

Catch history for blacktip shark – combined regions

SEDAR 11 Working Document

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Introduction:

The Data Workshop Panel recommended that blacktip sharks should be assessed as two separate stocks, Gulf of Mexico and western Atlantic Ocean. Industry representatives disagreed with this decision and produced a Minority Opinion on the matter for inclusion in the Data Workshop Final Report. In response to that concern, the lead analysts agreed to conduct a sensitivity run for blacktip sharks with regions combined. Indices of relative abundance for the combined region analysis were developed, when necessary, for the blacktip series discussed by the Indices Working Group in the DW Final Report and appended to the appropriate DW Working papers. Below is the description of how the catch history for this analysis was developed.

Catch History:

Blacktip - Combined Areas

Commercial landings

U.S. total commercial landings of blacktip sharks in 1996-2004 were compiled based on the Southeast and Northeast Regional general canvass landings data, and the SEFSC quota monitoring data. The larger of the two values reported for blacktip sharks in the southeast general canvass and the SEFSC quota monitoring is taken as the value of blacktip landings for the southeast. The landings from the Northeast Regional general canvass data are then added to the southeast landings to produce total U.S. estimates. Total U.S. estimates for 1987-1995 are from the general canvass data only, as the quota monitoring system did not exist and were obtained based on the proportional allocation of commercial landings of unclassified sharks by gear type and region defined in the 1996 assessment. Landings for 1981-1985 were taken from the 1996 assessment.

Unclassified sharks in 1996-2004 attributed to the LCS grouping were proportionally allocated to blacktip sharks by using the proportion of blacktip sharks observed in the LCS and multiplying the unclassified sharks by that value to estimate the weight of blacktip sharks likely listed as unclassified. The value was then added to the value reported from canvass/quota monitoring to determine the total landings for blacktip sharks.

The data are collected in landed or dressed weight. Various conversions are used to convert dressed weight to number of sharks. The Working Group indicated that the average weight used for the period 1986-1993 in the 2002 assessment was unrealistically low. This value (20.5 lb) was the average of the period 1994-1996. It was decided to use an average weight of 24.0 lb to estimate number of sharks caught for the period 1981-1993. This average weight was a compromise based on discussions among the Working Group participants and information provided by Mr. Chris Brannon regarding the average weight of the blacktip sharks he encountered in his fishing operations during that time period. From 1994 onward, the average weight was determined from bottom longline shark fishery observer program data.

Recreational landings

Recreational landings for blacktip sharks correspond to landings estimated from the MRFSS, the NMFS Headboat Survey, and the TXPWD data sets. As explained in the DW report, during 1998-1999, the MRFSS tested a new methodology for the estimation of charterboat effort, the For Hire Survey (FHS), which was deemed to provide better estimates of charterboat fishing effort and was officially adopted in 2000. Thus, landing estimates by the charterboat fleet between the 1981-1997 and 1998-2004 periods could not be directly compared. The Working Group agreed to use conversion factors that the NOAA Fisheries Southeast Fisheries Science Center personnel estimated, to adjust charterboat landings for 1981-1997 (Diaz and Phares, document SEDAR7-AW-03). MRFSS landings for the period 1981-1997 were thus re-estimated using these conversion factors and the MRFSS landings used for the period 1998-2004 were also those incorporating this new methodology. Total, annual recreational landing estimates of blacktip sharks are the sum of the MRFSS, Headboat, and TXPWD survey estimates.

Unreported Catches

Unreported large coastal shark (LCS) landings were provided by Mr. Chris Brannon to the National Marine Fisheries Service (NMFS) during the 1996 Shark Evaluation Workshop (SEW). These landings have been part of the LCS database since then. The Working Group did not have any way of determining what amount, if any, of these catches were included in landing reports. Therefore, the Working Group made the assumption that none of the catches were included and kept these data separate, listing them as unreported.

These landings correspond to the Gulf of Mexico during 1986, 1987, 1990 and 1991, while half of the landings correspond to the Gulf of Mexico and the other half to

the mid Atlantic during 1988 and 1989. Brannon reported that the Gulf of Mexico landings were approximately 2/3 blacktip sharks, with the remaining third being a combination of sandbar sharks and other LCS species; and that the Atlantic landings were approximately 7-10% blacktip sharks and the remaining mostly blacktips.

Following the information provided by Mr. Brannon, for the years 1986, 1987, 1990, and 1991, the estimate of unreported blacktip sharks for the areas combined was the same as that for the Gulf of Mexico (since all landings were in the GOM) and was calculated by multiplying the total unreported LCS catch estimate by 66%. For the years 1988 and 1989, the estimate was determined by multiplying the total unreported LCS catch estimate by the sum of 0.5×0.66 (50 % of the landings in the GOM and 66% blacktip) and 0.5×0.07 (50 % of the landings in the ATL and 7% blacktip).

Mexican catches

Mexican catches for blacktip shark corresponded to 50% of the sum of small fish caught in the states of Tamaulipas and Veracruz from document LCS05/06-DW-06. This percentage was used to take account of the potential mixing of U.S. and Mexican stocks in the Mexican fishing grounds.

Gulf menhaden fishery discards

Effort-adjusted estimates of dead discards for blacktip shark were determined. De Silva et al. (2001) reported that blacktip sharks represented 45.3% of the total observed bycatch in 1994-1995. Considering the reported 75% mortality rate among all sharks, this results in an estimated bycatch of 12,200 ($36,000 \times 0.453 \times 0.75$) and 11,200 dead blacktip sharks for the two years. The number of vessels operating in the fishery each year was divided by 53.5 vessels, the average number of vessels operating for the years in which bycatch estimates were available (1994 and 1995). The year-specific multipliers were then multiplied by the average number of blacktip (11,700) sharks discarded dead, as determined previously. This provides for year-specific bycatch estimates adjusted for the annual number of vessels in the fleet.

Confiscated Mexican catches in the US

The Group recommended inclusion of the confiscated illegal Mexican catches. The estimates of illegal blacktip shark catch were determined using the following guidelines/assumptions:

- Use of an average of 25 sharks per “lancha” (10 lb dressed weight average)
- Fifty percent of the estimated 1900 incursions are fishery-related incursions
- Eighty percent of the fishery-related incursions used gillnets and would catch coastal sharks
- Data series begins in 2000
- Assume 33% of sharks are blacktip sharks following findings in Castillo et al. (1998)
- Include only those sharks confiscated by U.S. Coast Guard, but not expand the series to earlier years since these sharks may have been already reported in the Mexican landings

SELECTIVITY AND AVAILABILITY

Commercial fishery and unreported landings: selectivity for these fisheries is assumed to follow a logistic curve that covers the entire age range; availability is assumed to be 1 for all ages.

Recreational fishery, Mexican landings and confiscated illegal Mexican catches: selectivity is assumed to be 1 for ages 0-1 with declining selectivity for later ages, but with lower steepness than for sandbar; availability is assumed to be 1 for all ages.

Menhaden fishery: selectivity and availability are assumed to be 1 for all ages.

Table 1. Species specific catch history for blacktip sharks for combined regions (thousands of fish).

CATCHES OF BLACKTIP SHARKS (in thousands) : GOM+ATL

Year	Commercial Landings	Recreational catches	Unreported catches	Mexican catches	Gulf Menhaden fishery discards	Confiscated Mexican catches in US	Total
1981	7.8	56.5		109.9	17.5		191.8
1982	7.8	82.6		70.1	17.9		178.4
1983	8.4	44.0		74.3	17.7		144.4
1984	11.5	39.1		109.0	17.7		177.3
1985	10.7	105.7		79.8	16.0		212.2
1986	59.2	166.1	16.43	72.5	15.7		329.9
1987	61.0	130.1	46.40	73.2	16.4		327.1
1988	137.5	146.6	41.35	80.1	16.0		421.6
1989	159.7	116.9	35.15	97.2	16.8		425.7
1990	85.5	95.0	34.39	111.5	16.4		342.8
1991	114.3	154.2	7.46	86.6	12.7		375.3
1992	150.4	158.8		93.7	11.2		414.1
1993	128.6	112.7		110.7	11.4		363.4
1994	198.4	68.2		102.0	12.2		380.7
1995	142.2	68.2		86.1	11.2		307.7
1996	97.3	87.3		95.3	11.2		291.1
1997	92.0	73.8		74.7	11.4		251.9
1998	103.0	79.9		66.9	10.9		260.7
1999	56.1	31.8		49.1	12.0		149.0
2000	51.4	74.0		45.0	10.3	0.330	181.0
2001	42.6	49.5		45.0	9.6	0.485	147.2
2002	50.6	39.8		45.0	9.4	0.459	145.3
2003	99.1	40.4		45.0	9.2	0.432	194.1
2004	60.8	31.3		45.0	9.4	0.700	147.2