Shark Depredation

Karyl Brewster-Geisz
Atlantic HMS Management Division
2019
Depredation by sharks is not a new phenomenon

**Negative Impacts**

- Mortality on target stocks
- Lost Revenues
- Lost Seafood
- Gear Damage
- Negative social impacts
Shark Depredation

- HMS is receiving more frequent reports of shark depredation in various fisheries over the last few years
- Impacts are widespread
  - Council-, State-, and HMS-managed fisheries
  - Northeast, Southeast, Gulf of Mexico, and U.S. Caribbean
Shark Grabs Striped Bass
CAPE COD BAY
Shark Depredation

• South Atlantic and GOM Fishery Management Councils have requested action to solve this problem

• Solutions may be limited by a variety of factors
Shark Depredation - Challenges

• Limited Reporting
  • There is no consistent and verifiable reporting of depredation events
  • We are unable to quantify the extent of the problem
  • Shark species involved often unknown or difficult to confirm

• Multiple Shark Species Implicated
  • Sandbar, dusky, silky, blacktip, spinner, spiny dogfish, porbeagle, blue, white, bull, tiger, hammerheads, Caribbean reef
  • These species have mixed stock statuses. Some are prohibited species.
  • Several stocks rebuilding

• Multiple Fisheries Affected
  • Northeast/Mid-Atlantic: Groundfish, Striped Bass, Black Sea Bass, HMS
  • Southeast/Gulf/Caribbean: Snapper-Grouper, Dolphin, Wahoo, Mackerel, Shrimp, Tarpon, Jacks, HMS
Shark Management – Brief History

• Managed since 1993
• Established 3 complexes for 39 species
• Limited Access started in 1999
• Managed more and more at a species level
• Currently manage 42 species (45 stocks)
• From 1993 until 2015 commercial quotas harvested fully (sometimes exceeded) very quickly
Relative biomass (abundance) of large coastal shark stocks

- Sandbar
- Dusky
- Scalloped hammerhead
- GOM Blacktip

Year

Relative biomass or abundance
0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5
Relative biomass (abundance) of small coastal shark stocks

- Finetooth
- Blacknose (ATL)
- Atlantic sharpnose
- Bonnethead
- Smooth dogfish
- Smoothhound complex


Relative biomass or abundance: 0.0, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0
# Status of the Shark Fishery

- Commercial quotas have not been caught in recent years

## 2017-2019 Averages

<table>
<thead>
<tr>
<th>Region</th>
<th>Species/Complex</th>
<th>Quota</th>
<th>% Landed</th>
</tr>
</thead>
<tbody>
<tr>
<td>WGOM</td>
<td>Blacktip</td>
<td>682,912</td>
<td>62%</td>
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<tr>
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<td>Agg LCS</td>
<td>121,983</td>
<td>98%</td>
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<tr>
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<td>Hammerhead</td>
<td>20,400</td>
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<td>EGOM</td>
<td>Blacktip</td>
<td>78,203</td>
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<td></td>
<td>Agg LCS</td>
<td>225,304</td>
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<td>Hammerhead</td>
<td>35,340</td>
<td>70%</td>
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<tr>
<td>GOM</td>
<td>Non-BKN SCS</td>
<td>248,215</td>
<td>56%</td>
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<td>Smoothhound</td>
<td>1,112,441</td>
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<tr>
<td>ATL</td>
<td>Agg LCS</td>
<td>372,552</td>
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<td>Hammerhead</td>
<td>59,736</td>
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<td></td>
<td>Non-BKN SCS</td>
<td>582,333</td>
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<td></td>
<td>Blacknose</td>
<td>37,921</td>
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<td></td>
<td>Smoothhound</td>
<td>3,973,902</td>
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<td>No Region</td>
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<td>110,230</td>
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<td>SSB Research</td>
<td>199,943</td>
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<td></td>
<td>Blue</td>
<td>601,856</td>
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<td></td>
<td>Porbeagle</td>
<td>3,748</td>
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<td>Other Pelagics</td>
<td>1,075,856</td>
<td>14%</td>
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</table>
Related Actions

• 2020 Shark Specifications – changed how quotas will be monitored, starting retention limits

• Amendment 14 – Restructuring how shark quotas are established

• Spatial Management and Data Collection – Collecting data from closed areas

• Atlantic blacktip shark assessment – underway

• Hammerhead shark assessment – starting 2021

• Implementation of biological opinions – Oceanic whitetip, scalloped hammerhead (only in Caribbean)

• Shark Fishery Review (SHARE) – Internal HMS initiative to explore fishery-dependent and –independent shark data
Shark Depredation - Questions

• Are there fishing techniques/strategies that attract sharks?

• Are there specific locations and seasons where depredation is more frequent?

• What are the best practices to quantify the ecological and socioeconomic impacts?
Shark Depredation - Progress

- Drymon et al. (2019) developed a genetic method to identify shark species involved with depredation

Shark Depredation - Considerations

• HMS is aware of the issue
  • Frequency of reports appears to be increasing
  • The extent of the problem and species involved is difficult to quantify

• HMS needs more data
  • Observer programs, logbooks, EM?
  • Depredation has been identified as a research priority

• HMS management is bound to MSA requirements
  • Overfished stocks must be rebuilt
  • Overfishing is not permitted
  • Find ways to work within legal constraints to minimize conflicts between sharks and other fisheries
    • Help ensure that optimum yield is attained and quotas are harvested
    • Align fishing seasons between sharks and target species?
    • Shark deterrent technologies?
Shark Depredation - Conclusions

We are aware of the issue
We are open to suggestions

• Data collection?
• Research proposals?
• Creative solutions?

• CONTACT: Karyl.Brewster-Geisz@noaa.gov