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Memo

July 7, 2020

To: Caitlin Starks, FMP Coordinator

From: Chris Batsavage and Lee Paramore, NCDMF

RE: North Carolina Preliminary February 2020 Black Sea Bass Recreational Harvest north of Cape Hatteras and Season Reduction Proposal

Introduction

In December 2019, the Council and Board agreed to allow a February 2020 black sea bass (north of Cape Hatteras) recreational fishery for interested states in federal waters. Anglers were limited to 15 fish per day at a minimum size of 12.5". The projected harvest assuming participation of all states was 100,000 pounds. The February recreational black sea bass fishery under these measures has been in place since 2018. The two states that opted into the February 2020 fishery were Virginia and North Carolina. Based on 2013 vessel trip report (VTR) data from Wave 1, the North Carolina recreational fishery north of Cape Hatteras was projected to harvest 62 pounds.

February 2020 Harvest Estimate and Analysis

The Marine Recreational Information Program (MRIP) estimate for black sea bass harvest north of Cape Hatteras in February 2020 was 28,091 fish and 50,692 pounds (Table 1). The estimated from MRIP number of fish released was 18,936 fish. MRIP staff collected 2 intercepts with black sea bass north of Cape Hatteras in February 2020. The intercepted trips harvested a total of 67 black sea bass among 8 anglers. No MRIP intercepts with black sea bass were collected during prior February openings in 2018 or 2019. For 2020, the MRIP estimate for boat trips in the ocean during Wave 1 totaled 13,259 trips with private/rental mode trips much higher than party/charter mode trips (Table 2). Trip numbers for just February 2020 north of Cape Hatteras were not available. GARFO staff received no for-hire Vessel Trip Reports (VTRs) from the NC for-hire fishery north of Cape Hatteras in February 2018-2020 (Table 3).

Table 1. Summary of estimated North Carolina (north of Cape Hatteras) private angler black sea bass catch and harvest during February 2018-2020. All values are based on MRIP estimates.

Private anglers - North Carolina February 2018-2020					
Year	**MRIP intercepts**	**Estimated total harvest** (# fish)	**Estimated total harvest** (lb.)	**Estimated total discards** (#s fish)	**Estimated total catch** (#s fish)
2018	0	0	0	0	0
2019	0	0	0	0	0
2020	2	28,091	50,692	18,936	47,027

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Table 2. Number of trips by mode in the ocean north of Cape Hatteras during Wave 1, 2020.

Mode	Area	Trips	PSE (Trips)
Private/Rental	Ocean ≤ 3 Miles	2,492	100.00
Private/Rental	Ocean > 3 Miles	9,897	72.56
Party/Charter	Ocean ≤ 3 Miles	72	0
Party/Charter	Ocean > 3 Miles	798	0
	Total Trips	13,259	

Table 3. Summary of North Carolina (north of Cape Hatteras) for-hire black sea bass catch and harvest during February 2018-2020. Values are based on MRIP, federal VTRs, and NCDMF sampling.

For-hire - North Carolina February 2018-2020					
Year	**MRIP intercepts**	**Federal VTRs submitted**	**Trips sampled by NCDMF**	**Sampled fish**	**Estimated weight of sampled fish**
2018	0	0	0	0	0
2019	0	0	1	24	55
2020	0	0	1	31	71

North Carolina Division of Marine Fisheries (NCDMF) staff worked with charter boat captains who target black sea bass north of Cape Hatteras to collect black sea bass carcasses for age and growth samples. Staff collected 31 black sea bass carcasses from a charter boat fishing in federal waters offshore of Oregon Inlet (Table 3). Lengths ranged from 371-574 mm; 68% were male and 32% were female. Additionally, otoliths were collected from the carcasses. NCDMF staff was not notified of every trip, and the lack of VTR data prevents us from estimating the proportion of for-hire trips that were sampled.

The Wave 1 black sea bass harvest estimate north of Cape Hatteras is very uncertain due to the low number of intercepts with black sea bass, the relatively high catch rates from the intercepts and the estimated number of trips during Wave 1 north of Cape Hatteras. The estimate suggests that more black sea bass were harvested in February 2020 than any entire year since 2011. While the fishing trips intercepted by MRIP and anecdotal fishing reports support that black sea bass harvest north of Cape Hatteras was higher than expected, it is unrealistic to believe over 50,000 pounds of fish were harvested given the low number of days that boats can safely fish in the ocean out of Oregon Inlet in the winter. The observation buoy offshore of Oregon Inlet was offline in February, but wind direction and velocity data at the Oregon Inlet Fishing Center's weather station was available to characterize weather conditions when known fishing trips occurred. MRIP intercept data, carcass collection data and fishing reports identified five days when anglers harvested black sea bass north of Cape Hatteras. The wind direction on four of those days were southerly (daily average wind direction from 160^{o} -212^{o}) and easterly (daily average wind direction of 79^{o}) on one day. Average daily wind speeds ranged from 2.9-8.2 miles per hour with wind gusts ranging from 4.0-9.2 miles per hour. The data from the weather station indicated that there were four additional days with similar wind directions and velocities, but it is unknown if or how much fishing effort occurred on those days. The number of boats fishing for black sea bass during the February season is also unknown, but most of the private boats fishing out of the Oregon Inlet boat ramp are less than 30 feet long and most of the charter boats are between 30 and 60 feet long and take 6 passengers or less. No head boats operate out of Oregon Inlet in the winter. Onshore wind directions (northerly and easterly) and moderate to high wind velocities make navigating Oregon Inlet and fishing in

federal waters hazardous during the winter. Therefore, it is unlikely that the recreational fishery landed over 50,000 pounds of black sea bass in only nine days.

An intercept of a trip that was reported by the anglers as a private boat mode fishing in state waters also contributed to the large harvest estimate. Although the trip occurred on a charter boat with out of state anglers, it is plausible that it was not a for-hire trip because for-hire captains will take friends and family fishing. However, black sea bass fishing north of Cape Hatteras largely occurs in federal waters, and the anecdotal reports from the 2020 February fishery indicated that anglers were fishing in federal waters.

NCDMF's MRIP staff applied the catch rates for the private boat modes in federal and state waters to the party/charter mode trips in state and federal waters and the private boat mode trips in federal waters as a relative comparison of black sea bass harvest estimates from the intercept reported as a private boat state waters trip (Table 4). The estimates from this intercept are much lower if it was reported as a party/charter mode trip with estimates approximately 30,000 pounds lower than the estimated harvest from the intercept. The estimate in pounds of fish from this estimate are also lower if it was reported as a private boat trip in federal waters with the estimate approximately 12,000 pounds lower than the estimated harvest from the intercept. It is important to note that there are no levels of precision for these estimates and the calculations are outside the MRIP harvest estimate calculations. They are provided to show how the mode and area fished could substantially influence the harvest estimate when there were only two intercepts with black sea bass.

Table 4. Comparison of harvest estimates (pounds) of the intercept reported as a private boat trip in state waters if it was reported as a different mode/area combination.

Party/Charter (P/C) Ocean > 3 Miles				
P/C Trips	Private Boat Catch Rate	P/C Harvest Est.	Original Est.	Difference
798	1.95	1,553	31,422	-29,869

Party/Charter (P/C) Ocean ≤ 3 Miles				
P/C Trips	Private Boat Catch Rate	P/C Harvest Est.	Original Est.	Difference
72	12.61	912	31,422	-30,510

Private Boat Ocean > 3 Miles				
P/C Trips	Private Boat Catch Rate	Private Harvest Est.	Original Est.	Difference
9,897	1.95	19,270	31,422	-12,152

The recreational black sea bass season reopened on May 17 with a 12.5" and a 15-fish bag limit since the public was notified in advance of the reopening date and regulations. NCDMF requested guidance from the ASMFC Summer Flounder, Scup, and Black Sea Bass Technical Committee on how to account for the February 2020 recreational black sea bass harvest north of Cape Hatteras.

Fishing Effort (Trips) and Harvest Analysis

The Technical Committee reviewed the MRIP data that generated the February 2020 black sea bass harvest estimate and suggested that NCDMF investigate effort-based methods to account for their February 2020 harvest. The Technical Committee determined that the harvest estimate appears to be an outlier and that there is not a technically sound way to quantitatively adjust or smooth the 2020 estimate, nor to calculate a season closure that would provide a pound for pound payback.

NCDMF staff examined fishing effort (trips) by wave north of Cape Hatteras for private/rental and party/charter mode trips in the Atlantic Ocean and for trips that either caught black sea bass or black sea bass were identified as a target species (Tables 5 and 6). Wave 1 MRIP sampling in North Carolina began in 2004. Trips in estuarine waters and shore mode trips in the ocean were omitted from the overall trip analysis since it is unlikely that black sea bass would be harvested from these areas and modes. Years and waves without trips that targeted and/or caught black sea bass were not included in the analysis. The number of trips by wave vary with more trips (on average) in Wave 1 than in Wave 6 (Table 5). The number of trips targeting and/or catching black sea bass by wave varies greatly by year and wave with some years having waves with no trips that caught or targeted black sea bass. The number of trips targeting black sea bass (on average) was higher in Wave 6 than Wave 1 (Table 6). The source data provided to the Technical Committee includes the percent standard errors (PSEs) for the trip estimates. The PSEs for boat trips in the ocean by wave vary from relatively low uncertainty (<10) to very uncertain (>50). The PSEs for the targeted black sea bass trips by wave are very uncertain with all of them exceeding 50.

Table 5. Total ocean trips in the private/rental and party/charter mode by wave north of Cape Hatteras, 1982-2020.

	Wave						
Year	1	2	3	4	5	6	Total Ocean Boat Trips
1982			35,174	70,624	37,396	14,448	157,643
1983			74,356	48,098	111,343	34,399	268,196
1984		21,766	16,780	37,947	6,263		82,758
1985		65,168	67,752	21,008	32,975	7,872	194,776
1986		58,254	46,275	93,627	26,497	8,186	232,839
1987		24,788	27,576	24,822	29,602	11,578	118,367
1988		20,787	60,888	65,720	35,262	16,281	198,937
1989		49,278	69,309	59,219	19,199	17,933	214,937
1990		7,916	39,958	52,614	27,299	9,099	136,886
1991		43,285	56,766	95,534	50,226	17,465	263,276
1992		28,402	84,768	55,319	51,007	10,272	229,768
1993		12,282	58,713	70,803	48,096	6,928	196,822
1994		35,102	60,328	46,108	35,335	19,067	195,940
1995		27,731	44,612	25,555	22,106	20,422	140,427
1996		82,881	51,551	75,460	44,277	44,039	298,207
1997		100,117	80,520	83,001	44,051	59,452	367,141
1998		43,894	72,322	73,522	35,443	46,233	271,415
1999		57,586	141,919	131,315	76,353	54,708	461,882
2000		49,599	120,736	140,593	38,013	37,262	386,204

2001		72,363	79,487	96,714	51,865	17,009	317,438
2002		90,314	73,215	67,232	26,323	110,117	367,201
2003		33,662	83,337	91,671	40,321	92,076	341,068
2004	226,942	204,462	171,049	115,921	26,980	143,472	888,826
2005	188,640	130,249	121,056	149,303	60,431	48,362	698,041
2006	107,006	14,133	148,607	127,441	58,526	126,612	582,326
2007	192,444	60,316	159,540	167,976	48,851	114,417	743,545
2008	133,166	18,009	106,092	91,328	27,219	34,160	409,974
2009	86,765	102,003	128,172	66,546	23,896	14,490	421,872
2010	34,111	69,227	130,801	74,965	47,816	34,346	391,265
2011	151,709	47,281	98,370	149,620	77,089	5,690	529,759
2012	28,107	14,362	118,381	66,500	60,860	9,594	297,803
2013	1,879	11,708	107,953	155,146	28,378	4,571	309,635
2014	1,316	25,238	115,445	113,060	25,455	14,744	295,258
2015		24,247	283,551	197,690	61,604	3,532	570,624
2016	11,137	74,782	219,698	245,258	41,754	8,329	600,958
2017	36,361	9,023	266,577	158,712	12,633	5,297	488,603
2018	17,207	3,280	213,644	122,901	68,550	6,723	432,305
2019	2,262	17,623	152,069	127,261	42,504	10,767	352,487
2020	12,389						12,389
82-20 Avg.	76,965	48,642	104,930	96,214	42,153	33,512	345,328
10-20 Avg.	29,648	29,677	170,649	141,111	46,664	10,359	389,190

Table 6. Number of trips that either caught or targeted black sea bass by wave north of Cape Hatteras, 1983-2020.

	Wave						
Year	1	2	3	4	5	6	Total Direct BSB Trips
1983			311		7,004		7,315
1984			384		249		633
1985				461	719	264	1,444
1987			611	17			628
1989		1,367	430	1,108			2,905
1990				173			173
1991		4,946	635				5,581
1992		13,161	3,556		1,408	896	19,021
1993			546		570	185	1,301
1994			512	124	512	1,024	2,172
1995				744			744
1996		2,844	498		656		3,998
1997		1,209					1,209
1998			288	1,380			1,668
1999		3,350	478	323			4,151
2000				1,733	511		2,244
2002		1,246		56			1,302
2003			502	1,015			1,517
2006		142	152				294
2007			915	1,231			2,146
2008	110			5,825			5,935
2010			88		556		644
2011			186				186
2012	128			1,582			1,710
2017			12,114	797		1,449	14,360
2018				249			249
2019		1,326	1,042	10,293			12,661
2020	996						996
83-20 Avg.	411	3,288	1,292	1,595	1,354	764	3,471
10-20 Avg.	562	1,326	3,358	3,230	556	1,449	4,401

Harvest in pounds by year and wave are also quite variable throughout the time series with some waves having no harvest estimate (Table 7). The PSEs are also very uncertain (>50) for some of the wave estimates, especially those in waves 1 and 6.

Table 7. Black sea bass harvest (pounds) and percent standard errors (PSEs) by wave north of Cape Hatteras, 1982-2020.

	1		2		3		4		5		6		Total
	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest
1982							-	-	12,123	17			12,123
1983			-	-	1,485	67	4,229	-	21,480	29			27,194
1984							36,305	67	38,336	61			74,641
1985					1,630	67	4,194	9	4,293	35	691	35	10,808
1986			2,061	-	630	67	175	-	5,790	23	954	67	9,610
1987					1,992	56	3,854	47	6,203	42			12,049
1988					-	-	-	-	-	-	-	-	-
1989			8,696	-	2,697	43	22,160	42	294	38	747	67	34,594
1990					6,314	48	1,224	37	12,178	31	237	52	19,953
1991			26,384	56	42,801	33	8,992	51	5,467	16	-	-	83,644
1992			278,178	48	9,078	44	-	-	1,349	6	11,886	67	300,491
1993					2,402	59	2,965	31	3,578	34	3,873	67	12,818
1994			-	-	414	36	22	67	14,118	34	192	67	14,746
1995			12,906	9	1,207	54	7,954	57	3,142	49	90	67	25,299
1996			366	-	2,185	55	1,265	31	5,676	32	5,456	67	14,948
1997			5,769	48	6,702	52	4,175	50	2,268	36	3,569	-	22,483
1998			59	67	13,480	48	2,385	59	1,268	47	8,160	67	25,352
1999			22,004	63	6,982	47	13,818	34	4,195	18	1,214	-	48,213
2000					2,560	52	2,361	27	1,876	57	7,031	67	13,828
2001					8,113	40	711	48	47	-	-	-	8,871
2002			9,052	53	2,181	66	6,669	37	960	67	-	-	18,862
2003			10,716	67	341	67	9,137	21	-	-	-	-	20,194
2004			16	67	-	-	2,353	46	162	67	-	-	2,531
2005					494	-	3,259	37	1,450	25	-	-	5,203
2006			3,356	39	11,581	29	4,046	7	2,661	45	4,816	67	26,460
2007	367	-	26,902	67	19,820	47	4,348	63	851	-	3,277	67	55,565
2008	12,414	59	391	20	-	-	2,012	51	131	-			14,948
2009	355	67	-	-	3,677	67	2,207	67	1,500	-	545	67	8,284
2010			16,528	47	2,400	33	-	-	5,542	54	-	-	24,470
2011	508	-	-	-	3,680	54	4,065	50	103,286	67			111,539
2012	-	-	-	-	1,667	41	1,217	36	5,315	47	31	-	8,230
2013	308	57	1,233	-	108	-	19,967	38	-	-	-	-	21,616
2014			929	19	23	21	205	67	112	22			1,269
2015			1,588	-	1,920	31	1,589	63	1,127	30	-	-	6,224
2016	25	-	311	2	684	37	452	63	-	-	118	-	1,590
2017					14,308	38	16,266	38	171	52	2,676	-	33,421
2018			116	-	3,223	23	810	22	2,815	-	2,530	-	9,494
2019			-	-	2,580	26	4,408	50	4,650	4			11,638
2020	50,692	49											50,692
Average	3,804		11,252		4,720		5,258		7,221		1,529		

Season Closure Proposal

NCDMF proposes closing the season in Wave 6 to account for the February 2020 harvest. The average total number of ocean boat trips in Wave 6 are less than in Wave 1, but the average total number of targeted black sea bass trips in Wave 6 are greater than in Wave 1. The black sea bass fishing season was open for the entire Wave 6 for all years except 2003-2005 when the season was open from November 1-30 (49% of wave open) and in 2010 and 2012 when the season was closed for the entire wave.

Based on the black sea bass harvest, fishing days and effort analyses, NCDMF recommends either closing North Carolina's recreational black sea bass fishery north of Cape Hatteras from December 1-31, 2020 (31 additional closed days) or from November 16-December 31, 2020 (46 additional closed days). NCDMF staff examined potential harvest reductions under the proposed season closures based on 2017 Wave 6 harvest and average Wave 6 harvest over the time series. Harvest reductions were calculated by multiplying the average daily harvest (total pounds/total open fishing days) by the proposed number of closed days. A 31-day season closure at the end of the year in 2017 would have reduced the black sea bass harvest by 1,360 pounds and by 2,018 pounds with a 46-day season closure at the end of the year. For the time series average, a 31-day season closure at the end of the year would have reduced the black sea bass harvest by 777 pounds and by 1,153 pounds with a 46-day season closure at the end of the year. The additional closed days along with the two-day delay in reopening the 2020 season are designed to account for the uncertainty in the trip and effort data. Closing Wave 6 for 28 days (equal to the number of days the season was open in February) may not fully account for the uncertain data.

Conclusion

The NCDMF agrees with the Technical Committee's recommendation to use effort-based methods to account for the February 2020 black sea bass harvest. The uncertainty in the harvest estimates throughout the time series prevent pound for pound payback calculations. The fishing trips intercepted by MRIP along with anecdotal fishing reports indicate that black sea bass harvest was higher than expected, but not to the level of the MRIP 2020 Wave 1 harvest estimate. The proposed season closures at the end of the year are designed to fairly account for the Wave 1 harvest based on comparing fishing effort in Wave 1 to Wave 6 trips and accounting for the uncertainty in the wave-specific effort data.

MRIP harvest estimates for black sea bass in North Carolina are uncertain and variable, especially in waves 1 and 6. As such, NCDMF does not plan to rely on MRIP to monitor black sea bass harvest during the February fishery in the future. The NCDMF agrees with the Technical Committee that other methods to estimate February harvest, such as mandatory logbook reporting or a call- in program, are more appropriate than MRIP.