Presentation Outline

● Survey data
● Commercial Landings
● Commercial Discards
● Recreational Landings (Harvest)
● Recreational Discards (Releases)
Disclaimer: All data presented here are preliminary estimates. The goal of this presentation is to provide a general overview of the scale and trends in each region. Final estimates will require a more extensive review.
Surveys
NMFS Bottom Trawl Survey
NMFS Trawl Survey Indices

- Eastern GOM
- Western GOM
- Cape Cod Winter Spawners

- Georges Bank
- Southern New England
- Western Scotian Shelf and Bay Of Fundy

Biomass (kg/tow) vs Year (1980, 2000, 2020)

SEASON
- FALL
- SPRING
NMFS Trawl Survey Indices
NMFS Trawl Survey (both seasons combined)
NMFS Trawl Survey (both seasons combined)

Western GOM

- 1960's
- 1970's
- 1980's
- 1990's
- 2000's
- 2010's

Catch (kg):
- 500
- 1000
- 1500
ME/NH Trawl Survey - Spring

*Map by Sally Sherman*
ME/NH Trawl Survey

Cod Atlantic Indices

- Fall
- Spring

Stratified Mean Catch (Number/Tow)

Years: 2000 to 2020
Mostly age-1 fish
Mostly age-0 and age-1 fish
MADMF Bottom Trawl Survey

Spring indices

[Graph showing abundance and biomass over years]

[Map showing geographical area]
MADMF Bottom Trawl Survey

Primarily an age-0 index
Eastern Gulf of Maine Sentinel Survey Design

- Stratified Random Design since 2012
  - Strata 0: 0-50m
  - Strata 1: 50-80m
  - Strata 2: 80-150m
  - Strata 3: 150m+

- Random Inshore Jigging
  - 36 stations, Strata 0

- Random Longline (LL)
  - 30 stations, Strata 1-3

- Random Offshore Jigging
  - 12 stations, Strata 1-3

- Fisherman’s Choice
  - Longline stations across any strata
  - Used in biological sampling but not for abundance index or habitat analysis

*All stations include 5, 5-minute jig drops on unbaited hooks. Longline stations include an additional 1 hour baited longline soak.

*Slide by Carla Guenther
Environmental Data Collected at all stations:
- Location (Lat/Long)
- Weather/Ocean Conditions
- Depth
- Temperature (Surface and Bottom)
- Sediment Type

Biological Data Collected from each fish:
- Length & Weight
- Morphometric Photo
- Otoliths
- Stomach
- Caudal Fin Clips
- Muscle Tissue

*Slide by Carla Guenther
Abundance Index and Habitat Modeling Results

Abundance Indices
3 AIs developed:
- Observation (Design) Based
- Boosted Regression Tree (BRT) Model Based
- Generalized Additive Model (GAM) Based

Results suggest that cod in the EGOM are at low densities, and, although fluctuating, do not appear to be in a general downward or upward trend over the time series.

Habitat Preferences
Based on cod caught using jigging gear at all random stations (inshore, offshore and longline)

*Slide by Carla Guenther
Data not worked up yet, but this survey is almost entirely in the Western GOM.
NMFS Bottom Longline Survey

Data not worked up yet, but this survey is in the Western GOM.
NEFSC’s Study Fleet Program

- Engages fishermen in collecting high resolution fishery dependent data to address science and management needs
- Program of ~40 contracted vessels
- Uses an electronic data collection system (FLDRS) that is effective and efficient
- Data set has been collected since 2006 but most consistent from 2010 - present
Survey Summary

- Survey trends are broadly similar across stocks.
- The majority of the cod biomass in the Gulf of Maine is currently in the Western GOM.
- The ME/NH Survey and Sentinel survey catch some cod, although not a lot in recent years. ME/NH Survey is mostly age-0’s and age-1’s.
- The Mass DMF Survey, Shrimp Survey, and Longline Survey all operate entirely, or almost entirely in the WGOM area.
Commercial Landings
Commercial Landings

- Eastern Gulf of Maine
- Western Gulf of Maine
- Cape Cod Winter Spawners
- Georges Bank
- Southern New England
- Western Scotian Shelf and Bay Of Fundy
Commercial Landings Lengths
Years with no samples:

Commercial Landings Lengths

Western Gulf of Maine

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Note: The diagram shows the distribution of total lengths for commercial landings in the Western Gulf of Maine from 1969 to 2019.
Commercial Landings Ages
Commercial Landings Ages

Commercial Landings Ages

Western Gulf of Maine

YEAR


TOTAL AGES

1998  1999  2000  2001  2002  2003  2004

2005  2006  2007  2008  2009  2010  2011

2012  2013  2014  2015  2016  2017  2018

2019

AGE
Commercial Discards
Commercial Discards (number of trips observed)

Number of trips observed in each stock area

- Eastern GOM
- Western GOM
- Cape Cod Winter
- Georges Bank
- Southern New England
- Western Scotian Shelf

Year
1990 2000 2010 2020
0 1000 2000
0 1000 2000
0 1000 2000
0 1000 2000
0 1000 2000
0 1000 2000
Commercial Discards (number of trips observed)

Number of trips observed in each stock area

- **Eastern GOM**
- **Western GOM**
- **Cape Cod Winter**
- **Georges Bank**
- **Southern New England**
- **Western Scotian Shelf**

Year

Number of trips observed
Commercial Discards (observed)

Amount of *observed* discards in each stock area

- Eastern GOM
- Western GOM
- Cape Cod Winter
- Georges Bank
- Southern New England
- Western Scotian Shelf
Commercial Discards Lengths
Commercial Discards Lengths

Many years with no or few observations
Commercial Discards Lengths

Western Gulf of Maine

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LENGTH
Commercial Catch Data Summary

- Landings in Eastern GOM have been very low for the past 20 years.
- There are many years with no length or age samples for commercial landings in Eastern GOM.
- There are very few observed discards or discard lengths in Eastern GOM.
- The Western GOM is relatively data-rich.
Recreational Catch
Recreational Catch Areas
Recreational Catch Areas

Western GOM
Recreational Catch

![Graph showing recreational catch in the Eastern and Western Gulf of Maine over the years.](image-url)
Recreational Catch
Recreational Harvest Lengths
Recreational Harvest Lengths

Eastern Gulf of Maine

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Recreational Harvest Lengths

Western Gulf of Maine

Year

2004

2005

2006

2007

2008

2009

2010

2011

2012

2013

2014

2015

2016

2017

2018

2019

Length (cm)
Recreational Release Lengths
Recreational Release Lengths
Recreational Release Lengths
Recreational Catch Data Summary

- Recreational catch in Eastern GOM has been very low.
- There are many years with no length samples for recreational catch in Eastern GOM.
- There are very few release lengths in Eastern GOM.
- The Western GOM is comparatively data-rich.
Overall Summary (based on preliminary data shown here)

- Given that there is very little catch or survey abundance in Eastern GOM, it is unlikely that an age-structured assessment can be conducted in that region.

- Quantifying historical patterns in growth, maturity, and length-weight relationships will also be a challenge in Eastern GOM.

- If the Western GOM is treated as a single stock, it is likely that there will be enough data to attempt an age-structured assessment in that region.