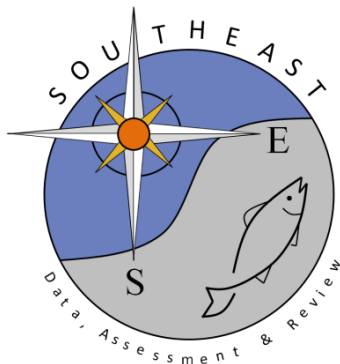


Potential use of Large Pelagic Intercept Survey data (LPIS) to estimate catch-per-unit-effort for Sandbar Sharks

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POTENTIAL USE OF LARGE PELAGIC INTERCEPT SURVEY DATA (LPIS) TO ESTIMATE CATCH-PER-UNIT-EFFORT FOR SANDBAR SHARKS

By

Guillermo A. Diaz¹

In preparation to the SEDAR 101, sandbar shark (*Carcharhinus plumbeus*) stock assessment, the SEFSC assessed the feasibility of estimating a time series of Catch-Per-Unit-Effort using data collected by the Large Pelagic Intercept Survey (LPIS) for the period 2002-2024.

The LPIS data contained a total of 83,890 records (trips) of which 591 caught a total of 1,553 sandbar sharks. That corresponds to a 0.7% positive trips. Table 1 shows the number of sharks caught by state and year.

Table 1: Number of sandbar sharks caught by year and state.

Year	CT	DE	MA	MD	ME	NH	NJ	NY	RI	VA	TOTAL
2002	1	0	5	0	0	0	1	9	0	1	17
2003	0	1	8	8	0	10	2	2	0	4	35
2004	0	6	4	3	0	0	0	2	0	60	75
2005	0	0	0	13	0	0	11	0	0	14	38
2006	0	0	0	9	0	0	0	2	0	148	159
2007	1	11	2	20	0	0	3	3	1	136	177
2008	5	5	0	14	0	0	20	0	1	178	223
2009	3	9	0	37	0	0	5	0	2	164	220
2010	0	4	0	21	0	0	5	5	0	2	37
2011	0	0	0	32	0	0	10	2	0	2	46
2012	0	0	0	4	0	0	6	1	0	3	14
2013	0	2	0	29	0	0	13	0	0	0	44
2014	0	0	0	26	0	0	32	4	0	0	62
2015	0	1	0	6	0	0	39	4	0	1	51
2016	0	6	12	54	0	0	14	4	0	0	90
2017	0	6	6	41	0	0	18	0	0	0	71
2018	3	6	0	20	0	0	27	2	0	0	58
2019	0	1	0	12	0	0	6	5	1	0	25
2020	0	4	0	9	0	0	3	5	2	0	23
2021	0	1	0	3	0	0	2	6	1	0	13
2022	6	2	11	4	0	0	5	0	3	6	37
2023	1	0	1	1	0	0	0	2	8	0	13
2024	0	1	2	5	0	0	6	2	9	0	25

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A quick examination of the numbers caught by state showed unusually high catches in VA for years 2006-2009. As a second step, data was filtered only to include those records where the fishers indicated that their primary or secondary target species were sharks. This filtering indicated that 11,701 trips targeted sharks (5.05% sandbar positive trips). Table 2 shows the number of sandbar sharks caught by year and state from trips that targeted sharks which totaled 724 sharks.

Table 2: Number of sandbar sharks caught by year and state from trips that targeted sharks.

Year	CT	DE	MA	MD	ME	NH	NJ	NY	RI	VA	TOTAL
2002	0	0	0	0	0	0	0	5	0	0	5
2003	0	1	0	7	0	0	1	2	0	3	14
2004	0	4	0	2	0		0	0	0	22	28
2005	0	0	0	13	0	0	11	0	0	0	24
2006	0	0	0	9	0	0	0	0	0	2	11
2007	0	10	0	18	0	0	3	3	1	0	35
2008	0	5	0	11	0	0	18	0	1	13	48
2009	0	7	0	32	0	0	2	0	0	1	42
2010	0	4	0	21	0	0	2	5	0	0	32
2011	0	0	0	31	0	0	10	0	0	2	43
2012	0	0	0	4	0	0	6	1	0	3	14
2013	0	2	0	28	0	0	11	0	0	0	41
2014	0	0	0	25	0	0	32	3	0	0	60
2015	0	1	0	6	0	0	39	4	0	0	50
2016	0	6	0	54	0	0	12	4	0	0	76
2017	0	6	1	41	0	0	10	0	0	0	58
2018	3	6	0	20	0	0	24	2	0	0	55
2019	0	1	0	11	0	0	6	2	1	0	21
2020	0	4	0	9	0	0	3	4	0	0	20
2021	0	1	0	3	0	0	0	6	0	0	10
2022	3	1	11	2	0	0	0	0	0	0	17
2023	1	0	0	1	0	0	0	0	5	0	7
2024	0	0	0	5	0	0	6	2	0	0	13

It is noticeable that the number of sandbar sharks caught in VA from 2006 to 2009 dropped from 626 sharks to 16. Hence, VA reported that a total of 610 sandbar were caught in 2006-2009 by trips that were not targeting sharks. Figure 1 shows the number of sandbar sharks caught by year by all trips and by trips targeting sharks.

Figure 1: Total number of sharks caught by year by all trips in the LPIS records and by trips that indicated targeting sharks (shark trips).

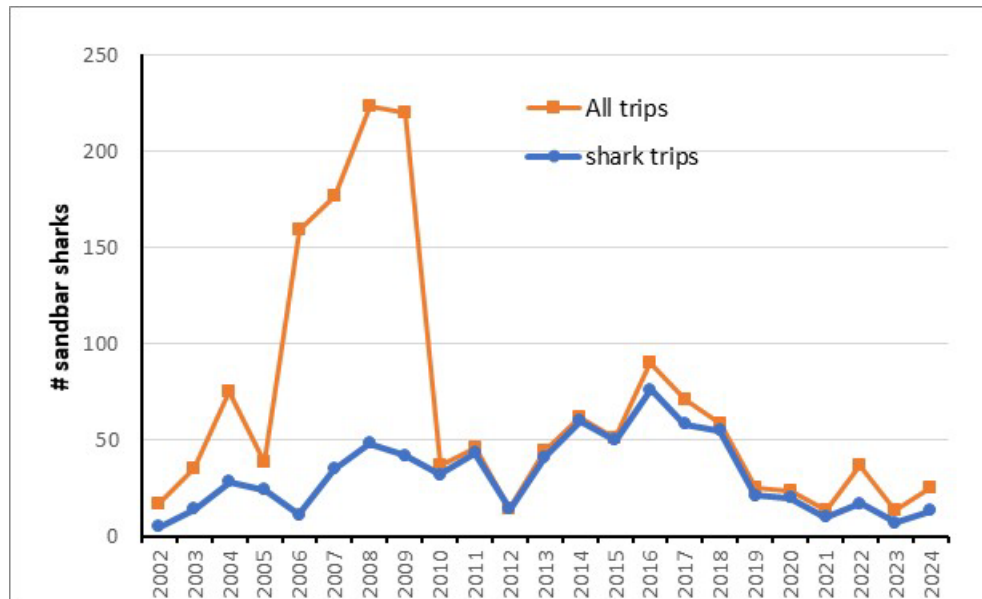


Figure 1 clearly shows that from 2002 to 2009 a significant number of sandbar sharks were caught in trips that didn't target sharks, while after 2009 almost all sandbar sharks were caught in trips targeting sharks.

The LPIS records also indicate the fate of the catch, i.e., if the catch was kept, discarded dead, or discarded alive. From 2002 to 2024 the LPIS showed that for the trips targeting sharks, 710 sharks were discarded alive, 0 were discarded dead, and 14 were kept. Therefore, 98% of the entire catch was not seen by the interviewer and it was self-reported by the fishers. Because interviewers were unable to identify almost all sandbar sharks caught, there is a significant possibility that an unknown fraction of the reported sandbar sharks caught were in reality dusky sharks (*Carcharhinus obscurus*) that were misidentified by the fishers as sandbar sharks.

CONCLUSION

Taking into consideration;

- 1) The uncertainty of the true level of catches, particularly prior to 2010.

- 2) That 98% of the entire sandbar catches from trips targeting sharks was self-reported
- 3) The possible misidentification of dusky sharks as sandbar sharks

The SEFSC does not recommend that a time series of CPUE be estimated using LPIS data.