SEFSC Longline Surveys
Mississippi Laboratories
The NMFS SEFSC MS Labs annual bottom longline survey is designed to monitor trends in abundance and distribution of coastal shark, snapper, grouper and tilefish species within the U.S. waters of the western North Atlantic Ocean.

The survey has the broadest geographical range of any fishery-independent longline survey.

Started in 1995, with the current protocol in use since 2001.
Survey area

- Cape Hatteras, NC to West Palm Beach, FL; Dry Tortugas to Brownsville, TX
SEFSC Bottom Longline Survey

• Time series: 1995-present
• Number of stations: 200-300 per year
• Days at sea: 60 days: Four two-week legs.
• Timeframe: Late July – September
SEFSC Bottom Longline Survey
Experimental Design

- Stratified-random sampling with proportional allocation based on continental shelf area
- Depth: East Coast: 9 – 55 m (60%), 55 – 183 m (40%)
  Northern Gulf of Mexico: 9 – 55 m (50%), 55 – 183 m (40%),
  183 – 366 m (10%)
Gear characteristics:

- **Gear:** 1 nautical mile mainline (4mm monofilament) with 100, 3.7 m. gangions (3mm monofilament with 15/0 non-offset circle hook baited with Atlantic mackerel). One hour soak time, defined as time from deployment of second highflyer until retrieval of first highflyer.

- **1995-2000:** Used #3 J-hooks. 2001- current: 15/0 circle hooks. Change due to increase in snapper/grouper catch with circle hooks.

![Diagram of highflyer setup with gangions and hooks]
Setting gear:
SEFSC Bottom Longline Survey

- Gear monitored via SELLIT (SouthEast LongLine Input Technology) developed at Chuck Schroeder at MSLABS
- Multiple aspects of gear configuration are monitored during setting and haulback
- Each gear element deployed and retrieved has individual data associated with time, position, depth, environmental data, etc.
- A similar biological sampling program is used for data entry
- Data are ingested directly into ACCESS to remove possibility of transcription errors and runs real time QA/QC checks
Setting gear:
Setting gear:
Environmental Data

Collect a suite of environmental data at each sampling location

• Temperature
• Salinity
• Transmissivity (water clarity)
• Dissolved oxygen
• Chl a concentration (fluorometer)
• Bottom type
• Weather conditions (air temperature, barometric pressure, wind speed and direction)
• Cast data collected throughout water column
Haulback:

- Biological data collected: Species, length, weight, sex, disposition, state of maturity, brood size, hard parts for ageing (FMP teleosts, some sharks), movement patterns (tagging), tissues for genetic analyses, etc.
- All captured fishes, unless moribund, are released alive, with the exception of teleosts retained for life history studies.
- Most shark species are tagged prior to release.
Monitor the status of each hook (e.g. time retrieved, lat, lon, depth, catch, bait condition, hook timer data, etc.)
Haulback cont.

![Image of Hook Status software interface showing the details of hook retrieval.](image-url)

- Hook Number: 1
- Time of Hook Retrieval: 08/12/2019 19:26:18

**Hook Timer Reading**
- HH: 00
- MM: 00

**Hook Condition**
- Hook Missing: < F2 >
- Hook Damaged: < F5 >

**Bait Condition Buttons**
- Bait Whole: < W >
- Bait Damaged: < D >
- Bait Missing: < M >

**Buttons**
- FISH ON HOOK!: < ENTER >
- RETURN TO RETRIEVAL: < BACK >

**Alerts**
- TIMER MISSING!: < F12 >
- TDR MISSING!: < F8 >
Biological sampling module:

Includes popup widows to enter tag numbers and track samples with barcodes.
Longline Assessment Support

Data presented to 13 SEDARs and used in base model for 14 assessments for stocks/species complexes

- GOM and Atlantic Large coastal sharks (SEDAR 11)
- GOM and Atlantic Small coastal sharks (SEDAR 13)
- GOM Sandbar shark, Atlantic sandbar shark (SEDAR 11, 21, 54)
- GOM Blacknose shark, Atlantic blacknose shark (SEDAR 13, 21)
- GOM Blacktip shark, Atlantic blacktip shark (SEDAR 11, 29, 65)
- Atlantic sharpnose shark (SEDAR 13, 34)
- Smoothhound sharks (SEDAR 39)
- Red Grouper (SEDAR 12, 42, 61)
- Red Snapper (SEDAR 7, 31)
- Tilefish (SEDAR 22)
- Yellowedge grouper (SEDAR 22)

- 139 species captured during survey
Indices of abundance 2001-2017:

Atlantic sharpnose shark

![Graph showing indices of abundance for Atlantic sharpnose shark from 2001 to 2017. The graph displays fluctuations in abundance with a trend line indicating a decline.]
Indices of abundance 2001-2017:

Blacknose shark
Indices of abundance 2001-2017:

Blacktip shark
Indices of abundance 2001-2017:

Sandbar shark
Questions?

Contact William Driggers
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Depredation in Research
Caught in the act!
Apex Predators depredation data

- Sandbar
- Dusky
- Atlantic sharpnose
- Scalloped hammerhead
- Tiger
- Blacktip
- Silky

Survey year:
- 2000
- 2005
- 2010
- 2015
- 2020

Sandbar n=15
Dusky n=11
Atlantic sharpnose n=226
Scalloped hammerhead n=3
Tiger n=6
Blacktip n=12
Silky n=1
Pascagoula depredation data
Pascagoula continued
Depredation on Sharks

Proportion of depredations to total sets observed

Depredation on Teleosts

Proportion of depredation to total sets observed

Bottom longline observer program

Provided by J. Carlson