General Recreational Survey Data for Gag in the Gulf of Mexico

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General Recreational Survey Data for Gag in the Gulf of Mexico

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General recreational catch estimates for Gag are compiled from the following separate sampling programs:
1. Marine Recreational Information Program (MRIP) (SEDAR68-DW-13)
2. Texas Parks and Wildlife Department (TPWD) (SEDAR70-WP-03)
3. Louisiana Creel survey program (LA Creel; 2014+)

Parameters for data prepared for SEDAR 72 recreational catch data:

- Species: Gag and Black Grouper (1981-1989)
    - State-specific ratios were applied to Black Grouper catch prior to 1990 to correct for potential misidentification of Gag. These ratios are 0.974, 1.000, 1.000, and 0.993 for LA, MS, AL, and FLW respectively.
- Year Range: 1981 - 2019
- Geographic Range: Gulf of Mexico states from Texas to western Florida, excluding the Florida Keys.
- Fishing Modes: Charter, Headboat (1981-1985), Private, Shore

- MRIP Survey Methodology: Fully calibrated estimates that take into account the change in the Fishing Effort Survey, the redesigned Access Point Angler Intercept Survey, and the For Hire Survey

Catch and Sample Size Information for Particular Domains:

- 1983 landings estimate: 4,207,909 fish
    - Strata: FLW, private, wave 6, and ocean greater than 10 miles
        - Intercept Records: a total of 1 angler trip resulting in a landings estimate of 2,327,492 fish
            - One angler trip with four contributors to group catch that harvested 36 Black Grouper (seen by interviewer)
    - Strata: FLW, private, wave 2, ocean greater than 10 miles
        - Intercept Records: a total of 2 angler trips resulting in a landings estimate of 973,391 fish
            - Two angler trips that harvest 8 Gag (seen by interviewer)

- 2004 discards estimate: 9,253,095 fish
    - Strata: FLW, private, wave 2, ocean greater than 10 miles
        - Intercept Records: a total of 92 angler trips resulting in a discards estimate of 1,172,320 fish

Catch Observation	*Minimum*	*Median*	*Mean*	*Maximum*
Harvest seen by interviewer	0	0	0.45	9
Harvest not seen by interviewer	0	0	0.23	5
Released live fish	0	3	3.73	25

    - Strata: FLW, private, wave 3, and ocean greater than 10 miles
        - Intercept Records: a total of 159 angler trips resulting in a discards estimate of 1,029,702 fish

Catch Observation	*Minimum*	*Median*	*Mean*	*Maximum*
Harvest seen by interviewer	0	0	0.37	9
Harvest not seen by interviewer	0	0	0.13	4
Released live fish	0	2	3.40	25

- 2008 landings estimate: 9,448,174 fish
    - Strata: FLW, private, wave 6, and ocean greater than 10 miles
        - Intercept Records: a total of 97 angler trips resulting in a discards estimate of 1,251,573 fish

Catch Observation	*Minimum*	*Median*	*Mean*	*Maximum*
Harvest seen by interviewer	0	0	0.59	7
Harvest not seen by interviewer	0	0	0	0
Released live fish	0	3	5.42	20

    - Strata: FLW, private, wave 1, ocean greater than 10 miles
        - Intercept Records: a total of 86 angler trips resulting in a discards estimate of 1,181,812 fish

Catch Observation	*Minimum*	*Median*	*Mean*	*Maximum*
Harvest seen by interviewer	0	0	0.62	7
Harvest not seen by interviewer	0	0	0.15	5
Released live fish	0	3	5.44	20

Tables

Table 1. Annual landings (AB1) and discards (B2) of Gag in numbers of fish by state and year (MRIP, LACreel 2014+, TPWD). FLW excludes the Florida Keys.

Table 2. Annual landings (AB1) and discards (B2) of Gag in numbers of fish by mode and year (MRIP, LACreel 2014+, TPWD). Note that catch from the combined private-shore fishing mode in the LA Creel survey is added to the private mode.

Table 3. Gag landings in numbers of fish (AB1) with associated coefficients of variation (CV; Dettloff et al. 2020) by mode and year (MRIP). Sample size is provided both as the total number of primary sampling units (PSU) and angler trips (Trp) intercepted by MRIP samplers within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Gag.

Table 4. Gag discards in numbers of fish (B2) with associated coefficients of variation (CV; Dettloff et al. 2020) by mode and year (MRIP). Sample size is provided both as the total number of primary sampling units (PSU) and angler trips (Trp) intercepted by MRIP samplers within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Gag.

Table 5. Total Gag landings (AB1) and discards (B2), in numbers of fish, with associated coefficients of variation (CV; Dettloff et al. 2020) by year (MRIP). Sample size is provided both as the total number of primary sampling units (PSU) and angler trips (Trp) intercepted by MRIP samplers within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Gag.

Table 6. Estimated landings of Gag in pounds whole weight by state and year (MRIP, LACreel 2014+, TPWD). Average weight estimates are calculated by strata using the following hierarchy: species, region, year, state, mode, wave, and area (Matter and Rios 2013). The minimum number of weights used at each level of substitution is fifteen fish, except for the final species level where the minimum is one fish (Dettloff and Matter 2019). FLW excludes the Florida Keys.

Table 7. Summary of length measurements (millimeters fork length) from MRIP-intercepted Gag by state and year. Summaries include the number of fish measured by MRIP (Fish), the number of angler trips from which those fish were measured (Trp), and the minimum (Min), geometric mean (Avg), and maximum (Max) size of fish lengths. FLW excludes the Florida Keys. LA lengths are available from MRIP only until 2013.

Table 8. Summary of weight measurements (pounds whole weight) from MRIP-intercepted Gag by state and year. Summaries include the number of fish weighed by MRIP (Fish), the number of angler trips from which those fish were weighed (Trp), and the minimum (Min), geometric mean (Avg), and maximum (Max) size of fish weights. FLW excludes the Florida Keys. LA weights are available from MRIP only until 2013.

Table 9. Summary of length measurements (millimeters fork length) from MRIP-intercepted Gag by mode and year. Summaries include the number of fish measured by MRIP (Fish), the number of angler trips from which those fish were measured (Trp), and the minimum (Min), geometric mean (Avg), and maximum (Max) size of fish lengths.

Table 10. Summary of weight measurements (pounds whole weight) from MRIP-intercepted Gag by mode and year. Summaries include the number of fish weighed by MRIP (Fish), the number of angler trips from which those fish were weighed (Trp), and the minimum (Min), geometric mean (Avg), and maximum (Max) size of fish weights.

Table 11. Summary of length (millimeters fork length) and weight measurements (pounds whole weight) from MRIP-intercepted Gag by year. Summaries include the number of fish for which size information was collected by MRIP (Fish), the number of angler trips from which those fish were sampled (Trp), and the minimum (Min), geometric mean (Avg), and maximum (Max) size of fish lengths and weights.

Table 12. Summary of length measurements (millimeters total length) from TPWD-intercepted Gag by mode and year. Summaries include the number of fish measured by TPWD (Fish), the number of angler trips from which those fish were measured (Trp), and the minimum (Min), geometric mean (Avg), and maximum (Max) size of fish lengths.

Table 13. Recreational Fishing Effort (in angler trips) for Gulf of Mexico anglers by state and year (MRIP, LACreel 2014+, TPWD). FLW excludes the Florida Keys.

Table 14. Recreational Fishing Effort (in angler trips) for Gulf of Mexico anglers by mode and year (MRIP, LACreel 2014+, TPWD). Note that effort from the combined private-shore fishing mode in the LA Creel survey has been added to the private mode.

Figures

Figure 1. Comparison of charterboat landings (AB1) and discard (B2) estimates (with standard error intervals shown) for Gag from the Coastal Household Telephone Survey (CHTS) and For-Hire Survey (FHS) from the Gulf of Mexico between 1981 to 1999. The charterboat calibration approach is discussed in Dettloff and Matter (2019; SEDAR64-RD-12).

Figure 2. MRIP Base (BASE), APAIS Calibrated (ACAL), and Fully Calibrated APAIS and FES (FCAL) catch estimates for Gag in the Gulf of Mexico. Landings (AB1) and discard (B2) estimates are in thousands of fish. Estimates in this figure include the Florida Keys as that domain is not separable from those used by the MRIP online comparison tool for the Gulf of Mexico. Figure does not include the proportion of black grouper assumed to have been gag from 1981-1989 (NMFS).

Figure 3. Annual Gag landings (AB1) and discards (B2), in thousands of fish, by state from 1981 to 2019 (MRIP, LACreel 2014+, TPWD). FLW excludes the Florida Keys.

Figure 3a. Percent of Gag landings (AB1) and discards (B2), in numbers of fish, from each state by year (bar graph) and overall (pie chart) between 1981 and 2019 (MRIP, LACreel 2014+, TPWD). FLW excludes the Florida Keys.

Figure 4. Annual Gag landings (AB1) and discards (B2), in thousands of fish, by mode from 1981 to 2019 (MRIP, LACreel 2014+, TPWD). Note that catch from the combined private-shore fishing mode in the LA Creel survey has been added to the private mode.

Figure 4a. Percent of Gag landings (AB1) and discards (B2), in numbers of fish, from each mode by year (bar graph) and overall (pie chart) between 1981 and 2019 (MRIP, LACreel 2014+, TPWD). Note that catch from the combined private-shore fishing mode in the LA Creel survey has been added to the private mode.

Figure 5. Estimates of annual landings for Gag in the Gulf of Mexico, as estimated from MRIP: estimated landings in thousands of fish (top), estimated landings in thousands of pounds whole weight (middle), and average weight of landed fish (estimated lbs/estimated fish) (bottom). Average weight estimates are calculated by strata using the following hierarchy: species, region, year, state, mode, wave, and area (Matter and Rios 2013). The minimum number of weights used at each level of substitution is fifteen fish, except for the final species level where the minimum is one fish (Dettloff and Matter 2019).

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Table 1. *Annual landings (AB1) and discards (B2) of Gag in numbers of fish by state and year (MRIP, LACreel 2014+, TPWD). FLW excludes the Florida Keys.*

	TX		LA		MS		AL		FLW		Total	
Year	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
1981			0	0	0	0	80,737	0	782,420	761,021	863,156	761,021
1982			14,765	0	1,416	2,491	0	0	2,107,308	470,658	2,123,489	473,149
1983	60	0	2,282	0	0	0	2,638	0	4,202,989	848,174	4,207,969	848,174
1984	298	0	820	0	0	0	9	0	665,838	186,467	666,964	186,467
1985	90	0	19,188	0	0	0	174,811	0	1,152,389	294,090	1,346,478	294,090
1986	0	0	3,191	6,891	404	0	111,556	8,928	1,124,012	871,828	1,239,162	887,647
1987	111	0	8,396	0	3,792	0	8,446	0	992,828	666,379	1,013,573	666,379
1988	0	0	20,582	0	85	0	48	0	1,011,383	473,456	1,032,097	473,456
1989	41	0	13,750	0	1,987	14	834	0	832,558	1,121,694	849,169	1,121,708
1990	232	0	0	0	46	0	389	0	559,810	916,385	560,477	916,385
1991	264	0	2,654	0	0	0	3,278	445	605,786	2,287,458	611,983	2,287,903
1992	0	0	4,055	2,527	1,244	42	5,192	1,627	617,407	1,701,383	627,898	1,705,579
1993	17	0	2,587	6,017	9,119	13	6,437	9,699	833,474	3,611,831	851,633	3,627,561
1994	135	0	4,944	2,578	1,187	6,579	11,571	12,329	491,864	3,437,557	509,701	3,459,042
1995	0	0	496	32	8	23,529	9,171	11,937	998,976	4,609,001	1,008,651	4,644,500
1996	281	0	15,492	4,297	15,906	4,869	25,345	35,041	618,911	2,329,524	675,935	2,373,730
1997	0	0	1,201	4,713	16	1,585	6,398	11,421	923,916	3,748,334	931,530	3,766,053
1998	411	0	6,133	912	9,401	24	13,180	98,534	1,138,769	5,207,905	1,167,895	5,307,375
1999	771	0	34,003	23,242	2,127	17,369	38,699	140,783	1,247,414	4,394,499	1,323,014	4,575,893
2000	666	0	4,692	0	6,915	4,380	33,787	47,002	1,404,296	2,912,173	1,450,355	2,963,555
2001	1,479	0	8,962	6,023	21	2,870	15,333	18,438	1,079,657	5,271,336	1,105,452	5,298,668
2002	420	0	4,559	15,255	16,937	19,677	22,620	53,331	1,244,793	5,958,160	1,289,330	6,046,423
2003	428	0	2,992	7,012	290	62	18,411	57,268	958,662	6,997,779	980,783	7,062,121
2004	264	0	16,579	9,422	0	851	13,461	68,811	1,517,330	9,174,011	1,547,635	9,253,095
2005	132	0	5,790	5,163	0	0	51,447	264,799	1,216,980	5,676,290	1,274,348	5,946,252
2006	524	0	8,789	3,853	0	0	4,827	34,069	715,666	3,782,556	729,805	3,820,478
2007	191	0	8,865	1,258	0	294	8,169	90,083	547,392	5,089,452	564,617	5,181,087
2008	269	0	4,291	7,934	0	568	4,175	115,180	950,535	9,324,493	959,270	9,448,174
2009	276	0	3,384	1,488	28,864	12,107	5,555	106,441	427,142	6,123,196	465,221	6,243,231
2010	153	0	294	147	1,727	3,453	19,546	12,041	590,138	5,067,649	611,858	5,083,290

	TX		LA		MS		AL		FLW		Total	
Year	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
2011	70	0	5,461	8,323	0	0	85	27,080	312,709	3,591,719	318,325	3,627,122
2012	191	0	96	17,889	0	0	1,649	11,998	281,852	2,529,040	283,788	2,558,927
2013	354	0	0	709	434	15,032	210	13,289	465,777	2,608,368	466,776	2,637,398
2014	68	0	680	0	0	0	1,208	1,983	323,918	2,011,884	325,874	2,013,867
2015	55	0	148	0	0	1,583	196	1,709	276,443	1,280,625	276,841	1,283,916
2016	221	0	368	0	166	62	232	22,092	211,393	2,119,808	212,380	2,141,962
2017	73	0	146	0	0	0	197	6,051	279,108	3,354,193	279,523	3,360,244
2018	65	0	227	0	0	381	159	1,457	303,525	2,266,147	303,976	2,267,986
2019	28	0	469	0	0	10	3,302	2,187	250,225	2,430,607	254,024	2,432,804

Table 2. *Annual landings (AB1) and discards (B2) of Gag in numbers of fish by mode and year (MRIP, LACreel 2014+, TPWD). Note that catch from the combined private-shore fishing mode in the LA Creel survey is added to the private mode.*

	Cbt		Hbt		Priv		Shore		Total	
Year	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
1981	117,237	89,783	73,325	56,153	608,723	375,072	63,871	240,014	863,156	761,021
1982	106,427	14,601	65,678	9,132	1,915,257	444,237	36,127	5,178	2,123,489	473,149
1983	99,849	15,011	61,320	9,388	3,968,602	818,788	78,197	4,986	4,207,969	848,174
1984	69,957	6,215	43,348	3,887	516,838	162,581	36,820	13,784	666,964	186,467
1985	164,180	22,980	102,684	14,373	952,189	205,632	127,425	51,104	1,346,478	294,090
1986	367,116	91,324			862,311	771,062	9,735	25,261	1,239,162	887,647
1987	106,620	17,620			885,599	648,759	21,354	0	1,013,573	666,379
1988	86,865	20,296			920,196	453,159	25,036	0	1,032,097	473,456
1989	74,357	46,217			743,073	916,787	31,739	158,704	849,169	1,121,708
1990	26,279	71,078			534,198	845,307	0	0	560,477	916,385
1991	35,079	3,502			551,502	2,153,462	25,401	130,939	611,983	2,287,903

	Cbt		Hbt		Priv		Shore		Total	
Year	AB1	B2	AB1	B2	AB1	B2	AB1	B2	AB1	B2
1992	156,110	86,121			449,852	1,383,225	21,937	236,232	627,898	1,705,579
1993	137,481	97,098			664,643	2,799,571	49,510	730,893	851,633	3,627,561
1994	66,607	113,478			437,080	3,167,270	6,013	178,295	509,701	3,459,042
1995	112,353	308,655			860,043	4,011,218	36,256	324,627	1,008,651	4,644,500
1996	199,052	240,693			465,773	1,957,620	11,111	175,417	675,935	2,373,730
1997	139,119	168,734			789,805	3,439,220	2,606	158,100	931,530	3,766,053
1998	199,321	351,124			901,778	4,793,871	66,796	162,380	1,167,895	5,307,375
1999	137,899	233,276			1,160,379	4,164,153	24,736	178,463	1,323,014	4,575,893
2000	127,608	134,811			1,300,642	2,620,036	22,105	208,708	1,450,355	2,963,555
2001	84,576	201,966			1,020,875	4,873,493	0	223,209	1,105,452	5,298,668
2002	114,051	246,969			1,169,815	5,152,397	5,463	647,057	1,289,330	6,046,423
2003	92,980	296,289			880,899	6,323,139	6,904	442,694	980,783	7,062,121
2004	134,341	337,988			1,411,016	8,482,647	2,279	432,460	1,547,635	9,253,095
2005	126,872	339,608			1,100,299	5,099,492	47,178	507,153	1,274,348	5,946,252
2006	70,445	140,619			653,196	3,395,370	6,164	284,489	729,805	3,820,478
2007	33,991	113,324			523,377	4,206,531	7,250	861,232	564,617	5,181,087
2008	89,110	313,363			854,330	8,335,172	15,831	799,639	959,270	9,448,174
2009	46,692	267,022			416,932	5,436,598	1,596	539,612	465,221	6,243,231
2010	60,233	325,174			538,069	4,289,267	13,556	468,848	611,858	5,083,290
2011	10,632	190,736			306,268	3,258,109	1,425	178,278	318,325	3,627,122
2012	46,754	170,375			235,197	2,210,779	1,837	177,773	283,788	2,558,927
2013	24,939	234,277			441,836	2,150,418	0	252,703	466,776	2,637,398
2014	12,425	67,971			313,449	1,612,026	0	333,870	325,874	2,013,867
2015	12,977	72,623			263,864	964,488	0	246,805	276,841	1,283,916
2016	17,623	104,765			194,757	1,657,218	0	379,979	212,380	2,141,962
2017	25,424	145,159			254,099	2,957,526	0	257,559	279,523	3,360,244
2018	19,823	126,194			280,324	1,936,453	3,828	205,339	303,976	2,267,986
2019	28,537	99,177			223,336	1,687,392	2,151	646,234	254,024	2,432,804

Table 3. *Gag landings in numbers of fish (AB1) with associated coefficients of variation (CV; Dettloff et al. 2020) by mode and year (MRIP). Sample size is provided both as the total number of primary sampling units (PSU) and angler trips (Trp) intercepted by MRIP samplers within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Gag.*

	Cbt				Hbt				Priv				Shore			
Year	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp
1981	50,404	0.59	76 (18)	610 (53)	31,524	0.82	76 (18)	610 (53)	175,640	0.39	221 (13)	1,780 (16)	42,515	0.83	324 (3)	1,942 (4)
1982	104,575	0.73	76 (10)	597 (32)	65,405	0.73	76 (10)	597 (32)	1,206,268	0.39	467 (23)	3,773 (35)	17,211	0.79	538 (2)	3,727 (2)
1983	96,411	0.39	123 (22)	1,357 (113)	60,299	0.42	123 (22)	1,357 (113)	1,271,299	0.59	203 (10)	1,671 (17)	0	0.00	372 (0)	2,603 (0)
1984	42,499	0.47	116 (14)	1,518 (56)	26,183	0.48	116 (14)	1,518 (56)	252,169	0.51	209 (6)	2,178 (7)	24,260	0.69	377 (2)	2,906 (3)
1985	78,593	0.41	89 (18)	1,260 (153)	49,155	0.63	89 (18)	1,260 (153)	128,441	0.51	294 (6)	2,696 (12)	0	0.00	497 (0)	3,606 (0)
1986	67,537	0.30	306 (42)	2,446 (66)					62,754	0.41	1,125 (13)	9,392 (17)	0	0.00	424 (0)	2,082 (0)
1987	41,376	0.26	262 (38)	2,245 (59)					351,373	0.45	1,060 (36)	8,344 (49)	21,505	1.00	371 (1)	2,158 (1)
1988	17,858	0.35	258 (31)	1,727 (40)					360,412	0.39	1,155 (28)	9,084 (44)	0	0.00	601 (0)	3,609 (0)
1989	71,567	0.27	201 (28)	1,324 (43)					135,691	0.29	732 (20)	6,017 (22)	31,963	0.73	422 (2)	2,941 (2)
1990	26,279	0.46	135 (12)	994 (23)					533,966	0.36	584 (23)	5,139 (30)	0	0.00	383 (0)	2,498 (0)
1991	35,038	0.42	185 (16)	1,463 (19)					551,279	0.23	630 (38)	5,713 (52)	25,401	1.00	429 (1)	2,811 (2)
1992	156,110	0.48	356 (33)	2,787 (46)					449,852	0.18	1,199 (82)	13,540 (111)	21,937	0.73	846 (3)	5,746 (3)
1993	137,481	0.34	180 (34)	1,362 (61)					664,626	0.23	843 (61)	9,610 (106)	49,510	0.50	899 (7)	7,497 (7)
1994	66,607	0.36	188 (16)	1,468 (30)					436,945	0.21	841 (83)	11,591 (126)	6,013	0.77	895 (2)	8,948 (2)
1995	112,353	0.33	178 (40)	1,265 (59)					860,043	0.25	731 (79)	10,149 (137)	36,256	0.48	742 (7)	8,011 (8)
1996	199,012	0.33	213 (44)	1,390 (69)					465,532	0.16	1,041 (108)	12,895 (146)	11,111	0.61	703 (3)	5,607 (3)
1997	139,119	0.21	368 (117)	2,155 (184)					789,805	0.19	990 (98)	12,918 (151)	2,606	0.75	654 (2)	5,719 (2)
1998	199,261	0.12	625 (245)	4,294 (388)					901,427	0.14	1,159 (147)	15,387 (230)	66,796	0.90	757 (4)	6,598 (7)
1999	137,416	0.08	855 (363)	7,104 (579)					1,160,091	0.10	1,642 (229)	19,713 (340)	24,736	0.40	937 (8)	8,775 (9)
2000	127,531	0.13	875 (327)	8,831 (573)					1,300,053	0.13	1,456 (158)	16,394 (259)	22,105	0.65	843 (4)	7,275 (4)
2001	84,555	0.14	733 (237)	7,307 (388)					1,019,417	0.13	1,346 (143)	17,978 (222)	0	0.00	798 (0)	7,364 (0)
2002	114,051	0.21	753 (243)	7,838 (435)					1,169,395	0.17	1,464 (163)	19,604 (260)	5,463	0.83	787 (2)	7,485 (2)
2003	92,962	0.12	861 (302)	8,608 (534)					880,489	0.12	1,575 (162)	18,487 (234)	6,904	1.00	920 (1)	8,029 (1)
2004	134,341	0.08	837 (345)	9,536 (711)					1,410,752	0.14	1,356 (142)	17,494 (237)	2,279	0.60	692 (3)	6,486 (3)
2005	126,854	0.08	647 (311)	7,510 (625)					1,100,185	0.19	1,216 (129)	15,901 (191)	47,178	0.68	657 (7)	6,422 (7)
2006	70,435	0.20	550 (188)	6,158 (322)					652,682	0.24	1,503 (93)	17,788 (121)	6,164	0.69	724 (3)	6,551 (3)
2007	33,966	0.14	591 (143)	6,243 (223)					523,211	0.15	1,460 (100)	17,990 (154)	7,250	0.81	755 (3)	6,773 (3)
2008	89,073	0.15	521 (142)	4,873 (217)					854,098	0.16	1,619 (121)	18,801 (166)	15,831	0.53	763 (7)	6,695 (7)
2009	46,692	0.16	508 (94)	4,665 (141)					416,656	0.16	1,632 (98)	19,479 (136)	1,596	0.71	813 (2)	7,343 (2)
2010	60,207	0.20	479 (108)	4,325 (172)					537,942	0.16	1,616 (106)	17,904 (144)	13,556	0.74	756 (5)	7,281 (6)
2011	10,596	0.44	610 (38)	6,068 (67)					306,234	0.23	1,729 (54)	18,468 (66)	1,425	1.00	786 (1)	7,159 (1)
2012	46,728	0.15	686 (99)	7,193 (200)					235,032	0.23	1,859 (45)	19,601 (61)	1,837	1.00	843 (1)	8,045 (1)

	Cbt				Hbt				Priv				Shore			
Year	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp	AB1	CV	PSU	Trp
2013	24,939	0.33	355 (39)	2,751 (53)					441,482	0.22	1,569 (70)	16,259 (106)	0	0.00	637 (0)	6,432 (0)
2014	12,207	0.23	490 (44)	4,661 (73)					312,919	0.22	1,318 (61)	14,753 (111)	0	0.00	409 (0)	4,262 (0)
2015	12,877	0.30	533 (30)	4,650 (49)					263,761	0.29	1,409 (44)	14,729 (63)	0	0.00	425 (0)	4,143 (0)
2016	17,523	0.24	583 (48)	4,531 (71)					194,268	0.31	1,472 (53)	15,141 (61)	0	0.00	675 (0)	4,688 (0)
2017	25,383	0.41	500 (26)	4,295 (34)					253,921	0.26	1,178 (46)	12,857 (82)	0	0.00	548 (0)	4,237 (0)
2018	19,806	0.31	491 (28)	4,223 (39)					280,049	0.28	1,091 (41)	10,561 (55)	3,828	1.00	529 (1)	4,377 (1)
2019	28,322	0.37	485 (26)	3,954 (49)					223,054	0.32	1,099 (46)	10,717 (66)	2,151	1.00	565 (1)	4,408 (1)

Table 4. *Gag discards in numbers of fish (B2) with associated coefficients of variation (CV; Dettloff et al. 2020) by mode and year (MRIP). Sample size is provided both as the total number of primary sampling units (PSU) and angler trips (Trp) intercepted by MRIP samplers within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Gag.*

	Cbt				Hbt				Priv				Shore			
Year	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp
1981	85,630	1.02	76 (5)	610 (28)	53,556	1.41	76 (5)	610 (28)	78,824	0.92	221 (2)	1,780 (2)	55,515	0.72	324 (3)	1,942 (7)
1982	14,613	0.96	76 (3)	597 (6)	9,139	1.32	76 (3)	597 (6)	380,792	0.39	467 (10)	3,773 (17)	0	0.00	538 (0)	3,727 (0)
1983	15,117	0.68	123 (7)	1,357 (22)	9,455	0.84	123 (7)	1,357 (22)	781,154	0.55	203 (7)	1,671 (14)	0	0.00	372 (0)	2,603 (0)
1984	1,999	0.89	116 (2)	1,518 (6)	1,250	1.00	116 (2)	1,518 (6)	95,823	0.95	209 (2)	2,178 (2)	8,998	1.00	377 (1)	2,906 (1)
1985	20,254	0.61	89 (10)	1,260 (38)	12,667	0.99	89 (10)	1,260 (38)	28,306	1.00	294 (1)	2,696 (3)	15,906	0.75	497 (2)	3,606 (2)
1986	32,009	0.44	306 (15)	2,446 (43)					24,085	0.45	1,125 (7)	9,392 (8)	0	0.00	424 (0)	2,082 (0)
1987	10,432	0.38	262 (10)	2,245 (22)					254,253	0.35	1,060 (15)	8,344 (25)	0	0.00	371 (0)	2,158 (0)
1988	2,963	0.59	258 (5)	1,727 (7)					194,653	0.35	1,155 (19)	9,084 (29)	0	0.00	601 (0)	3,609 (0)
1989	38,834	0.55	201 (8)	1,324 (16)					470,702	0.31	732 (30)	6,017 (56)	136,731	0.64	422 (4)	2,941 (6)
1990	71,078	0.55	135 (4)	994 (50)					845,307	0.34	584 (28)	5,139 (53)	0	0.00	383 (0)	2,498 (0)
1991	3,502	0.86	185 (5)	1,463 (7)					2,153,462	0.28	630 (53)	5,713 (124)	130,939	0.82	429 (3)	2,811 (4)
1992	86,121	0.44	356 (16)	2,787 (46)					1,383,225	0.20	1,199 (111)	13,540 (210)	236,232	0.54	846 (11)	5,746 (19)
1993	97,098	0.52	180 (10)	1,362 (41)					2,799,571	0.20	843 (131)	9,610 (328)	730,893	0.46	899 (26)	7,497 (47)

	Cbt				Hbt				Priv				Shore			
Year	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp	B2	CV	PSU	Trp
1994	113,478	0.39	188 (22)	1,468 (61)					3,167,270	0.13	841 (186)	11,591 (611)	178,295	0.22	895 (31)	8,948 (56)
1995	308,655	0.29	178 (29)	1,265 (127)					4,011,218	0.15	731 (167)	10,149 (482)	324,627	0.45	742 (38)	8,011 (64)
1996	240,693	0.30	213 (40)	1,390 (104)					1,957,620	0.11	1,041 (217)	12,895 (521)	175,417	0.48	703 (19)	5,607 (29)
1997	168,734	0.28	368 (46)	2,155 (118)					3,439,220	0.12	990 (212)	12,918 (552)	158,100	0.37	654 (21)	5,719 (31)
1998	351,124	0.16	625 (182)	4,294 (572)					4,793,871	0.13	1,159 (253)	15,387 (719)	162,380	0.25	757 (35)	6,598 (56)
1999	233,276	0.09	855 (334)	7,104 (1,115)					4,164,153	0.11	1,642 (361)	19,713 (894)	178,463	0.23	937 (39)	8,775 (47)
2000	134,811	0.24	875 (177)	8,831 (393)					2,620,036	0.09	1,456 (272)	16,394 (634)	208,708	0.36	843 (23)	7,275 (32)
2001	201,966	0.39	733 (138)	7,307 (464)					4,873,493	0.13	1,346 (299)	17,978 (854)	223,209	0.31	798 (27)	7,364 (37)
2002	246,969	0.19	753 (223)	7,838 (915)					5,152,397	0.10	1,464 (340)	19,604 (978)	647,057	0.31	787 (45)	7,485 (93)
2003	296,289	0.13	861 (354)	8,608 (1,597)					6,323,139	0.09	1,575 (378)	18,487 (1,110)	442,694	0.22	920 (53)	8,029 (87)
2004	337,988	0.09	837 (349)	9,536 (1,894)					8,482,647	0.11	1,356 (339)	17,494 (1,145)	432,460	0.27	692 (36)	6,486 (52)
2005	339,608	0.09	647 (328)	7,510 (2,142)					5,099,492	0.11	1,216 (264)	15,901 (804)	507,153	0.23	657 (51)	6,422 (87)
2006	140,619	0.16	550 (186)	6,158 (583)					3,395,370	0.12	1,503 (266)	17,788 (709)	284,489	0.39	724 (29)	6,551 (49)
2007	113,324	0.19	591 (99)	6,243 (293)					4,206,531	0.09	1,460 (293)	17,990 (867)	861,232	0.44	755 (48)	6,773 (97)
2008	313,363	0.18	521 (126)	4,873 (452)					8,335,172	0.11	1,619 (355)	18,801 (1,296)	799,639	0.22	763 (57)	6,695 (119)
2009	267,022	0.26	508 (139)	4,665 (508)					5,436,598	0.10	1,632 (354)	19,479 (1,133)	539,612	0.36	813 (50)	7,343 (102)
2010	325,174	0.28	479 (143)	4,325 (574)					4,289,267	0.10	1,616 (265)	17,904 (874)	468,848	0.21	756 (58)	7,281 (105)
2011	190,736	0.15	610 (148)	6,068 (541)					3,258,109	0.16	1,729 (220)	18,468 (538)	178,278	0.33	786 (34)	7,159 (61)
2012	170,375	0.12	686 (165)	7,193 (624)					2,210,779	0.13	1,859 (209)	19,601 (469)	177,773	0.26	843 (29)	8,045 (39)
2013	234,277	0.33	355 (49)	2,751 (178)					2,150,418	0.14	1,569 (207)	16,259 (517)	252,703	0.38	637 (14)	6,432 (19)
2014	67,971	0.24	490 (97)	4,661 (253)					1,612,026	0.14	1,318 (258)	14,753 (598)	333,870	0.45	409 (19)	4,262 (24)
2015	72,623	0.26	533 (71)	4,650 (155)					964,488	0.13	1,409 (187)	14,729 (379)	246,805	0.39	425 (13)	4,143 (22)
2016	104,765	0.20	583 (119)	4,531 (304)					1,657,218	0.23	1,472 (233)	15,141 (512)	379,979	0.33	675 (26)	4,688 (35)
2017	145,159	0.30	500 (91)	4,295 (247)					2,957,526	0.18	1,178 (206)	12,857 (580)	257,559	0.31	548 (23)	4,237 (49)
2018	126,194	0.22	491 (80)	4,223 (235)					1,936,453	0.19	1,091 (152)	10,561 (398)	205,339	0.43	529 (16)	4,377 (22)
2019	99,177	0.25	485 (85)	3,954 (209)					1,687,392	0.19	1,099 (144)	10,717 (387)	646,234	0.37	565 (25)	4,408 (41)

Table 5. *Total Gag landings (AB1) and discards (B2), in numbers of fish, with associated coefficients of variation (CV; Dettloff et al. 2020) by year (MRIP). Sample size is provided both as the total number of primary sampling units (PSU) and angler trips (Trp) intercepted by MRIP samplers within a specified strata and, in parentheses, the number of PSUs and angler trips that intercepted Gag.*

	AB1				B2			
Year	Total	CV	PSU	Trp	Total	CV	PSU	Trp
1981	300,083	0.30	621 (34)	4,332 (73)	273,525	0.56	621 (10)	4,332 (37)
1982	1,393,458	0.35	1,081 (35)	8,097 (69)	404,545	0.37	1,081 (13)	8,097 (23)
1983	1,428,010	0.53	698 (32)	5,631 (130)	805,725	0.54	698 (14)	5,631 (36)
1984	345,111	0.39	702 (22)	6,602 (66)	108,071	0.85	702 (5)	6,602 (9)
1985	256,189	0.31	880 (24)	7,562 (165)	77,134	0.46	880 (13)	7,562 (43)
1986	130,291	0.25	1,855 (55)	13,920 (83)	56,094	0.32	1,855 (22)	13,920 (51)
1987	414,253	0.39	1,693 (75)	12,747 (109)	264,685	0.34	1,693 (25)	12,747 (47)
1988	378,270	0.37	2,014 (59)	14,420 (84)	197,616	0.35	2,014 (24)	14,420 (36)
1989	239,222	0.21	1,355 (50)	10,282 (67)	646,267	0.27	1,355 (42)	10,282 (78)
1990	560,245	0.35	1,102 (35)	8,631 (53)	916,385	0.32	1,102 (32)	8,631 (103)
1991	611,719	0.21	1,244 (55)	9,987 (73)	2,287,903	0.27	1,244 (61)	9,987 (135)
1992	627,898	0.18	2,401 (118)	22,073 (160)	1,705,579	0.18	2,401 (138)	22,073 (275)
1993	851,616	0.19	1,922 (102)	18,469 (174)	3,627,561	0.18	1,922 (167)	18,469 (416)
1994	509,566	0.19	1,924 (101)	22,007 (158)	3,459,042	0.12	1,924 (239)	22,007 (728)
1995	1,008,651	0.21	1,651 (126)	19,425 (204)	4,644,500	0.13	1,651 (234)	19,425 (673)
1996	675,654	0.15	1,957 (155)	19,892 (218)	2,373,730	0.10	1,957 (276)	19,892 (654)
1997	931,530	0.17	2,012 (217)	20,792 (337)	3,766,053	0.11	2,012 (279)	20,792 (701)
1998	1,167,484	0.12	2,541 (396)	26,279 (625)	5,307,375	0.12	2,541 (470)	26,279 (1,347)
1999	1,322,243	0.09	3,434 (600)	35,592 (928)	4,575,893	0.10	3,434 (734)	35,592 (2,056)
2000	1,449,689	0.11	3,174 (489)	32,500 (836)	2,963,555	0.08	3,174 (472)	32,500 (1,059)
2001	1,103,973	0.12	2,877 (380)	32,649 (610)	5,298,668	0.12	2,877 (464)	32,649 (1,355)
2002	1,288,910	0.15	3,004 (408)	34,927 (697)	6,046,423	0.09	3,004 (608)	34,927 (1,986)
2003	980,355	0.10	3,356 (465)	35,124 (769)	7,062,121	0.08	3,356 (785)	35,124 (2,794)
2004	1,547,371	0.13	2,885 (490)	33,516 (951)	9,253,095	0.10	2,885 (724)	33,516 (3,091)
2005	1,274,216	0.16	2,520 (447)	29,833 (823)	5,946,252	0.09	2,520 (643)	29,833 (3,033)
2006	729,281	0.22	2,777 (284)	30,497 (446)	3,820,478	0.11	2,777 (481)	30,497 (1,341)
2007	564,426	0.14	2,806 (246)	31,006 (380)	5,181,087	0.11	2,806 (440)	31,006 (1,257)
2008	959,001	0.14	2,903 (270)	30,369 (390)	9,448,174	0.10	2,903 (538)	30,369 (1,867)
2009	464,945	0.14	2,953 (194)	31,487 (279)	6,243,231	0.09	2,953 (543)	31,487 (1,743)
2010	611,705	0.14	2,851 (219)	29,510 (322)	5,083,290	0.09	2,851 (466)	29,510 (1,553)
2011	318,255	0.23	3,125 (93)	31,695 (134)	3,627,122	0.15	3,125 (402)	31,695 (1,140)
2012	283,597	0.20	3,388 (145)	34,839 (262)	2,558,927	0.12	3,388 (403)	34,839 (1,132)
2013	466,422	0.21	2,561 (109)	25,442 (159)	2,637,398	0.12	2,561 (270)	25,442 (714)
2014	325,126	0.21	2,217 (105)	23,676 (184)	2,013,867	0.13	2,217 (374)	23,676 (875)
2015	276,638	0.28	2,367 (74)	23,522 (112)	1,283,916	0.12	2,367 (271)	23,522 (556)
2016	211,791	0.29	2,730 (101)	24,360 (132)	2,141,962	0.18	2,730 (378)	24,360 (851)
2017	279,304	0.24	2,226 (72)	21,389 (116)	3,360,244	0.16	2,226 (320)	21,389 (876)
2018	303,684	0.26	2,111 (70)	19,161 (95)	2,267,986	0.17	2,111 (248)	19,161 (655)
2019	253,527	0.28	2,149 (73)	19,079 (116)	2,432,804	0.16	2,149 (254)	19,079 (637)

Table 6. *Estimated landings of Gag in pounds whole weight by state and year (MRIP, LACreel 2014+, TPWD). Average weight estimates are calculated by strata using the following hierarchy: species, region, year, state, mode, wave, and area (Matter and Rios 2013). The minimum number of weights used at each level of substitution is fifteen fish, except for the final species level where the minimum is one fish (Dettloff and Matter 2019). FLW excludes the Florida Keys.*

Year	TX	LA	MS	AL	FLW	Total
1981		0	0	499,094	3,246,390	3,745,484
1982		110,491	10,594	0	13,190,000	13,311,084
1983	424	16,109	0	18,623	21,691,807	21,726,963
1984	2,506	6,892	0	74	3,210,554	3,220,026
1985	740	157,766	0	1,437,329	8,011,649	9,607,484
1986	0	20,503	2,597	789,722	5,308,432	6,121,254
1987	863	65,273	29,478	65,657	6,151,314	6,312,586
1988	0	190,007	788	439	5,797,024	5,988,259
1989	381	127,656	18,445	7,738	6,054,262	6,208,483
1990	1,903	0	379	3,194	5,080,281	5,085,757
1991	2,167	21,789	0	26,912	4,675,658	4,726,526
1992	0	33,767	10,357	43,229	4,640,420	4,727,773
1993	124	18,842	66,421	46,886	5,861,296	5,993,569
1994	932	34,144	8,195	79,909	3,577,322	3,700,502
1995	0	3,291	56	56,161	6,997,434	7,056,942
1996	1,595	87,954	90,305	134,738	3,450,396	3,764,989
1997	0	12,239	159	86,795	6,266,459	6,365,652
1998	3,783	56,452	86,530	153,687	8,857,601	9,158,053
1999	6,101	280,020	16,832	326,611	8,554,626	9,184,190
2000	1,657	44,555	60,708	350,724	9,921,274	10,378,918
2001	3,940	85,470	199	192,899	9,189,088	9,471,595
2002	3,858	41,881	155,581	257,673	9,649,768	10,108,762
2003	3,499	28,347	2,372	176,711	6,662,474	6,873,402
2004	2,069	141,822	0	92,344	11,107,500	11,343,735
2005	1,037	44,890	0	352,853	8,777,605	9,176,386
2006	3,930	60,510	0	46,833	4,944,674	5,055,946
2007	1,653	76,722	0	81,408	4,581,278	4,741,061
2008	2,129	33,963	0	33,039	7,015,589	7,084,719
2009	2,057	25,220	215,089	41,395	3,026,485	3,310,246
2010	1,074	2,065	12,118	103,369	4,041,067	4,159,693
2011	535	41,771	0	653	2,099,298	2,142,257
2012	1,522	768	0	13,141	1,991,318	2,006,749
2013	2,627	0	3,224	1,558	3,406,494	3,413,903
2014	562	5,620	0	9,987	2,761,949	2,778,118
2015	497	1,338	0	1,768	2,423,277	2,426,881
2016	2,291	3,815	1,719	2,409	1,991,940	2,002,174
2017	635	1,270	0	1,710	2,427,892	2,431,507
2018	570	1,991	0	1,391	2,579,710	2,583,662
2019	240	4,016	0	28,275	2,195,825	2,228,356

Table 7. *Summary of length measurements (millimeters fork length) from MRIP-intercepted Gag by state and year. Summaries include the number of fish measured by MRIP (Fish), the number of angler trips from which those fish were measured (Trp), and the minimum (Min), geometric mean (Avg), and maximum (Max) size of fish lengths. FLW excludes the Florida Keys. LA lengths are available from MRIP only until 2013.*

	LA					MS					AL					FLW				
Year	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
1981	0	0	0	0	0	0	0	0	0	0	9	7	235	413	915	218	107	230	500	975
1982	3	2	590	743	890	3	1	316	422	505	0	0	0	0	0	284	110	220	544	1,105
1983	11	2	265	468	782	0	0	0	0	0	7	7	340	526	630	290	142	220	563	1,075
1984	2	2	328	714	1,100	0	0	0	0	0	1	1	590	590	590	227	106	229	541	970
1985	6	1	430	451	490	0	0	0	0	0	69	15	360	450	635	527	230	253	593	1,150
1986	33	19	320	530	690	5	4	310	375	434	69	23	320	529	850	899	352	250	601	1,011
1987	5	2	280	352	410	4	3	201	368	531	25	7	320	608	725	490	189	225	578	1,210
1988	3	1	280	304	330	19	5	279	379	622	1	1	1,029	1,029	1,029	534	202	0	603	1,160
1989	4	3	287	424	710	9	4	271	307	398	4	3	365	482	824	270	103	307	574	939
1990	0	0	0	0	0	2	1	271	290	310	3	2	595	801	938	153	50	271	615	822
1991	10	5	360	602	813	1	1	506	506	506	8	5	480	697	870	154	62	241	609	879
1992	11	7	275	513	839	8	5	504	614	661	8	8	275	576	965	397	140	341	595	1,300
1993	6	4	451	556	674	8	6	504	580	669	7	6	629	681	783	430	158	252	583	860
1994	5	4	261	425	642	3	2	435	600	785	12	5	225	358	438	353	147	420	593	842
1995	4	3	499	616	746	1	1	547	547	547	28	17	484	561	760	449	183	268	589	790
1996	12	5	415	604	800	14	5	479	578	644	67	35	480	559	775	410	173	230	552	834
1997	2	2	576	647	718	6	3	560	608	678	57	31	475	610	795	852	301	266	599	1,420
1998	11	9	381	516	645	11	3	228	410	557	100	55	470	608	865	1,802	558	342	612	1,225
1999	28	16	490	623	710	8	6	228	548	676	389	136	295	533	810	2,530	770	277	596	1,590
2000	15	10	510	642	756	10	5	531	587	672	461	145	365	598	850	2,088	676	360	615	1,180
2001	8	7	545	646	810	2	2	475	477	479	82	50	377	652	945	1,695	551	255	653	1,227
2002	10	6	425	647	855	13	7	399	573	687	111	62	500	640	1,108	1,919	622	265	645	1,314
2003	15	9	430	608	1,098	1	1	552	552	552	52	36	490	595	975	2,462	723	360	630	1,364
2004	22	13	405	647	1,152	0	0	0	0	0	89	33	379	597	950	3,654	905	315	635	1,220
2005	31	18	532	641	997	0	0	0	0	0	192	70	363	617	1,008	2,511	735	220	637	1,217
2006	35	17	464	606	800	0	0	0	0	0	52	24	353	648	1,195	1,137	405	297	626	1,200
2007	14	14	484	657	864	0	0	0	0	0	24	17	530	679	985	831	349	281	648	1,204
2008	7	6	548	667	848	0	0	0	0	0	7	6	521	653	887	1,071	378	312	632	1,210
2009	8	2	618	848	1,048	3	2	559	571	586	11	10	509	574	745	641	265	307	620	1,125
2010	2	1	762	813	864	1	1	619	619	619	17	13	509	566	704	803	307	496	614	900
2011	2	2	608	624	641	0	0	0	0	0	2	2	645	674	704	292	130	481	629	1,092

	LA					MS					AL					FLW				
Year	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
2012	2	2	557	563	569	0	0	0	0	0	5	5	590	684	730	831	255	504	638	1,265
2013	0	0	0	0	0	2	1	494	500	507	5	4	720	881	1,195	347	154	472	622	855
2014						0	0	0	0	0	3	2	585	715	841	456	182	490	645	893
2015						0	0	0	0	0	2	2	765	787	809	250	110	246	652	1,243
2016						1	1	690	690	690	1	1	840	840	840	253	130	570	689	1,201
2017						0	0	0	0	0	3	1	615	655	715	203	115	416	658	871
2018						0	0	0	0	0	2	1	616	658	700	201	94	566	663	1,000
2019						0	0	0	0	0	5	5	549	614	665	234	111	422	658	1,011

Table 8. *Summary of weight measurements (pounds whole weight) from MRIP-intercepted Gag by state and year. Summaries include the number of fish weighed by MRIP (Fish), the number of angler trips from which those fish were weighed (Trp), and the minimum (Min), geometric mean (Avg), and maximum (Max) size of fish weights. FLW excludes the Florida Keys. LA weights are available from MRIP only until 2013.*

	LA					MS					AL					FLW				
Year	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
1981	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	9	7	0.4	3.8	20.5	218	107	0.4	5.3	31.3
1982	3	2	6.0	8.9	13.7	3	1	1.4	3.4	5.8	0	0	0.0	0.0	0.0	284	110	0.4	7.9	36.8
1983	11	2	0.7	6.4	20.1	0	0	0.0	0.0	0.0	7	7	1.3	4.9	7.1	290	142	0.4	6.5	35.8
1984	2	2	2.3	15.4	28.4	0	0	0.0	0.0	0.0	1	1	5.5	5.5	5.5	227	106	0.5	6.3	27.1
1985	6	1	2.0	2.3	3.3	0	0	0.0	0.0	0.0	69	15	1.8	3.4	6.6	527	230	0.4	7.2	39.0
1986	33	19	1.4	5.8	12.4	4	4	1.2	2.6	3.7	69	23	1.1	6.2	22.5	899	352	0.4	8.5	33.3
1987	5	2	0.5	1.2	2.3	4	3	0.3	2.4	4.7	25	7	1.1	7.5	12.5	490	189	0.3	7.9	72.3
1988	3	1	0.5	0.8	1.2	5	5	0.6	1.0	1.2	0	1	0.0	0.0	0.0	190	202	1.1	8.5	39.1
1989	4	3	0.7	3.6	11.0	7	4	0.7	0.9	1.3	4	3	2.0	5.2	14.7	270	103	0.9	7.9	31.8

	LA					MS					AL					FLW				
Year	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
1990	0	0	0.0	0.0	0.0	2	1	0.7	0.8	0.9	3	2	7.9	19.1	25.3	153	50	0.7	8.2	22.3
1991	10	5	1.7	10.1	18.2	0	1	0.0	0.0	0.0	8	5	3.1	15.6	32.5	154	62	0.4	7.9	28.9
1992	10	7	1.1	9.3	27.0	2	5	9.9	9.9	9.9	6	8	0.7	17.2	35.7	386	140	1.5	8.1	82.4
1993	6	4	2.6	6.5	11.0	8	6	3.7	7.6	12.2	7	6	7.9	11.7	20.7	430	158	0.5	7.2	33.8
1994	5	4	0.7	3.2	9.1	3	2	2.4	8.1	16.5	12	5	0.7	1.6	2.6	353	147	2.3	7.1	27.3
1995	4	3	5.3	10.1	14.7	1	1	6.5	6.5	6.5	28	17	3.7	6.3	16.4	449	183	0.6	6.6	16.5
1996	12	5	1.8	10.0	20.3	14	5	4.2	6.5	9.4	67	35	3.7	6.3	15.8	410	173	0.4	5.5	17.1
1997	2	2	8.1	9.2	10.4	6	3	5.5	8.1	11.2	57	31	3.0	13.4	39.4	852	301	0.7	10.0	100.2
1998	11	9	1.4	4.9	8.1	11	3	0.4	2.2	4.4	100	55	5.0	11.5	36.2	1,802	558	1.3	9.2	82.9
1999	28	16	3.6	8.0	11.3	8	6	0.5	6.1	9.4	389	136	1.0	10.5	42.1	2,530	770	0.7	7.6	118.1
2000	15	10	4.4	9.5	14.8	10	5	3.8	7.5	16.2	461	145	1.9	11.7	25.5	2,088	676	1.9	8.2	56.7
2001	8	7	5.6	8.6	13.2	2	2	4.4	4.7	4.9	82	50	2.1	12.6	40.9	1,695	551	0.7	9.5	55.0
2002	10	6	2.7	9.6	20.7	13	7	1.9	6.1	10.3	111	62	4.6	13.3	63.9	1,919	622	0.8	9.0	72.8
2003	15	9	2.2	9.5	42.7	1	1	5.6	5.6	5.6	52	36	4.7	10.5	41.7	2,462	723	1.3	8.1	75.3
2004	22	13	2.2	9.7	49.6	0	0	0.0	0.0	0.0	89	33	1.9	7.0	29.3	3,654	905	0.9	7.9	55.0
2005	31	18	3.9	8.2	29.2	0	0	0.0	0.0	0.0	192	70	1.5	7.3	31.8	2,511	735	0.3	7.9	51.4
2006	35	17	2.8	7.0	16.4	0	0	0.0	0.0	0.0	52	24	1.2	9.1	40.5	1,137	405	1.3	7.5	46.6
2007	14	14	3.7	9.9	21.8	0	0	0.0	0.0	0.0	24	17	4.6	9.9	25.3	831	349	0.7	8.6	53.0
2008	7	6	3.9	9.8	18.1	0	0	0.0	0.0	0.0	7	6	4.2	9.4	18.6	1,071	378	0.7	7.9	54.4
2009	8	2	6.8	19.9	36.4	3	2	4.8	5.5	6.2	11	10	3.7	6.0	12.6	641	265	0.8	7.4	41.6
2010	2	1	10.6	13.5	16.3	1	1	7.6	7.6	7.6	17	13	3.7	5.3	10.1	803	307	3.6	7.0	21.3
2011	2	2	6.8	6.9	7.0	0	0	0.0	0.0	0.0	2	2	7.3	8.7	10.1	292	130	3.5	7.7	40.8
2012	2	2	4.8	4.9	4.9	0	0	0.0	0.0	0.0	5	5	5.7	9.5	11.6	831	255	3.7	8.0	59.1
2013	0	0	0.0	0.0	0.0	2	1	3.6	3.6	3.6	5	4	10.3	23.1	54.0	347	154	3.6	7.2	17.3
2014						0	0	0.0	0.0	0.0	3	2	6.4	11.3	15.7	456	182	3.7	8.3	19.8
2015						0	0	0.0	0.0	0.0	2	2	12.8	15.2	17.6	250	110	0.7	9.0	64.3
2016						1	1	9.5	9.5	9.5	1	1	16.9	16.9	16.9	253	130	5.0	10.4	55.3
2017						0	0	0.0	0.0	0.0	3	1	6.5	8.1	11.0	203	115	2.1	8.8	18.2
2018						0	0	0.0	0.0	0.0	2	1	7.1	8.6	10.1	201	94	5.4	8.8	36.5
2019						0	0	0.0	0.0	0.0	5	5	5.3	6.8	8.4	234	111	2.2	8.5	38.2

Table 9. *Summary of length measurements (millimeters fork length) from MRIP-intercepted Gag by mode and year. Summaries include the number of fish measured by MRIP (Fish), the number of angler trips from which those fish were measured (Trp), and the minimum (Min), geometric mean (Avg), and maximum (Max) size of fish lengths.*

	Cbt					Hbt					Priv					Shore				
Year	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
1981	42	16	340	568	975	83	53	325	564	975	90	39	230	422	820	12	6	235	339	915
1982	16	4	316	549	835	54	35	320	659	1,005	214	72	220	522	1,105	6	2	265	349	480
1983	20	6	265	514	970	178	116	330	608	1,075	100	26	230	497	830	10	3	220	391	510
1984	24	4	390	588	1,100	147	82	318	591	970	52	19	229	394	640	7	4	270	481	760
1985	91	28	360	543	712	399	178	317	609	1,150	80	31	345	489	730	32	9	253	460	635
1986	776	297	305	616	1,011						228	99	250	514	925	2	2	475	498	520
1987	276	99	201	601	1,152						247	101	230	549	1,210	1	1	287	287	287
1988	223	78	246	637	1,029						329	128	220	570	1,160	5	3	0	326	710
1989	136	44	271	616	939						149	67	287	516	750	2	2	307	330	352
1990	88	23	271	596	938						70	30	271	637	805	0	0	0	0	0
1991	42	19	360	643	877						127	52	241	600	879	4	2	612	672	733
1992	197	46	341	605	1,300						221	111	275	583	853	6	3	275	548	733
1993	192	61	252	572	860						248	106	375	596	815	11	7	285	534	733
1994	117	30	420	580	812						254	126	225	584	842	2	2	548	612	675
1995	150	59	268	575	786						319	137	365	597	790	13	8	278	492	675
1996	199	69	442	547	800						301	146	255	563	834	3	3	230	283	390
1997	566	184	287	609	1,420						349	151	266	586	850	2	2	600	608	615
1998	1,395	388	342	618	1,225						518	230	228	590	870	11	7	512	557	625
1999	2,139	579	277	588	1,167						805	340	228	589	1,590	11	9	345	523	625
2000	1,902	573	360	617	1,180						666	259	365	597	865	6	4	490	602	757
2001	1,281	388	255	661	1,227						506	222	308	630	1,020	0	0	0	0	0
2002	1,465	435	329	656	1,314						586	260	265	615	905	2	2	531	602	673
2003	2,002	534	360	635	1,364						527	234	430	607	850	1	1	742	742	742
2004	3,191	711	315	638	1,220						571	237	400	616	930	3	3	561	608	662
2005	2,319	625	363	639	1,217						408	191	445	622	923	7	7	220	480	660
2006	980	322	297	631	1,200						241	121	353	610	857	3	3	539	596	660
2007	562	223	450	658	1,118						304	154	281	633	1,204	3	3	515	524	536
2008	699	217	319	644	1,210						376	166	312	614	874	10	7	515	538	568
2009	430	141	337	629	1,125						231	136	307	608	811	2	2	531	546	560
2010	559	172	512	617	900						255	144	496	604	781	9	6	531	595	669
2011	166	67	514	650	1,092						129	66	481	603	751	1	1	572	572	572
2012	695	200	510	643	1,265						142	61	504	613	778	1	1	541	541	541

	Cbt					Hbt					Priv					Shore				
Year	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
2013	139	53	472	628	1,195						215	106	494	623	855	0	0	0	0	0
2014	230	73	490	644	893						229	111	497	647	884	0	0	0	0	0
2015	127	49	374	681	1,243						125	63	246	625	796	0	0	0	0	0
2016	143	71	572	707	1,201						112	61	570	668	842	0	0	0	0	0
2017	82	34	572	660	852						124	82	416	657	871	0	0	0	0	0
2018	110	39	566	665	1,000						92	55	574	660	775	1	1	705	705	705
2019	101	49	422	658	1,011						137	66	549	656	810	1	1	628	628	628

Table 10. *Summary of weight measurements (pounds whole weight) from MRIP-intercepted Gag by mode and year. Summaries include the number of fish weighed by MRIP (Fish), the number of angler trips from which those fish were weighed (Trp), and the minimum (Min), geometric mean (Avg), and maximum (Max) size of fish weights.*

	Cbt					Hbt					Priv					Shore				
Year	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
1981	42	16	1.5	7.2	31.3	83	53	1.1	6.9	24.5	90	39	0.7	3.2	14.5	12	6	0.4	2.5	20.5
1982	16	4	1.4	5.5	12.1	54	35	1.3	11.6	36.8	214	72	0.4	7.2	35.1	6	2	0.7	2.2	4.4
1983	20	6	0.7	6.4	25.0	178	116	0.9	7.8	35.8	100	26	0.5	4.6	15.4	10	3	0.4	1.9	3.2
1984	24	4	2.1	6.7	28.4	147	82	0.9	7.7	27.1	52	19	0.5	2.6	9.7	7	4	0.6	4.5	12.1
1985	91	28	1.8	6.2	13.2	399	178	1.3	7.5	39.0	80	31	1.3	4.5	13.1	32	9	0.4	3.0	6.6
1986	775	297	0.7	8.8	33.3						228	99	0.4	6.1	25.4	2	2	3.5	4.1	4.6
1987	276	99	0.3	8.9	72.3						247	101	0.4	6.6	54.3	1	1	0.9	0.9	0.9
1988	94	78	0.6	12.5	39.1						104	128	0.5	4.3	10.2	0	3	0.0	0.0	0.0
1989	134	44	0.8	10.8	31.8						149	67	0.7	4.9	14.0	2	2	0.9	1.2	1.5
1990	88	23	0.7	8.1	25.3						70	30	0.7	8.7	18.3	0	0	0.0	0.0	0.0
1991	41	19	1.7	11.3	32.5						127	52	0.4	7.5	21.9	4	2	6.6	7.5	8.5

	Cbt					Hbt					Priv					Shore				
Year	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
1992	186	46	1.9	10.0	82.4						212	111	1.1	7.0	20.8	6	3	0.7	5.5	8.4
1993	192	61	0.5	8.0	33.8						248	106	1.8	6.8	17.2	11	7	0.9	5.8	14.4
1994	117	30	2.3	7.8	27.3						254	126	0.7	6.5	16.1	2	2	5.3	7.3	9.4
1995	150	59	0.6	6.5	16.5						319	137	1.5	6.8	16.4	13	8	0.6	4.6	9.3
1996	199	69	2.9	5.7	20.3						301	146	0.6	5.8	17.8	3	3	0.4	0.8	1.7
1997	566	184	2.1	12.6	100.2						349	151	0.7	6.4	19.6	2	2	5.6	5.9	6.2
1998	1,395	388	2.7	10.3	82.9						518	230	0.4	6.6	18.9	11	7	3.3	4.9	6.6
1999	2,139	579	0.7	8.4	53.6						805	340	0.5	6.9	118.1	11	9	1.3	4.8	6.8
2000	1,902	573	1.9	9.5	56.7						666	259	1.9	6.9	21.0	6	4	3.7	7.7	15.0
2001	1,281	388	0.7	10.2	55.0						506	222	0.9	8.2	27.3	0	0	0.0	0.0	0.0
2002	1,465	435	1.5	9.9	72.8						586	260	0.8	7.5	27.0	2	2	4.0	7.3	10.5
2003	2,002	534	1.3	8.5	75.3						527	234	2.2	6.8	17.1	1	1	12.5	12.5	12.5
2004	3,191	711	0.9	8.0	55.0						571	237	3.0	7.0	24.6	3	3	6.1	6.7	7.8
2005	2,319	625	1.5	8.0	51.4						408	191	2.6	7.2	24.7	7	7	0.3	4.7	9.1
2006	980	322	1.3	7.7	46.6						241	121	1.2	6.8	17.2	3	3	4.8	6.8	9.1
2007	562	223	3.2	9.0	40.3						304	154	0.7	8.2	53.0	3	3	3.6	4.1	4.5
2008	699	217	1.2	8.4	54.4						376	166	0.7	7.1	19.7	10	7	3.6	4.6	5.4
2009	430	141	1.2	7.9	41.6						231	136	0.8	6.7	15.9	2	2	4.1	4.7	5.4
2010	559	172	3.7	7.2	21.3						255	144	3.6	6.6	14.9	9	6	4.1	6.3	8.0
2011	166	67	3.5	8.6	40.8						129	66	3.7	6.6	13.9	1	1	6.1	6.1	6.1
2012	695	200	3.7	8.2	59.1						142	61	4.1	7.1	13.7	1	1	4.7	4.7	4.7
2013	139	53	3.6	7.7	54.0						215	106	3.6	7.3	17.3	0	0	0.0	0.0	0.0
2014	230	73	4.0	8.2	19.8						229	111	3.7	8.4	19.0	0	0	0.0	0.0	0.0
2015	127	49	1.9	10.2	64.3						125	63	0.7	7.9	18.7	0	0	0.0	0.0	0.0
2016	143	71	5.0	11.4	55.3						112	61	5.1	9.2	19.0	0	0	0.0	0.0	0.0
2017	82	34	4.8	8.8	16.9						124	82	2.1	8.7	18.2	0	0	0.0	0.0	0.0
2018	110	39	5.4	9.0	36.5						92	55	5.7	8.5	13.5	1	1	12.8	12.8	12.8
2019	101	49	2.2	8.6	38.2						137	66	4.9	8.4	16.7	1	1	7.6	7.6	7.6

Table 11. *Summary of length (millimeters fork length) and weight measurements (pounds whole weight) from MRIP-intercepted Gag by year. Summaries include the number of fish for which size information was collected by MRIP (Fish), the number of angler trips from which those fish were sampled (Trp), and the minimum (Min), geometric mean (Avg), and maximum (Max) size of fish lengths and weights.*

	Length					Weight				
Year	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
1981	227	114	230	497	975	227	114	0.4	5.3	31.3
1982	290	113	220	545	1,105	290	113	0.4	7.8	36.8
1983	308	151	220	559	1,075	308	151	0.4	6.5	35.8
1984	230	109	229	543	1,100	230	109	0.5	6.4	28.4
1985	602	246	253	575	1,150	602	246	0.4	6.7	39.0
1986	1,006	398	250	593	1,011	1,005	398	0.4	8.2	33.3
1987	524	201	201	576	1,210	524	201	0.3	7.8	72.3
1988	557	209	0	594	1,160	198	209	0.5	8.2	39.1
1989	287	113	271	562	939	285	113	0.7	7.6	31.8
1990	158	53	271	614	938	158	53	0.7	8.3	25.3
1991	173	73	241	612	879	172	73	0.4	8.4	32.5
1992	424	160	275	593	1,300	404	160	0.7	8.3	82.4
1993	451	174	252	584	860	451	174	0.5	7.3	33.8
1994	373	158	225	583	842	373	158	0.7	6.9	27.3
1995	482	204	268	587	790	482	204	0.6	6.6	16.5
1996	503	218	230	555	834	503	218	0.4	5.7	20.3
1997	917	337	266	600	1,420	917	337	0.7	10.2	100.2
1998	1,924	625	228	610	1,225	1,924	625	0.4	9.3	82.9
1999	2,955	928	228	588	1,590	2,955	928	0.5	8.0	118.1
2000	2,574	836	360	612	1,180	2,574	836	1.9	8.8	56.7
2001	1,787	610	255	653	1,227	1,787	610	0.7	9.6	55.0
2002	2,053	697	265	644	1,314	2,053	697	0.8	9.2	72.8
2003	2,530	769	360	629	1,364	2,530	769	1.3	8.2	75.3
2004	3,765	951	315	634	1,220	3,765	951	0.9	7.8	55.0
2005	2,734	823	220	636	1,217	2,734	823	0.3	7.9	51.4
2006	1,224	446	297	626	1,200	1,224	446	1.2	7.6	46.6
2007	869	380	281	649	1,204	869	380	0.7	8.7	53.0
2008	1,085	390	312	633	1,210	1,085	390	0.7	7.9	54.4
2009	663	279	307	622	1,125	663	279	0.8	7.5	41.6
2010	823	322	496	613	900	823	322	3.6	7.0	21.3
2011	296	134	481	630	1,092	296	134	3.5	7.7	40.8
2012	838	262	504	638	1,265	838	262	3.7	8.0	59.1
2013	354	159	472	625	1,195	354	159	3.6	7.4	54.0
2014	459	184	490	646	893	459	184	3.7	8.3	19.8
2015	252	112	246	653	1,243	252	112	0.7	9.0	64.3
2016	255	132	570	690	1,201	255	132	5.0	10.4	55.3
2017	206	116	416	658	871	206	116	2.1	8.7	18.2
2018	203	95	566	663	1,000	203	95	5.4	8.8	36.5
2019	239	116	422	657	1,011	239	116	2.2	8.5	38.2

Table 12. *Summary of length measurements (millimeters total length) from TPWD-intercepted Gag by mode and year. Summaries include the number of fish measured by TPWD (Fish), the number of angler trips from which those fish were measured (Trp), and the minimum (Min), geometric mean (Avg), and maximum (Max) size of fish lengths.*

	Cbt					Priv					Total				
Year	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max	Fish	Trp	Min	Avg	Max
1983	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	2	2	230	295	360	2	2	230	295	360
1985	0	0	0	0	0	2	2	300	310	321	2	2	300	310	321
1986	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	4	1	355	471	673	0	0	0	0	0	4	1	355	471	673
1988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	1	1	250	250	250	1	1	250	250	250
1990	0	0	0	0	0	5	3	232	394	515	5	3	232	394	515
1991	1	1	523	523	523	4	2	258	304	384	5	3	258	348	523
1992	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	2	2	396	432	468	2	2	396	432	468
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	1	1	465	465	465	6	5	347	421	500	7	6	347	428	500
1997	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	1	1	576	576	576	8	7	251	454	631	9	8	251	468	631
1999	5	3	254	435	669	7	5	225	332	564	12	8	225	375	669
2000	4	2	315	462	587	13	9	237	419	562	17	11	237	429	587
2001	1	1	506	506	506	16	9	276	446	585	17	10	276	449	585
2002	0	0	0	0	0	8	8	269	595	823	8	8	269	595	823
2003	1	1	639	639	639	7	7	340	469	1,001	8	8	340	490	1,001
2004	0	0	0	0	0	8	7	335	436	580	8	7	335	436	580
2005	1	1	447	447	447	3	2	357	415	467	4	3	357	423	467
2006	1	1	442	442	442	11	10	197	361	410	12	11	197	368	442
2007	1	1	616	616	616	5	5	285	334	409	6	6	285	381	616
2008	1	1	435	435	435	5	4	295	408	547	6	5	295	412	547
2009	0	0	0	0	0	9	8	279	458	821	9	8	279	458	821
2010	1	1	1,042	1,042	1,042	4	3	410	530	845	5	4	410	633	1,042
2011	1	1	467	467	467	2	2	398	448	497	3	3	398	454	497
2012	1	1	904	904	904	4	4	364	523	588	5	5	364	599	904
2013	0	0	0	0	0	1	1	593	593	593	1	1	593	593	593
2014	0	0	0	0	0	2	2	477	598	718	2	2	477	598	718
2015	2	1	588	602	617	1	1	808	808	808	3	2	588	671	808
2016	1	1	384	384	384	2	2	308	369	430	3	3	308	374	430
2017	0	0	0	0	0	3	3	371	544	788	3	3	371	544	788
2018	0	0	0	0	0	4	3	417	638	787	4	3	417	638	787
2019	0	0	0	0	0	2	2	570	806	1,041	2	2	570	806	1,041

Table 13. *Recreational Fishing Effort (in angler trips) for Gulf of Mexico anglers by state and year (MRIP, LACreel 2014+, TPWD). FLW excludes the Florida Keys.*

Year	TX	LA	MS	AL	FLW	Total
1981		5,443,324	1,500,488	1,961,664	13,455,505	22,360,981
1982		6,258,398	1,886,936	2,018,892	18,191,732	28,355,958
1983	727,764	6,727,736	2,065,413	2,034,552	22,848,132	34,403,597
1984	729,425	6,504,247	1,964,113	1,965,413	22,743,249	33,906,447
1985	906,376	6,572,069	1,946,516	2,051,290	25,159,541	36,635,792
1986	891,397	6,124,846	1,969,197	2,094,987	21,826,444	32,906,871
1987	1,143,146	5,858,078	1,917,560	2,007,343	20,042,042	30,968,169
1988	1,061,428	5,923,422	2,074,776	2,030,477	26,339,313	37,429,416
1989	946,525	5,959,837	2,176,386	2,050,077	26,903,115	38,035,940
1990	891,992	6,522,225	2,614,859	2,189,778	24,985,366	37,204,220
1991	901,729	6,551,479	2,830,732	2,496,457	26,477,891	39,258,288
1992	1,052,178	6,811,348	2,652,416	2,534,167	24,595,371	37,645,480
1993	1,043,953	7,200,313	2,683,955	2,580,832	28,017,878	41,526,931
1994	1,199,294	7,261,962	2,708,473	2,790,868	28,345,613	42,306,210
1995	1,151,485	7,272,037	2,720,561	2,811,817	25,529,805	39,485,705
1996	1,182,323	7,832,054	2,842,940	2,873,857	23,377,101	38,108,275
1997	1,059,881	8,129,630	3,125,302	3,201,557	25,050,957	40,567,327
1998	1,116,153	8,272,438	3,272,402	3,242,880	28,227,763	44,131,636
1999	1,316,355	8,751,059	3,568,584	3,418,511	33,549,976	50,604,485
2000	1,317,594	9,835,541	3,791,218	3,744,313	35,372,305	54,060,971
2001	1,162,347	10,047,817	3,904,563	4,018,024	37,105,431	56,238,182
2002	1,094,893	9,366,820	3,743,348	4,109,359	34,892,546	53,206,966
2003	1,144,936	9,770,130	3,760,258	4,397,398	37,266,771	56,339,493
2004	1,111,706	9,111,752	3,718,305	4,742,003	43,372,355	62,056,121
2005	1,076,335	8,548,931	3,259,936	4,376,978	39,485,123	56,747,303
2006	1,145,863	8,029,154	3,857,950	5,110,383	35,415,725	53,559,075
2007	1,064,739	8,952,616	4,031,282	5,219,235	36,875,663	56,143,535
2008	1,031,906	9,805,845	4,353,513	4,977,530	36,330,561	56,499,355
2009	1,039,396	10,515,738	4,573,165	5,441,596	33,956,273	55,526,168
2010	1,024,125	11,222,564	4,509,351	5,329,293	37,523,527	59,608,860
2011	1,104,640	11,453,646	4,503,301	5,737,821	37,723,812	60,523,220
2012	1,181,357	10,889,486	4,492,747	6,150,613	41,547,562	64,261,765
2013	1,109,216	10,770,452	4,341,700	6,768,525	42,495,503	65,485,396
2014	1,093,165	2,226,868	4,311,510	6,481,789	35,080,654	49,193,986
2015	1,050,013	2,425,434	4,593,570	6,829,718	32,449,032	47,347,767
2016	1,194,809	2,241,734	4,717,914	7,319,601	36,231,155	51,705,213
2017	1,145,628	2,308,352	4,847,581	8,493,459	39,338,854	56,133,874
2018	1,223,566	2,275,932	4,554,960	6,680,646	38,267,376	53,002,480
2019	1,255,059	2,108,454	4,226,768	6,676,884	33,255,506	47,522,671

Table 14. *Recreational Fishing Effort (in angler trips) for Gulf of Mexico anglers by mode and year (MRIP, LACreel 2014+, TPWD). Note that effort from the combined private-shore fishing mode in the LA Creel survey has been added to the private mode.*

Year	Cbt	Hbt	Priv	Shore	Total
1981	393,653	184,590	9,788,741	11,993,998	22,360,982
1982	523,703	260,912	11,539,636	16,031,708	28,355,959
1983	577,982	256,493	14,486,938	19,082,184	34,403,597
1984	538,634	242,211	14,092,265	19,033,336	33,906,446
1985	590,627	277,516	15,254,933	20,512,717	36,635,793
1986	568,071		14,774,401	17,564,400	32,906,872
1987	589,079		14,797,442	15,581,648	30,968,169
1988	514,257		17,206,317	19,708,841	37,429,415
1989	598,554		16,639,761	20,797,624	38,035,939
1990	582,562		17,643,786	18,977,872	37,204,220
1991	538,436		17,342,858	21,376,993	39,258,287
1992	562,637		17,960,471	19,122,372	37,645,480
1993	632,103		18,369,691	22,525,138	41,526,932
1994	674,540		18,879,440	22,752,231	42,306,211
1995	767,107		19,483,060	19,235,538	39,485,705
1996	728,968		19,486,760	17,892,546	38,108,274
1997	775,426		20,868,517	18,923,384	40,567,327
1998	770,950		22,378,087	20,982,599	44,131,636
1999	785,377		24,652,366	25,166,742	50,604,485
2000	764,302		24,235,439	29,061,230	54,060,971
2001	779,587		26,736,316	28,722,278	56,238,181
2002	747,306		25,968,811	26,490,849	53,206,966
2003	705,784		26,781,055	28,852,654	56,339,493
2004	784,050		30,051,274	31,220,797	62,056,121
2005	693,307		29,101,391	26,952,605	56,747,303
2006	824,855		27,001,186	25,733,034	53,559,075
2007	867,716		27,430,701	27,845,117	56,143,534
2008	815,284		29,704,327	25,979,743	56,499,354
2009	777,345		28,971,676	25,777,146	55,526,167
2010	598,246		30,041,475	28,969,138	59,608,859
2011	761,822		30,443,129	29,318,268	60,523,219
2012	942,070		31,766,244	31,553,451	64,261,765
2013	872,550		29,690,881	34,921,964	65,485,395
2014	864,446		23,290,379	25,039,160	49,193,985
2015	994,732		22,093,560	24,259,475	47,347,767
2016	1,058,564		23,433,797	27,212,850	51,705,211
2017	1,088,133		24,321,945	30,723,796	56,133,874
2018	1,230,739		22,674,462	29,097,279	53,002,480
2019	1,284,733		20,000,859	26,237,079	47,522,671

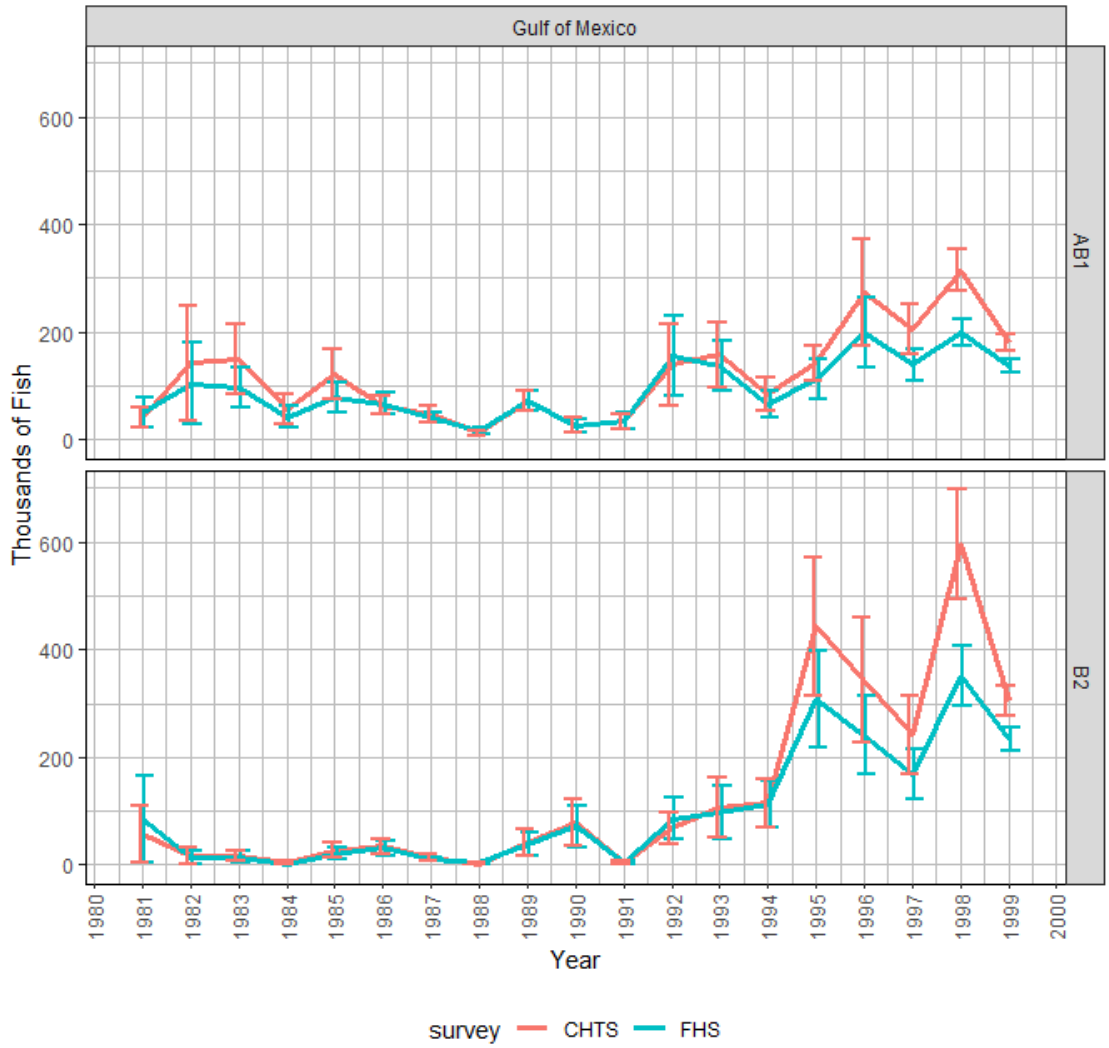

Figure 1. *Comparison of charterboat landings (AB1) and discard (B2) estimates (with standard error intervals shown) for Gag from the Coastal Household Telephone Survey (CHTS) and For-Hire Survey (FHS) from the Gulf of Mexico between 1981 to 1999. The charterboat calibration approach is discussed in Dettloff and Matter (2019; SEDAR64-RD-12).*

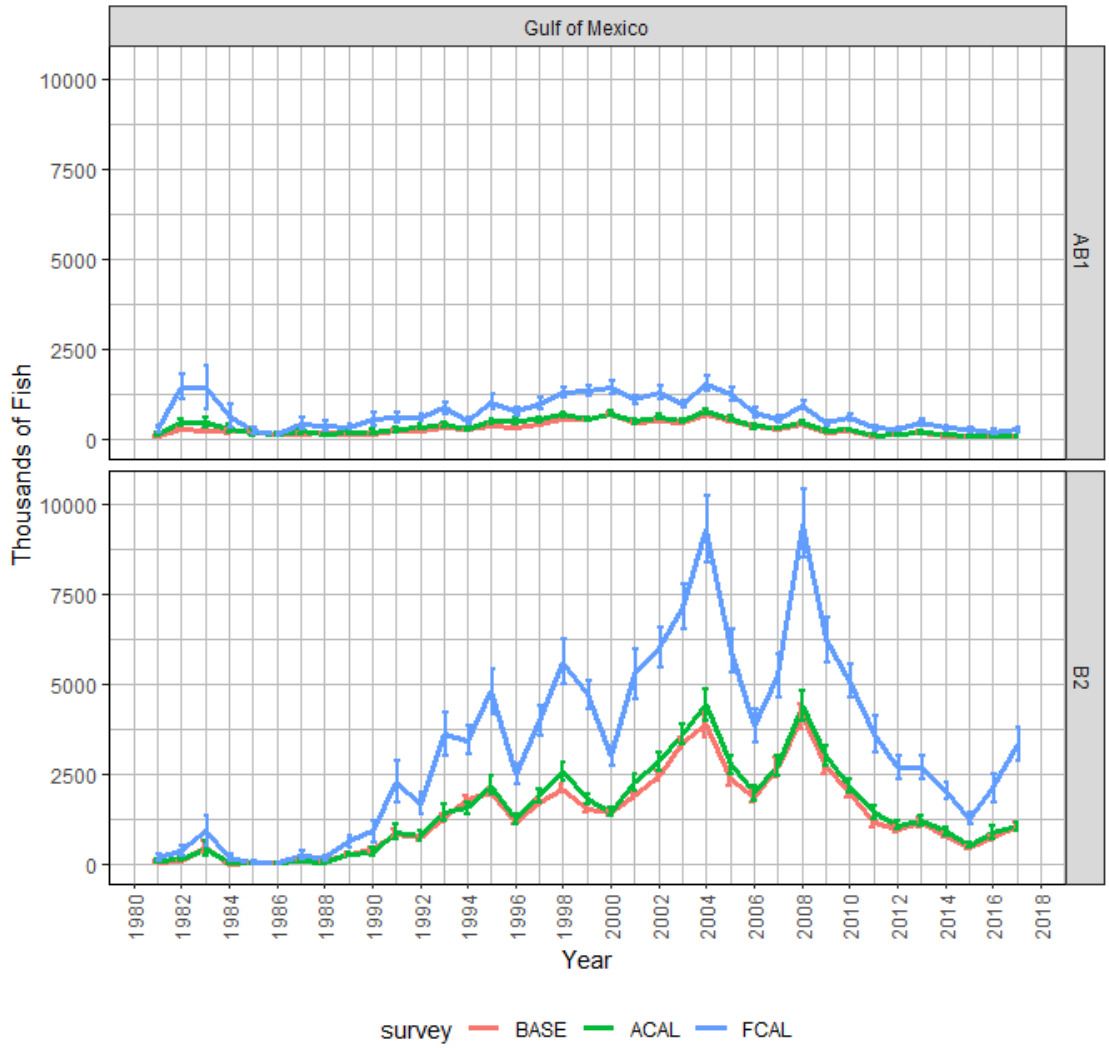

Figure 2. *MRIP Base (BASE), APAIS Calibrated (ACAL), and Fully Calibrated APAIS and FES (FCAL) catch estimates for Gag in the Gulf of Mexico. Landings (AB1) and discard (B2) estimates are in thousands of fish. Estimates in this figure include the Florida Keys as that domain is not separable from those used by the MRIP online comparison tool for the Gulf of Mexico. Figure does not include the proportion of black grouper assumed to have been gag from 1981-1989 (NMFS).*

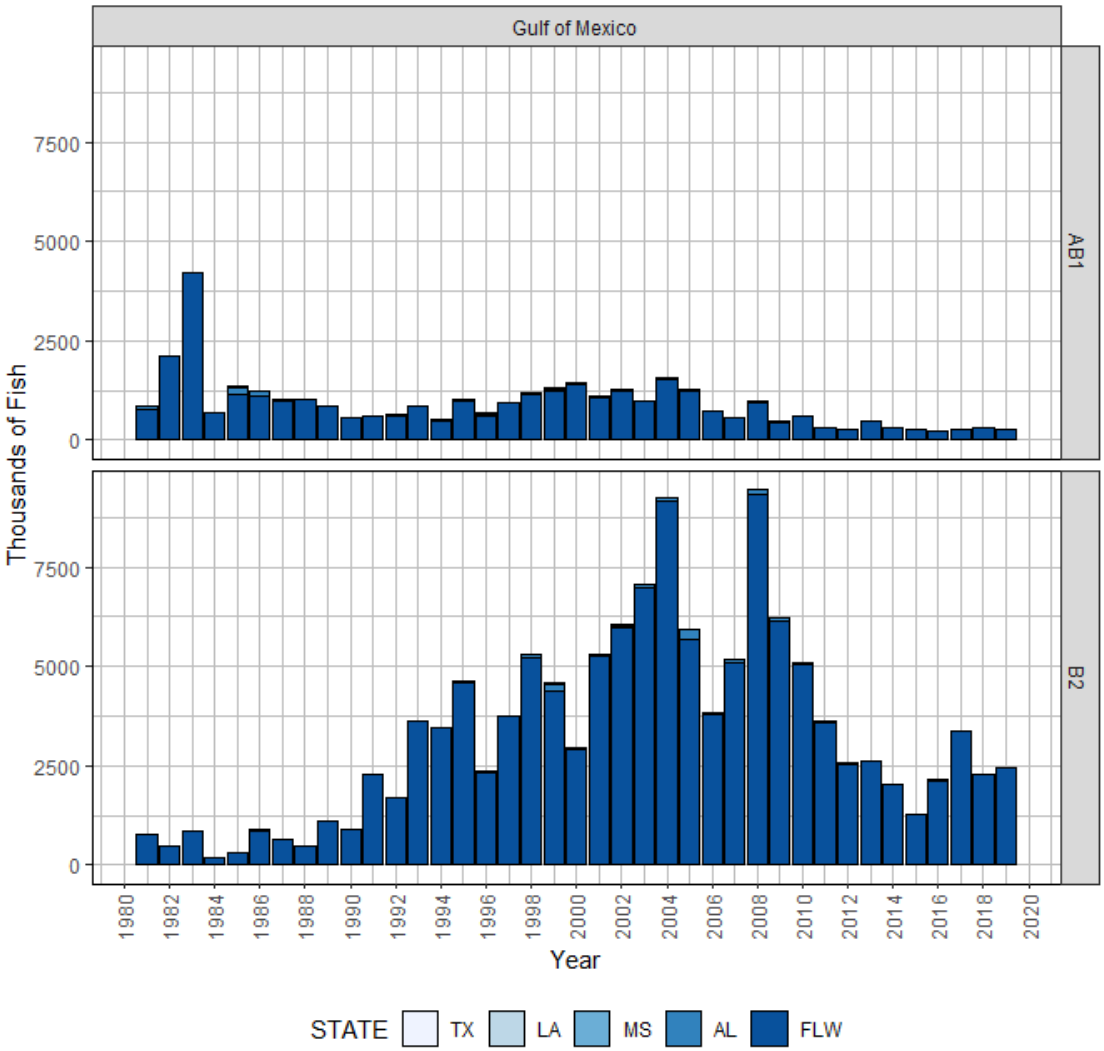

Figure 3. *Annual Gag landings (AB1) and discards (B2), in thousands of fish, by state from 1981 to 2019 (MRIP, LACreel 2014+, TPWD). FLW excludes the Florida Keys.*

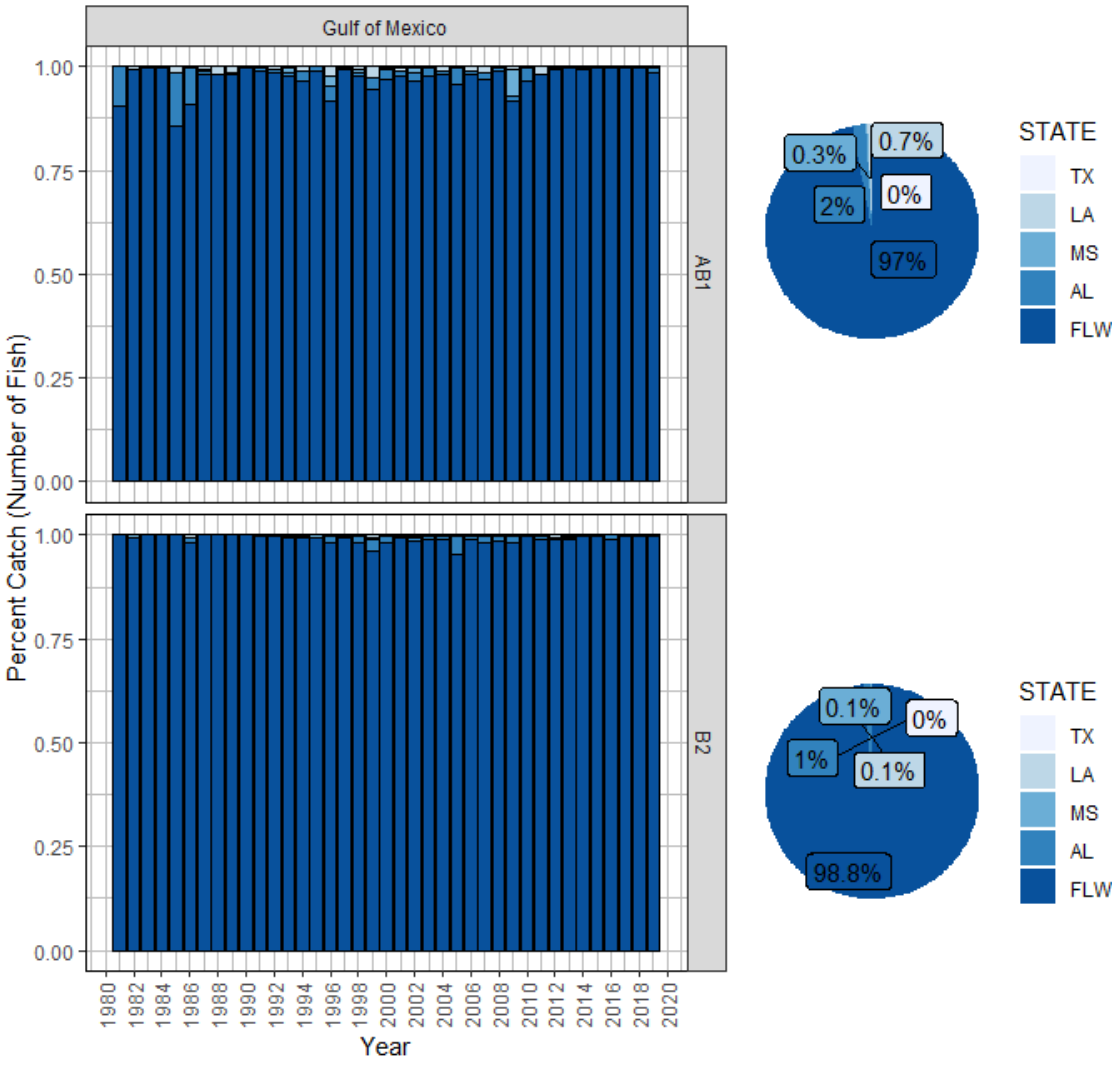

Figure 3a. *Percent of Gag landings (AB1) and discards (B2), in numbers of fish, from each state by year (bar graph) and overall (pie chart) between 1981 and 2019 (MRIP, LACreel 2014+, TPWD). FLW excludes the Florida Keys.*

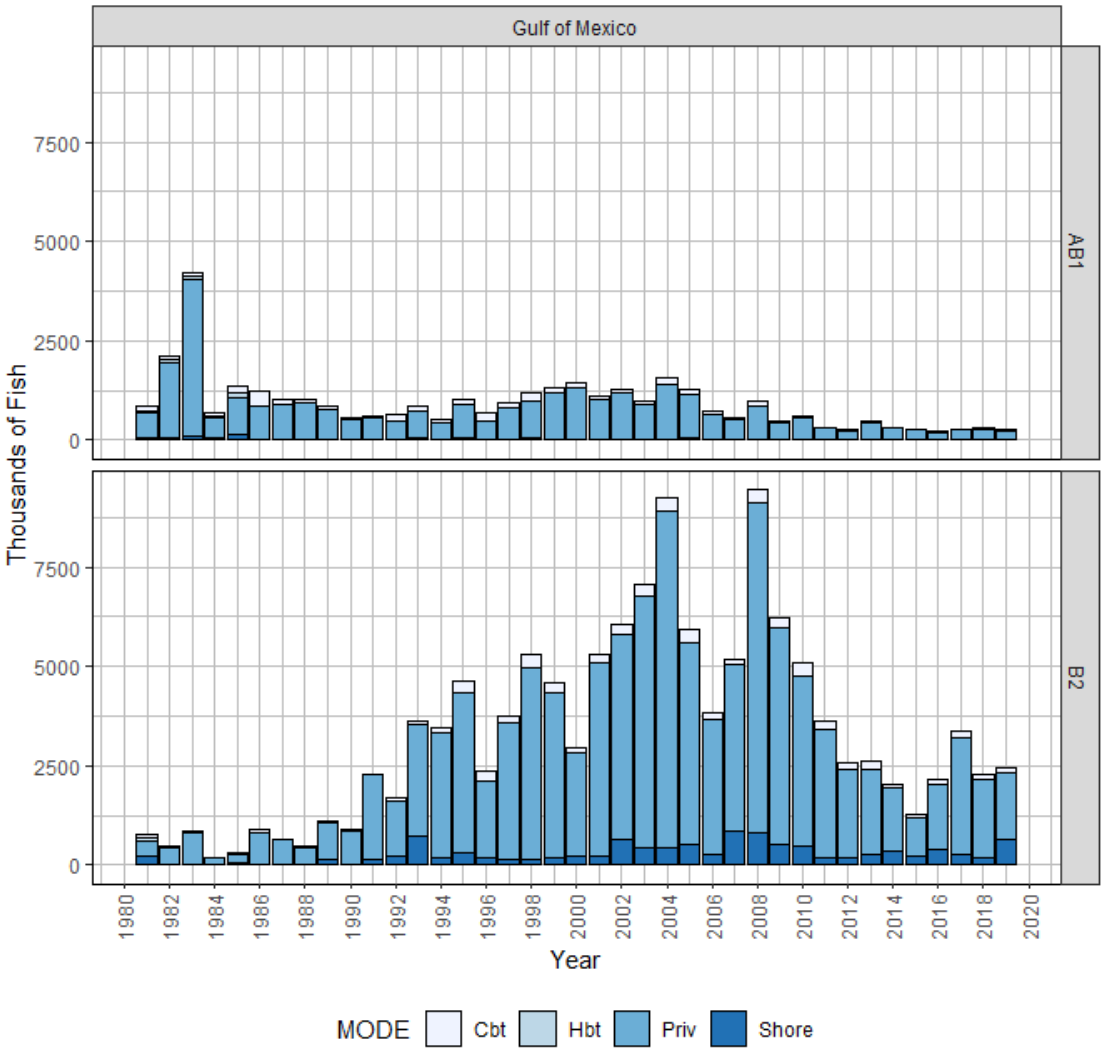

Figure 4. *Annual Gag landings (AB1) and discards (B2), in thousands of fish, by mode from 1981 to 2019 (MRIP, LACreel 2014+, TPWD). Note that catch from the combined private-shore fishing mode in the LA Creel survey has been added to the private mode.*

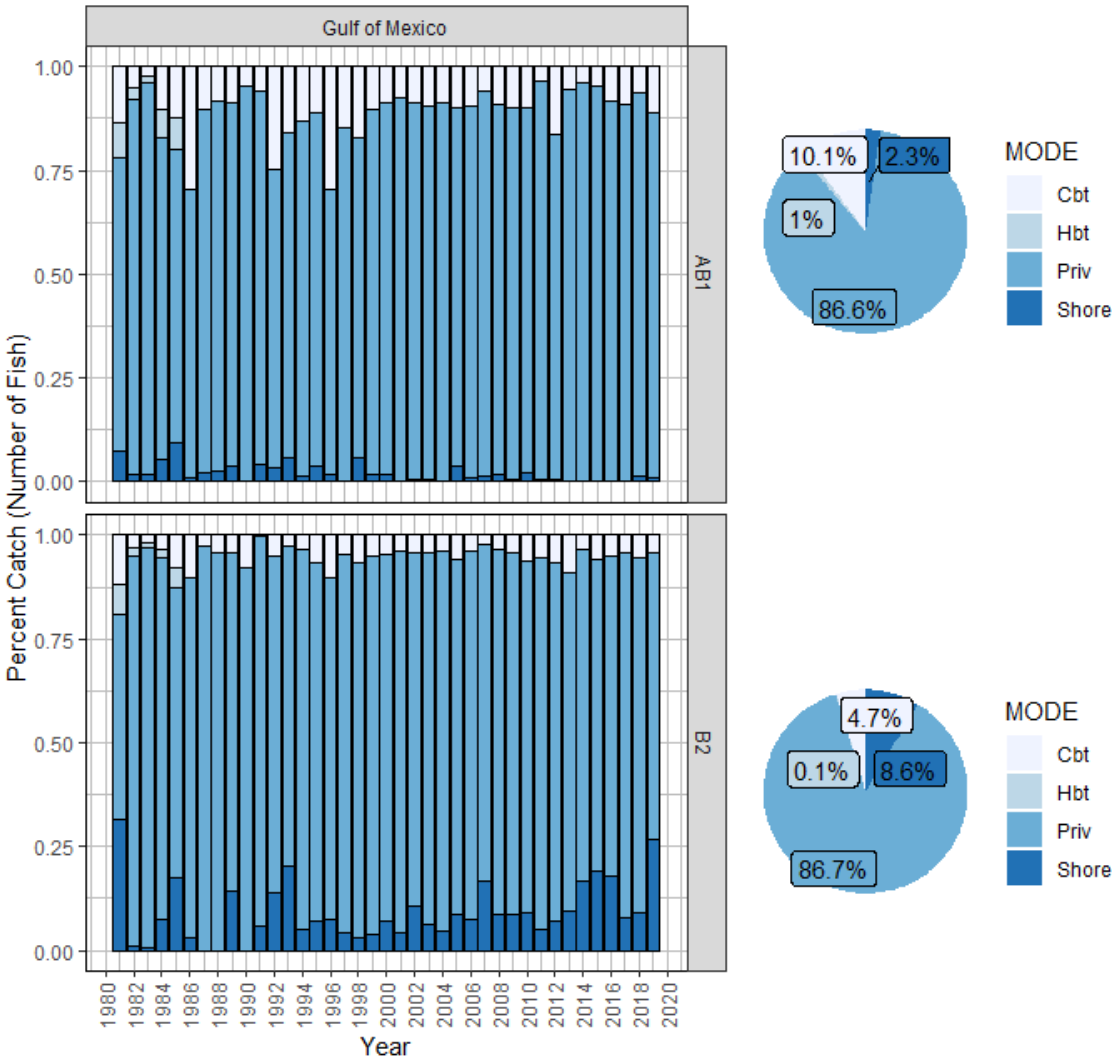

Figure 4a. *Percent of Gag landings (AB1) and discards (B2), in numbers of fish, from each mode by year (bar graph) and overall (pie chart) between 1981 and 2019 (MRIP, LACreel 2014+, TPWD). Note that catch from the combined private-shore fishing mode in the LA Creel survey has been added to the private mode.*

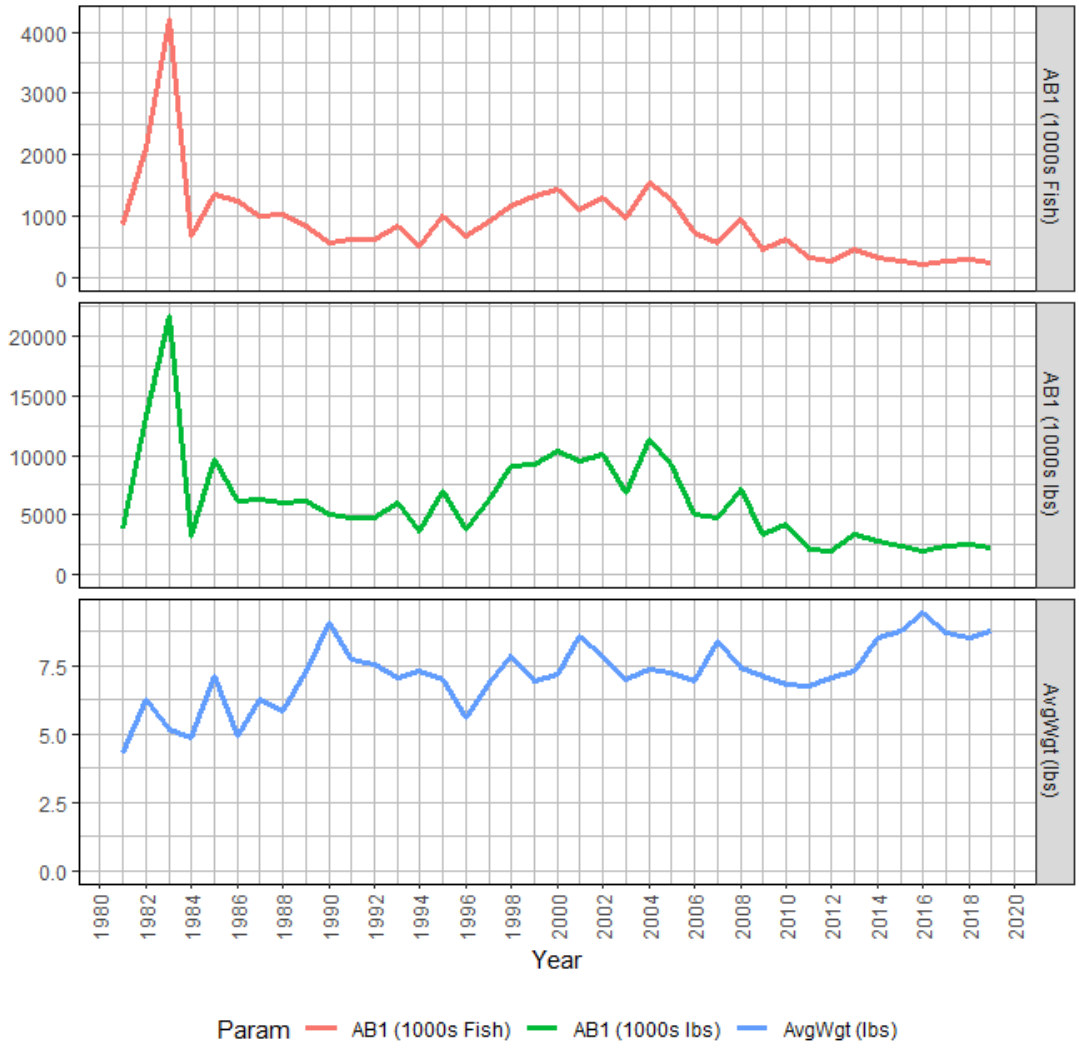

Figure 5. *Estimates of annual landings for Gag in the Gulf of Mexico, as estimated from MRIP: estimated landings in thousands of fish (top), estimated landings in thousands of pounds whole weight (middle), and average weight of landed fish (estimated lbs/estimated fish) (bottom). Average weight estimates are calculated by strata using the following hierarchy: species, region, year, state, mode, wave, and area (Matter and Rios 2013). The minimum number of weights used at each level of substitution is fifteen fish, except for the final species level where the minimum is one fish (Dettloff and Matter 2019).*