



NOAA
FISHERIES

**Northeast Fisheries
Science Center**

2021 Atlantic mackerel MT assessment: Rebuilding projections

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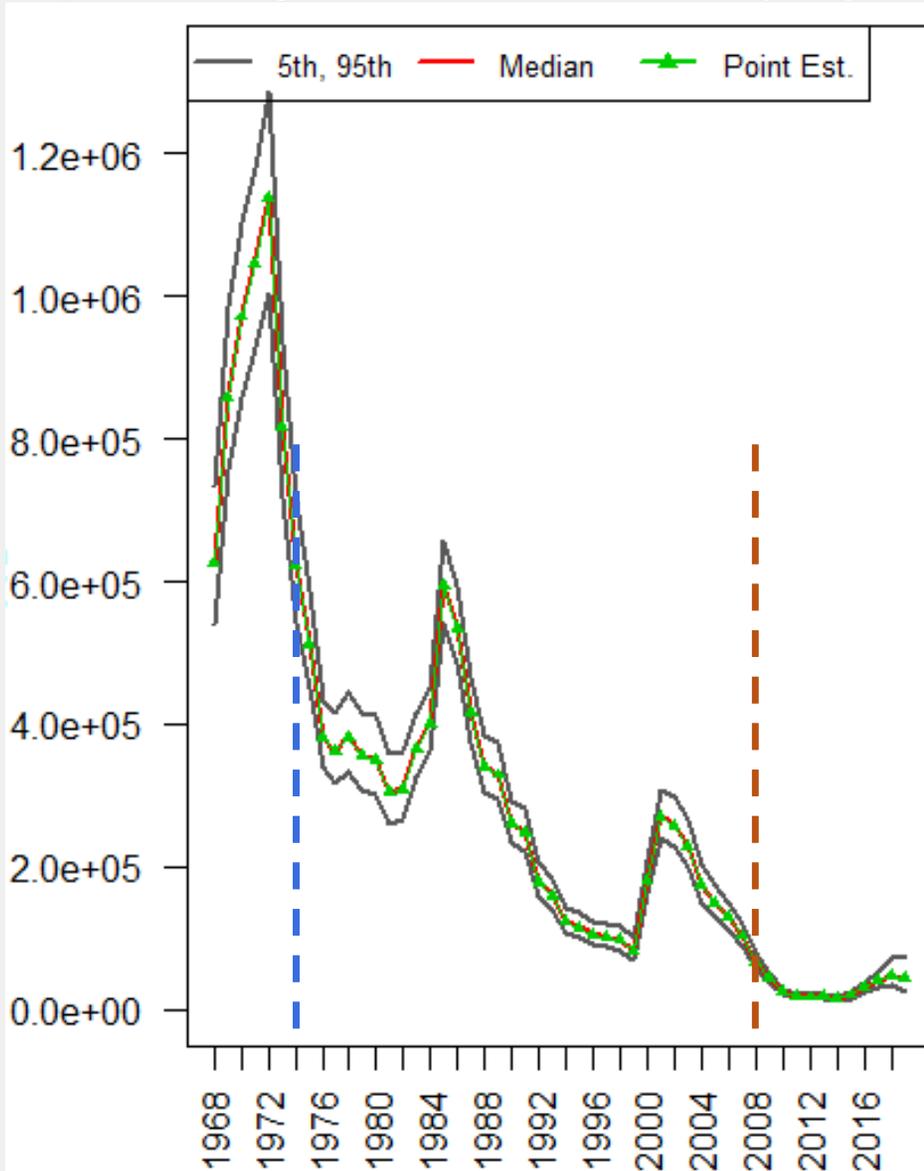


Key Assumptions

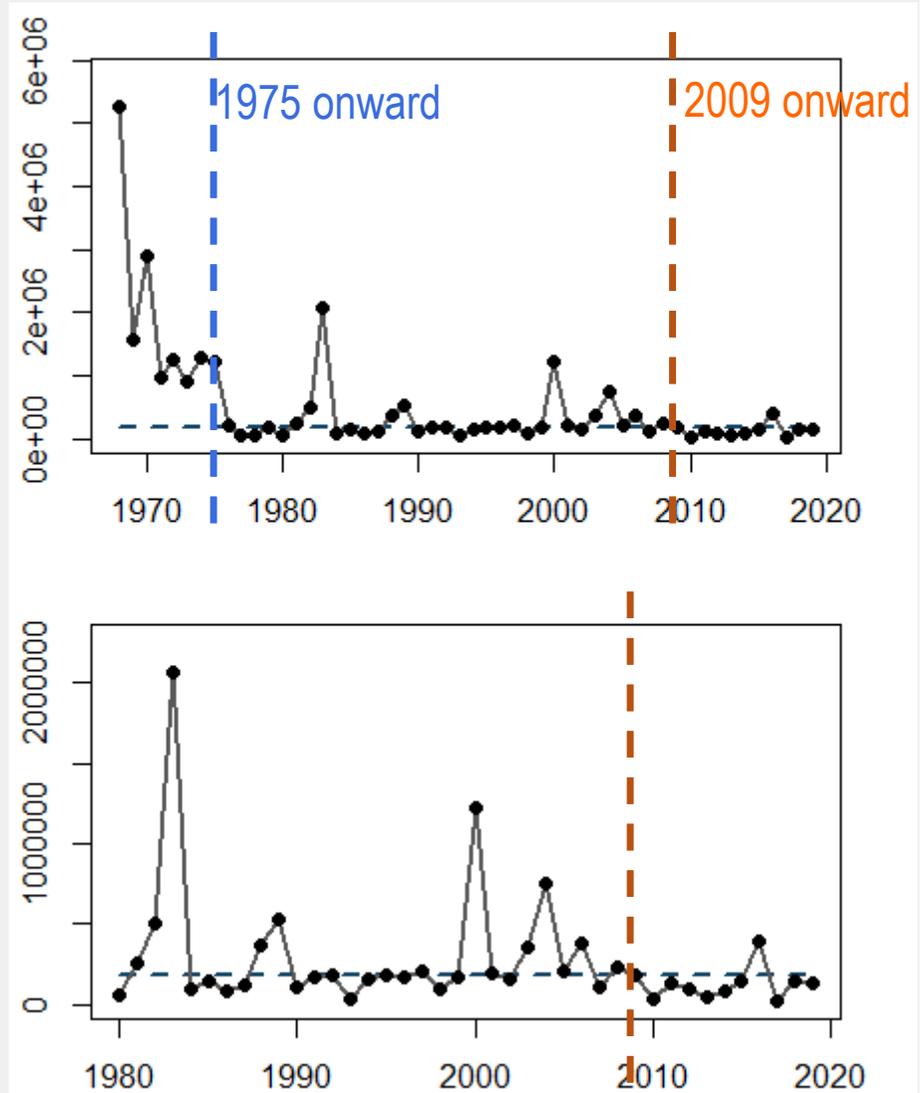
- Interim year(s) catches
 - 2020: 18,014 mt
 - 2021: 12,220 mt
 - 2022: 12,055 mt
- Recruitment - Empirical CDFs derived based on recruitment estimates from:
 - 2009 onward (period of recent low recruitment)
 - Two stanza:
 - If SSB is less than $\frac{1}{2}$ SSB MSY (90,545 mt): 2009 onward
 - Otherwise: 1975 onward
 - Odds Ratio (thanks to Paul Rago) = 9.167, X^2 prob = 0.998)
 - 2000 iterations were run for each projection scenario and the year the $\frac{1}{2}$ SSB MSY threshold was reached varied among iterations

ASAP estimates:

Spawning stock biomass (mt)



Recruitment (000s)



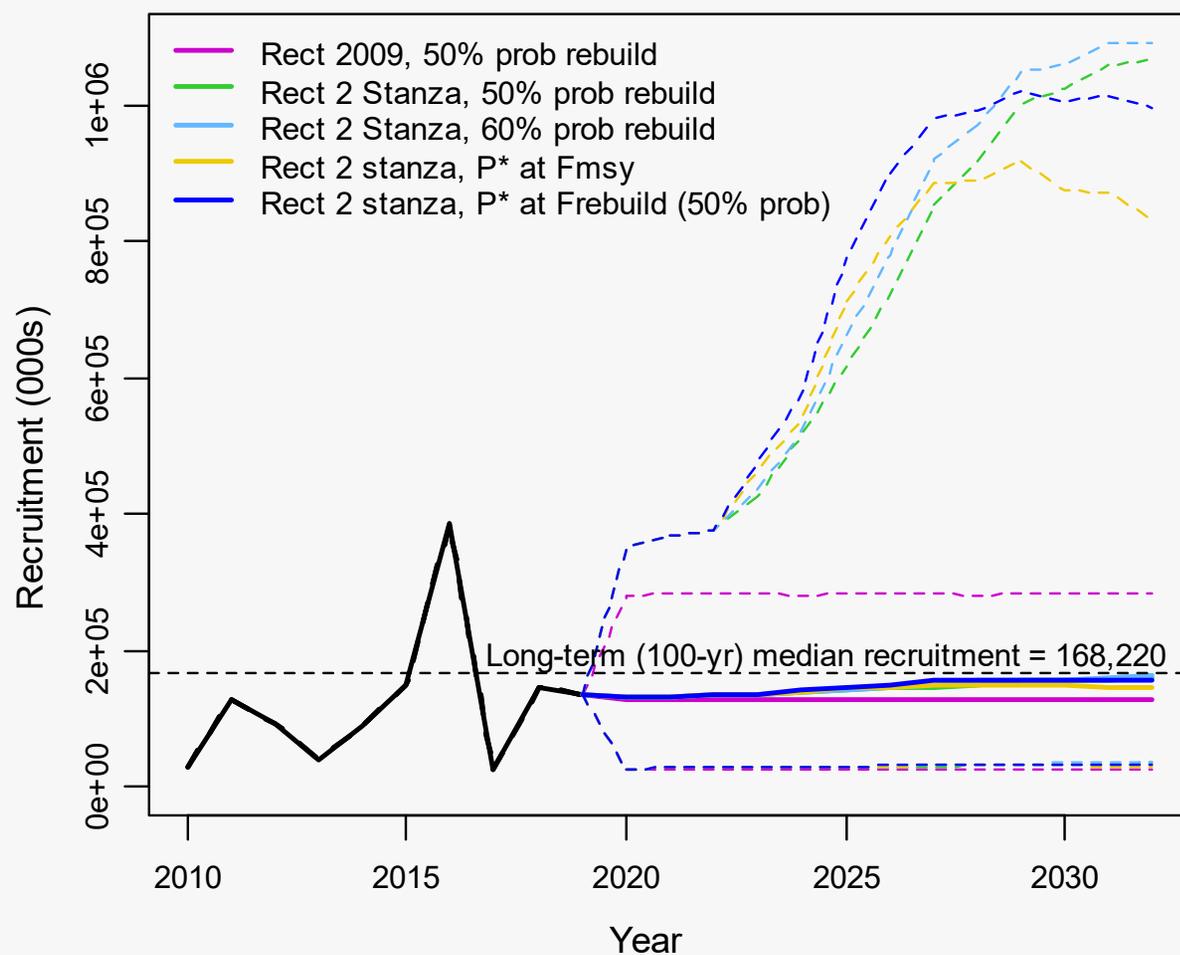
Rebuilding projections ($F_{msy} = 0.22$, $SSB_{msy} = 181,090$)

- Recruitment: 2009 onward
 - 10-year rebuilding with 50% probability ($F_{rebuild} = 0.01$)
- Recruitment: 2-stanza
 - 10-year rebuilding with 50% probability ($F_{rebuild} = 0.14$)
 - 10-year rebuilding with 60% probability ($F_{rebuild} = 0.12$)
 - P^* at $F_{msy} = 0.22$ with 150% CV
 - P^* at $F_{rebuild} = 0.14$ with 150% CV

Projected Recruitment

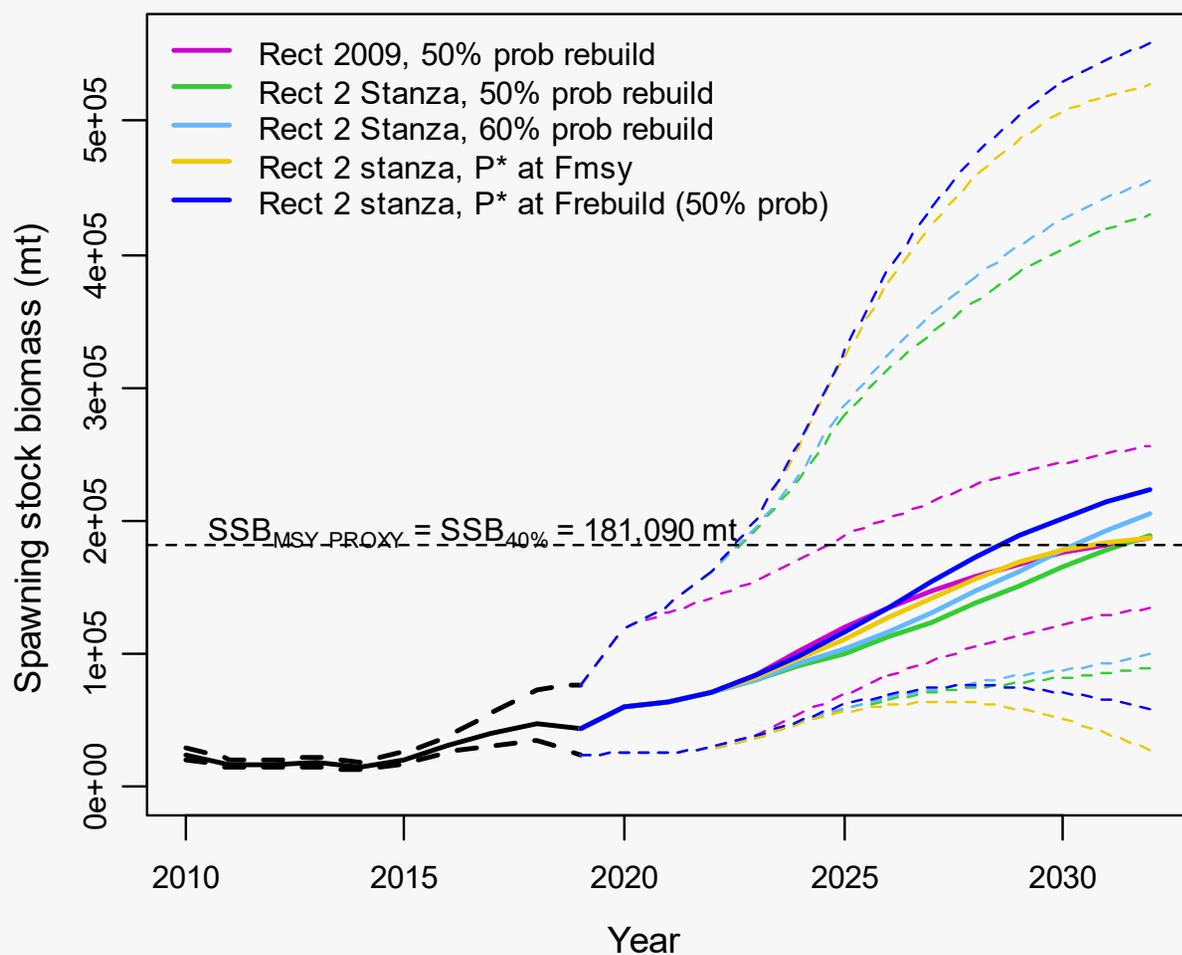
Median Recruitment in 2032

Rect 2009, 50% prob rebuild	128,775
Rect 2 Stanza, 50% prob rebuild	157,790
Rect 2 Stanza, 60% prob rebuild	162,097
Rect 2 stanza, P* at Fmsy	146,680
Rect 2 stanza, P* at Frebuild (50% prob)	155,298



Projected SSB

	SSB in 2032	Prob. Rebuilt
Rect 2009, 50% prob rebuild	187,093	0.566
Rect 2 Stanza, 50% prob rebuild	188,731	0.534
Rect 2 Stanza, 60% prob rebuild	204,796	0.605
Rect 2 stanza, P* at Fmsy	186,886	0.515
Rect 2 stanza, P* at Frebuild (50% prob)	222,817	0.623



Projected Catch

	Median Catch in 2032
Rect 2009, 50% prob rebuild	1,692
Rect 2 Stanza, 50% prob rebuild	22,672
Rect 2 Stanza, 60% prob rebuild	21,215
Rect 2 stanza, P* at Fmsy	30,564
Rect 2 stanza, P* at Frebuild (50% prob)	24,459

