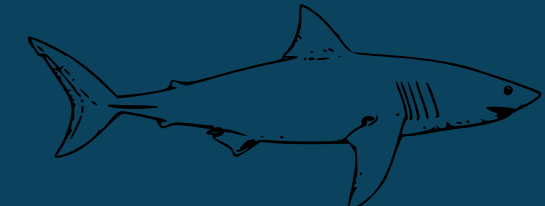
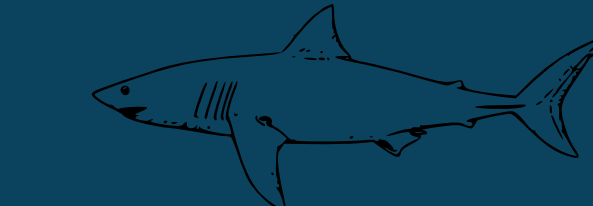




The Human Dimensions of the Shore-Based Shark Fishery in Florida, USA



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What is shore-based shark fishing (SBSF)?

SBSF is a relatively easily accessible and low-cost mode of recreational shark angling which may occur from beaches, piers, or bridges. Participation in this sport is observed in many countries (Australia, South Africa, Argentina, etc.) and seems to be increasing in popularity.

In Florida, anglers are required to obtain a shore-based shark fishing permit to participate, which is available to anyone over the age of 16 and requires the completion of an online course on best practices for shark fishing.

Significance of This Research

The characteristics of the shore-based shark fishery in Florida remain largely unknown due to a lack of research attention. With seemingly increased participation in recreational shark fishing, as well as the lack of research on the impacts of recreational fishing on coastal shark populations, understanding the angler characteristics can help inform the management of this fishery. Our study presents the first comprehensive profile of this fishery.

Methods

Survey Design

We designed a 40-question survey in Qualtrics XM investigating:

- Socio-demographics
- Fishing specialization
- Fishing preferences
- Fishing motivations
- Perceptions of shark conservation and management

Survey Target Sample and Timeline

The survey was sent via email to 10,990 anglers who held a shore-based shark fishing (SBSF) permit with the Florida Fish and Wildlife Commission (FWC).

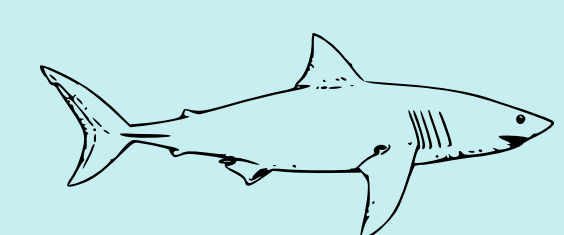
- First contact: March 13th, 2020
- Second contact (reminder): April 2nd, 2020
- Survey close date: April 17th, 2020

Data Analysis

We performed an exploratory two-step cluster analysis in SPSS with nine fishing specialization variables to find distinct angler types among a continuum of fishing specialization.

Following this, we then compared the cluster variable to other variables in contingency tables, using a chi-square analysis to test for significant associations between angler profiles and socio-demographics, fishing preferences, motivations, and perceptions of shark conservation and management.

Survey Response Rate



Surveys received: 1895

Response rate: 17.2%

Active SBSF anglers (sample size) = 856

Specialization Variables Included in Cluster Analysis

1. Number of years spent fishing for any species
2. Number of years spent shark fishing
3. Number of days spent fishing for any species
4. Number of days spent shark fishing
5. Self-assessed skill level
6. Hours spent watching fishing videos (centrality to lifestyle)
7. Number of fishing club memberships (centrality to lifestyle)
8. Shore-based shark fishing equipment expenses in one year
9. Number of sharks caught in one year

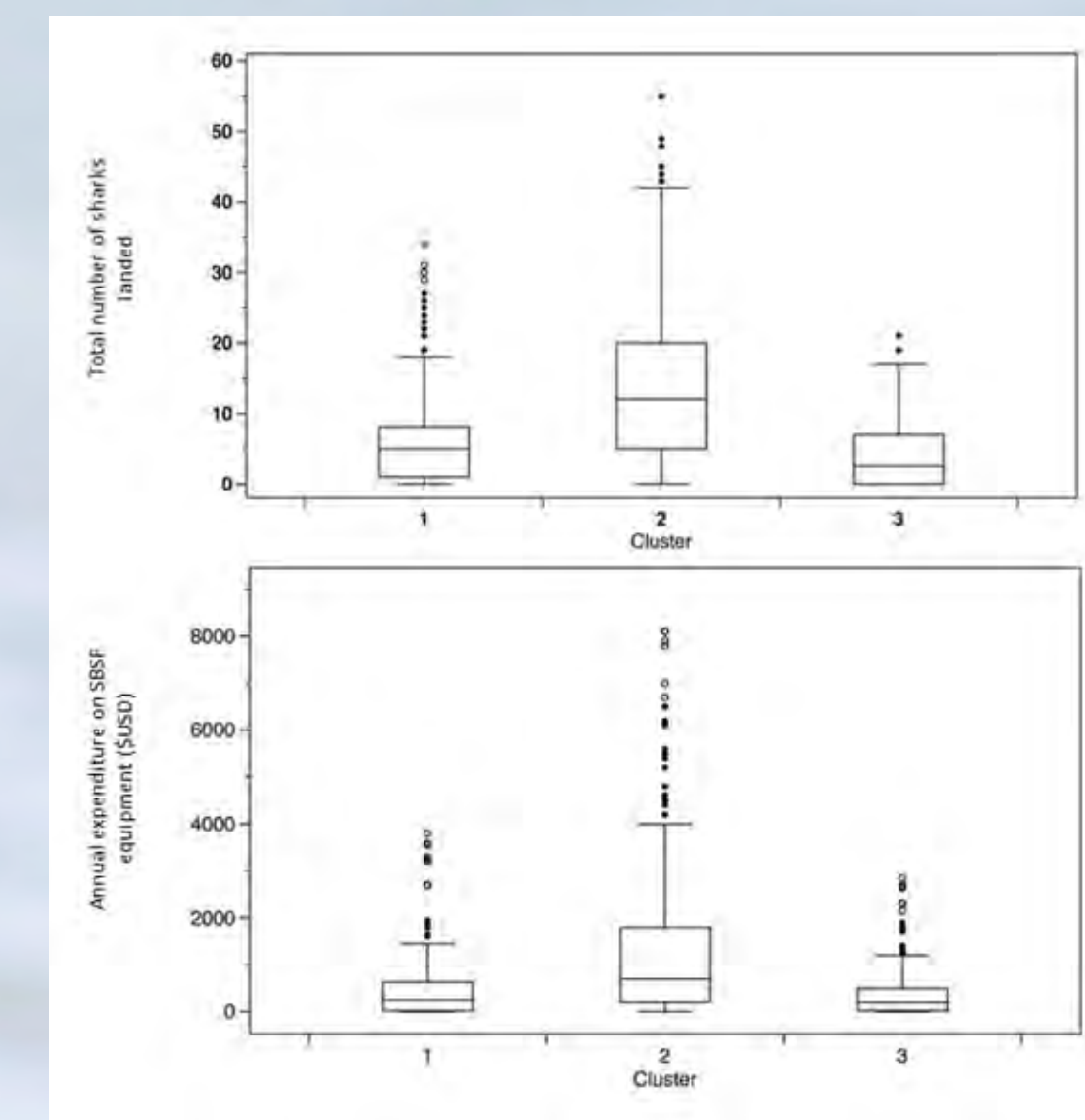


Figure 1: Representation of the differences in number of sharks caught and equipment expenses across the three angler profiles (Clusters: 1 = EIA, 2 = SFA, 3 = NIA)

Angler Typology

| Novice Infrequent Anglers | Experienced Infrequent Anglers | Skilled Frequent Anglers |
|---|---|---|
| 198 Anglers | 271 Anglers | 312 Anglers |
| Years targeting sharks: Less than 5 years | Years targeting sharks: 10 - 20+ years | Years targeting sharks: 1 - 20+ years |
| Frequency of SBSF: Less than once/month | Frequency of SBSF: Less than once/month | Frequency of SBSF: Daily to biweekly |
| Fishing skill level: Beginner/Intermediate | Fishing skill level: Intermediate/Advanced | Fishing skill level: Advanced/Professional |
| SBSF equipment expenses: \$405.29 USD (+/- \$565.03) | SBSF equipment expenses: \$452.38 USD (+/- \$647.23) | SBSF equipment expenses: \$1305.24 USD (+/- 1643.34) |
| Number of sharks caught: 4 sharks (+/- 5) | Number of sharks caught: 7 sharks (+/- 8) | Number of sharks caught: 18 sharks (+/- 16) |

Description of the Sample Population

Socio-demographics

- 94% Male
- 65% Florida residents
- Even distribution of anglers between the ages of 21 - 60 years.
- 41% hold a bachelor's or college degree
- 70% are employed full-time

Fishing Habits and Specialization

Most anglers...

- Began SBSF 1 - 5 years ago (40%)
- Ranked their fishing skill as intermediate or advanced (87%)
- Participate in SBSF only a few times a year (63%)
- Participate in SBSF in the evenings (48%)
- Participate in SBSF for 4 - 7 hours at a time (69%)

Economic Evaluation of the Fishery

- Total of \$523,706.50 USD spent on SBSF equipment in 1 year (rod and tackle gear, fishing clothing, other) (\bar{x} = \$766.77)
 - Extrapolated to the full permit list = \$7.8M USD
- Total of \$305,391.75 USD spent on their last fishing trip of 21 days or less (\bar{x} = \$496.57)
 - Extrapolated to the full permit list = \$34.4M USD

Top Motivators for SBSF

- 1) To be outside and by water (92%)
- 2) For the thrill of the catch (84%)
- 3) To relax (82%)

Preferred Target Species

- 1) Blacktip shark (*Carcharhinus limbatus*)
- 2) Bull Shark (*Carcharhinus leucas*)

Shark Conservation and Management

- 89% wish to learn more about shark survival post-release.
- 88% would change their fishing habits to help shark survival
- 60% do not believe more regulations are required.
- 85% believe commercial fishing negatively impacts shark populations.
- Only 25% believe recreational fishing negatively impacts shark populations

Shark Catches

Total of 9617 sharks caught in 1 year (\bar{x} = 11 sharks per angler)

