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#### Thanks to our industry participants



Steve Shelley F/V Mollie D

**Dewey Hemilright** 

F/V Tar Baby



Jim and Mike Freeman F/V Little Jo



Vincent Bonura F/V Gale Mist II



- Background and need
- Methodology
- Results from 2020 & 2021
- Potential utility of the survey
- Plans for 2022 and beyond









## **Background & need**

- Previously existing SEFSC bottom longline survey (shark / red snapper) -GOM & South Atlantic
  - South Atlantic component
    - 1995 present
    - 9 m to 183 m
    - Deeper depth limit due to current-driven gear loss in greater depths
    - 46-60 stations per year
    - Few demersal non-shark species caught
- Trap-video survey effectively samples most demersal species in depths to ~ 85 m
- Limited data available for the deeper-water, demersal species complex





- What?
  - Deepwater longline survey intended to generate indices of abundance and life-history information (e.g., from otolith and reproductive samples) to support stock assessments and management
  - Focal species tilefishes and deepwater groupers
- How?
  - Cooperative effort with industry
- When?
  - Implemented in 2020, repeated in 2021, planned for 2022
  - Anticipated to continue annually



#### Survey methodology

- 2015 South Atlantic
  Deepwater Survey
  Workshop (Carmichael et al. 2015)
- Results from recent cooperative research and survey projects
  - Mid-Atlantic deepwater longline survey



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of the TORs. The Committee then provided comments to address each TOR.

- NC to FL Keys
- 75 366 m
- Stratified by depth (75-146 and 146-366 m) and latitude (one-degree bands)
- Gear
  - 3-mile mainline (4-mile in 2020)
  - 150 hooks per mile
  - 12/0 offset circle hooks
  - Bait = squid (2-inch squares)





- Deployment and retrieval: last hook in = first hook out
  - Vessel always connected to gear to avoid current-driven gear loss
  - 15-20 minutes between end of deployment and beginning of retrieval
- Sunrise to sunset
- August-October





- Site selection background
  - Focal species (tilefishes and deepwater groupers) utilize both hardbottom and unstructured habitats
  - Poor knowledge of habitat distributions in survey domain
  - Patchy distribution of hardbottom habitat
  - Random site selection may result in limited sampling of hardbottom habitat
  - Relatively large number of known sites within the survey area affiliated with hardbottom (data sources; surveys, fishing charts, observers, industry)





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- Site selection three site types
  - Random
  - Universe random
  - Captain's choice
- Combination of site types allocated to each depth x latitude cell
- Equal allocation of effort across cells
- Anticipate stratified random site selection beginning in 2022





- Industry participants contracted by survey partner SCDNR
  - 2020 two participants
  - 2021 four participants
- Data collection at sea by NMFS observer
  - Site-specific details (date, latitude and longitude, depth, and time of sampling)
  - Species-specific lengths, abundance, and biological samples (otoliths and reproductive samples), when possible and for selected species
  - Bottom temperature recorded for each deployment (sensor attached to gear)





# Results - 2020





# **Results - 2020 vs 2021**



Random = 63% Universe random = 26% CC = 11%



Random = 48% Universe random = 29% CC = 23%



# Results - 2020 vs 2021 - teleosts

Species	Number caught - 2020	Number caught - 2021	Proportion positive - 2020	Proportion positive - 2021
Blueline Tilefish	38	1371	0.17	0.25
Tilefish Golden	166	898	0.22	0.25
Snowy Grouper	29	229	0.17	0.27
Almaco Jack	23	134	0.13	0.16
Mutton Snapper	36	82	0.15	0.09
Red Snapper	11	73	0.13	0.09
Red Porgy	14	58	0.09	0.07
Greater Amberjack	5	31	0.11	0.06
Blackline Tilefish	1	26	0.02	0.02
Gag Grouper	7	18	0.11	0.05
Yellowedge Grouper	5	13	0.04	0.04
Scamp Grouper	16	11	0.07	0.04



# Results - 2020 vs 2021 - sharks

Species	2020 Abundance	2021 Abundance	Proportion positive - 2020	Proportion positive - 2021
Dogfish		168	0	0.06
Smooth Dogfish		50	0	0.05
Atlantic Sharpnose Shark	116	34	0.26	0.08
Roughskin Dogfish	2	24	0.04	0.06
Sandbar Shark	11	23	0.22	0.10
Silky Shark	11	20	0.15	0.05
Scalloped Hammerhead Shark	8	19	0.13	0.06
Shortspine Dogfish	8	17	0.02	0.03
Tiger Shark	15	14	0.20	0.05
Night Shark	2	11	0.04	0.05
Chain Catshark		9	0	0.03
Dusky Shark		5	0	0.02
Sharpnose Sevengillshark		3	0	0.02



















































#### **Potential for index development**

- Proportion positive values > 0.10 suggest index development with reasonable CV likely possible
- Proportion positive random stations 2021
  - Snowy grouper 0.27
  - Golden tilefish 0.18
  - Almaco jack 0.17
  - Blueline tilefish 0.16
  - Sandbar shark 0.14
  - Mutton snapper 0.13
  - Atlantic sharpnose 0.13
  - Red snapper 0.11
  - Dogfish 0.11
  - Eight additional species 0.05-0.10
    - Predominantly sharks + greater amberjack







#### **Summary outcomes**

- 2021 results suggest feasibility of multi-species survey
  - Utility for teleost and shark species
- Plan for 2022
  - Similar effort to 2021
    - Impact of increased fuel costs?
  - Proportional-to-area allocation of effort?
  - Stratified random site selection?
- Future efforts
  - Assess potential for utilizing universe random and captain's choice data in index development



# Thank you!

#### **Questions?**



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## **Survey comparisons**

#### Shark/red snapper longline survey

- 1-mile mainline
- 100 hooks per mile
- 15/0 hooks
- Bait Atlantic mackerel
- Gear deployment / retrieval: first hook in = first hook out

#### SADL survey

- 3-mile mainline
- 150 hooks per mile
- 12/0 hooks
- Bait squid
- Gear deployment / retrieval: last hook in = first hook out

