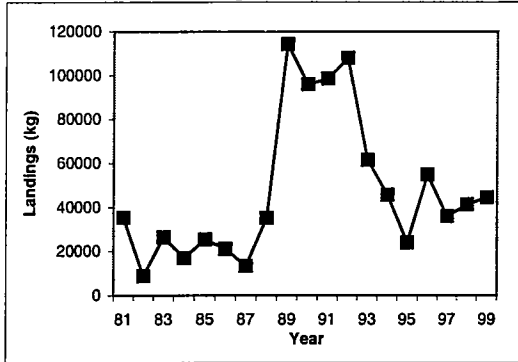
"For Hire" Recreational Landings



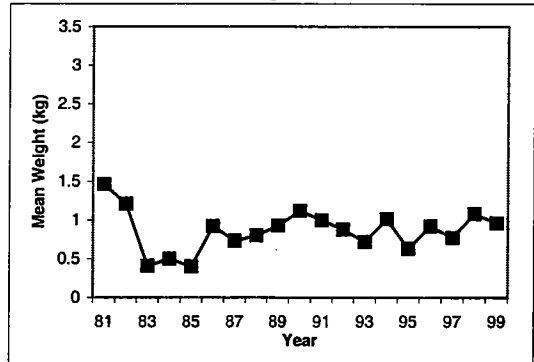
"For Hire" Recreational Mean Weights



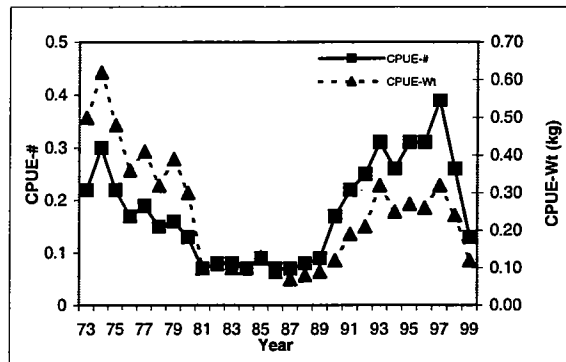
Other Recreational Landings



Other Recreational Mean Weights



Headboat CPUE: North Carolina - Southeast Florida



Red porgy data (landings, mean weights, and CPUE-Wt are in kg.)

Year	Commercial		Headboat			CPUE-Wt		Charter boat		Other Recreational		
	Landings	Mean Wt	Landings	Mean Wt	N	CPUE-#	CPUE-Wt	Landings	Mean Wt	Landings	Mean Wt	N
72			235351	1.06	2115	4.4	4.8					
73			334125	1.13	2508	5.1	5.8					
74			233116	1.07	1798	2.8	2.8					
75			202542	1.05	1148	2.4	2.2					
76			186310	1.09	1240	2.2	1.9					
77			240348	1.01	1100	2.4	2.5					
78			239757	1.02	843	1.9	2.2					
79			162176	1.05	458	1.5	1.7					
80			161668	0.95	727	1.7	1.7					
81			147625	0.85	575	2.0	1.8	0		5789	0.58	8
82			195923	0.72	1246	2.8	2.0	0	0.67	2503	0.55	4
83	1.05	337	118592	0.78	1206	1.7	1.3	19158	0.85	2487	0.33	4
84	0.92	3347	98446	0.78	1284	1.3	1.0	43250	0.65	4835	0.85	2
85	0.93	3447	118106	0.66	967	1.7	1.2	35	0.50	93437	0.64	31
86	0.89	3770	100737	1.39	1228	1.4	0.9	1284	0.58	7538	0.60	12
87	0.78	3306	100006	0.58	1203	1.3	0.8	9574	0.69	23407	0.57	35
88	0.74	1721	97764	0.59	811	1.3	0.8	32207	0.53	148055	0.60	27
89	0.72	2035	74865	0.50	1511	1.4	0.7	45587	0.61	16277	0.40	29
90	0.65	2463	56819	0.48	1312	1.0	0.5	7078	0.79	14016	0.32	10
91	0.62	2457	63874	0.48	649	1.1	0.5	50482	0.68	14741	0.43	28
92	0.69	1384	49830	0.49	828	0.8	0.5	32513	0.65	20206	0.50	23
93	0.74	1979	45824	0.54	1011	0.7	0.4	15797	0.65	10564	0.92	5
94	0.74	1745	39721	0.52	780	0.7	0.4	4115	0.58	10503	0.51	8
95	0.68	2260	42198	0.57	851	0.7	0.4	33755	0.60	2427	0.58	6
96	0.65	2679	37294	0.57	868	0.7	0.4	53391	0.70	32952	0.98	11
97	0.66	3208	34155	0.60	635	0.5	0.3	4984	0.67	2845	0.76	11
98	0.61	3559	31417	0.58	793	0.4	0.2	3621	0.60	1689		
99	0.73	2961	22070	0.69	264	0.2	0.1	11248	0.85	5294	1.02	7

1989 - Gear restrictions as listed in text

1992 - Gear restrictions as listed in text

12" TL minimum size limit, all fisheries

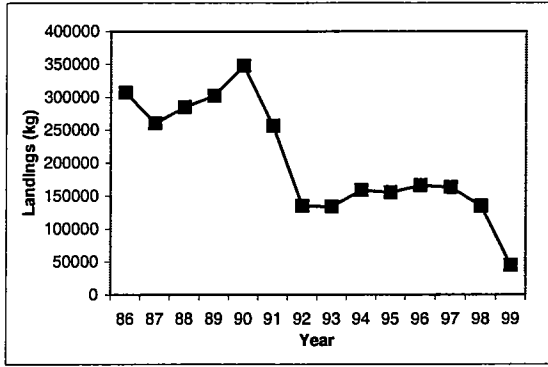
1999 - 14" TL minimum size limit, all fisheries

- March and April commercial sale prohibited

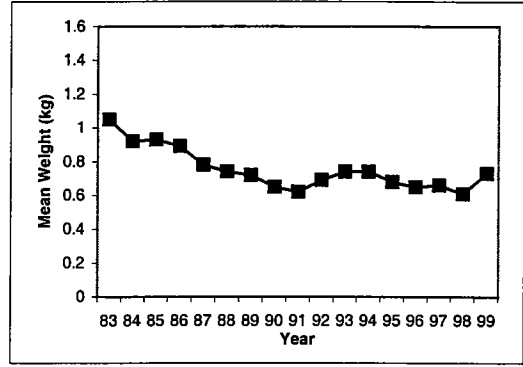
- September, emergency rule, fishery closed to recreational and commercial harvest

Red porgy

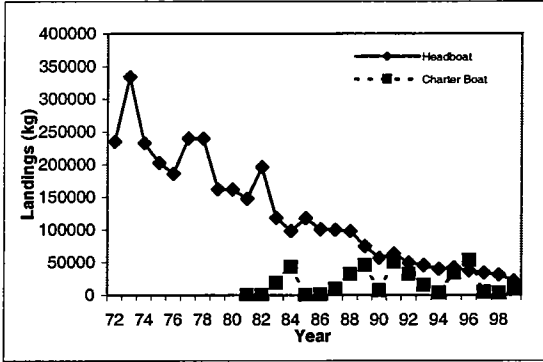
Commercial Landings



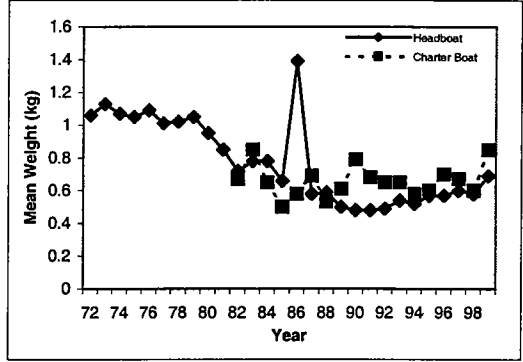
Commercial Mean Weights



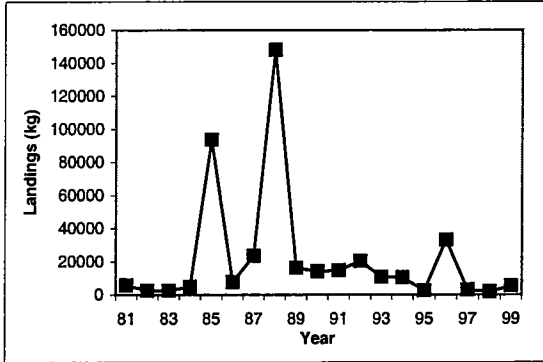
"For Hire" Recreational Landings



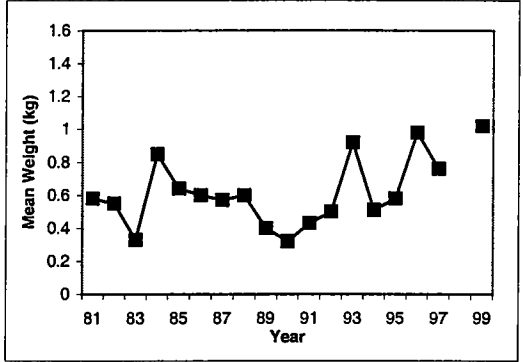
"For Hire" Recreational Mean Weights



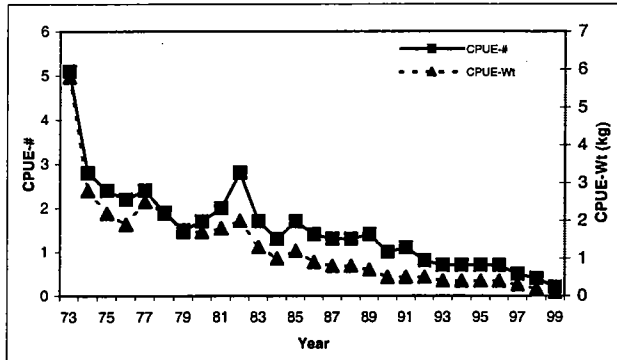
Other Recreational Landings



Other Recreational Mean Weights



Headboat CPUE: North Carolina - Northeast Florida



Vermilion snapper data (landings, mean weights, and CPUE-Wt are in kg.)

Year	Commercial		Headboat		Charter boat		Other Recreational	
	Landings	Mean Wt	Landings	Mean Wt	Landings	Mean Wt	Landings	Mean Wt
72			48576	0.51	569	1.7		
73			67762	0.78	278	1.1		
74			47679	0.56	672	1.1		
75			74872	0.62	702	1.4		
76			115354	0.61	667	0.8		
77			69538	0.45	514	0.3		
78			131201	0.44	917	0.4		
79			97192	0.46	699	0.2		
80			90025	0.49	677	0.5		
81			104320	0.38	676	1.6	0	0
82			154150	0.43	1397	2.0	0	8639
83	0.94	391	133985	0.35	2280	1.8	96935	80523
84	0.85	4921	111114	0.36	2316	1.5	5483	0.48
85	0.82	5996	168814	0.32	2994	2.3	4759	0.10
86	0.63	8621	158448	0.31	3564	2.1	0	0.40
87	0.56	8022	204999	0.29	3383	2.4	27891	0.18
88	0.54	6266	189892	0.29	2495	2.6	35048	0.65
89	0.62	5625	157189	0.24	4776	2.3	28586	0.36
90	0.59	6007	175439	0.23	5333	2.6	15828	0.39
91	0.61	10525	275691	0.53	4041	2.8	30213	0.41
92	0.63	6039	113216	0.29	2835	1.5	49421	0.25
93	0.70	8230	116665	0.32	3330	1.6	30585	0.42
94	0.72	7545	127754	0.31	5738	2.0	21354	0.46
95	0.65	9866	123314	0.33	4811	2.0	15506	0.41
96	0.59	5252	125332	0.35	3563	2.2	70871	0.48
97	0.66	5223	136039	0.38	4048	2.3	18961	0.43
98	0.58	6675	124962	0.35	4072	2.2	44848	0.92
99	0.66	11825	152287	0.39	4233	2.6	37593	0.40

1983 - 4" mesh on trawl gear to achieve 12" minimum size on VS

1989 - Gear restrictions as listed in text

1992 - Gear restrictions as listed in text

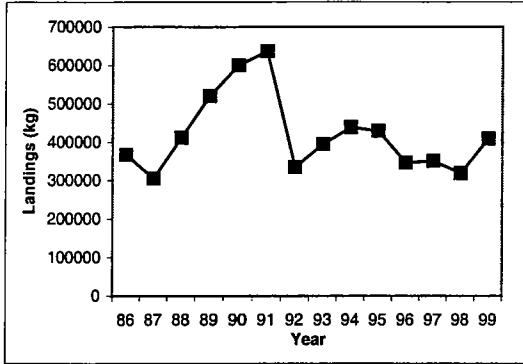
10" TL minimum size limit, all fisheries

Recreational bag limit of 10 VS /person/day

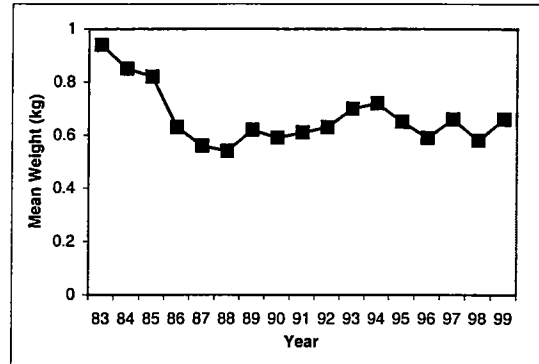
1999 - 11" recreational minimum size limit, 12" commercial minimum size limit

Vermilion snapper

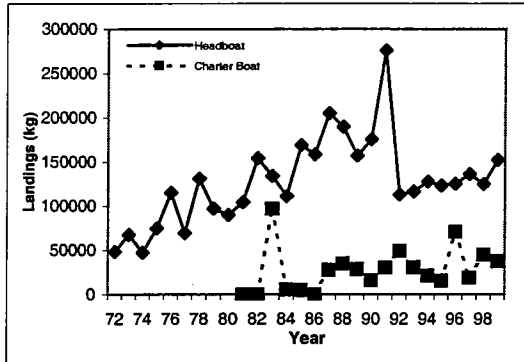
Commercial Landings



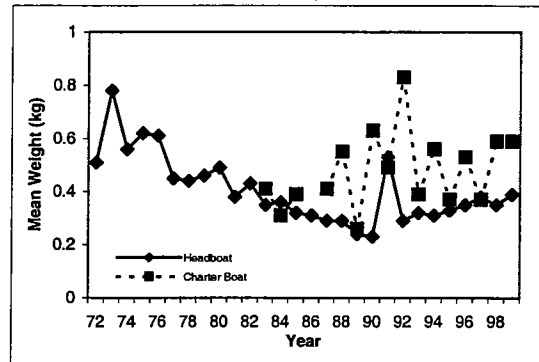
Commercial Mean Weights



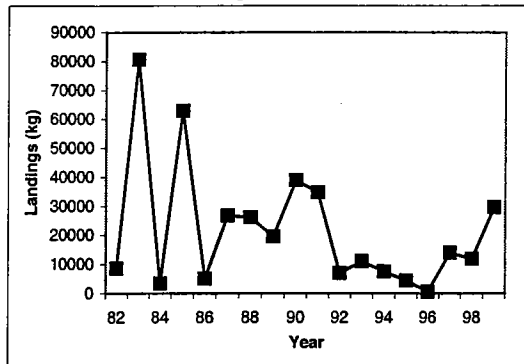
"For Hire" Recreational Landings



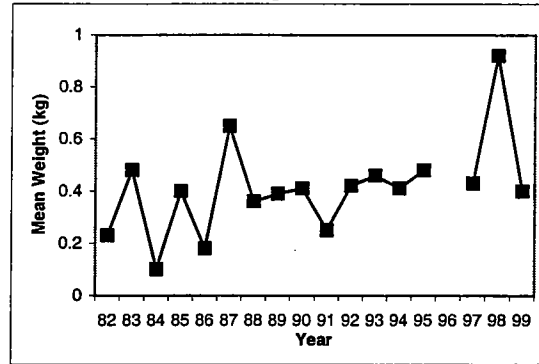
"For Hire" Recreational Mean Weights



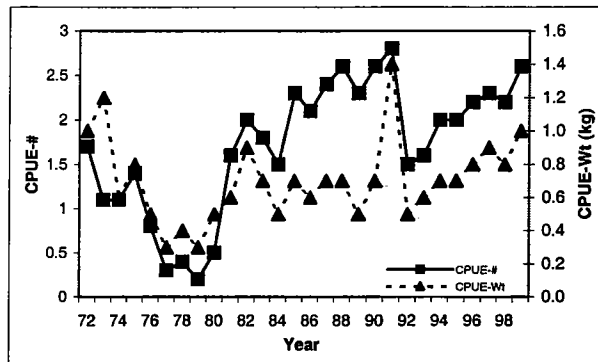
Other Recreational Landings



Other Recreational Mean Weights



Headboat CPUE: North Carolina - Northeast Florida



Red snapper data (landings, mean weights, and CPUE-Wt are in kg.)

Year	Commercial		Headboat			Charter boat		Other Recreational					
	Landings	Mean Wt	Landings	Mean Wt	N	CPUE-#	CPUE-Wt	Landings	Mean Wt	N	Landings	Mean Wt	N
						NC - NEFL							
72			18517	8.00	50	0.04	0.38						
73			26626	8.48	41	0.07	0.46						
74			13770	4.43	95	0.03	0.16						
75			15833	3.45	166	0.05	0.17						
76			102011	2.32	499	0.06	0.26						
77			85973	1.86	718	0.03	0.09						
78			75590	1.71	741	0.03	0.10						
79			81574	2.51	245	0.01	0.08						
80			32177	1.87	259	0.04	0.08						
81			52086	1.50	675	0.24	0.35						
82			44410	2.02	431	0.12	0.27						
83	5.54	35	33527	1.23	947	0.17	0.19	1018	2.59	8	68563	1.50	28
84	1.79	1073	36885	1.29	1261	0.16	0.19	1233	0.70	44	40038	1.10	13
85	2.32	871	59840	1.17	1156	0.25	0.30	32106	1.91	5	111714	0.76	41
86	2.42	1124	24636	1.68	419	0.08	0.11	3830	0.18	206	460543	1.28	36
87	2.58	1270	37076	1.39	303	0.11	0.16	25451	2.03	14	83672	0.53	20
88	2.13	777	58928	1.66	196	0.12	0.20	28116	1.23	25	40615	0.83	39
89	2.37	1201	32074	1.32	362	0.11	0.15	42346	2.05	24	67085	0.50	67
90	2.28	847	29759	1.45	311	0.10	0.14	28186	1.62	21	93738	0.56	43
91	2.45	971	32633	1.87	89	0.07	0.17	1419	0.61	14	60013	3.72	10
92	4.15	543	13100	2.71	62	0.03	0.06	19954	2.03	14	44558	0.48	4
93	3.40	1400	19352	2.60	194	0.04	0.10	135325	2.10	10	145256	1.62	9
94	3.03	1191	19488	2.95	108	0.04	0.09	21467	4.68	15	38857	2.06	8
95	3.82	1315	26039	3.09	131	0.05	0.15	37991	3.43	35	37414	0.70	3
96	3.91	812	20972	3.36	78	0.04	0.15	24504	1.82	24	7604	4.83	3
97	4.38	436	23226	3.79	67	0.03	0.15	11205	1.72	9	41958	2.22	6
98	8.55	521	12178	2.57	136	0.03	0.08	29910	1.28	20	9616		
99	3.31	1140	19758	2.82	156	0.04	0.13	27603	2.34	26	24544	5.02	5
								40936	1.28	114	34441	2.24	25

1983 - 12" TL minimum size limit, all fisheries

1989 - Gear restrictions as listed in text

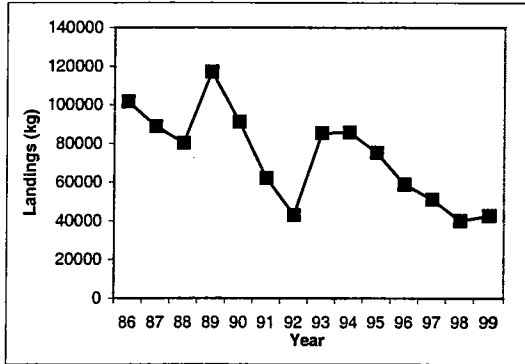
1992 - Gear restrictions as listed in text

20" TL minimum size limit, all fisheries

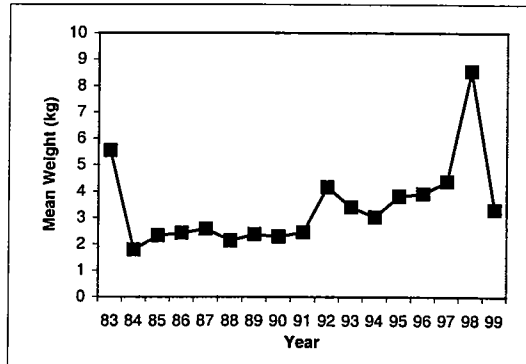
Recreational bag limit of 10 snapper/person/day, no more than 2 RS (Excluding VS)

Red snapper

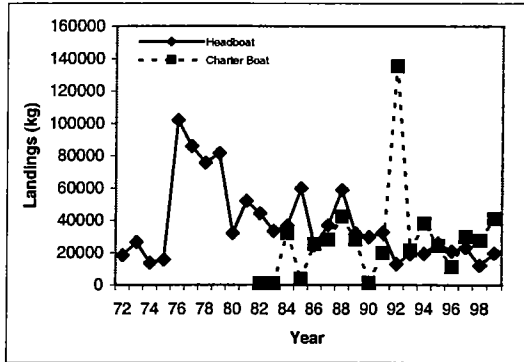
Commercial Landings



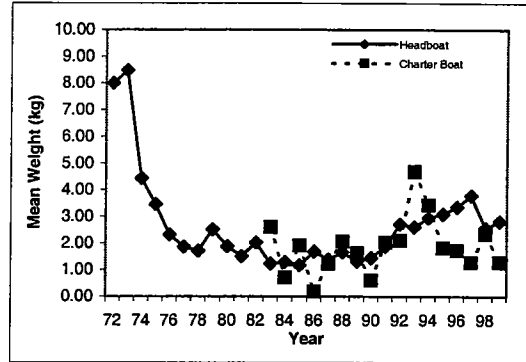
Commercial Mean Weights



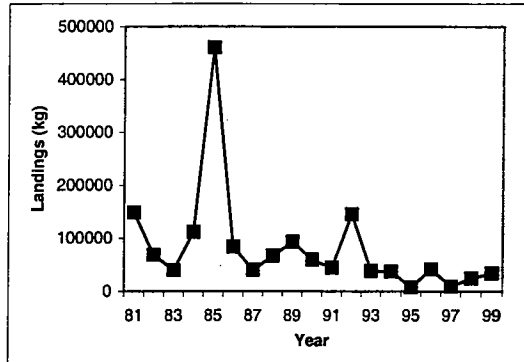
"For Hire" Recreational Landings



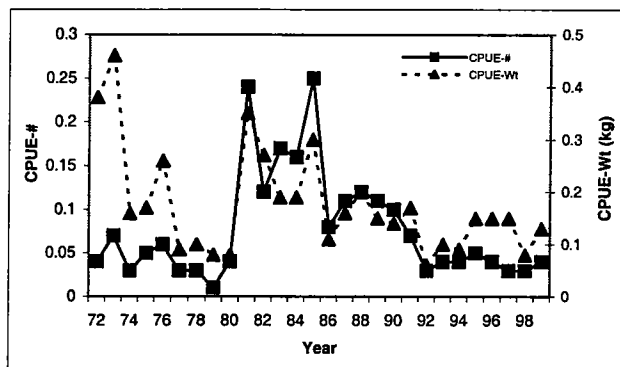
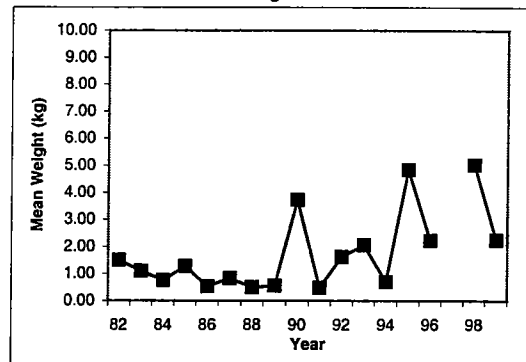
"For Hire" Recreational Mean Weights



Other Recreational Landings



Other Recreational Mean Weights



Gag data (landings, mean weights, and CPUE-Wt are in kg.)

Year	Commercial			Headboat			CPUE-Wt			Charter boat			Other Recreational		
	Landings	Mean Wt	N	Landings	Mean Wt	N	CPUE-#	CPUE-Wt	NC - NEFL	Landings	Mean Wt	N	Landings	Mean Wt	N
72				54136	5.35	76	0.15	1.11							
73				85817	7.47	124	0.18	1.48							
74				65830	7.54	88	0.09	0.78							
75				33471	6.96	135	0.05	0.36							
76				26124	7.85	149	0.04	0.29							
77				26813	6.15	183	0.05	0.29							
78				18906	5.89	173	0.03	0.20							
79				30562	5.83	147	0.06	0.37							
80				19543	4.63	175	0.04	0.22							
81				67130	4.42	225	0.07	0.31		0					
82				58007	4.76	296	0.06	0.31		1063	1.10	1	38724	0.83	9
83		5.55	116	59971	3.68	481	0.08	0.31		358219	2.20	2	10149	0.52	5
84		6.72	3443	93522	4.93	713	0.09	0.43		30118	3.58	17	46920	3.00	7
85		7.45	3738	71585	4.53	512	0.07	0.33		3739	3.00	5	105841	3.12	12
86		5.54	2412	60839	3.35	382	0.08	0.26		16611	4.75	2	58482	0.89	21
87		6.42	3463	84937	3.22	372	0.09	0.30		82972	2.63	24	3835	0.77	15
88		6.91	1932	91269	3.38	288	0.10	0.38		135881	3.33	33	170898	2.91	32
89		6.04	1794	78711	3.15	472	0.10	0.36		61410	3.46	30	76638	1.73	17
90		5.82	1329	62911	2.95	366	0.09	0.30		36969	2.88	65	133790	3.15	20
91		5.62	1780	51674	2.94	184	0.07	0.26		30385	3.92	21	130351	0.63	15
92		5.56	2354	56466	3.06	276	0.07	0.28		71019	4.13	75	72870	2.15	30
93		5.77	2430	55053	3.98	282	0.06	0.26		146148	4.07	44	146148	4.18	28
94		5.33	1741	43048	3.89	363	0.05	0.23		76530	4.47	65	147849	4.33	33
95		7.68	379	50439	5.29	2571	0.06	0.27		90232	4.47	65	141489	3.59	26
96		6.76	2097	30092	4.36	220	0.05	0.20		63730	3.98	52	82070	3.67	22
97		6.85	1966	27934	5.24	259	0.04	0.17		44465	7.32	29	96272	8.98	12
98		6.68	2267	32149	4.06	341	0.05	0.20		16452	6.97	19	107178	4.48	8
99		6.63	2739	26465	4.60	259	0.03	0.16		33219	9.15	21	61574	4.53	13
										94133	5.02	54	181091	4.20	36

1989 - Gear restrictions as listed in text

1992 - Gear restrictions as listed in text

20" TL minimum size limit, all fisheries

Recreational bag limit of 5 grouper/person/day

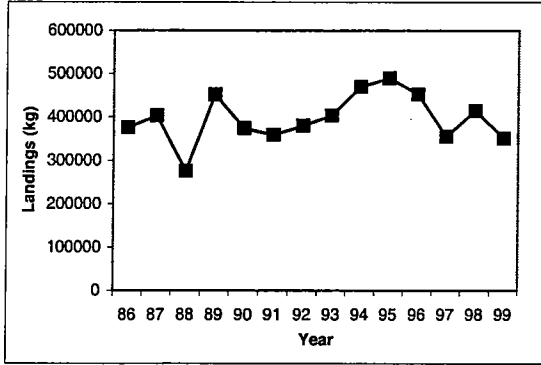
1999 - 24" TL minimum size limit

- Included in the 5 grouper bag limit, no more than 2 fish may be gag or black grouper individually or combined

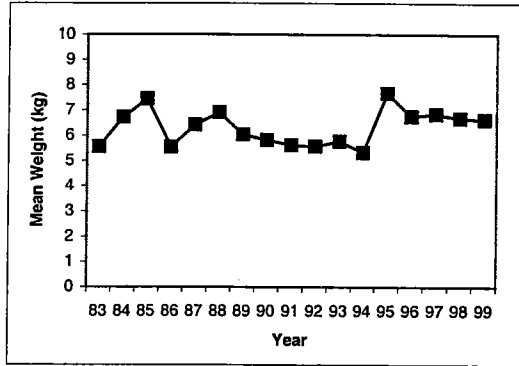
- March and April commercial sale prohibited

Gag

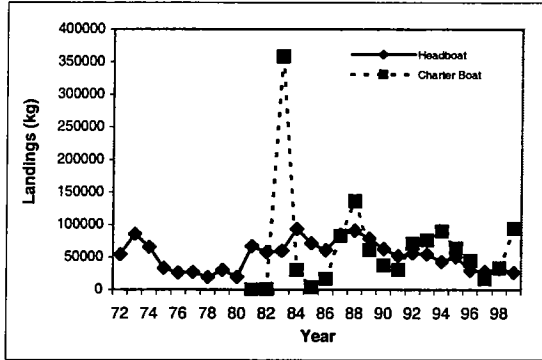
Commercial Landings



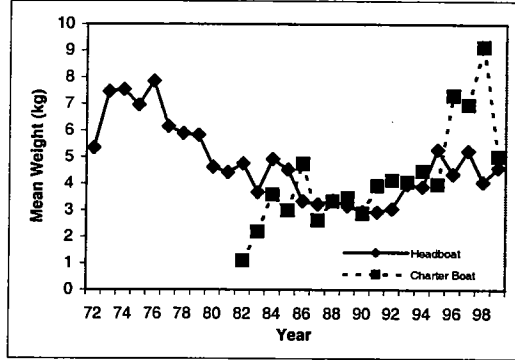
Commercial Mean Weights



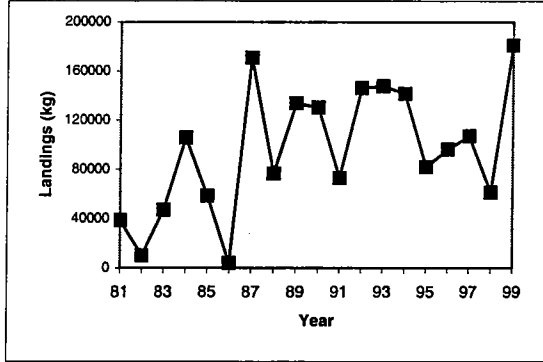
"For Hire" Recreational Landings



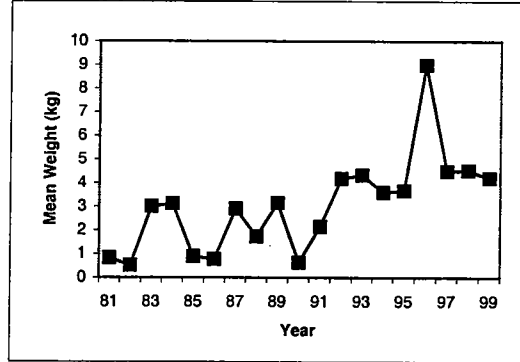
"For Hire" Recreational Mean Weights



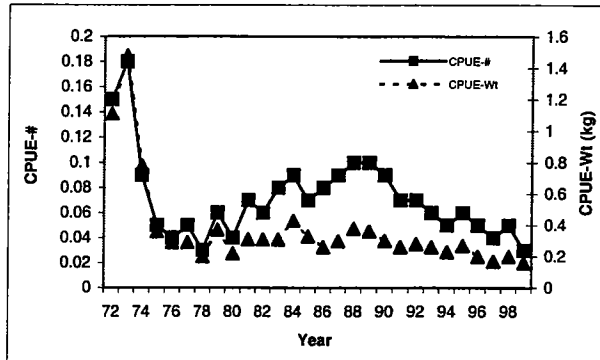
Other Recreational Landings



Other Recreational Mean Weights



Headboat CPUE: North Carolina - Northeast Florida



Scamp data (landings, mean weights, and CPUE-Wt are in kg.)

Year	Commercial		Headboat				Charter boat		Other Recreational			
	Landings	Mean Wt	Landings	Mean Wt	N	CPUE-#	CPUE-Wt	Landings	Mean Wt	Landings	Mean Wt	N
72			53140	4.6	375	0.23	1.09					
73			32671	4.2	363	0.13	0.56					
74			48966	4.3	373	0.14	0.58					
75			27807	4.4	483	0.07	0.30					
76			31130	4.7	863	0.07	0.34					
77			36832	4.6	426	0.06	0.29					
78			30622	4.3	302	0.07	0.33					
79			40022	3.3	170	0.12	0.48					
80			10231	2.5	158	0.04	0.12					
81			13485	2.2	109	0.02	0.05					
82			18838	2.7	253	0.04	0.10			6290	1.68	2
83			20566	2.6	434	0.03	0.10		4.5	0		
84	2.6	1275	19240	2.7	454	0.03	0.08	2678	1.0	24610	0.45	1
85	2.4	1722	21515	2.4	433	0.04	0.11	619	5.8	11721		
86	2.5	2269	16733	2.1	411	0.03	0.07	2843		356		
87	2.4	4049	24189	1.6	521	0.06	0.10	803	4.7	4483	2.53	45
88	2.2	2887	23590	1.5	446	0.06	0.10	18263	2.4	3140	1.52	3
89	1.9	3462	20836	1.4	340	0.05	0.09	2335	1.8	7364	1.03	11
90	1.9	3424	27920	1.5	317	0.09	0.13	3155	1.2	4637	0.58	13
91	1.9	4142	78234	2.7	388	0.12	0.39	8039	1.3	6552	1.56	8
92	2.3	1798	30622	2.6	228	0.06	0.15	11780	2.5	3737	0.68	3
93	2.3	2409	24421	2.7	322	0.05	0.13	3686	2.5	2859	1.86	3
94	2.3	1957	28457	2.4	332	0.07	0.17	6545	2.0	4174	2.01	1
95	2.4	2990	35522	2.3	364	0.09	0.22	126	3.1	0		
96	2.2	2786	25746	2.7	265	0.07	0.18	9350	1.9	3254	1.43	1
97	2.3	2324	34450	2.4	416	0.09	0.23	11365	2.5	0		
98	2.1	3256	35673	2.3	382	0.10	0.23	14486	2.8	4005	2.23	2
99	2.1	5625	40581	2.5	338	0.12	0.28	21980	3.4	2409	1.31	1

1989 - Gear restrictions as listed in text

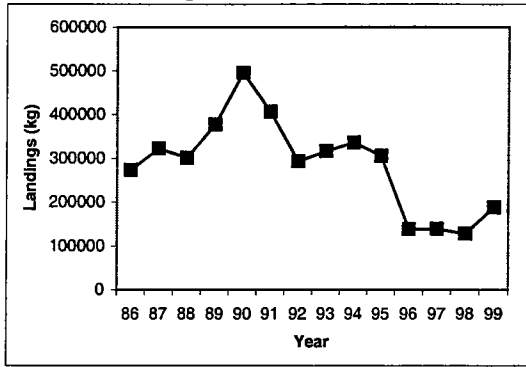
1992 - Gear restrictions as listed in text

20" TL minimum size limit, all fisheries

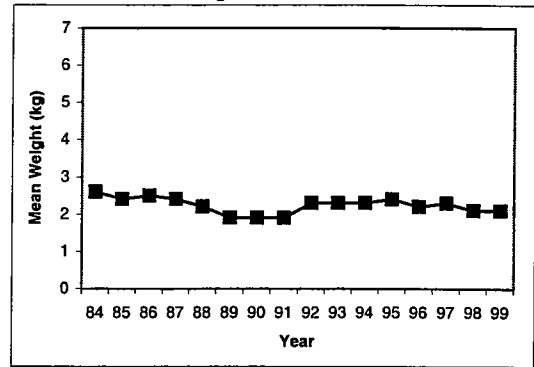
Recreational bag limit of 5 grouper/person/day

Scamp

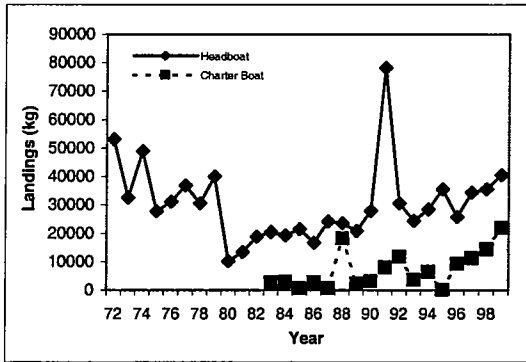
Commercial Landings



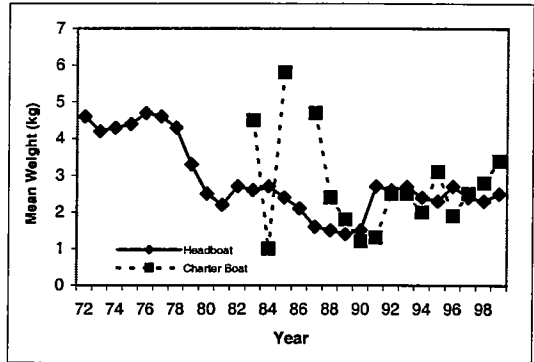
Commercial Mean Weights



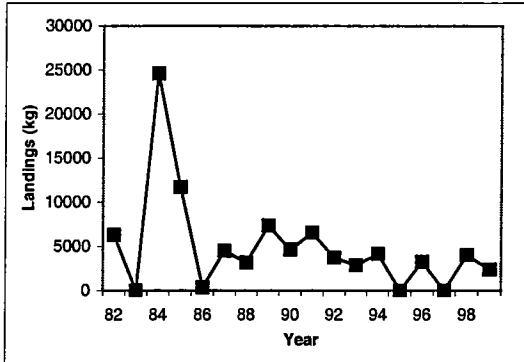
"For Hire" Recreational Landings



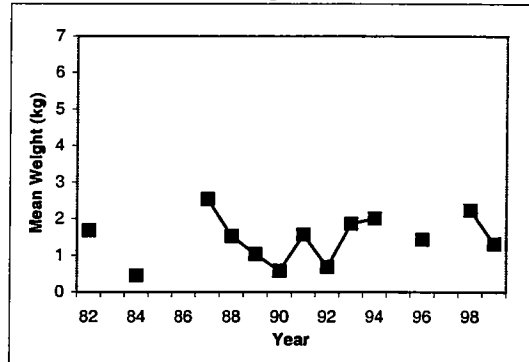
"For Hire" Recreational Mean Weights



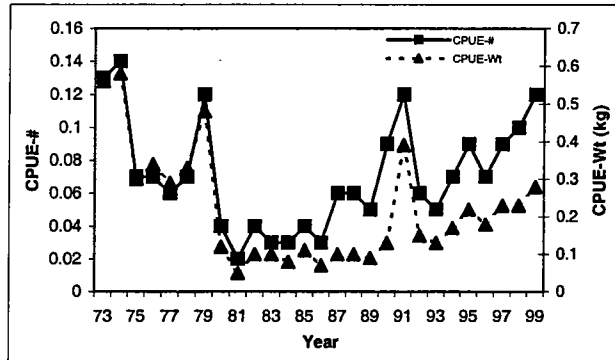
Other Recreational Landings



Other Recreational Mean Weights



Headboat CPUE: North Carolina - Northeast Florida



Red grouper data (landings, mean weights, and CPUE-Wt are in kg.)

Year	Commercial		Headboat				Charter boat		Other Recreational			
	Landings	Mean Wt	Landings	Mean Wt	N	CPUE-#	CPUE-Wt	Landings	Mean Wt	Landings	Mean Wt	N
72				10.4	12							
73				9.98	10							
74				8.39	15							
75				7.13	27							
76				3.51	64							
77				4.91	111							
78				4.01	96							
79				2.51	157							
80				2.45	175							
81			16880	2.60	223	0.03	0.07			46148	1.33	12
82			14279	2.24	274	0.02	0.05	4061	4.45	114878	4.76	5
83	5.60	79	17648	2.00	389	0.05	0.08	316	8.21	319477	1.08	6
84	5.91	216	18361	1.95	598	0.04	0.08	4258	2.83	671848	0.92	12
85	6.48	208	19627	2.25	583	0.04	0.09	5974	1.37	59453	0.54	1
86	205849	119	13314	2.08	387	0.03	0.05	359	1.12	728030	0.66	13
87	157218	465	15702	2.17	283	0.03	0.07	31673		88861	1.17	14
88	228058	446	10615	1.90	211	0.01	0.03	122332	1.22	54308	2.74	6
89	157754	525	8126	2.35	242	0.01	0.03	1264	1.59	17263	1.58	3
90	128126	987	21733	2.72	184	0.02	0.07	173953	2.18	10719		
91	134258	713	7777	2.85	64	0.01	0.02	388	2.57	17104	1.23	3
92	115960	322	13294	3.34	79	0.02	0.06	2330	3.74	121856	2.30	7
93	151537	687	14095	2.93	107	0.02	0.07	60205	3.29	102681	2.86	15
94	188432	500	16099	2.91	133	0.02	0.06	5006	3.09	94380	2.63	4
95	163022	497	16011	3.13	189	0.03	0.08	27249	3.17	109384	1.76	6
96	101660	347	16853	3.05	207	0.03	0.08	21796	2.84	140101	2.85	13
97	166781	596	25235	3.54	399	0.03	0.11	23676	4.39	27636	2.80	7
98	217943	1193	33748	2.93	445	0.06	0.18	8612	2.81	64816	3.46	10
99	274214	1795	26074	3.33	309	0.02	0.06	15391	3.13	30932	3.13	21

1983 - 12" TL minimum size limit, all fisheries

1989 - Gear restrictions as listed in text

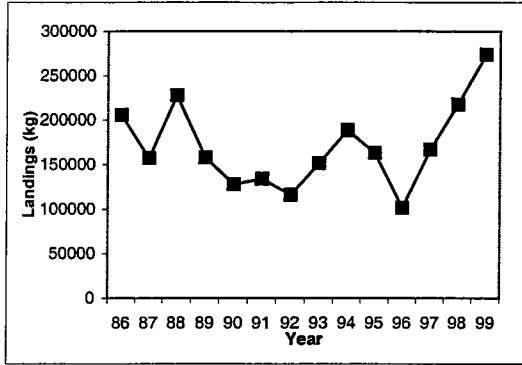
1992 - Gear restrictions as listed in text

20" TL minimum size limit, all fisheries

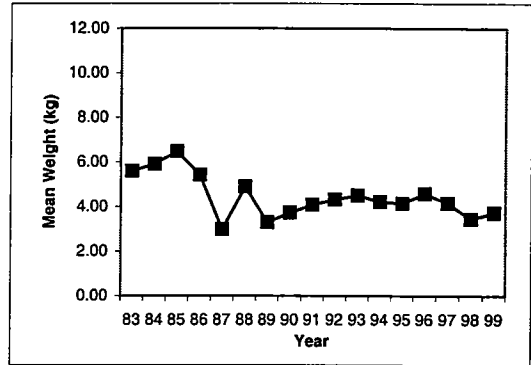
Recreational bag limit of 5 grouper/person/day

Red grouper

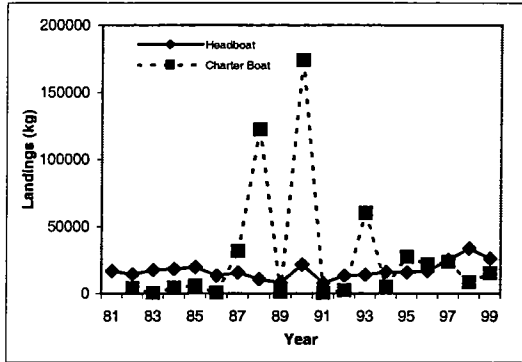
Commercial Landings



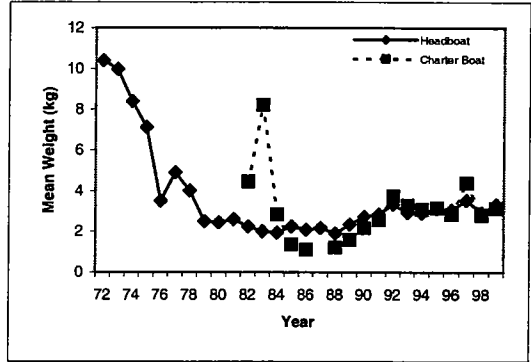
Commercial Mean Weights



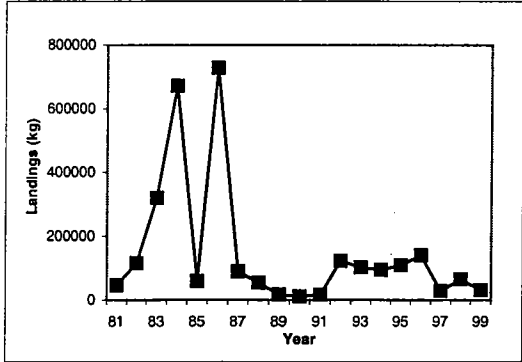
"For Hire" Recreational Landings



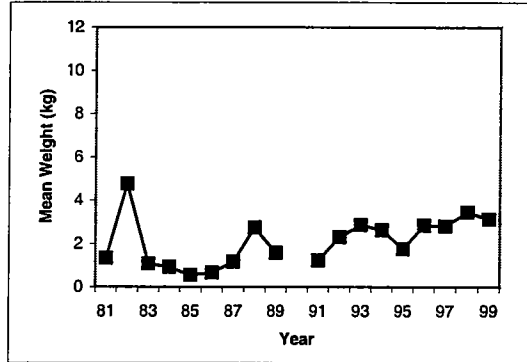
"For Hire" Recreational Mean Weights



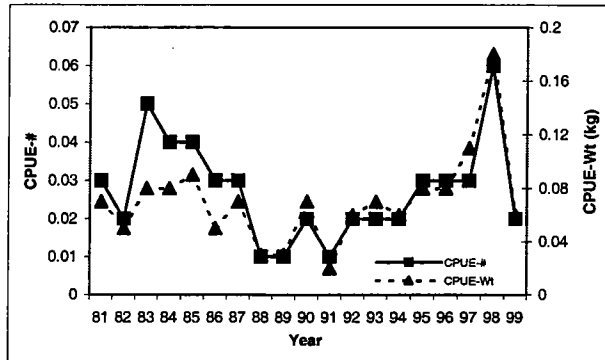
Other Recreational Landings



Other Recreational Mean Weights



Headboat CPUE: North Carolina - Southeast Florida



Greater amberjack data (landings, mean weights, and CPUE-Wt are in kg.)

Year	Commercial			Headboat			Charter boat			Other Recreational		
	Landings	Mean Wt	N	Landings	Mean Wt	N	Landings	Mean Wt	N	Landings	Mean Wt	N
72				0.77		1						
73				7.96		16						
74				7.13		22						
75				9.58		19						
76				9.67		50						
77				5.21		39						
78				10.42		92						
79				4.97		115						
80				6.81		52						
81				4.46		108	0.05	0.20		148667	15.63	6
82				5.32		48	0.07	0.31		3914	14.55	2
83		35.49	1	54213	3.34	161	0.05	0.15		35327	7.91	7
84		3.90	1	113345	6.45	151	0.05	0.29		181257	11.55	34
85		5.81	24	51398	3.95	165	0.03	0.14		179373	10.62	16
86		232878	22	53728	4.38	168	0.03	0.13		355806	10.97	34
87		629073	50	94986	5.01	186	0.04	0.21		307662	12.78	48
88		577291	61	76431	7.85	86	0.03	0.18		397668	10.54	30
89		506944	29	44158	4.93	191	0.03	0.11		314312	13.20	62
90		835765	53	47798	6.26	119	0.02	0.11		206767	8.64	27
91		1060147	137	65088	7.13	74	0.02	0.17		413312	10.12	35
92		1007593	244	71255	6.32	130	0.02	0.19		229485	10.43	38
93		863930	812	71200	8.33	121	0.02	0.21		260519	11.60	59
94		888360	412	54693	7.43	124	0.02	0.16		353272	10.24	93
95		844016	319	35784	7.65	113	0.02	0.12		311588	11.36	48
96		691348	181	42036	8.13	76	0.02	0.14		273664	12.65	67
97		631670	506	22823	8.91	72	0.01	0.08		193910	11.87	34
98		547889	663	24357	6.63	93	0.01	0.10		134191	10.76	66
99		496482	742	31554	6.60	127	0.02	0.11		531231	10.09	313

1989 - Gear restrictions as listed in text

1992 - Gear restrictions as listed in text

28" FL recreational minimum size limit

36" FL commercial minimum size limit (28" FL minimum for cored fish)

Recreational bag limit of 3 GAJ/person/day

Commercial harvest and/or landing of GAJ in excess of bag limit is prohibited in April off Cape Canaveral, FL

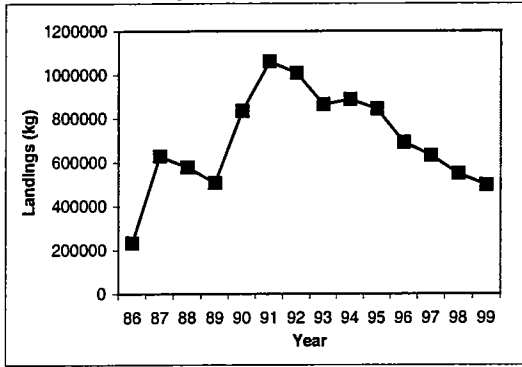
1998 - Commercial quota of 1,169,931 lb gutted weight, season starts May 1

1999 - Recreational bag limit of 1 GAJ/person/day

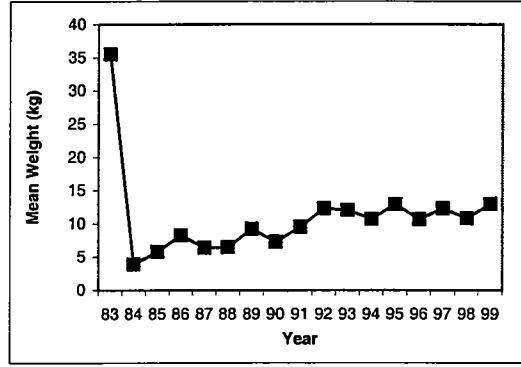
During April closure, commercial and recreational bag limit 1/person/day and sale prohibited

Greater amberjack

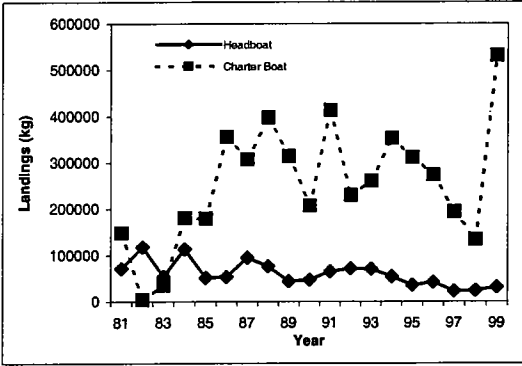
Commercial Landings



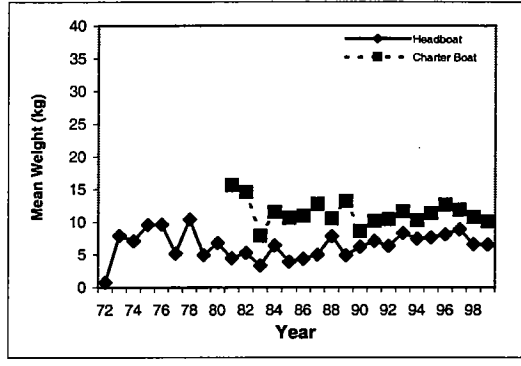
Commercial Mean Weight



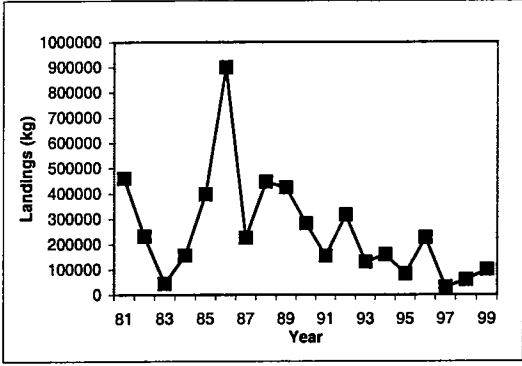
"For Hire" Recreational Landings



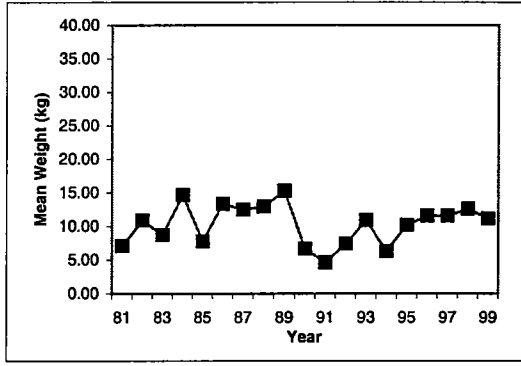
"For Hire" Recreational Mean Weights



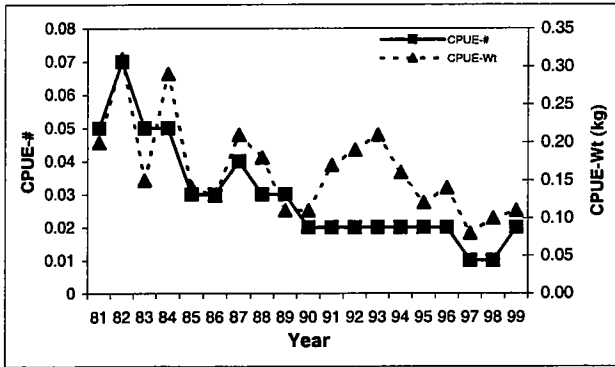
Other Recreational Landings



Other Recreational Mean Weights



Headboat CPUE: North Carolina - Southeast Florida



Black grouper data (landings, mean weights, and CPUE-Wt. are in kg.)

Year	Commercial		Headboat		SEFL	Charter Boat		Other Recreational	
	Landings	Mean Wt	Landings	Mean Wt		Landings	Mean Wt	Landings	Mean Wt
72			11.07	4					
73									
74			21.34	2	0.008	0.054			
75			5.55	6	0.002	0.132			
76			8.65	24	0.007	0.025	1.59		
77			6.43	43	0.007	0.028	2.02		
78			4.09	67	0.007	0.033			
79			5.01	42	0.006	0.055			
80			5.65	34	0.012	0.048			
81		17.01	3.80	48	0.003	0.012			
82		21.17	5.71	59	0.002	0.007			
83	436756	0.89	4.98	54	0.002	0.010			
84	505425	3.87	6.37	28	0.005	0.022			
85	350125	4.96	4.69	17	0.007	0.035			
86	354232	3.68	3.91	20	0.007	0.028			
87	210440	4.06	4.70	18	0.007	0.022			
88	127947	4.36	5.13	10	0.006	0.031			
89	131724	6.16	4.64	11	0.005	0.026			
90	154386	4.57	5.77	17	0.006	0.035			
91	140692	7.32	5.41	20	0.006	0.028			
92	833	6.97	3.25	14	0.007	0.022			
93	71455	9.62	5.41	15	0.005	0.026			
94	74768	7.12	6.33	25	0.006	0.035			
95	80034	6.70	5.97	24	0.004	0.028			
96	63623	6.24	6.41	11	0.004	0.028			
97							3920	150254	4.35
98							18842	27056	.42
99							79944	156028	6.55
							15427	65755	1.05
							15318	79607	6.38
							711021	326505	4.26
							803	141577	5.38
							305090	980737	
							940	115285	18.00
							0	36833	
							0	133037	
							31203	84910	2.23
							0	0	
							0	30072	10.49
							0	42026	2.84
							2746	61023	5.78
							8546	25635	4.88
							6073	38556	7.90
							26468	3599	4.49
									11

1989 - Gear restrictions as listed in text

1992 - Gear restrictions as listed in text

20" TL minimum size limit, all fisheries

Recreational bag limit of 5 grouper/person/day

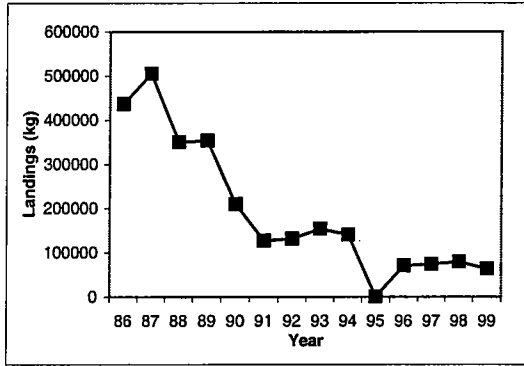
1999 - 24" TL minimum size limit

- Included in the 5 fish grouper bag limit, no more than 2 fish may be gag or black grouper individually or combined

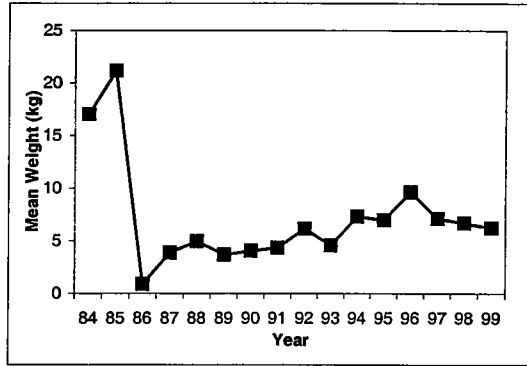
- March and April commercial sale prohibited

Black grouper

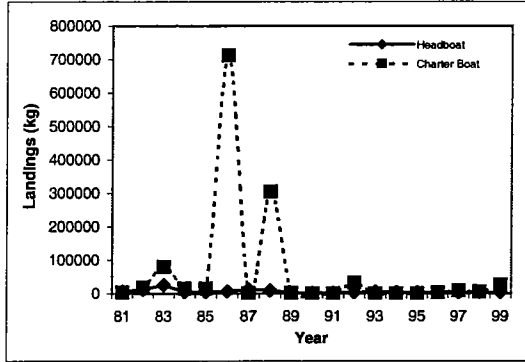
Commercial Landings



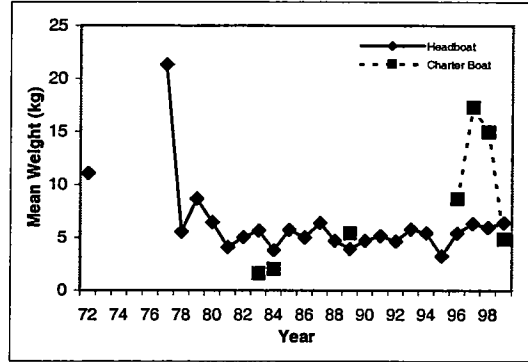
Commercial Mean Weights



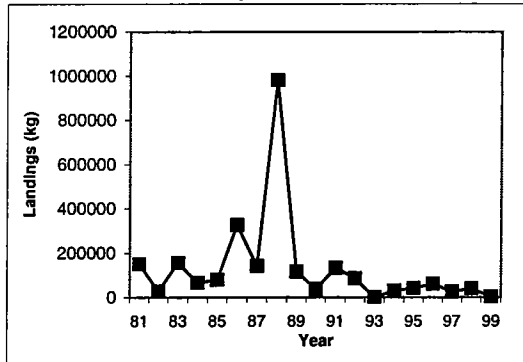
"For Hire" Recreational Landings



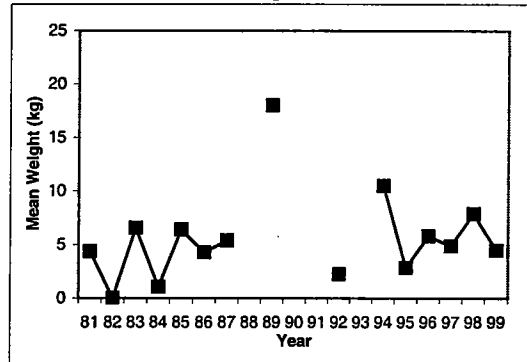
"For Hire" Recreational Mean Weights



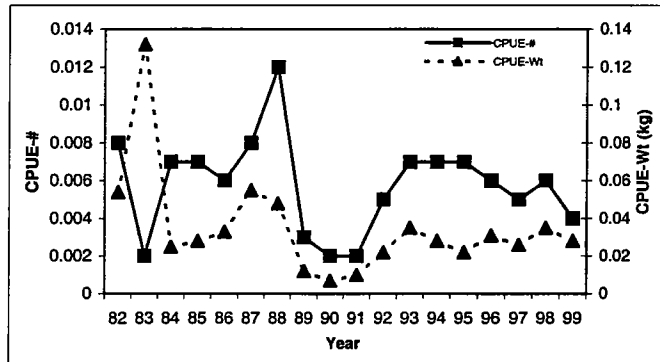
Other Recreational Landings



Other Recreational Mean Weights



Headboat CPUE: Southeast Florida



Speckled hind data (landings, mean weights, and CPUE-Wt are in kg.)

Year	Commercial		Headboat				Charter boat		Other Recreational			
	Landings	Mean Wt	Landings	Mean Wt	N	CPUE-#	CPUE-Wt	Landings	Mean Wt	Landings	Mean Wt	N
72			18330	4.28	141	0.090	0.374					
73			27618	3.59	271	0.141	0.477					
74			17980	3.78	183	0.058	0.213					
75			12022	3.60	199	0.033	0.130					
76			11195	4.10	111	0.028	0.122					
77			6722	2.69	149	0.027	0.073					
78			4104	2.34	125	0.019	0.044					
79			5843	2.77	28	0.020	0.070					
80			3099	2.61	30	0.012	0.035					
81			1265	1.49	14	0.006	0.010					
82			4963	2.07	41	0.022	0.049					
83		2.0	3820	1.87	84	0.024	0.042					
84		1.6	1660	1.05	108	0.014	0.016					
85		1.6	4342	1.40	82	0.027	0.044					
86	35890	1.6	3312	1.20	75	0.024	0.030	341	1.09	1		
87	25674	1.7	3088	1.31	48	0.017	0.026	101	2.77	1		
88	20342	2.1	3761	1.79	48	0.014	0.026	49			0	
89	22638	1.9	1475	1.67	30	0.012	0.014	67	1.27	1	0	
90	21814	1.8	520	0.80	12	0.006	0.005	0			1037	
91	17384	2.0	735	0.50	7	0.003	0.006	0			0	
92	20385	2.0	570	0.87	7	0.003	0.005	0			0	
93	20272	3.2	254	0.75	11	0.002	0.002	0			0	
94	10042	1.9	226	0.95	12	0.002	0.002	0			151	0.42
95	1691	2.0	406	1.92	14	0.002	0.004	0			0	
96	1417	1.8	182	0.97	12	0.001	0.001	2335	1.57	1	474	1.65
97	4159	2.5	141	0.89	22	0.001	0.001	1062	0.64	2	0	
98	2304	2.0	1022	1.30	22	0.006	0.010	327			159	
99	2304	2.1	383	0.60	15	0.006	0.004	670	1.93	1	0	0.50

1992 - Gear restrictions as listed in text

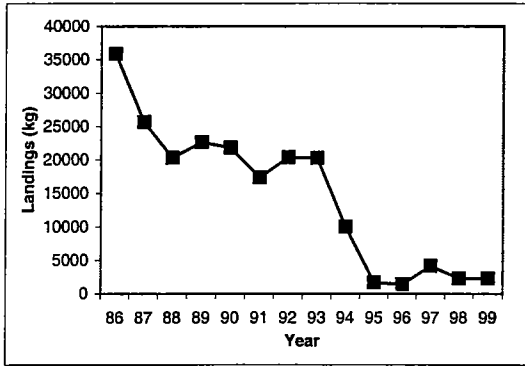
Recreational bag limit of 5 grouper/person/day

1994 - One SH/vessel/trip commercial or recreational

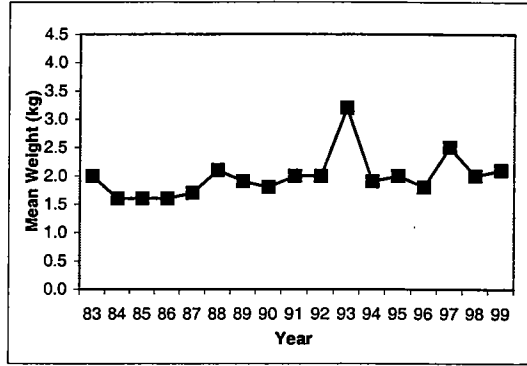
No sale of SH

Speckled hind

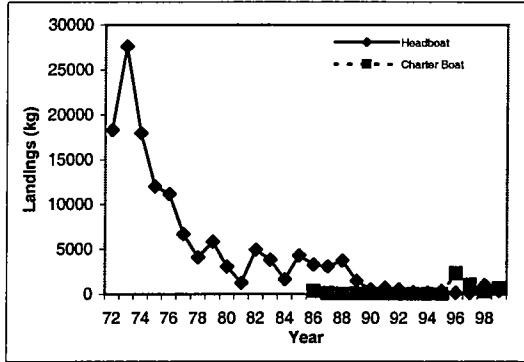
Commercial Landings



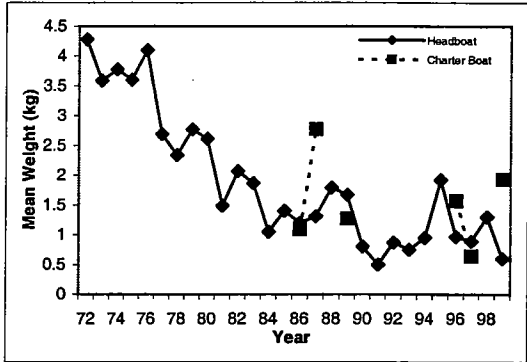
Commercial Mean Weights



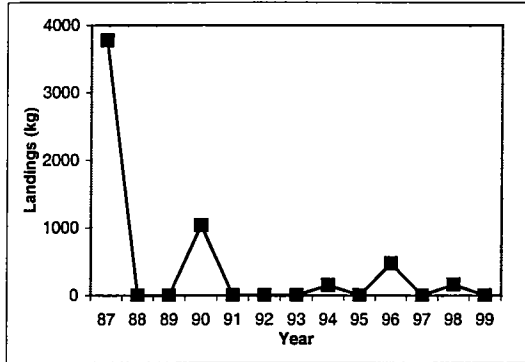
"For Hire" Recreational Landings



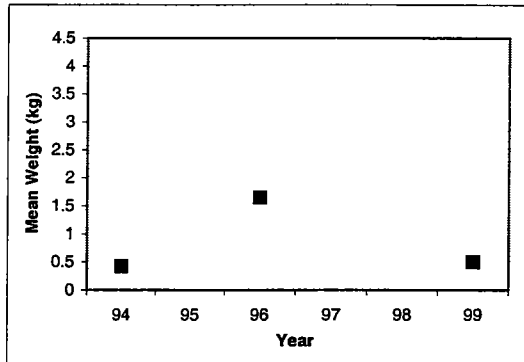
"For Hire" Recreational Mean Weights



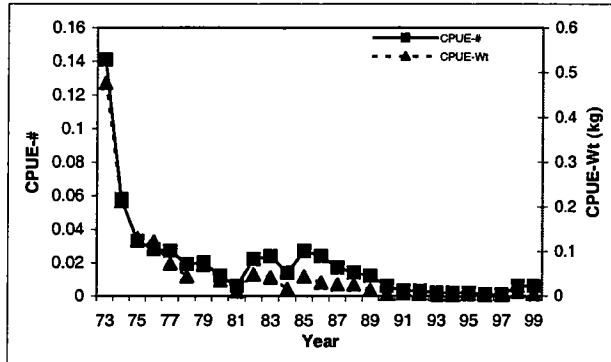
Other Recreational Landings



Other Recreational Mean Weights



Headboat CPUE: North Carolina - South Carolina



Snowy grouper data (landings, mean weights, and CPUE-Wt are in kg.)

Year	Commercial		Headboat		Charter boat		Other Recreational	
	Landings	Mean Wt	Landings	Mean Wt	Landings	Mean Wt	Landings	Mean Wt
72			38	4.47	0.021	0.104		
73			27	4.14				
74			116	4.09				
75			104	3.81	0.011	0.066		
76			115	3.20	0.027	0.122		
77			62	2.46	0.012	0.038		
78			25	1.24	0.008	0.049		
79			25	3.24	0.014	0.054		
80			29	3.28	0.030	0.102		
81			32	1.79	0.008	0.020	0	3.52
82			11	3.05	0.006	0.019	0	0
83	2.42	95	33	2.37	0.024	0.080	2690	6.50
84	3.73	1735	6	1.79	0.001	0.003	0	0.50
85	3.97	3058	38	1.49	0.003	0.005	0	0
86	2.84	2863	46	1.39	0.003	0.005	0	0
87	2.78	1807	20	1.47	0.003	0.005	497	1.00
88	1.77	1209	23	1.27	0.002	0.004	45	0.40
89	2.26	1605	51	2.21	0.003	0.004	0	0
90	2.48	2394	6	0.99	0.002	0.003	0	0.50
91	2.99	2715	3	1.46	0.001	0.003	129	1.33
92	3.47	4628	2	0.18	0.001	0.001	0	0
93	3.01	7110	7	0.50	0.001	0.001	652	5.30
94	2.32	2689	16	0.69	0.001	0.001	0	0
95	1.59	5558	11	0.81	0.001	0.001	289	0.55
96	2.19	2050	18	1.09	0.002	0.005	0	0
97	2.35	2352	130	2.11	0.001	0.004	670	4.79
98	2.10	2131	10	1.21	0.001	0.002	2637	0
99	2.85	3437	1	0.44	0.001	0.001	6474	2.18
							298	1.65
							32	1

1992 - Gear restrictions as listed in text

Recreational bag limit of 5 grouper/person/day

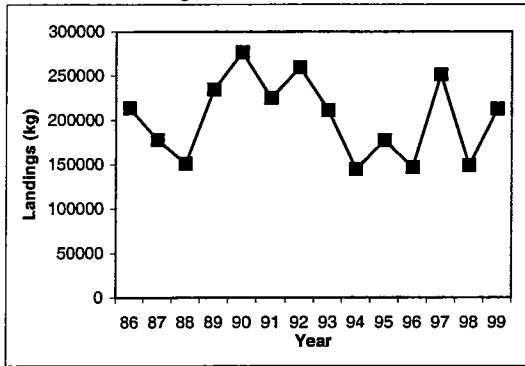
1994 - Commercial quota of 344,508 lb gutted weight

Commercial trip limit of 2,500 lb while season is open

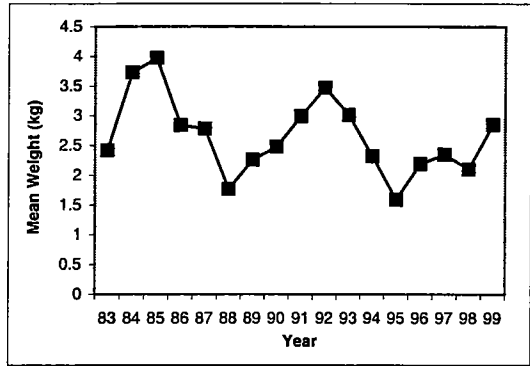
Commercial trip limit of 300 lb in closed season

Snowy grouper

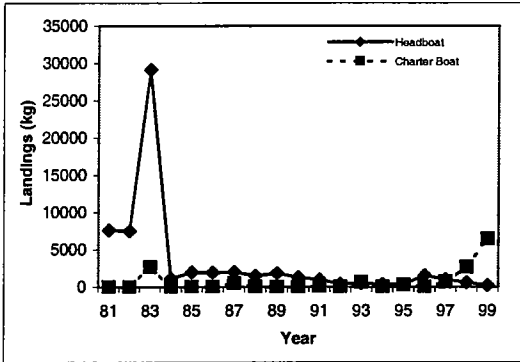
Commercial Landings



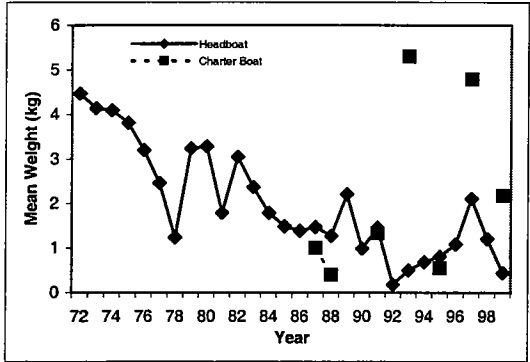
Commercial Mean Weights



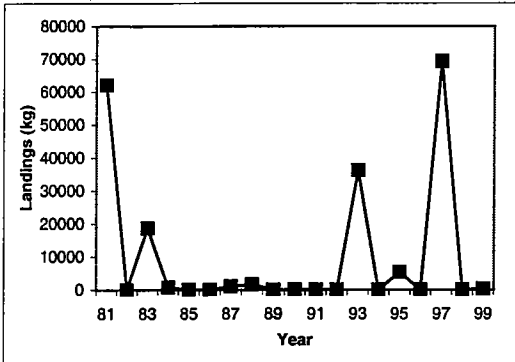
"For Hire" Recreational Landings



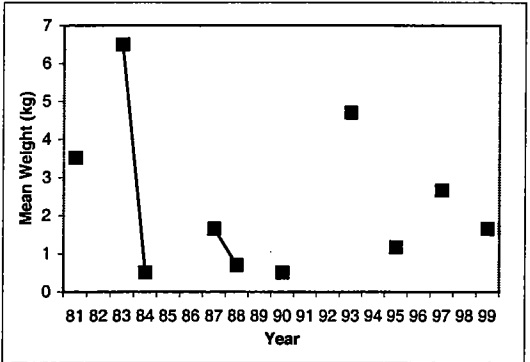
"For Hire" Recreational Mean Weights



Other Recreational Landings



Other Recreational Mean Weights



Headboat CPUE: North Carolina - Southeast Florida

