

SAW/SARC-64 Summary (NEFSC CRD#18-03)

Public Presentation: April 2018

SAW/SARC Process

- 1. SAW Working Groups**
- 2. External Peer Review Panel: Center of Independent Experts (CIE) + SSC.**
- 3. Products: (Reviewer's Reports) + (2 Science Reports)**
<http://www.nefsc.noaa.gov/nefsc/saw/> (see SAW64)
<http://www.nefsc.noaa.gov/publications/> (see Ref. Docs.)
- 4. Management advice:**
 - SAW/SARC reports support SSC in making ABC recommendation.

**The 64th Northeast Regional
Stock Assessment Review Committee**

**Stephen H. Clark Conference Room – Northeast Fisheries Science Center
Woods Hole, Massachusetts
Nov. 28 –30, 2017**

SARC Chairman:

**Dr. John Boreman
(MAFMC SSC Chair)**

SARC Panelists:

**Dr. Robin Cook
(Glasgow,UK; CIE)**

**Dr. Joseph Powers
(Washington DC; CIE)**

**Ms. Kevin Stokes
(Wellington, NZ; CIE)**

A. Atl. Mackerel

(A.) Mackerel

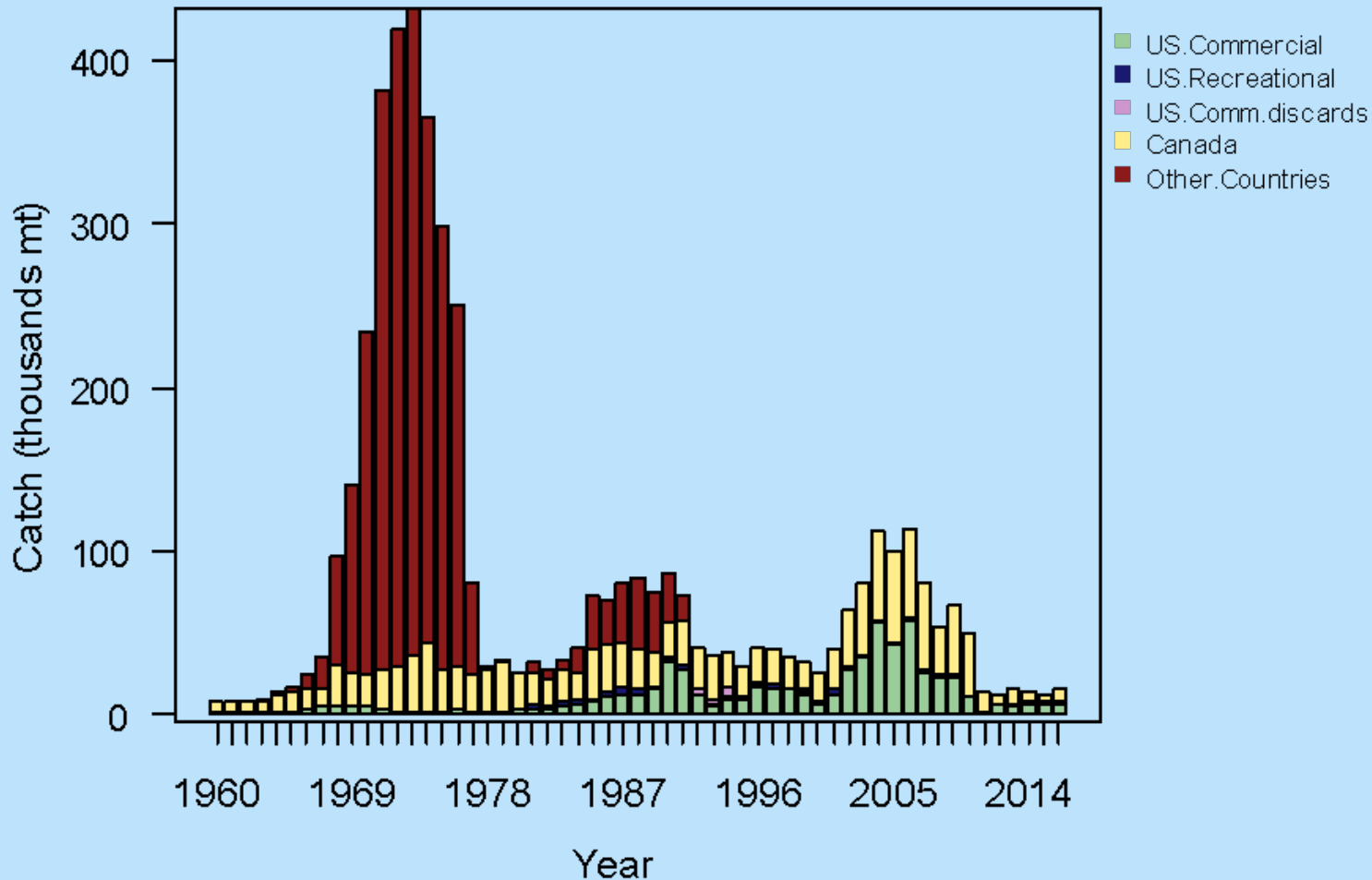
- 1. Examine spatial and ecosystem influences on stock**
- 2. Estimate catch from all sources**
- 3. Evaluate fishery independent and fishery dependent indices being used in the assessment**
- 4. Estimate annual fishing mortality, recruitment and biomass for the time series**
- 5. Propose biological reference points**
- 6. Evaluate Stock status. Describe condition of the stock**
- 7. Conduct stock projections**
- 8. Review research recommendations and ID new ones**

- **Current 2017 assessment is accepted.**
- **2009 assessment was not accepted by TRAC.**
- **Current Stock Status: overfished and overfishing.**
- **$F_{40\%}$, is an acceptable proxy for F_{MSY} , and basis for B_{MSY} proxy.**
- **Stock Distribution changed to the N and E. Habitat and predator relationships were examined.**
- **Current single stock definition retained.**

- **Collaboration with Canadian scientists enabled accounting for the major sources of catch from the stock.**
- **US and Canadian egg surveys combined index provided critical new information relative to spawning stock biomass.**
- **Stock size projections are strongly influenced by size of the 2015 year class. Terminal year estimates like R_{2015} have higher uncertainty. R_{2015} is promising, but does not appear huge.**

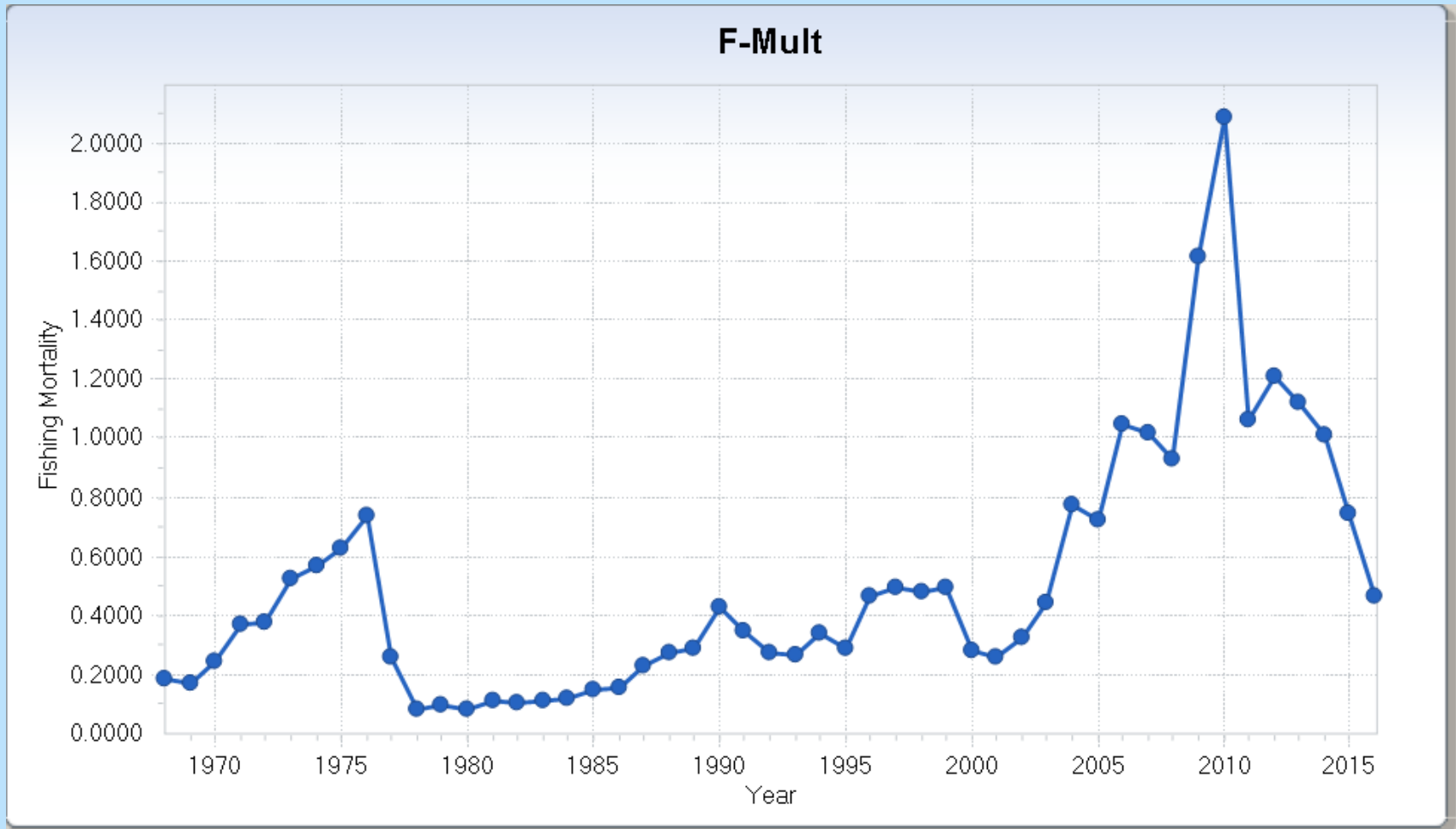
- **Maintain the US and Canadian egg surveys for future assessments. This index is crucial for the assessment.**
- **Would have been useful to see more discussion of how the biological characteristics of the species affects its vulnerability to the existing fisheries.**

Mackerel: Components of Catch 1968-2016



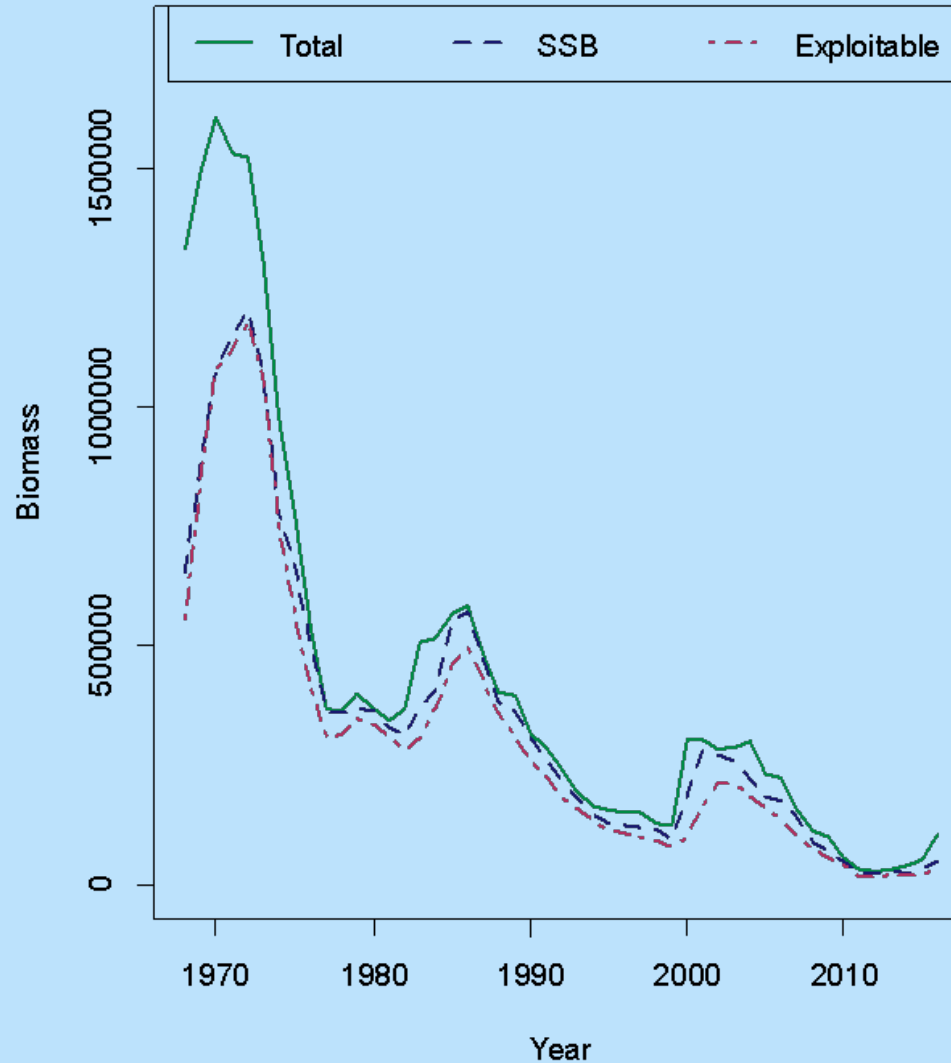
Peak catches during 1970s by distant water fleets. Total Catch increased again after 2000, but declined recently after the stronger 1999 and 2003 YC's passed through.

Mackerel: Fishing Mortality (1968-2016)



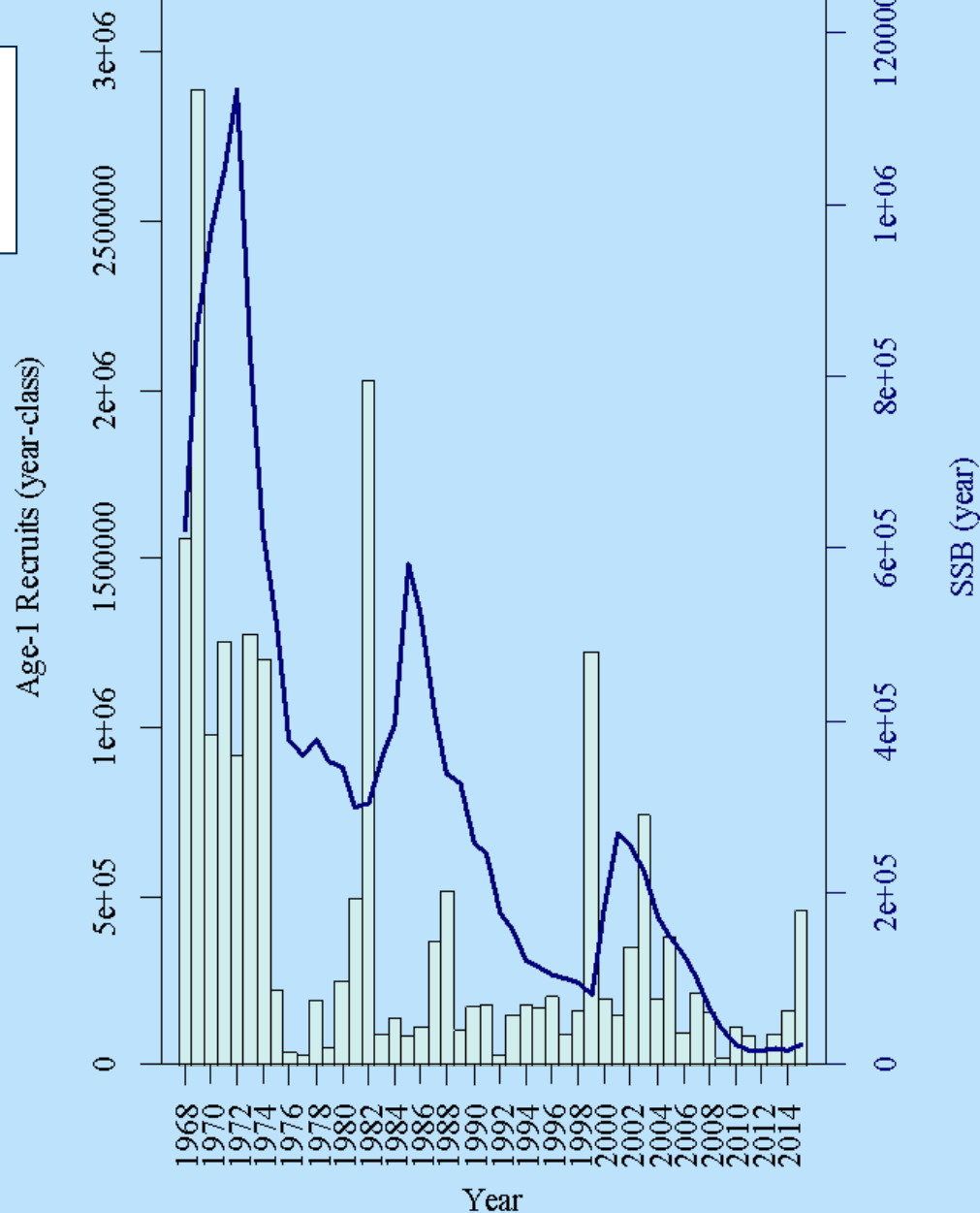
F (age 6+) was high in the 1970s. It increased a lot after 2000 due to increased catches, accompanied by declining SSB.

Mackerel: Spawning Stock Biomass (1968 - 2016)



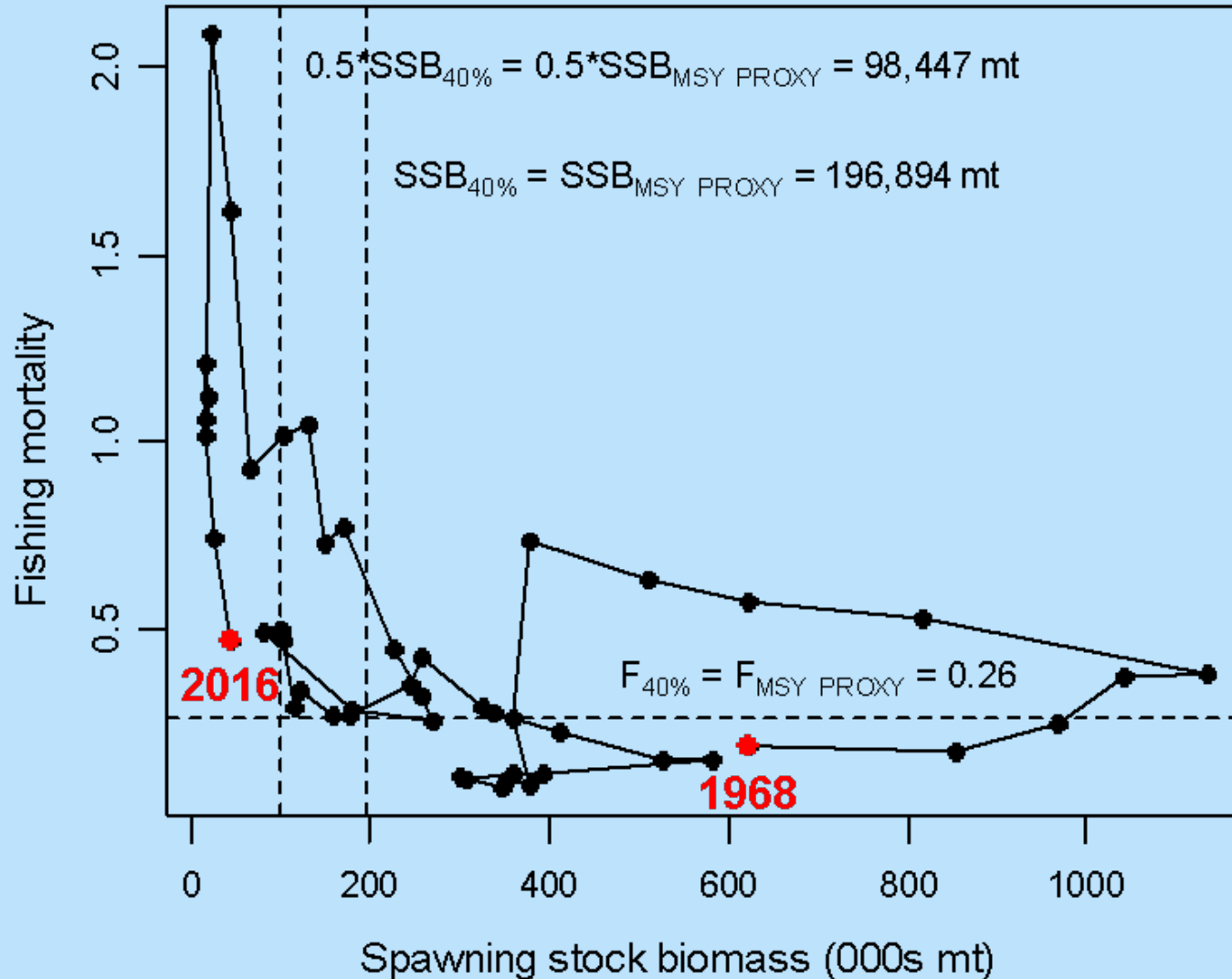
There were 2 periods of increasing SSB, when the 1982 and 1999 cohorts moved through. But overall, there has been a major drop in SSB since the 1970s.

Mackerel : Recruitment (1968-2016) and SSB



**There were strong Recr. Year classes in 1982, 1999, and 2003.
Recr₂₀₁₅ is promising, but terminal year estimates are more uncertain !**

Atl. Mackerel: Stock Status over Time



Current Status: overfished, overfishing. F has been $> F_{msy}$ since ~1987. There has been a long-term decline in SSB.

Example Mackerel Projection

Assumptions:

**2017 catch = 21,898 mt; fish at F_{MSY} proxy ($F_{40\%}=0.26$) during 2018+;
Recruit CDF from 1975-2016.**

		2017	2018	2019	2020
SSB (mt)	Median	101,825	132,532	153,198	165,487
	5th Percentile	44,017	62,299	81,410	92,754
	95th Percentile	207,193	260,273	305,940	359,842
Recruitment (000s)	Median	164,337	164,359	164,453	164,332
	5th Percentile	35,335	35,381	35,344	35,315
	95th Percentile	1,169,815	1,179,224	1,201,696	1,178,003
January 1 biomass (mt)	Median	135,714	172,598	200,558	216,681
	5th Percentile	71,745	84,355	107,435	121,498
	95th Percentile	252,303	344,668	401,743	455,147
Catch (mt)	Median	21,898	24,948	30,023	33,250
	5th Percentile	-	11,069	15,549	18,428
	95th Percentile	-	50,317	56,857	68,034

Note wide- Confidence Intervals on SSB.