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# Follow up for the SSC on GAJ projections

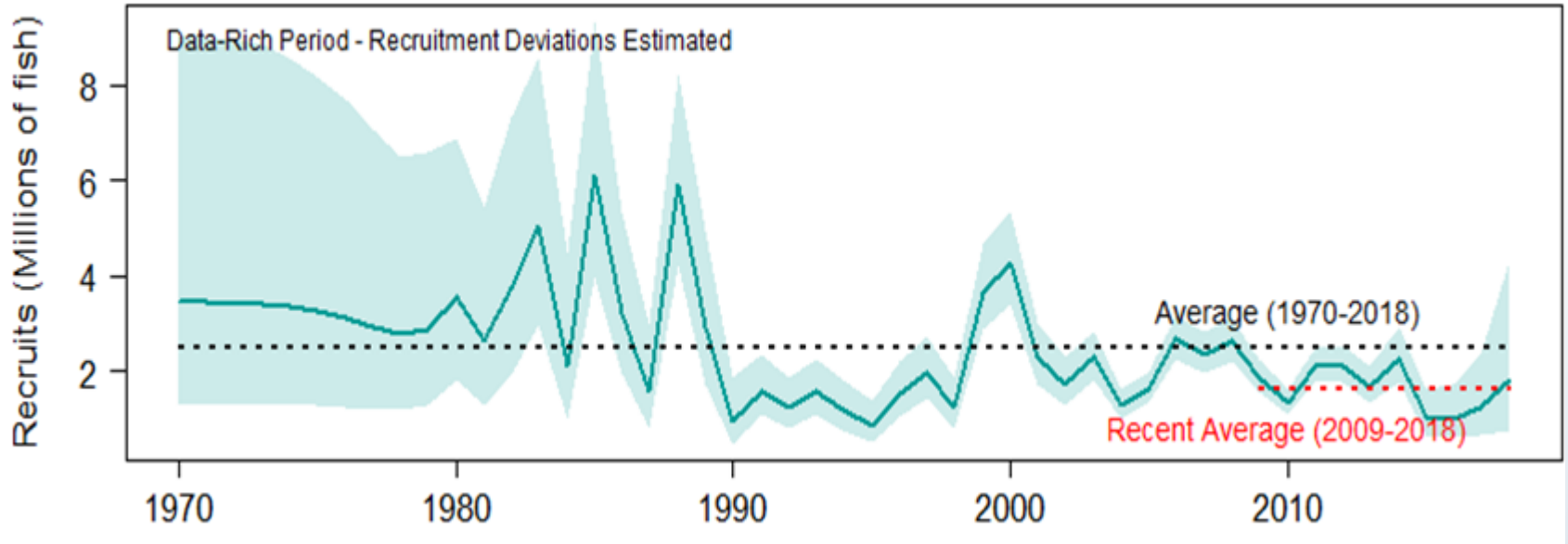
GMFMC SSC Meeting  
9/30/2021

# September 2021 SSC meeting projections configurations:

<u>Parameter</u>	<u>Value</u>	<u>Comment</u>
Relative F	Average 2016-2018	S/A SEDAR 70
F Current	Geometric mean 2016-2018	S/A SEDAR 70
Selectivity	Average 2016-2018	S/A SEDAR 70
Retention	Average 2016-2018	S/A SEDAR 70
Recruitment (OFL)	Average 2009-2018	S/A SEDAR 70
Recruitment (ABC)	75%SPR30	S/A SEDAR 70
Landings	Average 2017-2019	Used in 2020-2021 S/A SEDAR 70
Allocation ratio	27:73	plus allocation ratio requests
Steepness	0.777	



# Recruitment



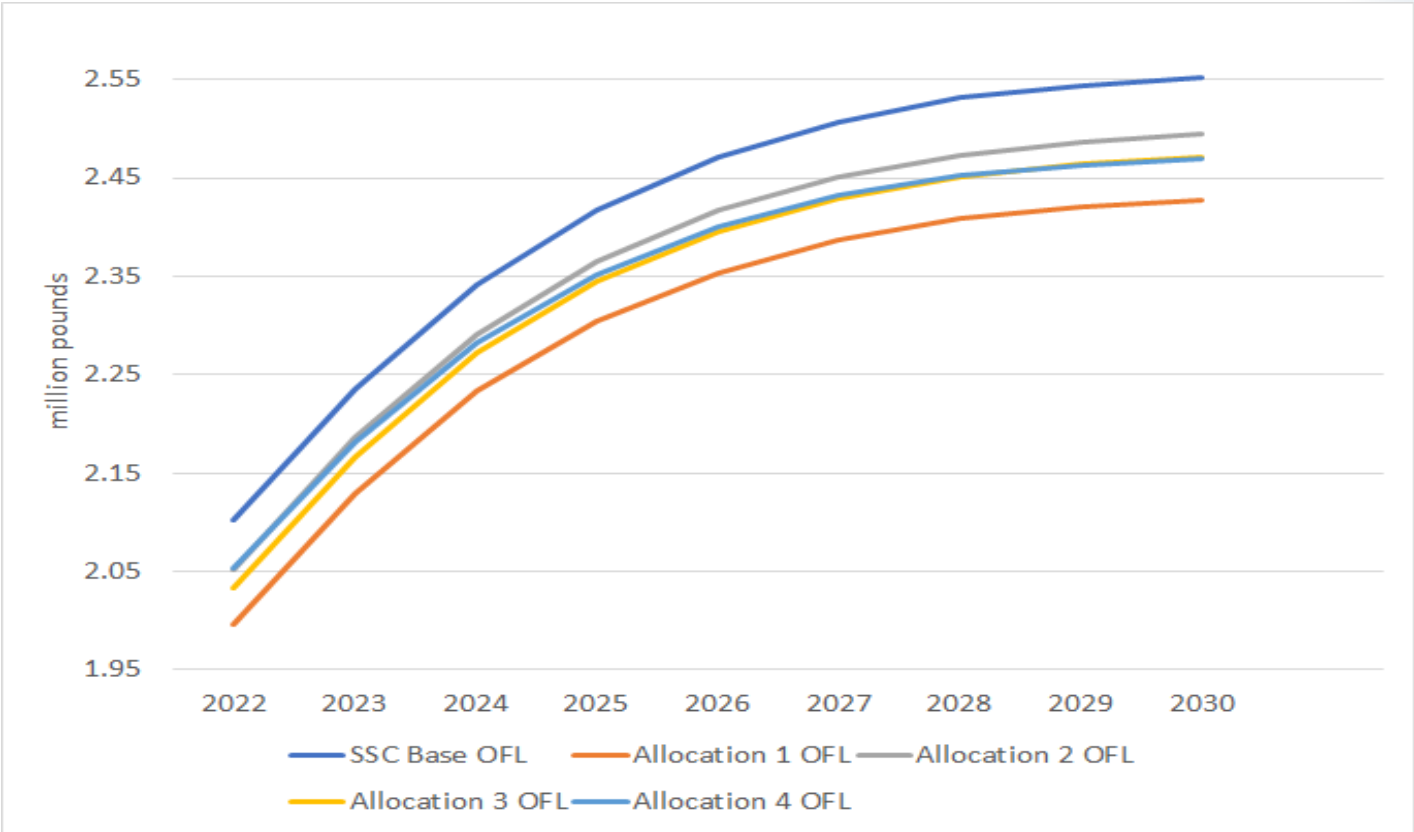
Recent average: (2009-2018) 1650.66



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# OFL projections under requested allocation scenarios

Base = 73:27  
#1 = 84:16  
#2 = 78:22  
#3 = 80:20  
#4 = Comm  
fixed



# ABC projections under requested allocation scenarios

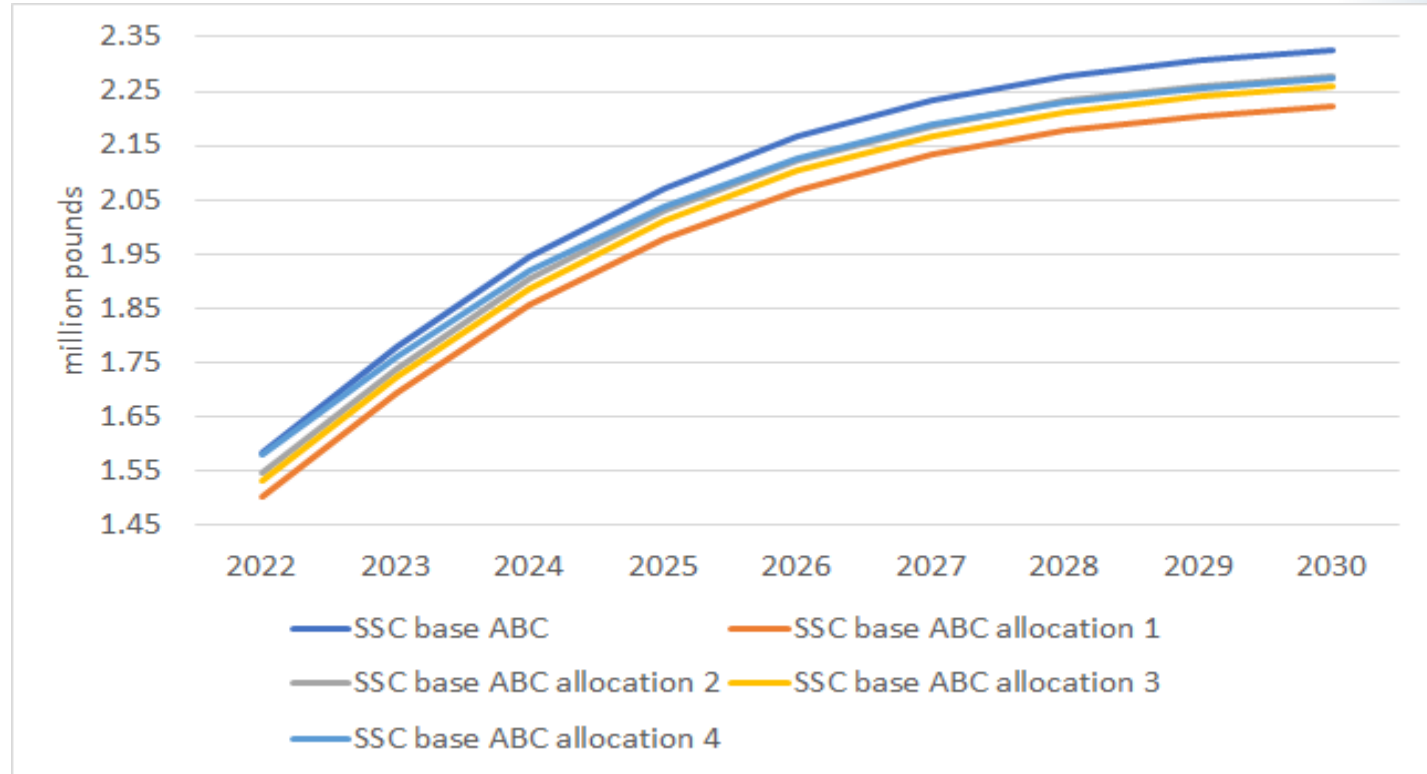
Base = 73:27

#1 = 84:16

#2 = 78:22

#3 = 80:20

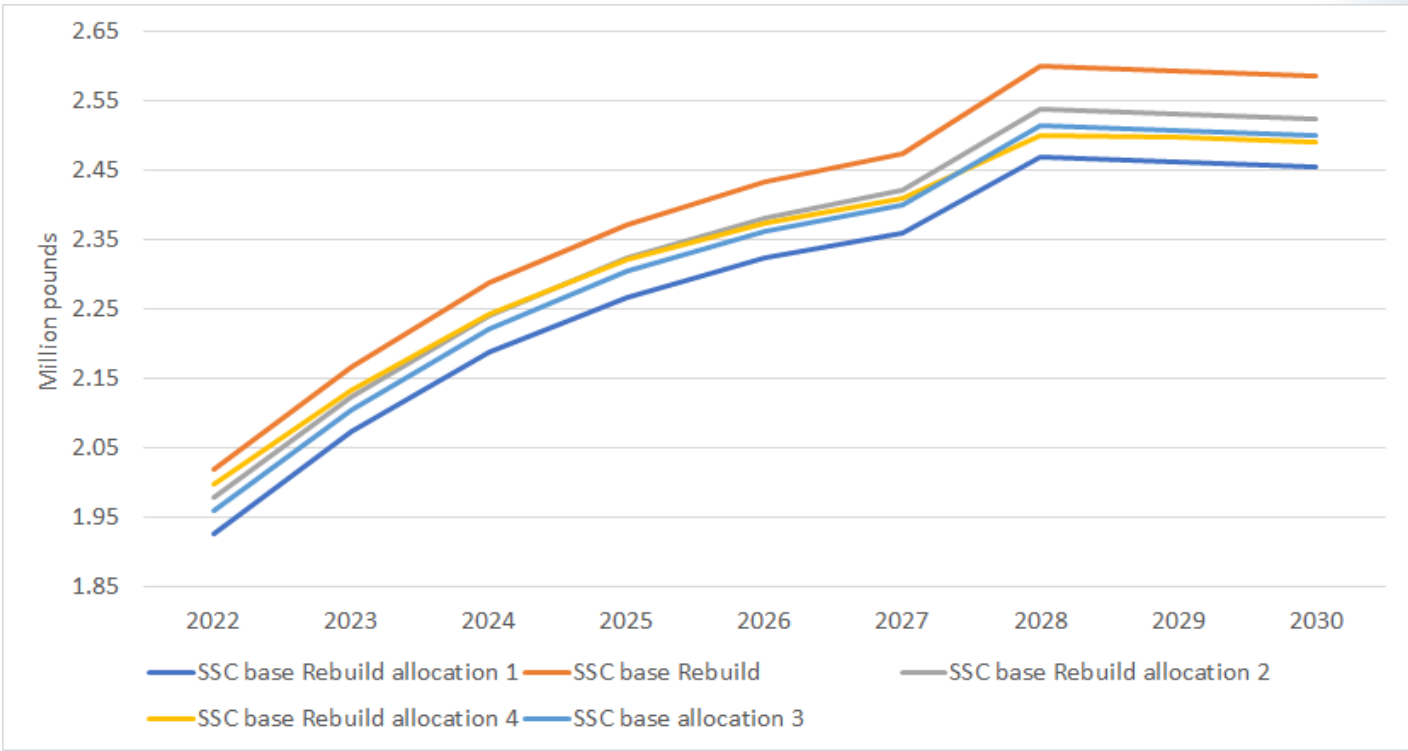
#4 = Comm  
fixed at  
484,380 lbs  
WW



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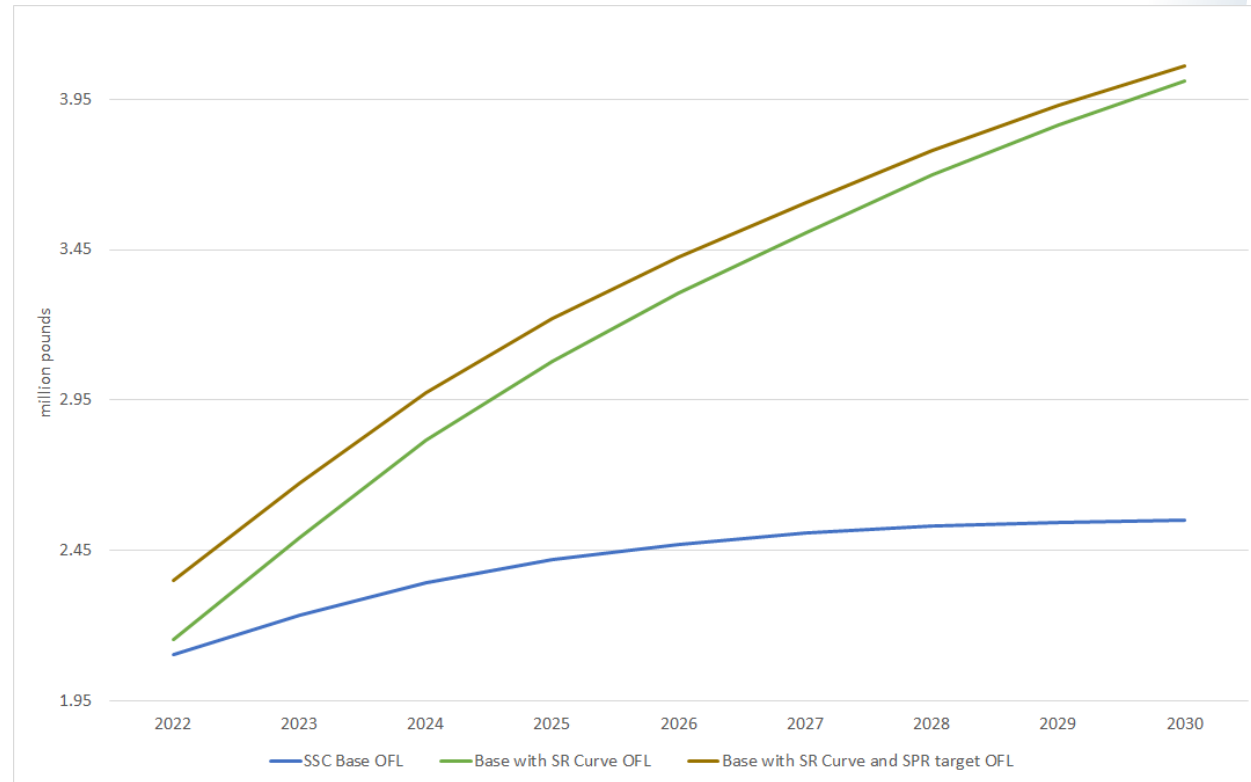
# Rebuild projections under requested allocation scenarios

Base = 73:27  
#1 = 84:16  
#2 = 78:22  
#3 = 80:20  
#4 = Comm  
fixed at  
484,380 lbs  
WW

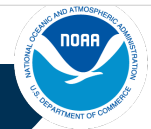
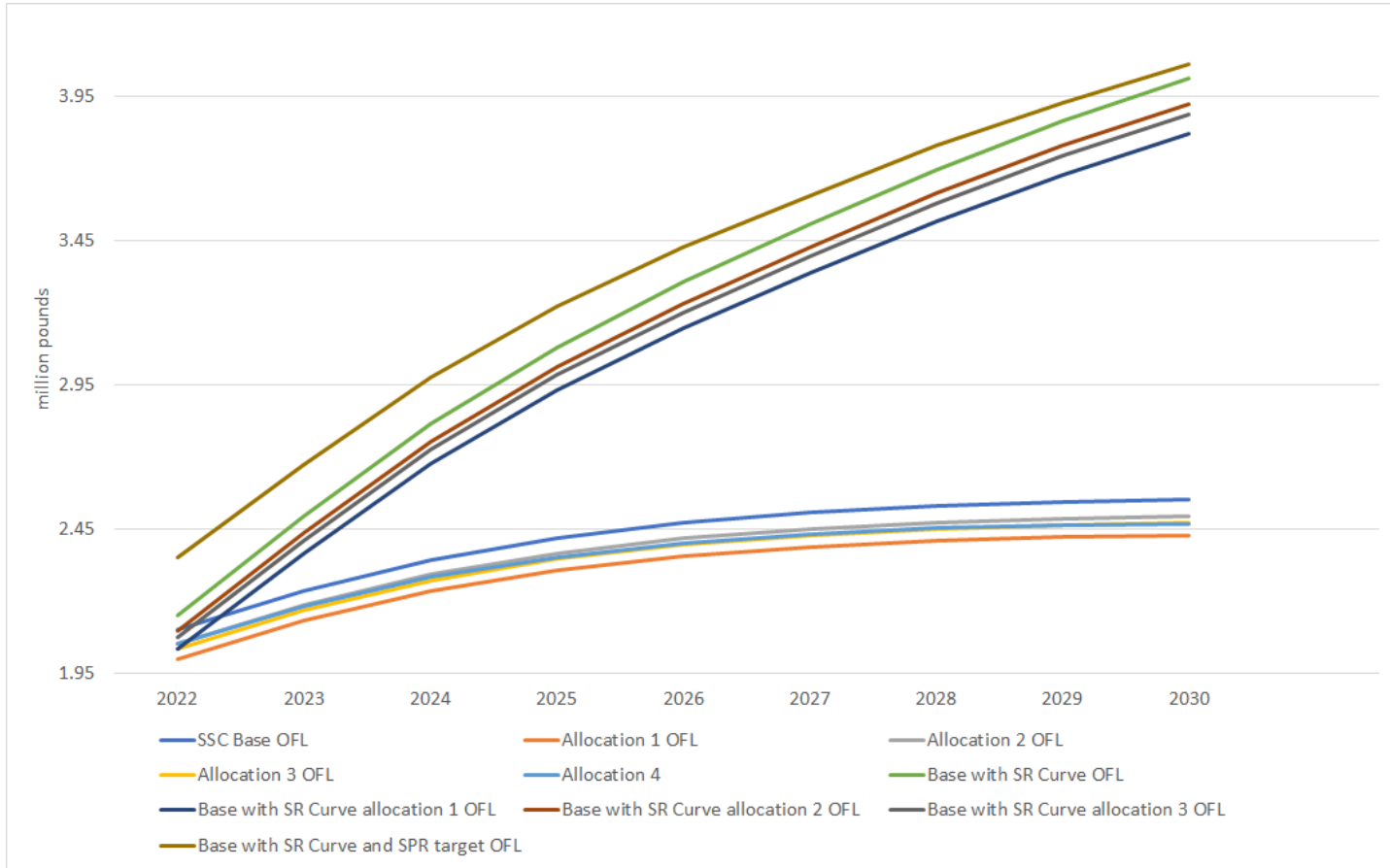


# The impact of choosing the most recent recruits for setting benchmarks

- Rebuilding plan was reset (from 2012 to 2027) using a projected yield which pulled recruits from the stock recruit curve.
- To deviate from that set up would mean reducing the expected long term yield and recovery target.



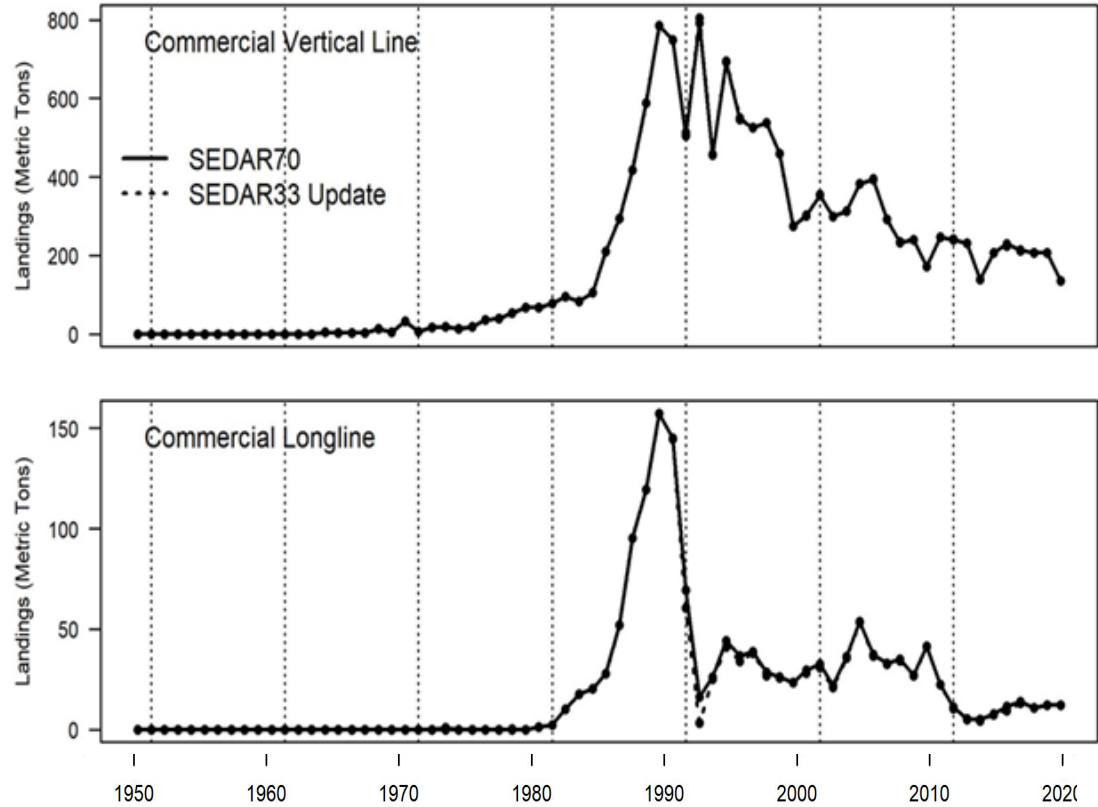
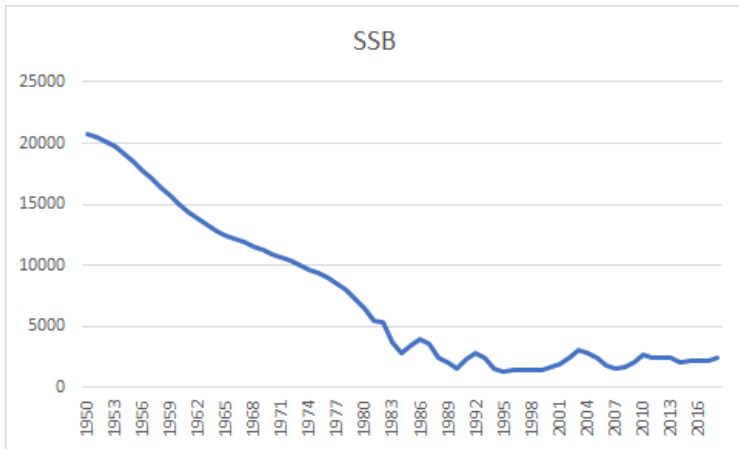
# Relative Effect of Allocations



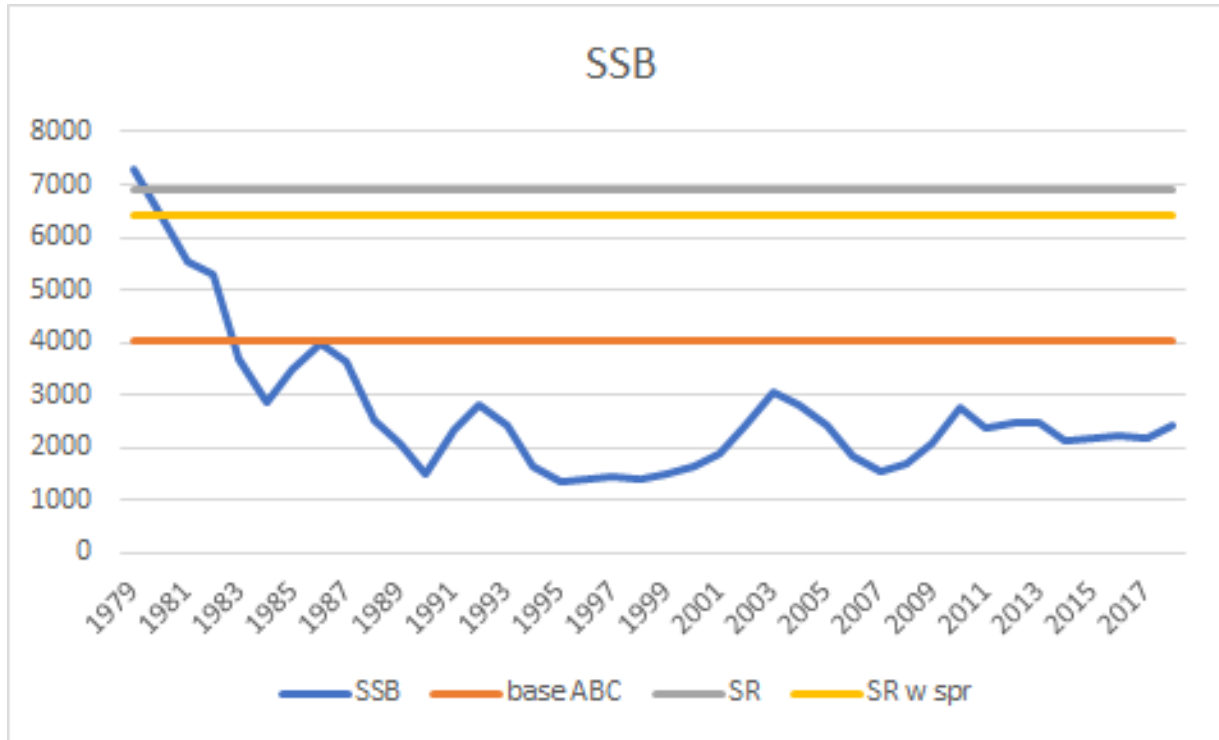
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# Historic SSB vs. landings



# Historic SSB vs. 10 yr Projections



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# Inferring a regime shift?

- By using the recent years of recruitment for GAJ, we are inferring a regime shift.
- We are telling the projections that the recruitment, and therefore the productivity of the stock, is lower.
- The expected recruits and stock size, and thus yield, in the projections will be reduced
  - A lower expected stock size will be easier to achieve (i.e. rebuilding will be faster at the same F because the stock doesn't have to reach the higher threshold).



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### How much evidence is required for acceptance of productivity regime shifts in fish stock assessments: Are we letting managers off the hook?



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# MSRA table for the SSC Base

Variable	Definition	Value
Base M	Fully selected ages of Lorenzen Natural Mortality (M)	0.28
Steepness	Fixed Stock-Recruit (SR) parameter (not used in projections)	0.777
Virgin Recruitment	Estimated SR parameter (not used in projections)	3,698
Generation Time	Fecundity-weighted mean age	7.59
SSB Unfished	Estimated virgin spawning stock biomass	23,733
	Mortality Rate Criteria	
FMSYproxy	Equilibrium F that achieves SPR30%	0.242
MFMT	Equilibrium F that achieves SPR30%	0.242
FOY	F that rebuilds the stock to SSBSPR30% by 2027	
Fcurrent	0.75 * Directed F at FSPR30%	0.302
Fcurrent/FMSYproxy	Geometric Mean (F2016-2018)=Fcurrent	1.25
Fcurrent/MFMT	Current stock status based on FMSYproxy	1.25
	Current stock status based on MFMT	
SSBMSYproxy	Biomass Criteria	3,179
MSST	Equilibrium SSB at FSPR30%	1,589
SSB at Optimum Yield	0.5*SSBSPR30%	
SSB_2018	Equilibrium SSB when Directed F = 0.75 * Directed F at FSPR30%	2,433
SSB_2018/SSBFMSYproxy	SSB2018	0.77
SSB_2018/MSST	Current stock status based on SSBSPR30% (Equil)	1.53
SSB_2018/SSBunfished	Current stock status based on MSSTSPR30%	0.1



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