

Demographics of Sharks Captured in the Recreational Land-Based Surf Fishery

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Introduction

The practice of recreational land-based catch and release shark fishing has increased in popularity in recent years. While many fishermen acknowledge they do not target specific species, it appears that most captures are prohibited species and thus requires proper enforcement. Unfortunately, many aspects of the shark fishery make data collection and implementation of proper fishing practices challenging. Understanding each shark species' unique population demographic in addition to their natural range, can lead to successful management and conservation of these shark species. Additionally, a system of proper fishing and handling techniques can be developed in cooperation with local fisherman to decrease post release mortality.

Methods

- Recreational fishermen were allowed to catch sharks from land using their own hook and line fishing practices in three locations in southern New Jersey. Two sites were in the Atlantic Ocean and the other site was located in Delaware Bay.
- Fishing took place between June-July, and each shark caught was identified by species and sex and measured fork length and total length (nearest cm). All sharks were tagged using traditional dart tags while a subset of the sharks caught were surgically implanted with a Vemco V16-6H acoustic transmitter.



Figure 1. (A) Surgical implantation of a Vemco V16-6H acoustic tag. (B) Close up of an external dart tag. (C) Large Sandbar shark acoustically tagged ready for release.

Results

- In 2017, 12 land based excursions captured 67 individual sharks including 3 unique shark species. 20 Sand Tiger sharks (*Carcharias taurus*), (mean FL = 150.1 cm), 45 Sandbar shark (*Carcharhinus plumbeus*) (mean FL = 122.8 cm), 1 Dusky shark (*Carcharhinus obscurus*), and 1 Spinner Shark (*Carcharhinus brevipinna*). A subset of 15 sharks were surgically implanted with Vemco V16-6H acoustic transmitters (9 Sand Tigers and 6 Sandbar sharks).
- In 2018, 53 land based excursions were conducted during which 203 individuals sharks were captured consisting of four unique species: 159 Sandbar sharks (mean FL = 106.68 cm), 19 Sand Tiger sharks (mean FL = 189.43 cm), 23 Dusky sharks (mean FL = 104.74 cm), and 2 Spinner sharks (mean FL = 59.05 cm). A subset of 18 sharks were surgically implanted with Vemco V-16-6H acoustic transmitters (18 Sandbar sharks).
- In 2019, 92 land based excursions led to 135 captured sharks. 80 Sandbar sharks (mean FL = 110.5 cm), 52 Sand Tiger sharks (mean FL = 160.7 cm), and 3 Blacktip sharks (*Carcharhinus limbatus*) (mean FL = 140.5 cm). A subset of 27 sharks were acoustically tagged with Vemco V-16-6H acoustic transmitters (23 Sandbars, 2 Sand Tigers and 2 Blacktips).
- There was a 100% post release survival rate in 2017.
- Data for the 2018 and 2019 survival rates are still being compiled.

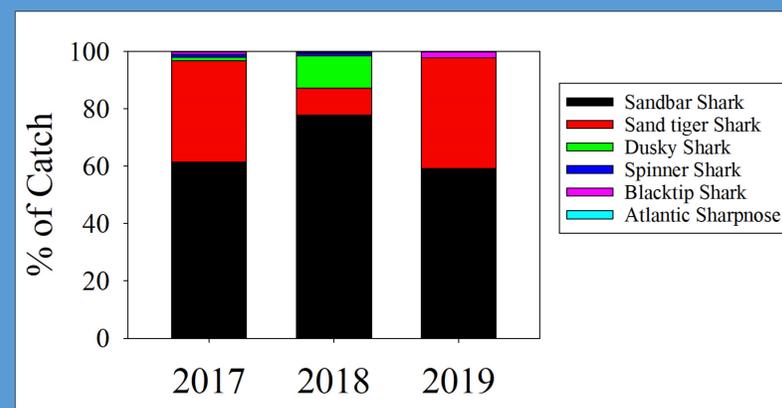


Figure 2. Catch composition of captured sharks from 2017-2019.

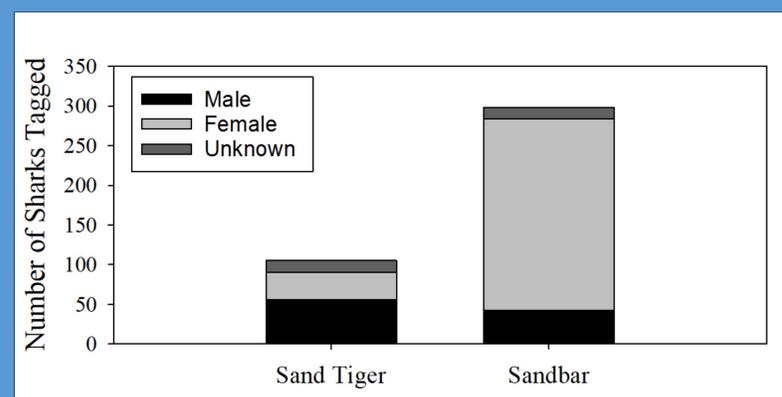


Figure 3. Total number of sharks tagged by sex for the two most commonly caught species Sand Tiger shark and Sand Bar shark.

Results

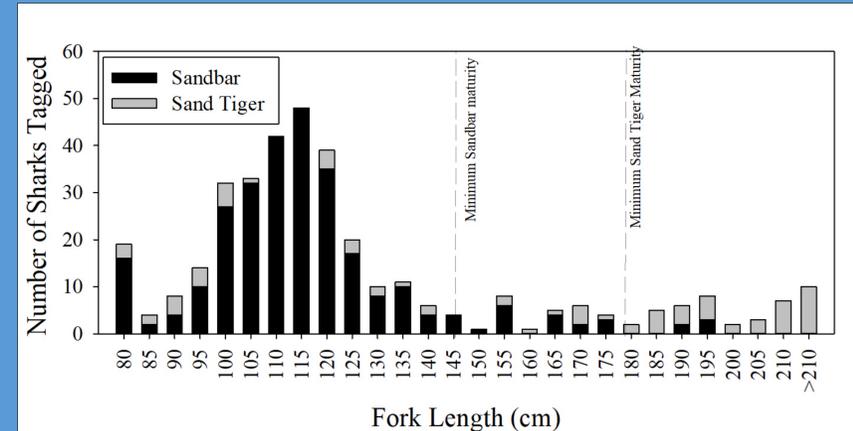


Figure 4. Length distributions of Sandbar sharks and Sand Tiger sharks captured from 2017-2019.

Discussion

The popularity of recreational land based shark fishing continues to increase along the coast of NJ. Despite this growth of the fishery, 98% of the total shark captures represent prohibited species in NJ. Sandbar and Sand Tiger sharks dominated catches and current concerns are focused on increased mortality induced by the capture event and post-release stress and injury. Preliminary acoustic tag data suggests 100% survival from sharks handled by best practices in catch-and-release. Catches of sharks tend to be highly variable temporally and spatially. Relatively few male Sandbar sharks were caught suggesting differential habitat use among the different life stages as well as sexes.

Future Efforts

- Continue to surgically implant acoustic transmitters in both species which should allow us to delineate the long term habitat use amongst sexes, species, and life stages.
- Develop and educate fisherman on the best catch-and-release practices.
- Continue to monitor previously tagged sharks in order to gather long term data on species migrations and survival rates.