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# Stock Status, and Abundance and Fishery Mortality Trajectories of U.S. Atlantic Coastal Shark Stocks

**A presentation to the HMS AP Panel**  
**4 September 2019**

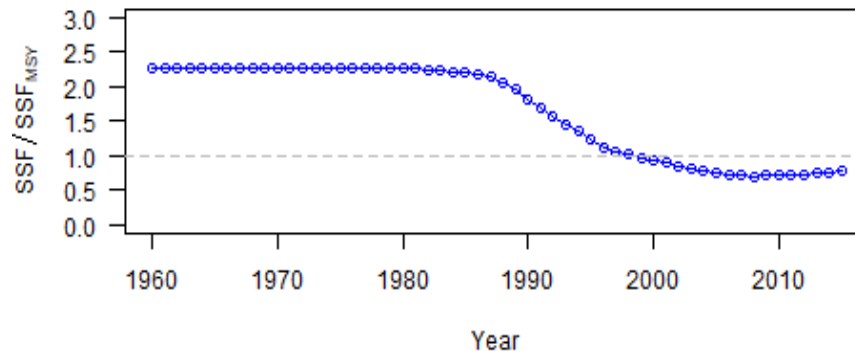
# Objectives

1. Compare stock status from the previous to the latest stock assessment for Atlantic coastal sharks (large and small coastal sharks)
2. Examine trends in biomass (or abundance) and fishing mortality with respect to MSY from the latest stock assessments

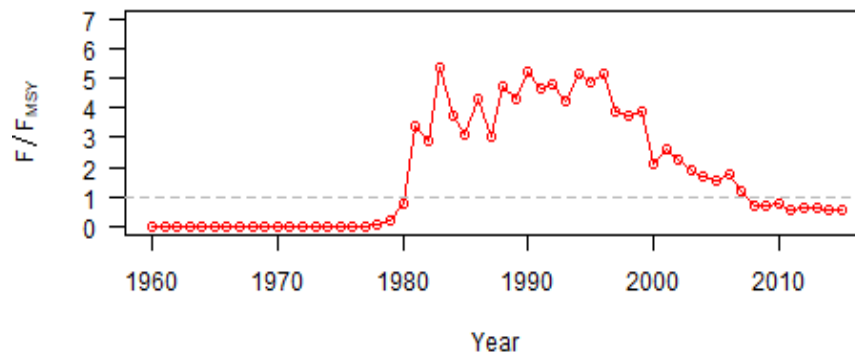
# Stock status of large coastal sharks

| Stock   | Area           | Previous assessment           |                                      |                                       | Latest assessment                 |                                      |                                       | Improved status?                           | Comments   |
|---|----------------|-------------------------------|--------------------------------------|---------------------------------------|-----------------------------------|--------------------------------------|---------------------------------------|--|--|
|   |                | SEDAR / Date                  | Overfished?<br>(B/B <sub>msy</sub> ) | Overfishing?<br>(F/F <sub>msy</sub> ) | SEDAR / Date                      | Overfished?<br>(B/B <sub>msy</sub> ) | Overfishing?<br>(F/F <sub>msy</sub> ) |  |  |
| <b>Sandbar</b>  | Atlantic       | SEDAR 21 (2011; benchmark)    | Yes (0.66)                           | No (0.62)                             | SEDAR 54 (2017; standard)         | <b>Yes</b> (0.77)                    | <b>No</b> (0.58)                      | <b>YES</b><br>(overfished and overfishing) | TAC increased from 220 to 246 mt dw  |
| <b>Dusky</b>  | Atlantic       | SEDAR 21 (2011; benchmark)    | Yes (0.47)                           | Yes (1.59)                            | SEDAR 21 update (2016)            | <b>Yes</b> (0.54)                    | <b>Yes</b> (1.12)                     | <b>YES</b><br>(overfished and overfishing) | Required reductions in F to achieve rebuilding by rebuilding year with a 70% probability decreased from 62% to 39% |
| <b>Blacktip</b>                                       | GOM            | SEDAR 29 (2012; standard)     | No (2.62)                            | No (0.074)                            | SEDAR 29 update (2018)            | <b>No</b> (2.73)                     | <b>No</b> (0.023)                     | <b>YES</b><br>(overfished and overfishing) |  |
| <b>Blacktip</b>                                       | South Atlantic | SEDAR 11 (2006; benchmark)    | N/A <sup>1</sup>                     | N/A <sup>1</sup>                      | SEDAR 65 (benchmark; ongoing)     |                                      |                                       |  |  |
| <b>Scalloped hammerhead</b>                           | Atlantic       | Hayes et al. (2009; external) | <b>Yes</b> (0.45)                    | <b>Yes</b> (1.29)                     | Planned for 2021 (research track) |                                      |                                       |  | Will also include great and smooth hammerheads   |
| <sup>1</sup> Assessment not accepted by CIE reviewers |                |                               |                                      |                                       |                                   |                                      |                                       |  |  |

# SANDBAR SHARK relative SSF and F trajectories (base run)

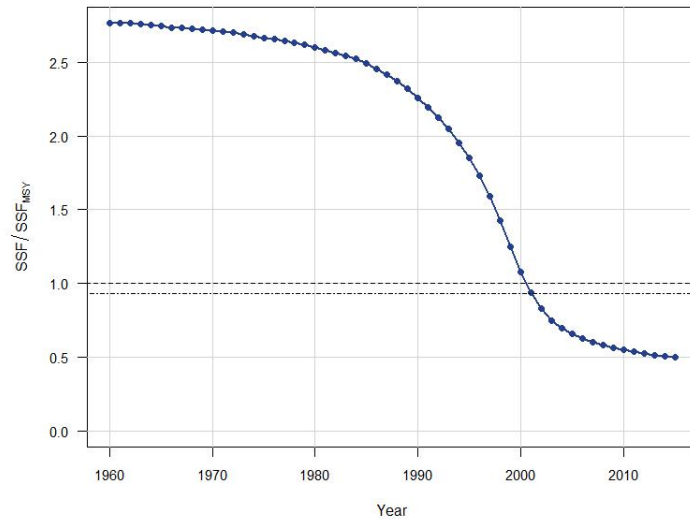


Shows a 10% increase in SSF since 2008

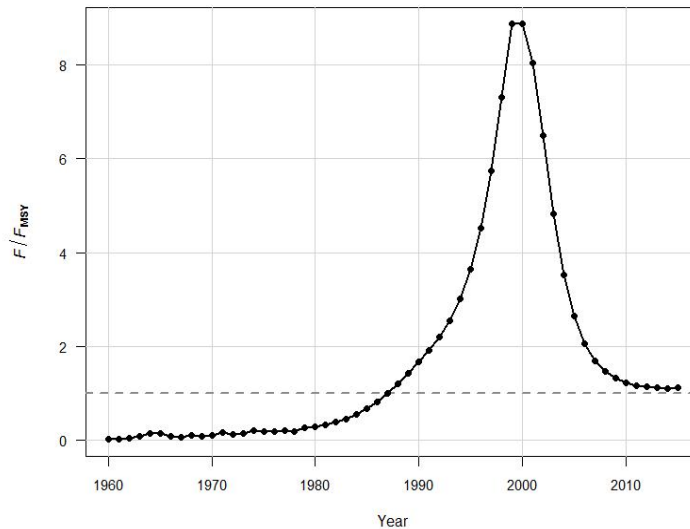


Shows a 68% decrease in F since 2006

# DUSKY SHARK relative SSF and F trajectories (base run)

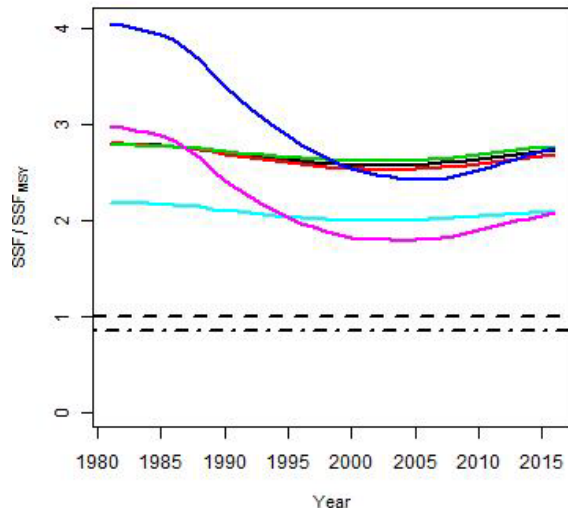


The rate of decline in SSF has slowed down in recent years, in particular since 2011

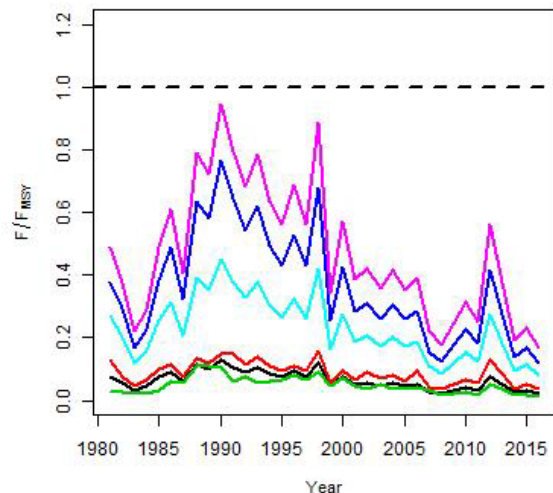


F declined precipitously since 2000 and has further decreased by 9% since 2010

# GOM BLACKTIP SHARK relative SSF and F trajectories (base run + 5 additional states of nature)

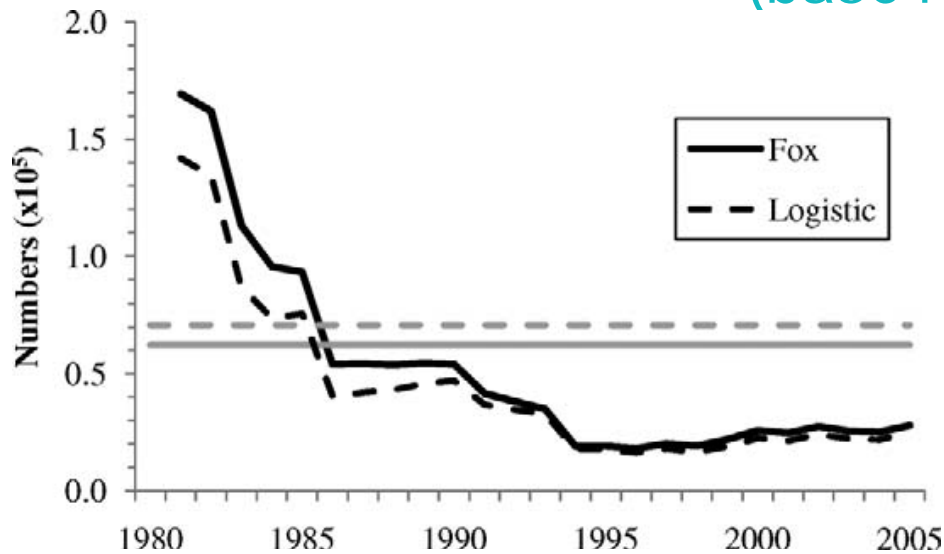


SSF has been increasing since the mid-2000s and has always been healthy

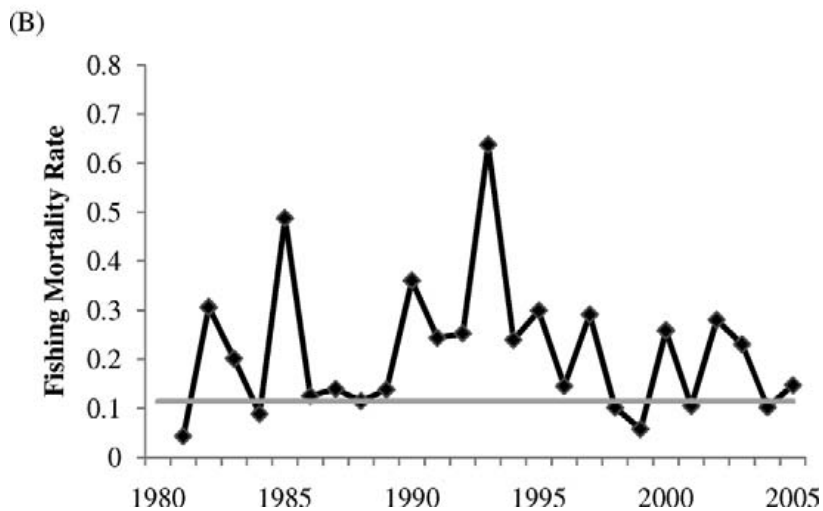


F has been decreasing since the early 1990s and has always been low

# SCALLOPED HAMMERHEAD SHARK N and F trajectories (base run)

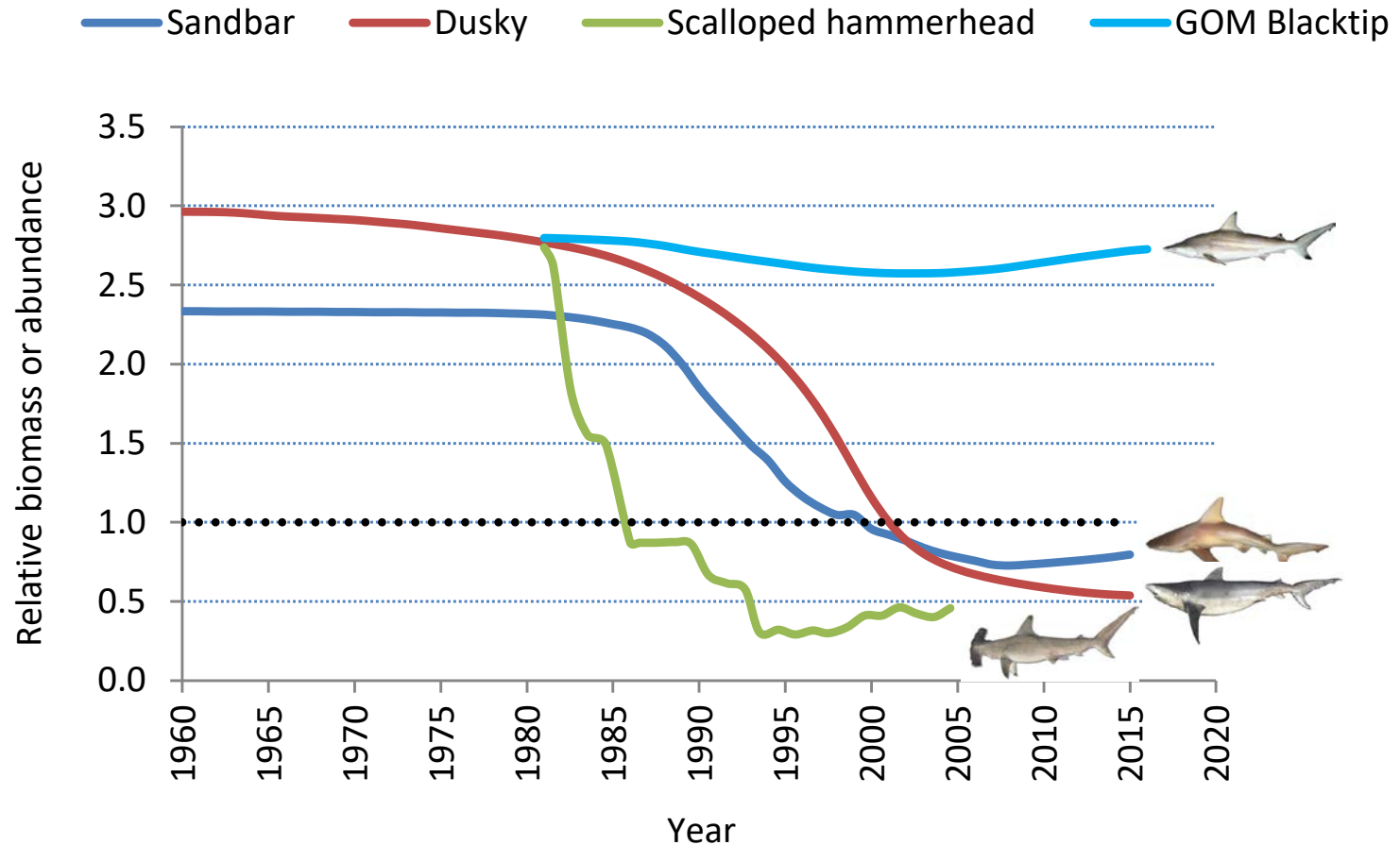


Showed an increasing trend since 1998



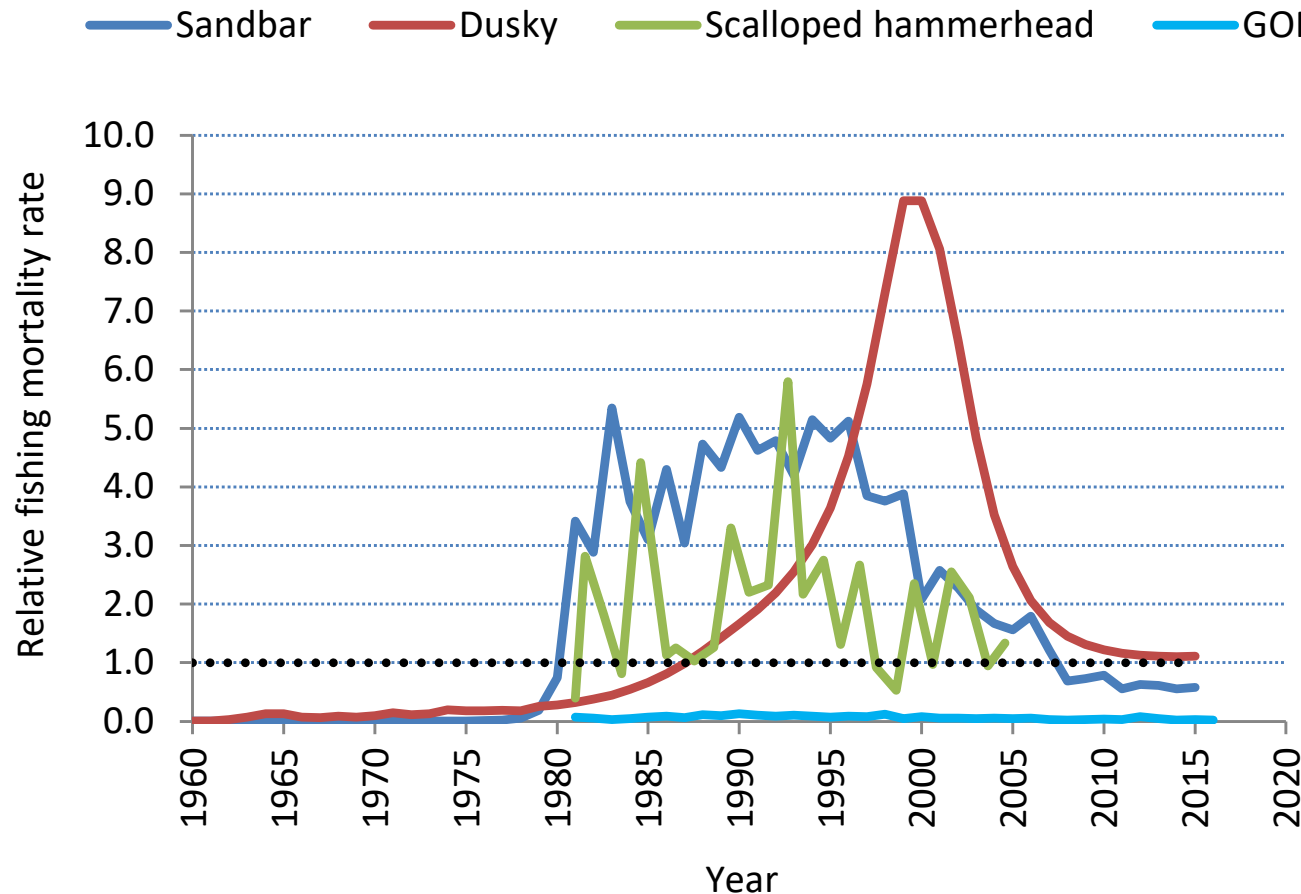
Showed an alternating pattern in F for the most recent years

# Relative biomass (abundance) of large coastal shark stocks





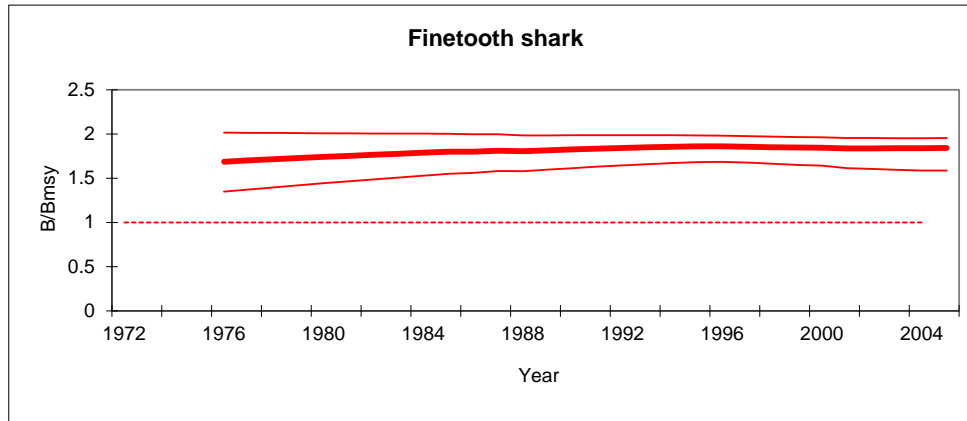
# Relative fishing mortality rate of large coastal shark stocks



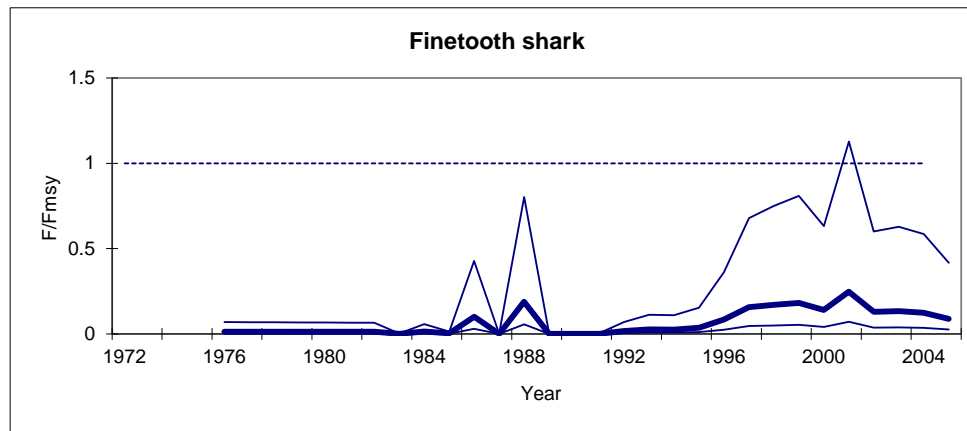
# Stock status of small coastal sharks

| Stock   | Area     | Previous assessment        |                                      |                                       | Stock / Area   | Latest assessment          |                                      |                                       | Improved status?   | Comments                              |
|---|----------|----------------------------|--------------------------------------|---------------------------------------|----------------|----------------------------|--------------------------------------|---------------------------------------|--|---------------------------------------|
|   |          | SEDAR / Date               | Overfished?<br>(B/B <sub>msy</sub> ) | Overfishing?<br>(F/F <sub>msy</sub> ) |                | SEDAR / Date               | Overfished?<br>(B/B <sub>msy</sub> ) | Overfishing?<br>(F/F <sub>msy</sub> ) |  |                                       |
| <b>Finetooth</b>                                      | Atlantic | SEDAR 13 (2007; benchmark) | <b>No</b> (1.80)                     | <b>No</b> (0.17)                      |                |                            |                                      |                                       |  |                                       |
| <b>Blacknose</b>                                      | Atlantic | SEDAR 13 (2007; benchmark) | Yes (0.48)                           | Yes (3.77)                            | South Atlantic | SEDAR 21 (2011; benchmark) | <b>Yes</b> (0.60)                    | <b>Yes</b> (5.02)                     | <b>YES</b><br>(overfished)<br><b>NO</b><br>(overfishing) | With respect to original single stock |
|   |          |                            |                                      |                                       | Gulf of Mexico | SEDAR 21 (2011; benchmark) | N/A <sup>1</sup>                     | N/A <sup>1</sup>                      |  |                                       |
| <b>Atlantic sharpnose</b>                             | Atlantic | SEDAR 13 (2007; benchmark) | No (1.49)                            | No (0.70)                             |                | SEDAR 34 (2013; standard)  | <b>No</b> (1.73)                     | <b>No</b> (0.34)                      | <b>YES</b><br>(overfished and overfishing)               |                                       |
| <b>Bonnethead</b>                                     | Atlantic | SEDAR 13 (2007; benchmark) | No (1.13)                            | No (0.61)                             |                | SEDAR 34 (2013; standard)  | <b>No</b> (1.27)                     | <b>No</b> (0.50)                      | <b>YES</b><br>(overfished and overfishing)               |                                       |
| <b>Smooth dogfish</b>                                 |          |                            |                                      |                                       |                | SEDAR 39 (2015; benchmark) | <b>No</b> (2.29)                     | <b>No</b> (0.79)                      |  |                                       |
| <b>Smoothhound complex</b>                            |          |                            |                                      |                                       |                | SEDAR 39 (2015; benchmark) | <b>No</b> (1.78)                     | <b>No</b> (0.18)                      |  |                                       |
| <sup>1</sup> Assessment not accepted by CIE reviewers |          |                            |                                      |                                       |                |                            |                                      |                                       |  |                                       |

# FINETOOTH SHARK relative B and F trajectories (base run)

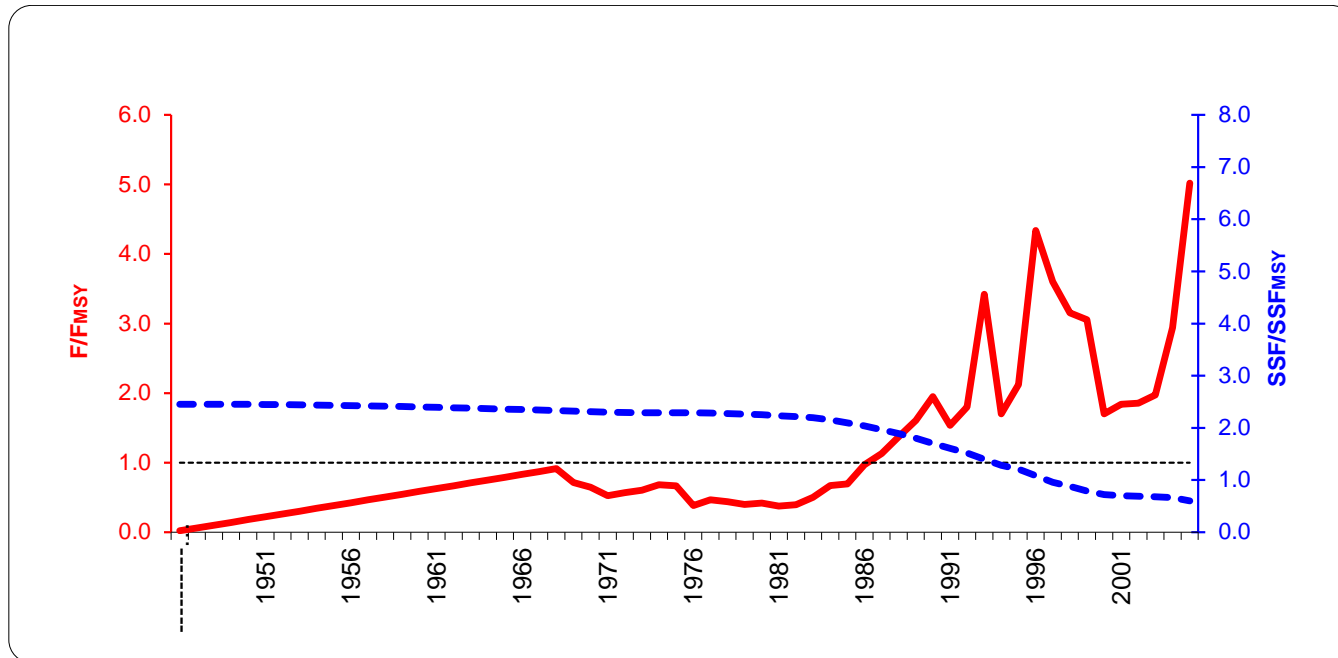


Shows a stable B trajectory

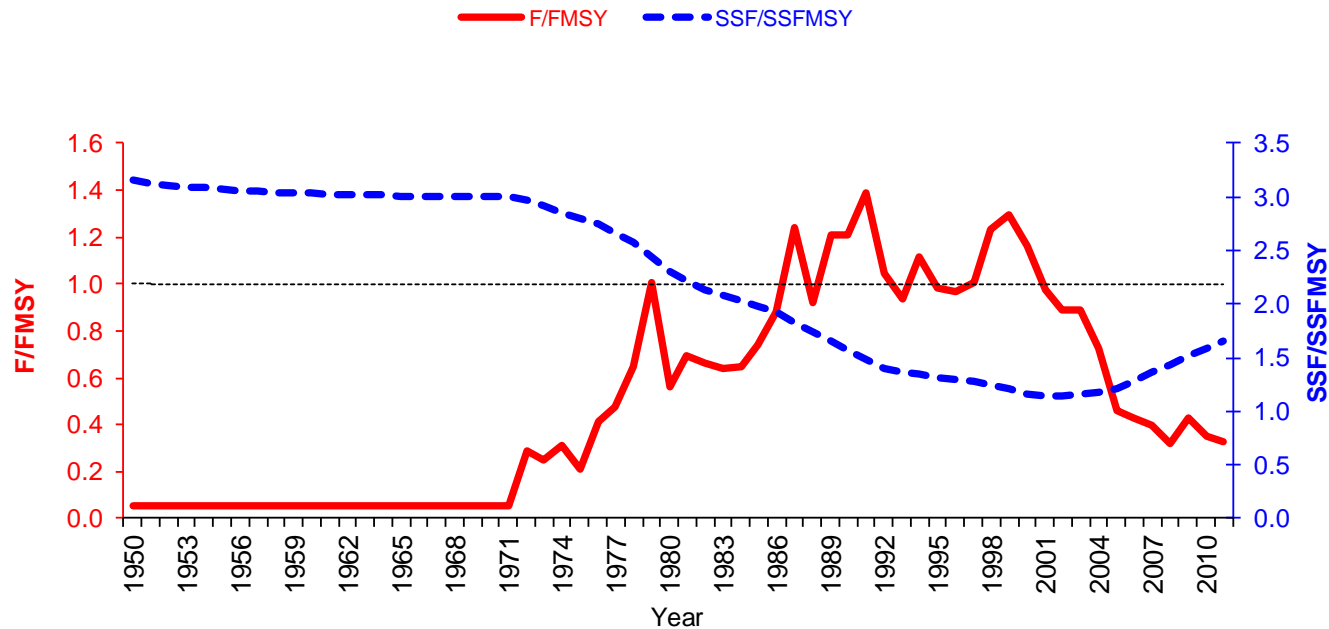


Shows a low F throughout

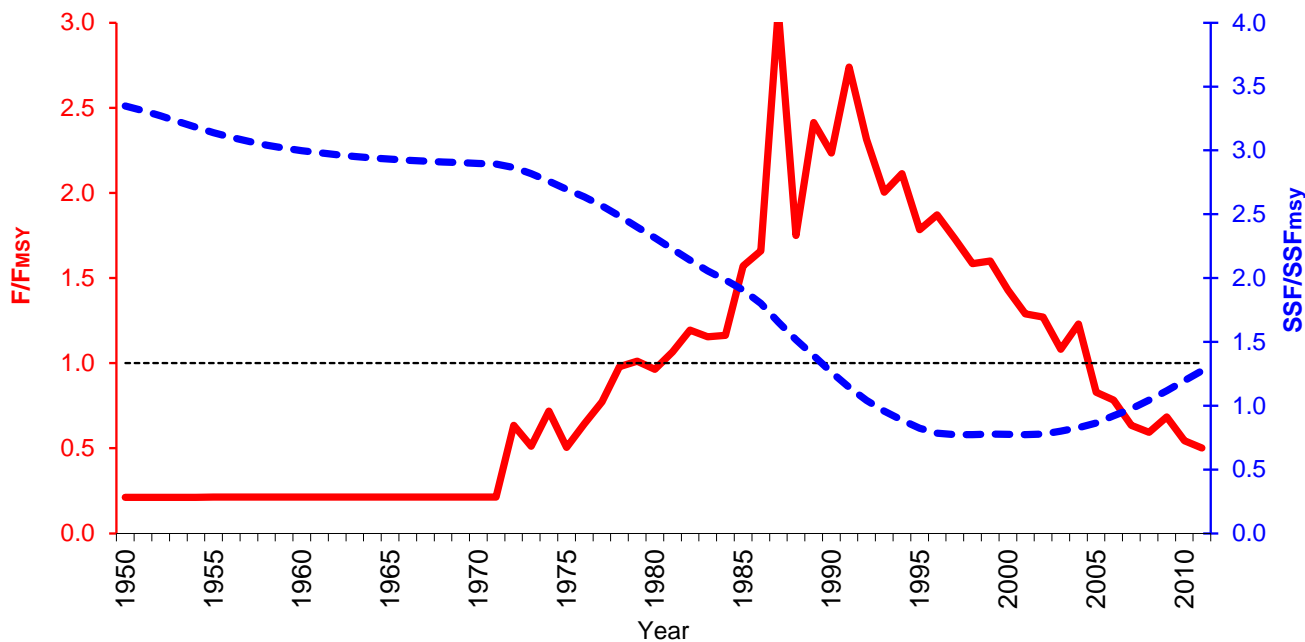
# BLACKNOSE SHARK (South Atlantic) relative SSF and F trajectories (base run)



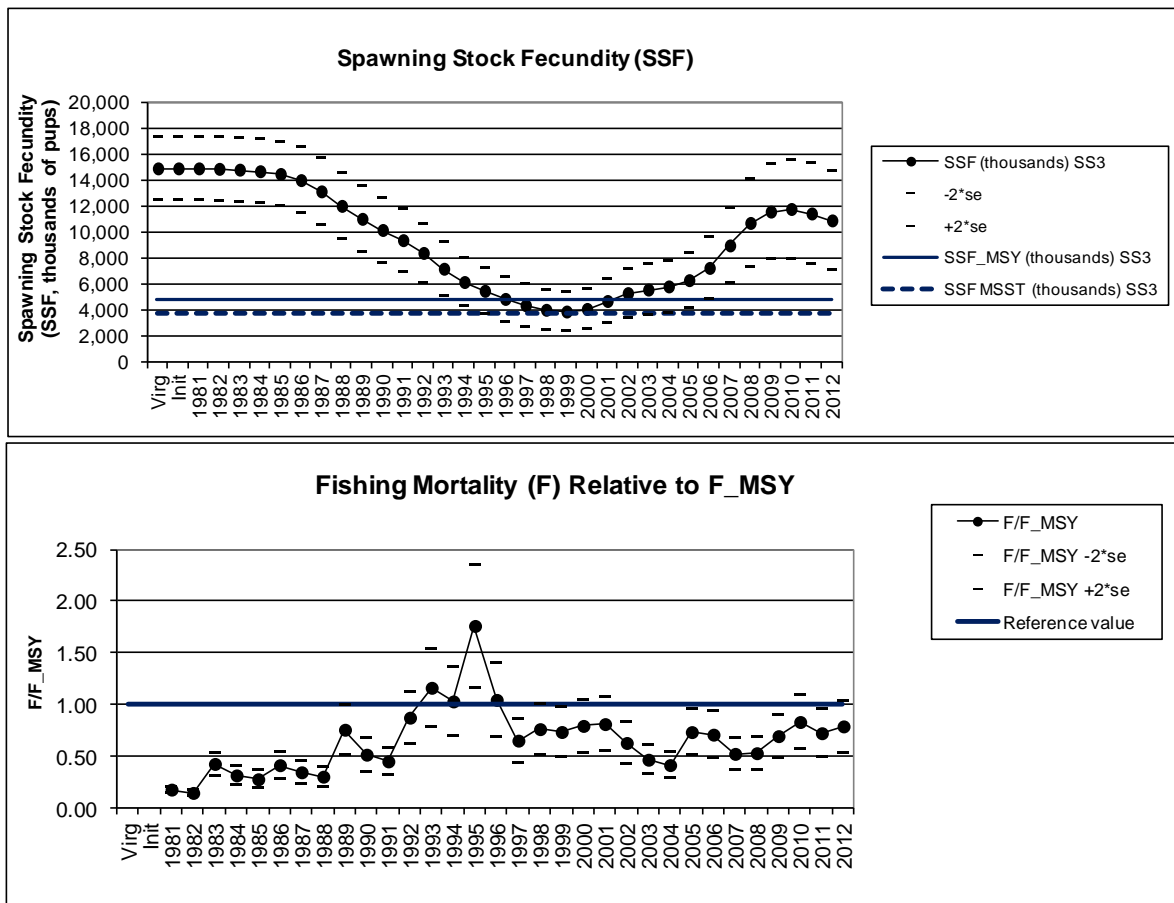
# ATLANTIC SHARPNOSE SHARK relative SSF and F trajectories (base run)



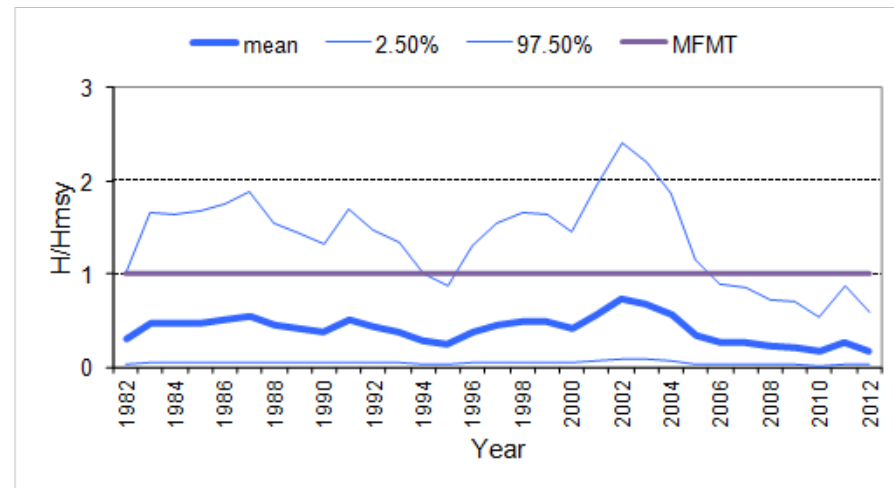
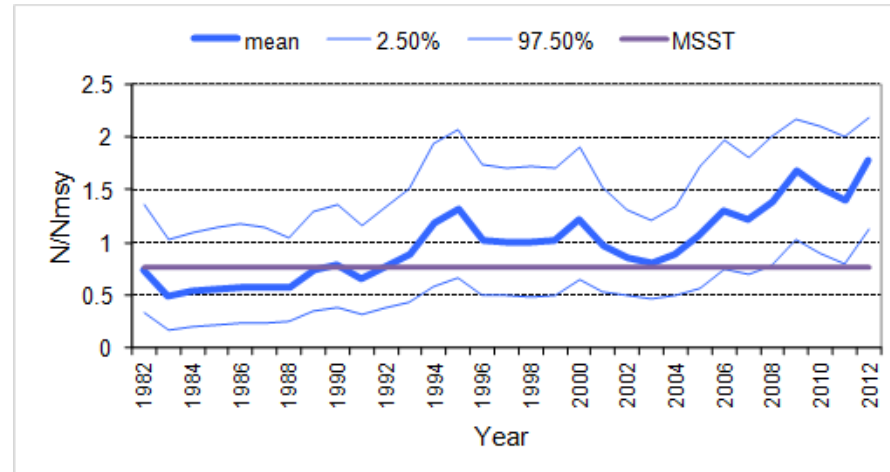
# BONNETHEAD SHARK relative SSF and F trajectories (base run)



# SMOOTH DOGFISH relative SSF and F trajectories (base run)



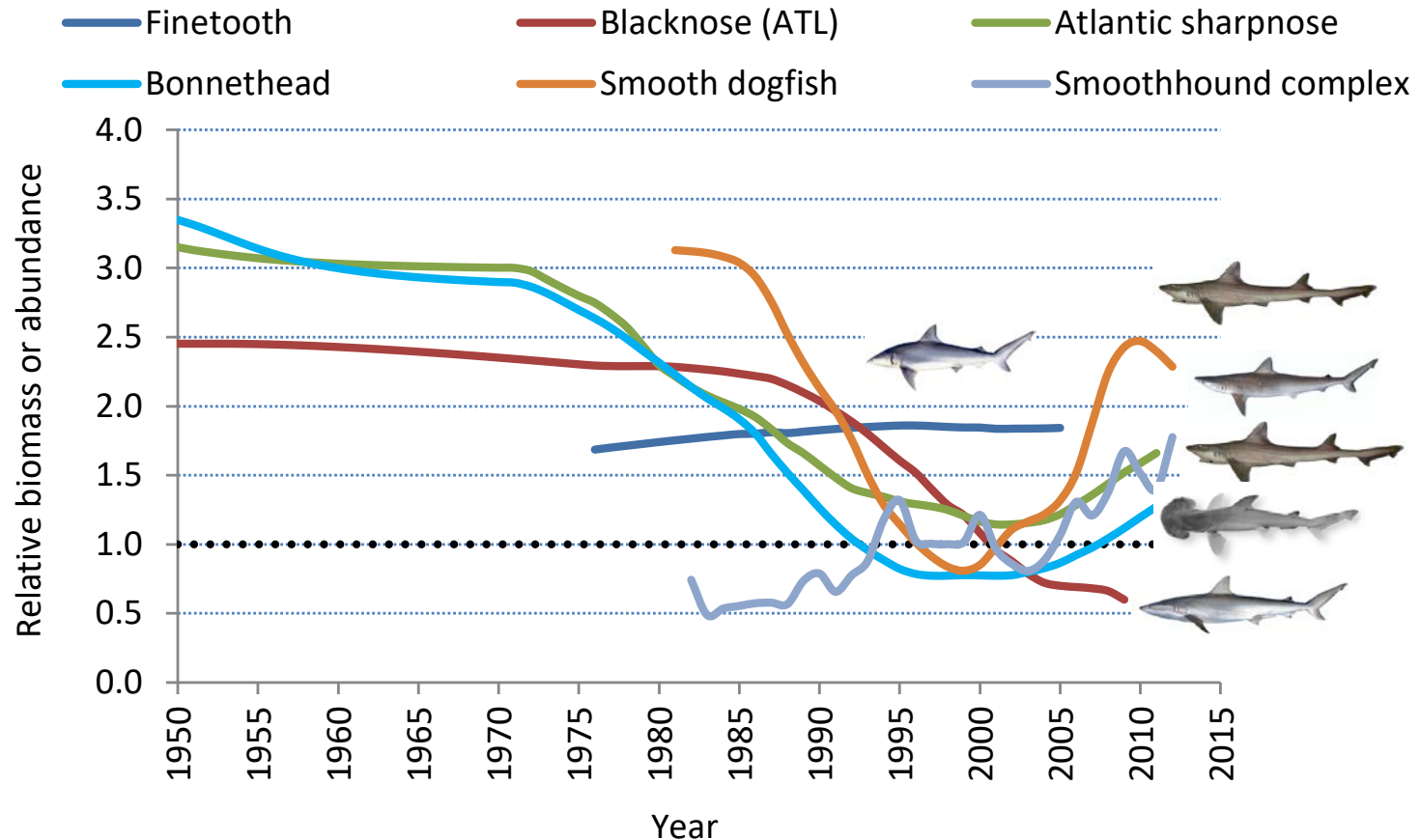
# SMOOTH HOUND COMPLEX relative SSF and F trajectories (base run)



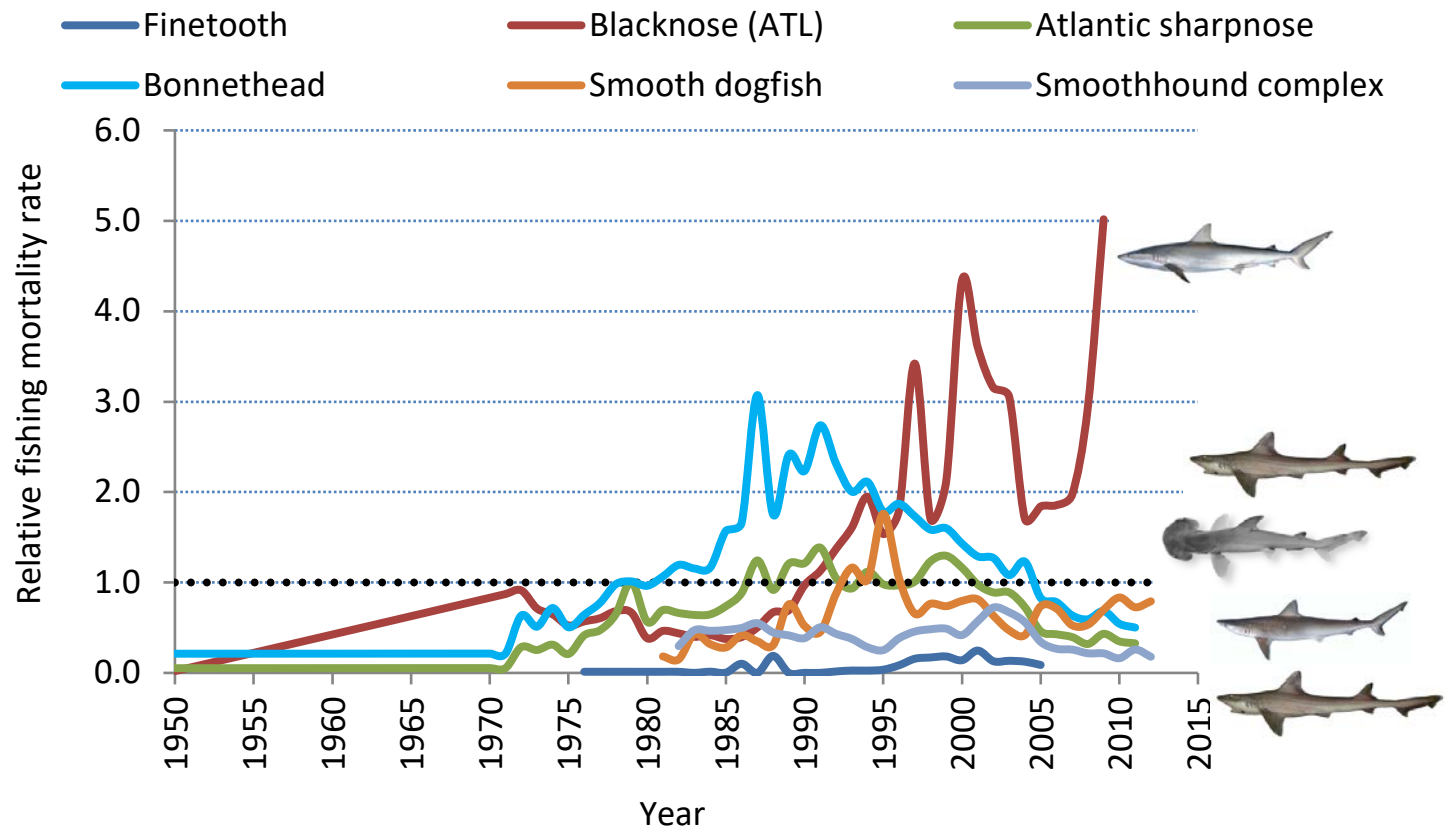
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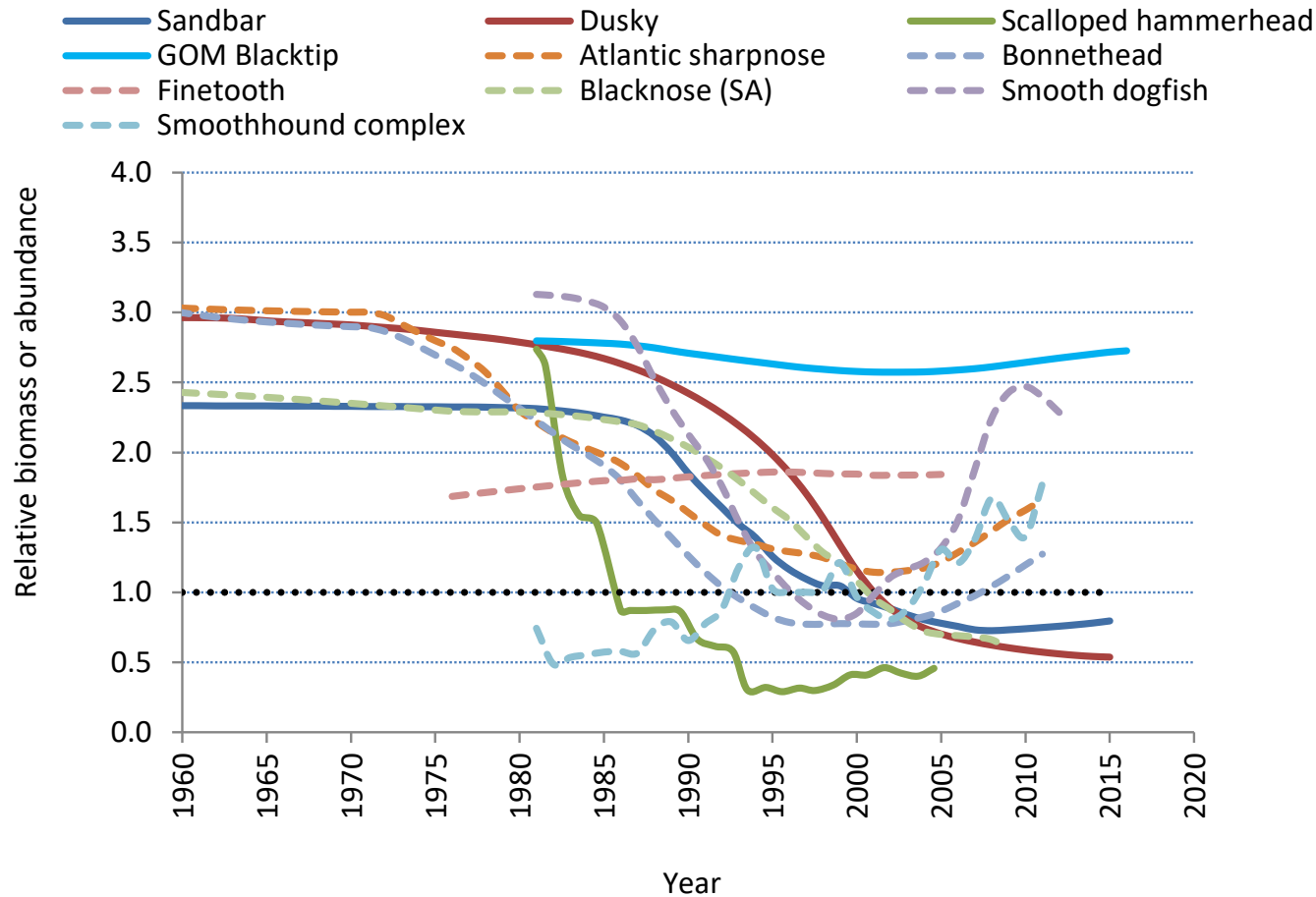
# Relative biomass (abundance) of small coastal shark stocks



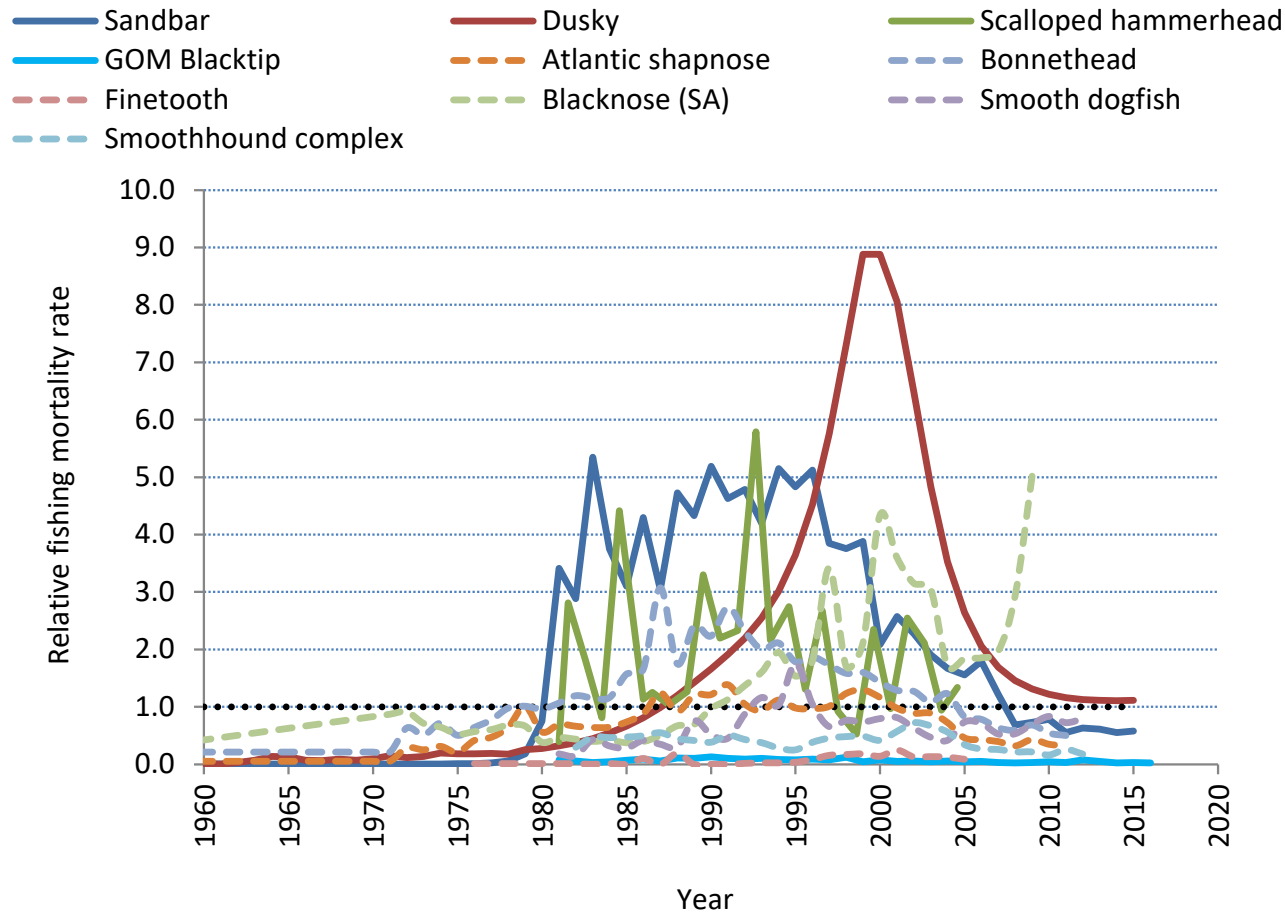
# Relative fishing mortality rate of small coastal shark stocks



# Relative biomass (abundance) of all coastal shark stocks



# Relative fishing mortality rate of all coastal shark stocks



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# Summary

- All large coastal shark stocks re-assessed have improved in status since the previous assessment (sandbar, dusky, GOM blacktip)
- All small coastal shark stocks re-assessed have improved in status since the previous assessment (Atlantic sharpnose, bonnethead, blacknose ATL), except for blacknose shark (ATL) overfishing status