Greater Amberjack and Gag Grouper Catches from Mississippi Laboratories Fishery Independent Surveys

Adam G. Pollack and G. Walter Ingram

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Greater Amberjack and Gag Grouper Catches from Mississippi Laboratories Fishery Independent Surveys

Adam G. Pollack and G. Walter Ingram, Jr.
NOAA Fisheries, Southeast Fisheries Science Center,
Mississippi Laboratories, Pascagoula, MS

Abstract: *The Southeast Fisheries Science Center Mississippi Laboratories has conducted fishery independent surveys in the northern Gulf of Mexico (GOM) since the 1960s. Mississippi Laboratories conducts a number of surveys, SEAMAP Groundfish, Small Pelagics Trawl, Bottom Longline, SEAMAP Reef Fish and SEAMAP Ichthyoplankton, which are typically analyzed for use in stock assessments. Due to the low occurrences of gag grouper and greater amberjack in the surveys, no abundance indices are presented for this stock assessment, aside from abundances indices from the SEAMAP Reef Fish survey. Nominal catch rates, survey effort and length frequency distributions are presented for those surveys with no abundance indices.*

Introduction

The Southeast Fisheries Science Center (SEFSC) Mississippi Laboratories (MSLABS) has conducted fishery independent surveys in the northern Gulf of Mexico (GOM) since the 1960s. Much of the sampling is conducted under the Southeast Area Monitoring and Assessment Program (SEAMAP). This program is a collaborative effort between federal, state and university programs, designed to collect, manage and distribute fishery independent data throughout the region. Surveys conducted under SEAMAP include the SEAMAP Groundfish Survey, SEAMAP Reef Fish Survey and SEAMAP Ichthyoplankton Survey. Other surveys conducted by MSLABS in the Small Pelagics Survey and Bottom Longline Survey.

In previous stock assessments for gag grouper (*Mycteroperca microlepis*) (SEDAR 10) and greater amberjack (*Seriola dumerili*) (SEDAR 9), most of the fishery independent indices were not used because of the low catches/occurrences of both species. This document will summarize the available catch data from the fishery independent surveys conducted by MSLABS.

SEAMAP Groundfish Survey

Groundfish surveys have been conducted in the fall (October – November) since 1972 covering an area between 88° to 91°30′. In 1982, a second trawl survey began under SEAMAP during the summer (June – July). In 1987, the SEAMAP design was adopted for the fall survey. Under SEAMAP, sampling covered an area between Brownville, TX and Mobile Bay, AL. In 2008, the sampling area was expanded eastward to cover an area to the Florida Keys, thus fully covering the northern GOM. A full review of survey methodologies and descriptions of the datasets have been presented in detail by Nichols (2004) and Pollack and Ingram (2010).

A total of 18,596 successful trawl stations have been completed during the SEAMAP groundfish survey (Table 1). Survey effort and catch rates of gag grouper and greater amberjack are presented in Figures 1 and 2, respectively. Over the course of the survey, there have been only 36 stations with gag present, most of which are located off the Florida coast, which would explain why they are not overly abundant in the early years of the survey (Table 2). Gag grouper ranged in size from 228 to 658 mm, with the majority measuring less than 500 mm (Figure 3). Greater amberjack occurred at 218 stations (Table 3). Greater amberjack ranged in size from 106 to 392 mm, with those less than 250 mm primarily being caught during the summer survey and those over 250 mm in the fall survey (Figure 4). However, gag grouper and greater amberjack do not occur at a high enough frequency for abundance indices to be produced for this stock assessment.

Small Pelagics Survey

Two surveys conducted by MSLABS can fall under the Small Pelagics Survey designation. The first survey was conducted between 1988 and 1996 and was previously analyzed for greater amberjack by Ingram (2005) and presented during SEDAR 9. The second Small Pelagics Survey was conducted between 2002 and 2012 (Figures 5 and 6). A full description of the survey methodology is presented by Ingram (2008). In the second survey, occurrences of gag grouper and greater amberjack were very low (0.21% and 2.42%, respectively) (Table 4). Size ranges of gag grouper and greater amberjack are presented in Figures 7 and 8, respectively. Due to the low frequencies of occurrence for gag grouper or greater amberjack no abundance indices were produced for this stock assessment.

Bottom Longline Survey

Standardized bottom longline surveys have been conducted by MSLABS since 1995. The bottom longline survey has evolved over time to encompass the entire northern GOM, covering depths from 9 to 366 m (Figures 9 and 10). A full description of the evolution of the survey and survey methodologies was presented by Ingram *et al.* (2005). A total of 2760 stations have been sampled (Table 5). Size ranges of gag grouper and greater amberjack are presented in Figures 10 and 11, respectively. However, gag grouper and greater amberjack do not occur at a high enough frequency for abundance indices to be produced for this stock assessment.

SEAMAP Reef Fish Video Survey

Abundance indices for gag grouper (Gledhill *et al*. 2005) and greater amberjack (Gledhill *et al*. 2006) have been produced and used in previous stock assessments. Both sets of abundance indices will be updated for this stock assessment in a separate working document.

SEAMAP Ichthyoplankton Survey

The Southeast Area Monitoring and Assessment Program has supported collection and analysis of ichthyoplankton samples in the northern GOM since 1982. There were three main time series that were available for analysis: Spring Ichthyoplankton Survey (April - May, continental shelf edge to deep GOM waters), Summer Ichthyoplankton Survey (May – July, coast to continental shelf edge) and Fall Ichthyoplankton Survey (August – October, coast to continental shelf edge) (Figure 13). A full review of the survey methodologies were presented by Lyczkowski-Shultz and Hanisko (2004).

Currently in the dataset, there are 582 individuals identified as *Epinephelinae* and 5309 individuals identified as *Seriola spp.*. However, at this time there is no way, outside of genetic analysis, to positively identify either gag grouper or greater amberjack. Therefore, no abundance indices were produced for this stock assessment.

Literature Cited

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Table 1. Number of stations sampled by area during the summer and fall SEAMAP groundfish surveys (F = east of 87°, E = 87° to 89°, W = 89° to 94°, T = west of 94°)

	Summer					Fall					
Year	F	E	W	T	Total	F	E	W	T	Total	Combined
1972							65	119		184	184
1973						9	114	146		269	269
1974							103	139		242	242
1975							93	187		280	280
1976							108	199		307	307
1977							97	145		242	242
1978							137	182		319	319
1979							109	164		273	273
1980							109	124		233	233
1981							106	173		279	279
1982		52	70	66	188		123	150		273	461
1983	19	37	76	67	199		99	123		222	421
1984		58	90	80	228		82	144		226	454
1985		73	75	40	188		106	157	78	341	529
1986		68	63	39	170	29	62	122	92	305	475
1987		97	114	88	299		45	131	51	227	526
1988		69	83	90	242		37	114	91	242	484
1989		54	78	88	220		44	120	90	254	474
1990		69	111	87	267		54	117	86	257	524
1991		47	122	91	260		47	116	90	253	513
1992		46	113	89	248		33	105	92	230	478
1993		45	113	89	247		72	114	87	273	520
1994		60	111	90	261		50	115	88	253	514
1995		44	107	87	238		40	112	89	241	479
1996		46	109	89	244		45	115	91	251	495
1997		44	97	90	231		45	115	87	247	478
1998		35	104	89	228		44	139	90	273	501
1999		44	112	90	246		42	115	91	248	494
2000		45	105	89	239		44	112	88	244	483
2001		36	83	57	176		21	114	92	227	403
2002		44	116	91	251		52	114	91	257	508
2003		44	70	91	205		77	107	91	275	480
2004		39	115	86	240		43	97	89	229	469
2005		33	78	82	193		44	122	88	254	447
2006		45	105	89	239		48	89	87	224	463
2007		41	90	89	220		30	116	81	227	447
2008	44	52	115	91	302	40	39	168	119	366	668
2009	128	87	166	138	519	107	58	139	134	438	957
2010	134	36	95	107	372	107	30	96	81	314	686
2011	132	23	91	81	327	16	18	96	83	213	540
2012	155	69	93	82	399		67	70	61	198	597
Total	*612*	*1582*	*3070*	*2622*	*7886*	*308*	*2682*	*5242*	*2478*	*10710*	*18596*

Table 2. Nominal CPUE and percent occurrence for gag grouper captured during the SEAMAP groundfish survey.

	Summer		Fall		Combined	
Year	CPUE	Percent	CPUE	Percent	CPUE	Percent
1972			0	0	0	0
1973			0	0	0	0
1974			0	0	0	0
1975			0	0	0	0
1976			0	0	0	0
1977			0	0	0	0
1978			0	0	0	0
1979			0	0	0	0
1980			0	0	0	0
1981			0	0	0	0
1982	0	0	0	0	0	0
1983	0	0	0	0	0	0
1984	0	0	0	0	0	0
1985	0	0	0	0	0	0
1986	0	0	0	0	0	0
1987	0	0	0	0	0	0
1988	0.0248	0.41	0	0	0.0124	0.21
1989	0	0	0.0020	0.39	0.0011	0.21
1990	0	0	0	0	0	0
1991	0	0	0	0	0	0
1992	0	0	0	0	0	0
1993	0	0	0.0879	0.73	0.0462	0.38
1994	0	0	0	0	0	0
1995	0	0	0	0	0	0
1996	0	0	0	0	0	0
1997	0	0	0	0	0	0
1998	0	0	0.0067	0.37	0.0036	0.20
1999	0.0244	0.41	0	0	0.0121	0.20
2000	0	0	0	0	0	0
2001	0	0	0	0	0	0
2002	0	0	0.0109	0.39	0.0055	0.20
2003	0	0	0	0	0	0
2004	0	0	0	0	0	0
2005	0	0	0	0	0	0
2006	0	0	0.0053	0.45	0.0025	0.22
2007	0	0	0	0	0	0
2008	0.0132	0.33	0.0108	0.55	0.0119	0.45
2009	0.0307	0.96	0.0363	1.37	0.0333	1.15
2010	0.0268	1.08	0.0065	0.32	0.0175	0.73
2011	0.0485	1.22	0	0	0.0293	0.74
2012	0.0245	1.00	0.0101	0.51	0.0197	0.84
Total	*0.0062*	*0.17*	*0.0051*	*0.15*	*0.0065*	*0.19*

Table 3. Nominal CPUE and percent occurrence for greater amberjack captured during the SEAMAP groundfish survey.

	Summer		Fall		Combined	
Year	CPUE	Percent	CPUE	Percent	CPUE	Percent
1972			0	0	0	0
1973			0	0	0	0
1974			0.0413	0.83	0.0413	0.83
1975			0.0214	0.36	0.0214	0.36
1976			065	0.33	0.0065	0.33
1977			0	0	0	0
1978			0.0125	0.63	0.0125	0.63
1979			0	0	0	0
1980			0	0	0	0
1981			0	0	0	0
1982	0	0	0	0	0	0
1983	0	0	0	0	0	0
1984	0	0	0.0354	0.88	0.0176	0.44
1985	0.0152	0.53	0.0235	0.29	0.0205	0.38
1986	0.0813	1.76	0	0	0.0291	0.63
1987	0.0478	0.33	0	0	0.0272	0.19
1988	0.0125	0.83	0	0	0.0062	0.41
1989	0	0	0	0	0	0
1990	0.1227	3.37	0.1025	1.95	0.1128	2.67
1991	0.2312	4.62	0.1562	3.16	0.1942	3.90
1992	0.0244	0.81	0	0	0.0127	0.42
1993	0.0047	0.40	0.2226	1.10	0.1191	0.77
1994	0.0723	1.92	0.0132	1.19	0.0432	1.56
1995	0.1169	4.20	0.0176	0.83	0.0669	2.51
1996	0.0315	0.82	0.0032	0.40	0.0171	0.61
1997	0.5095	2.60	0.0625	0.81	0.2785	1.67
1998	0	0	0	0	0	0
1999	0.2553	4.88	0.1053	2.42	0.1800	3.64
2000	0.0765	2.09	0	0	0.0378	1.04
2001	0	0	0.1911	1.76	0.1077	0.99
2002	0.4355	3.19	0.0042	0.39	0.2173	1.77
2003	0.0138	0.98	0.0033	0.36	0.0077	0.63
2004	0.1393	1.67	0.0160	1.75	0.0791	1.71
2005	0.0752	1.55	0.0277	1.18	0.0482	1.34
2006	0.1013	2.93	0	0	0.0523	1.51
2007	0.1406	6.36	0.0025	0.44	0.0705	3.36
2008	0.0643	1.99	0.0381	1.37	0.0500	1.65
2009	0.1306	2.12	0.0317	0.91	0.0854	1.57
2010	0.0429	0.81	0.0127	0.64	0.0290	0.73
2011	0.1459	2.14	0.0187	0.94	0.0957	1.67
2012	0.3128	3.51	0.0200	1.01	0.2157	2.68
Total	*0.1033*	*1.82*	*0.0290*	*0.63*	*0.0635*	*1.16*

Table 4. Nominal CPUE and percent occurrence for gag grouper and greater amberjack captured during the small pelagics survey.

		Gag Grouper		Greater Amberjack	
Year	Stations	CPUE	Percent	CPUE	Percent
2002	132	0	0	0.0400	1.52
2003	145	0.0138	0.69	0	0
2004	101	0	0	0.8119	4.95
2006	73	0	0	0.1284	1.37
2007	146	0.0124	0.68	0.0949	1.37
2008	167	0	0	0.5119	4.19
2009	122	0	0	0.0975	3.28
2010	136	0	0	0.1025	2.21
2011	131	0.0151	0.76	0.0150	0.76
2012	111	0	0	0.2446	4.50
Total	*1264*	*0.0041*	*0.21*	*0.20467*	*2.42*

Table 5. Nominal CPUE and percent occurrence for gag grouper and greater amberjack captured during the bottom longline survey.

		Gag		Greater	
Year	Station	CPUE	Percent	CPUE	Percent
1995	77	0	0	0	0
1996	83	0	0	0.0102	1.20
1997	169	0	0	0	0
1999	161	0	0	0	0
2000	137	0.0072	0.73	0	0
2001	277	0.0502	2.89	0.0034	0.36
2002	212	0.0047	0.47	0.0095	0.94
2003	280	0.0145	1.07	0.0033	0.36
2004	249	0.0361	3.21	0.0327	1.20
2005	95	0.0104	1.05	0	0
2006	150	0	0	0	0
2007	156	0.0063	0.64	0.0176	1.28
2008	108	0.0090	0.93	0	0
2009	185	0.0222	1.62	0	0
2010	151	0.0194	1.99	0.0190	1.99
2011	128	0.0082	0.78	0	0
2012	142	0	0	0.0292	2.82
Total	*2760*	*0.0145*	*1.12*	*0.0082*	*0.62*

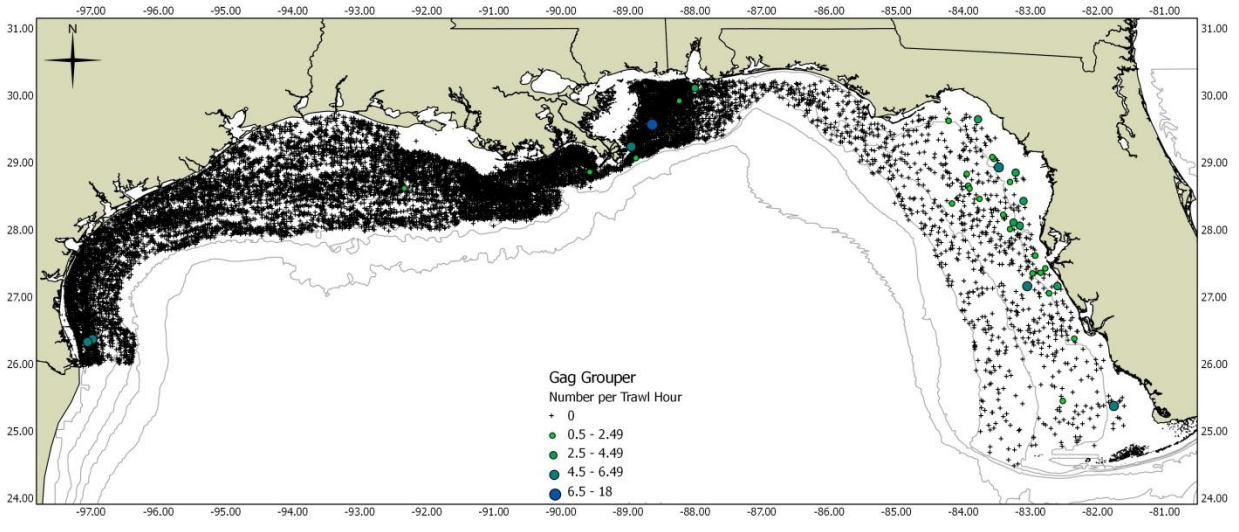

Figure 1. SEAMAP groundfish survey stations with CPUE for gag grouper.

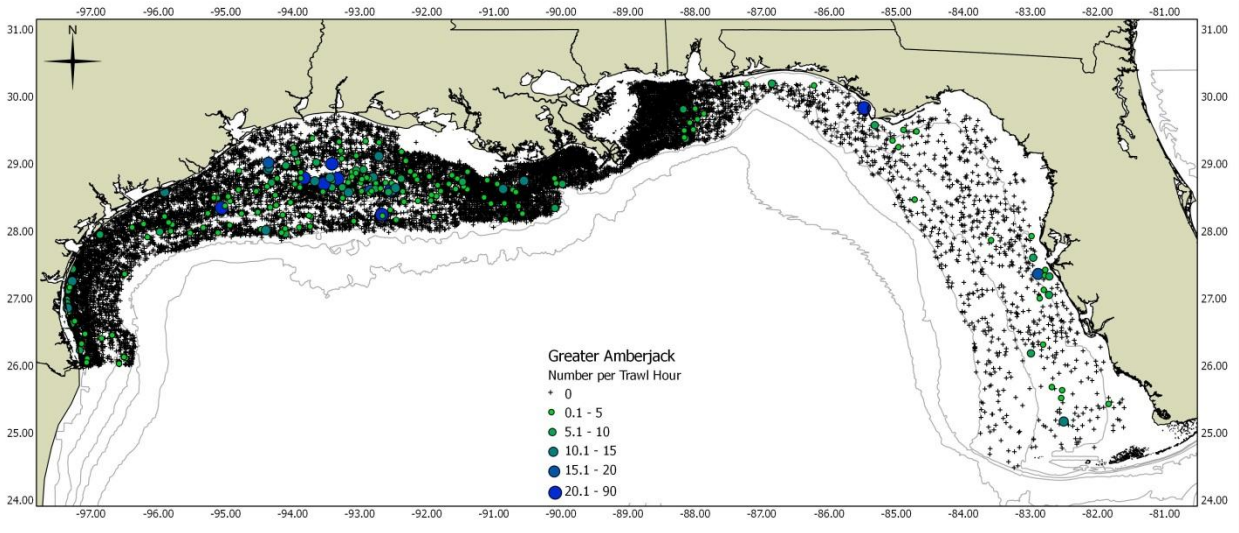

Figure 2. SEAMAP groundfish survey stations with CPUE for greater amberjack.

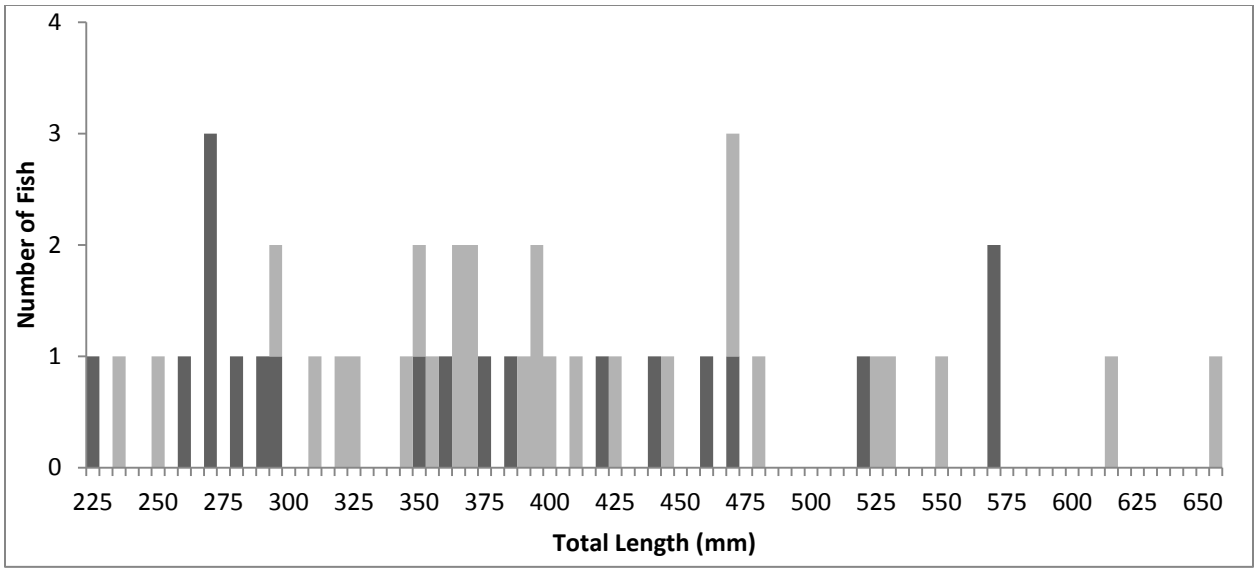

Figure 3. Length frequency distribution of gag grouper captured during summer (light gray) and fall (dark gray) SEAMAP groundfish surveys.

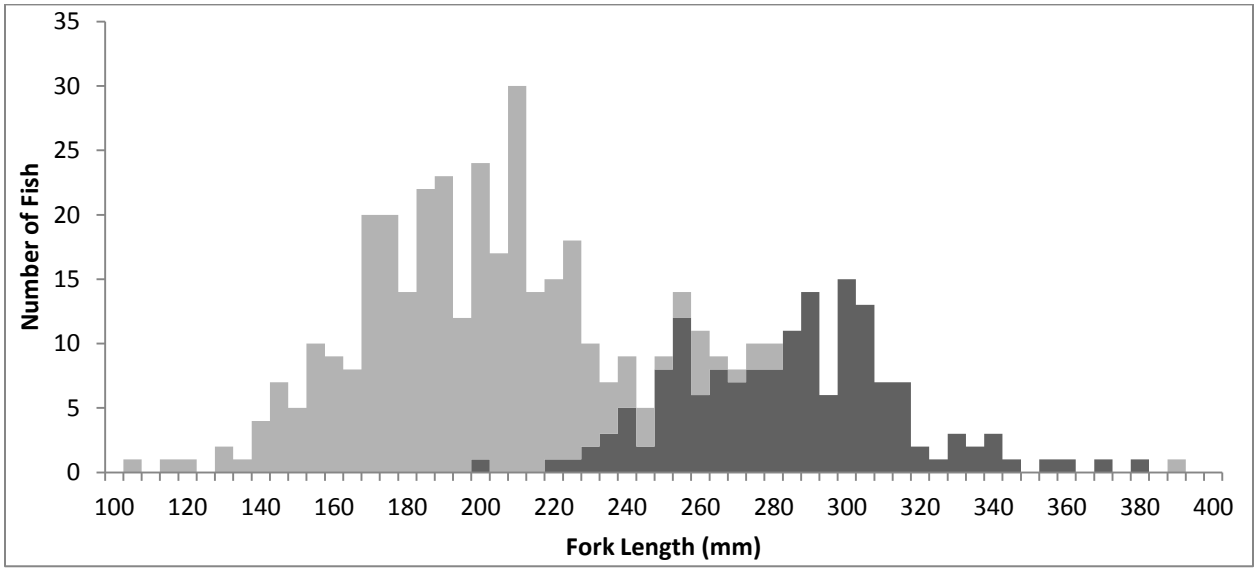

Figure 4. Length frequency distribution of greater amberjack captured during summer (light gray) and fall (dark gray) SEAMAP groundfish surveys.

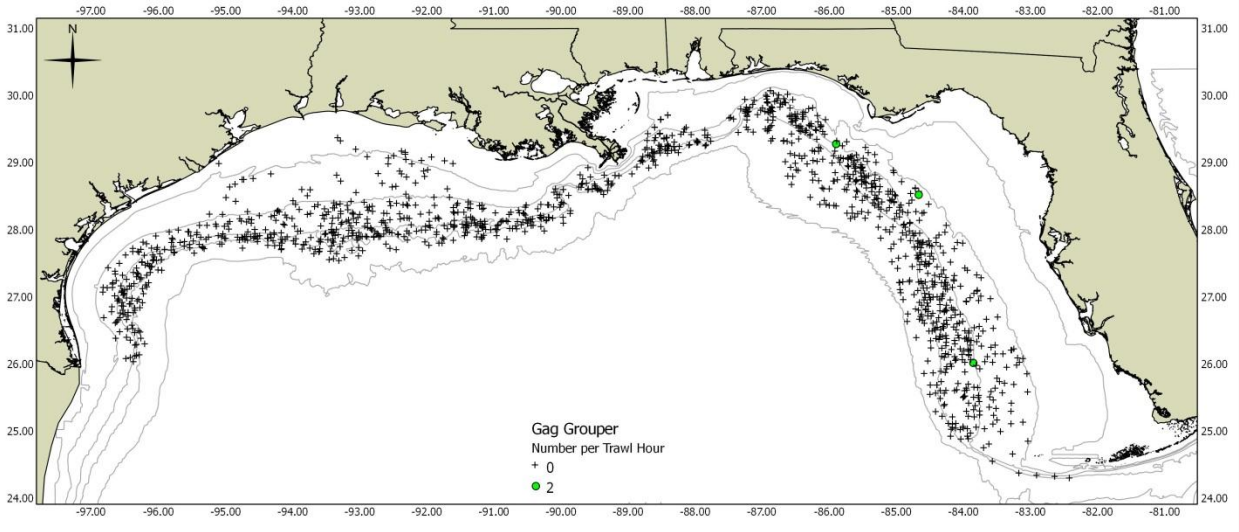

Figure 5. Small pelagic survey stations with CPUE for gag grouper.

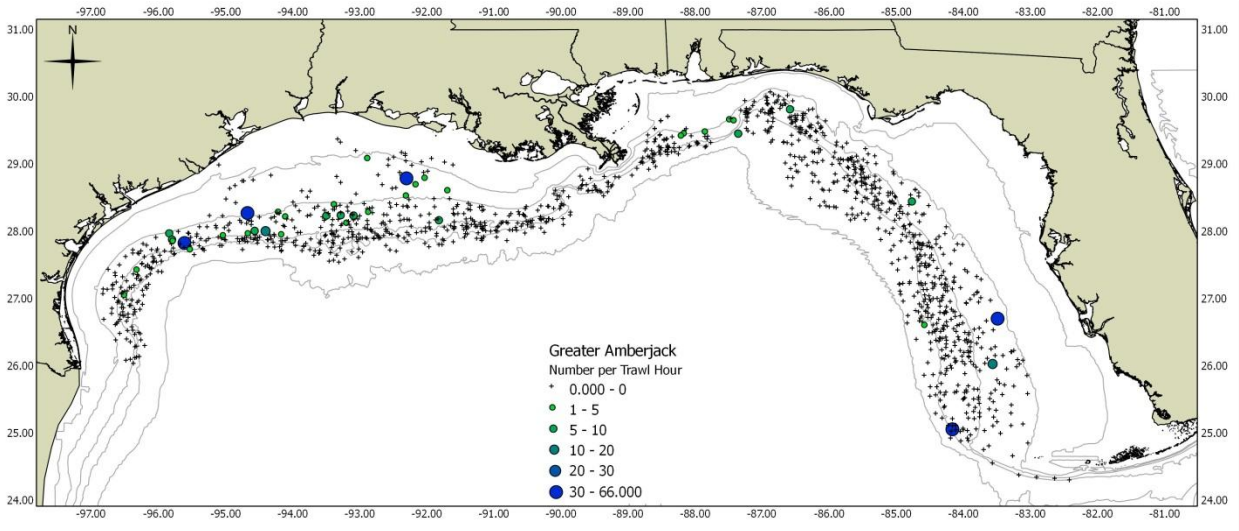

Figure 6. Small pelagic survey stations with CPUE for greater amberjack.

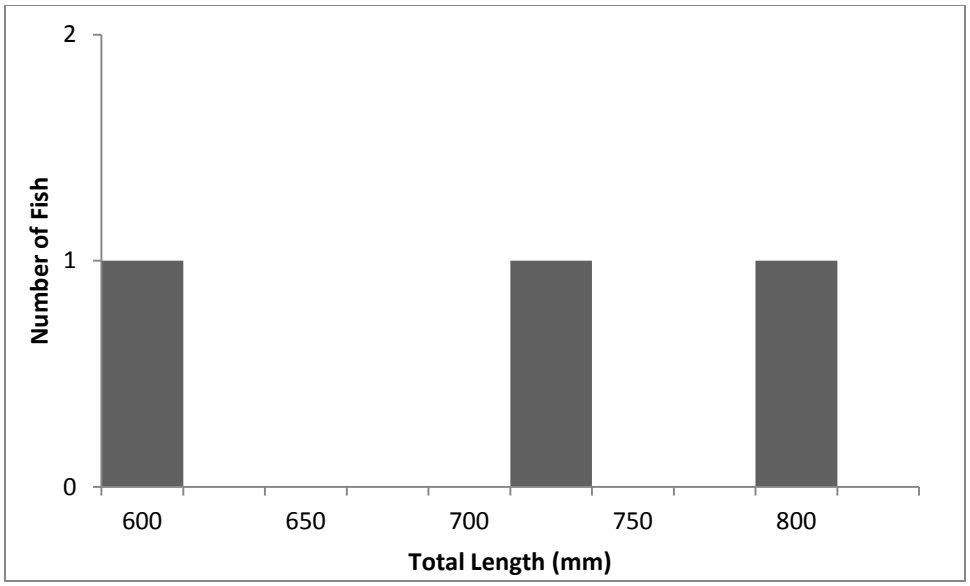

Figure 7. Length frequency distribution of gag grouper captured during small pelagics surveys.

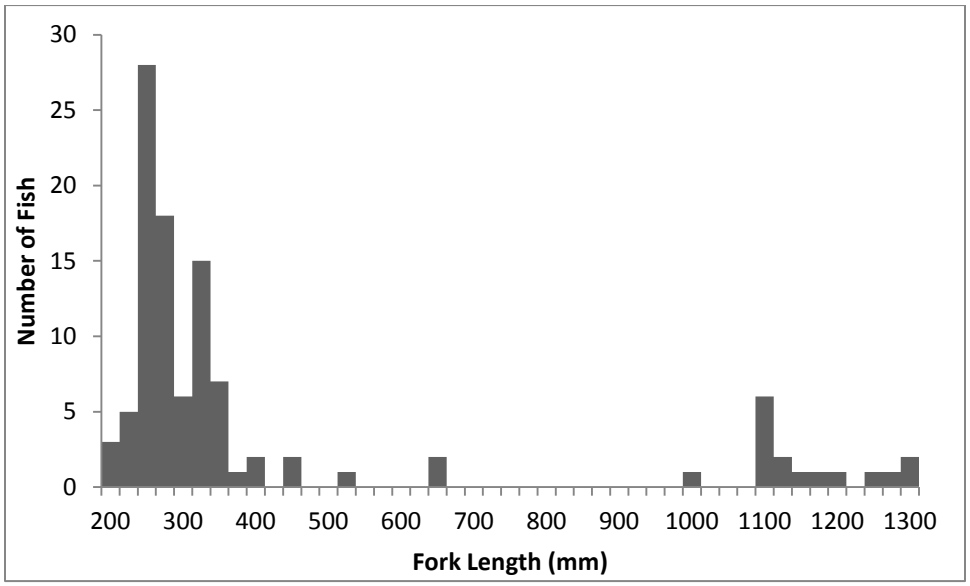

Figure 8. Length frequency distribution of greater amberjack captured during small pelagics surveys.

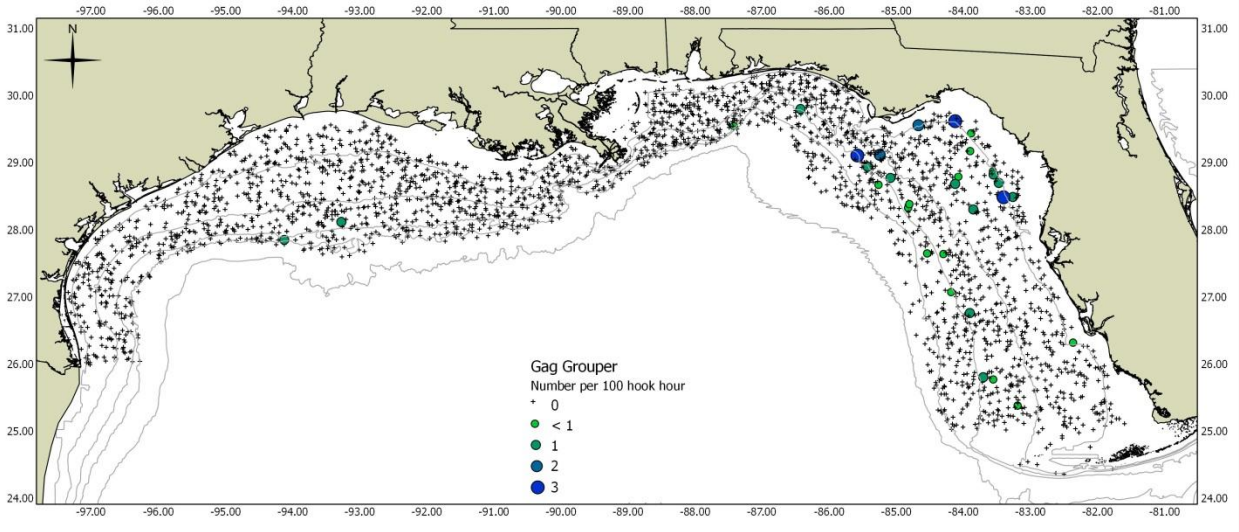

Figure 98. Bottom longline survey stations with gag grouper CPUE.

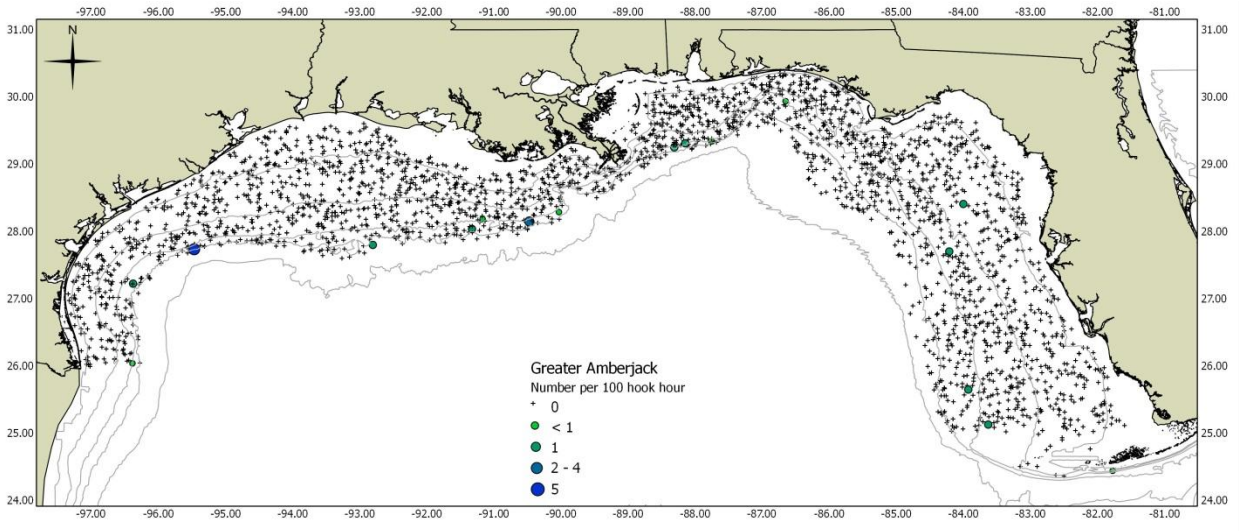

Figure 10. Bottom longline survey stations with greater amberjack CPUE.

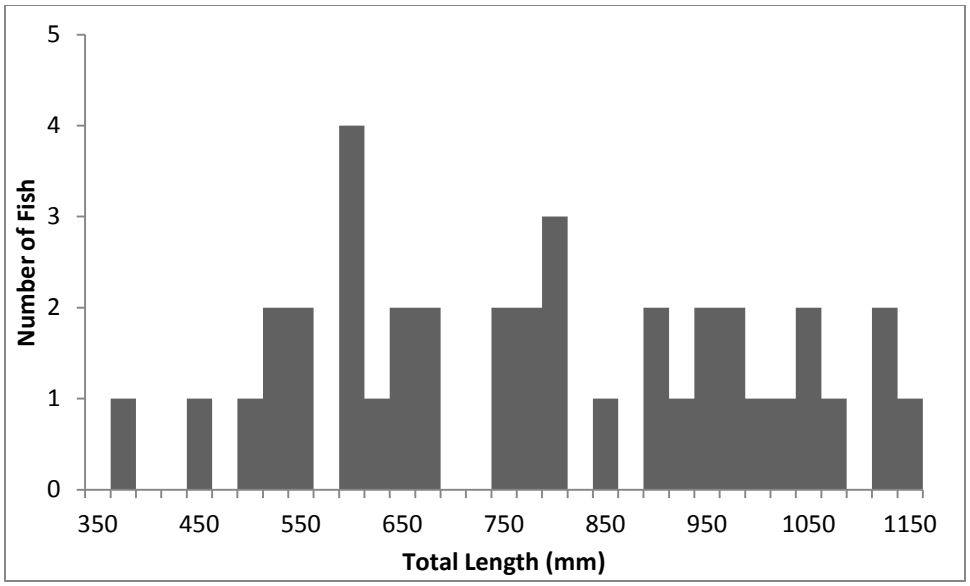

Figure 11. Length frequency distribution of gag grouper captured during bottom longline surveys.

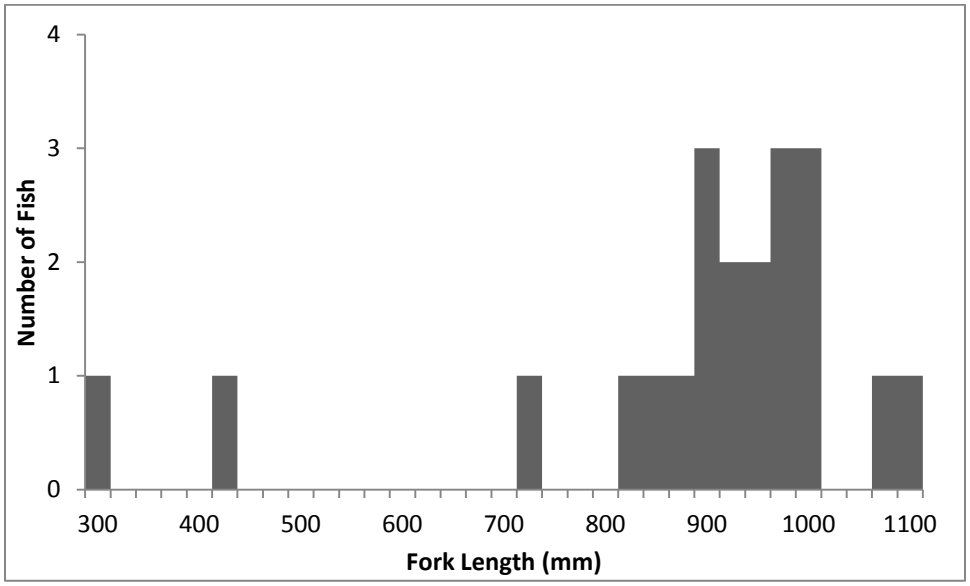

Figure 12. Length frequency distribution of greater amberjack captured during bottom longline surveys.

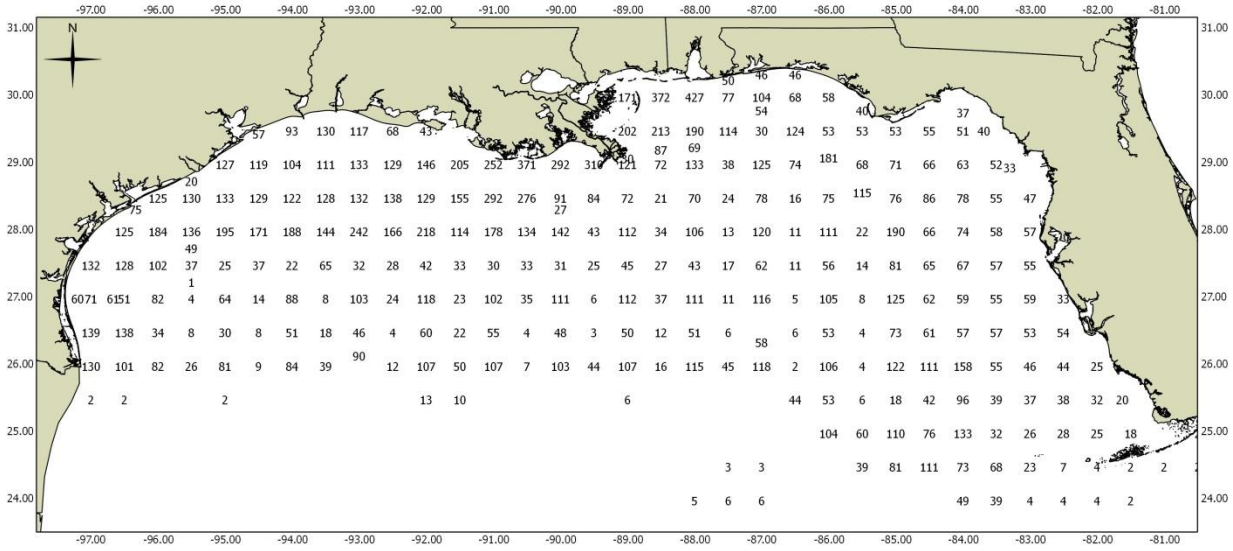

Figure 13. Location of plankton stations in the Gulf of Mexico showing the number of times it has been sampled.