THE SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

Summary of MSY proxies in the South Atlantic

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Management history of MSY proxies in the South Atlantic

- Final Comprehensive SFA Amendment (1998)
  - *Set F40% Static SPR as a proxy for Goliath and Nassau Grouper.*
  - *Set F30% Static SPR as an MSY proxy for the remaining [snapper-grouper] species.*
  - *Set F30% Static SPR as an MSY proxy for Coastal Migratory Pelagics.*
- NOAA Fisheries NS1 Tech Memo *Draft* Guidelines (presented to SSC, July 2023):
  - *"If using a %SPR for the proxy reference points, re-evaluate the choice of %SPR proxy used to ensure it is still consistent with the new perception of the stock's productivity."*
  - *Evaluation of MSY or appropriate proxy and their associated benchmarks when updating stock assessments.*

Most recent MSY benchmarks for SAFMC stock assessments

sources: NOAA stock SMART, Southeast Data Assessment and Review (SEDAR), SSC

- NOAA's Stock SMART (Stock Status, Management, Assessment, and Resources Trends:
  - https://www.fisheries.noaa.gov/resource/tool-app/stock-smart
- Southeast Data Assessment and Review (SEDAR):
  - https://sedarweb.org/
- Scientific and Statistical Committee (SSC), July 2023 meeting
  - https://safmc.net/briefing-books/july-2023-ssc-meeting-briefing-book/

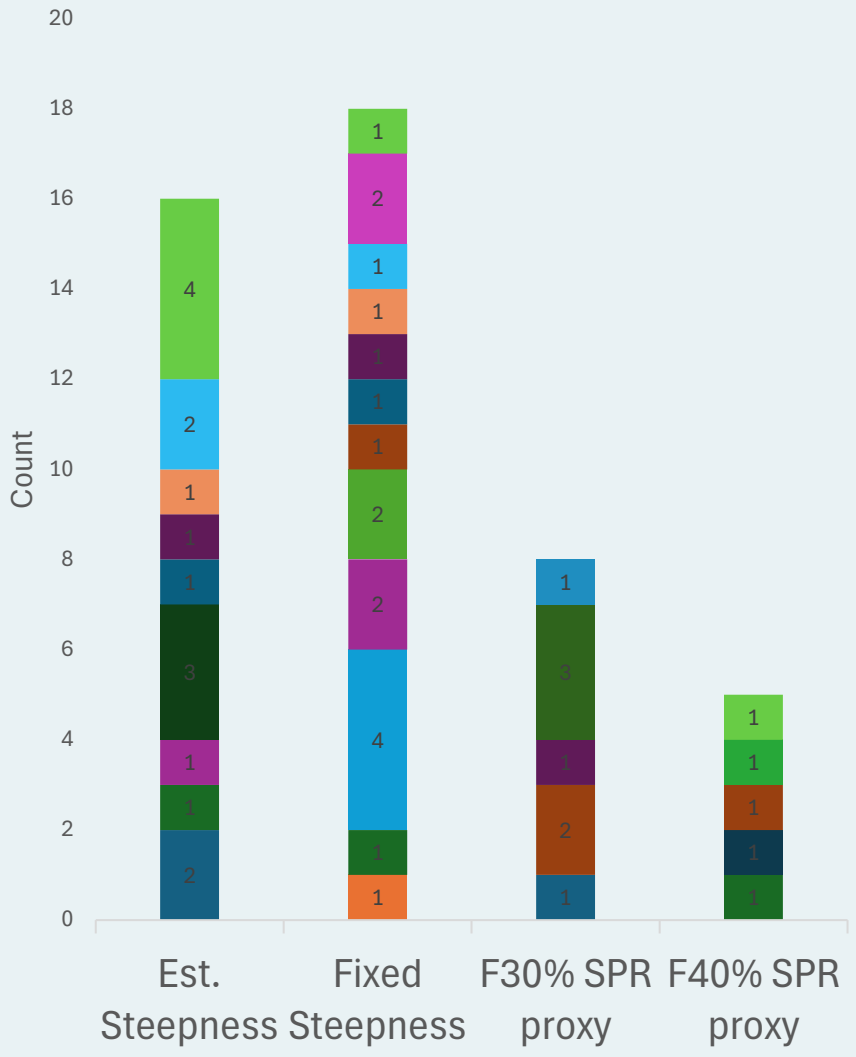
Most recent MSY benchmarks for SAFMC stock assessments

sources: NOAA stock SMART, Southeast Data Assessment and Review (SEDAR), SSC

Common Name	Assessment Year	Assessment Model	Assessment Report	MSY Basis	Steepness (*h*)	(h), value	Natural Mortality (M)	F reference
Hogfish - FLK/EFL	2014	SS	SEDAR 37	F30% as proxy	estimated	0.83	0.18	0.138
Yellowtail Snapper	2024	SS	SEDAR 96	F30% as proxy	estimated	0.77	0.22	0.398
Mutton Snapper	2024	SS	SEDAR 79	F30% as proxy	estimated	0.64	0.13	0.149
King mackerel	2020	SS	SEDAR 38 Update	F30% as proxy	fixed / mean R	0.99	0.16	0.145
Red snapper	2021	BAM	SEDAR 73	F30% as proxy	mean R	n/a	0.11	0.206
Scamp	2023	BAM	SEDAR 68OA	F40% as proxy	mean R	n/a	0.16	0.278
Gray triggerfish	2024	BAM	SEDAR 41	F40% as proxy	mean R	n/a	0.38	0.56
Red porgy	2020	BAM	SEDAR 60	Fmsy	estimated	0.38	0.22	0.18
Gag	2021	BAM	SEDAR 71	Fmsy	estimated	0.90	0.15	0.368
Black sea bass	2025	BAM	SEDAR 76 Update	Fmsy	estimated	0.39	0.38	0.32
Wreckfish	2014	SCA	Not SEDAR	Fmsy	fixed	0.75	0.04	0.065
Blueline tilefish	2017	ASPIC	SEDAR 50	Fmsy	fixed	0.84	0.17	0.146
Red grouper	2017	BAM	SEDAR 53	Fmsy	fixed	0.87	0.14	0.12
Vermilion snapper	2018	BAM	SEDAR 55	Fmsy	fixed	0.69	0.22	0.41
Greater amberjack	2020	BAM	SEDAR 59	Fmsy	fixed	0.87	0.25	0.686
Snowy grouper	2021	BAM	SEDAR 36 Update	Fmsy	fixed	0.84	0.08	0.101
Spanish mackerel	2023	BAM	SEDAR 78	Fmsy	fixed	0.75	0.35	0.516
Tilefish	2024	BAM	SEDAR 89	Fmsy	fixed	0.60	0.14	0.216

MSY benchmarks for SAFMC stock assessments

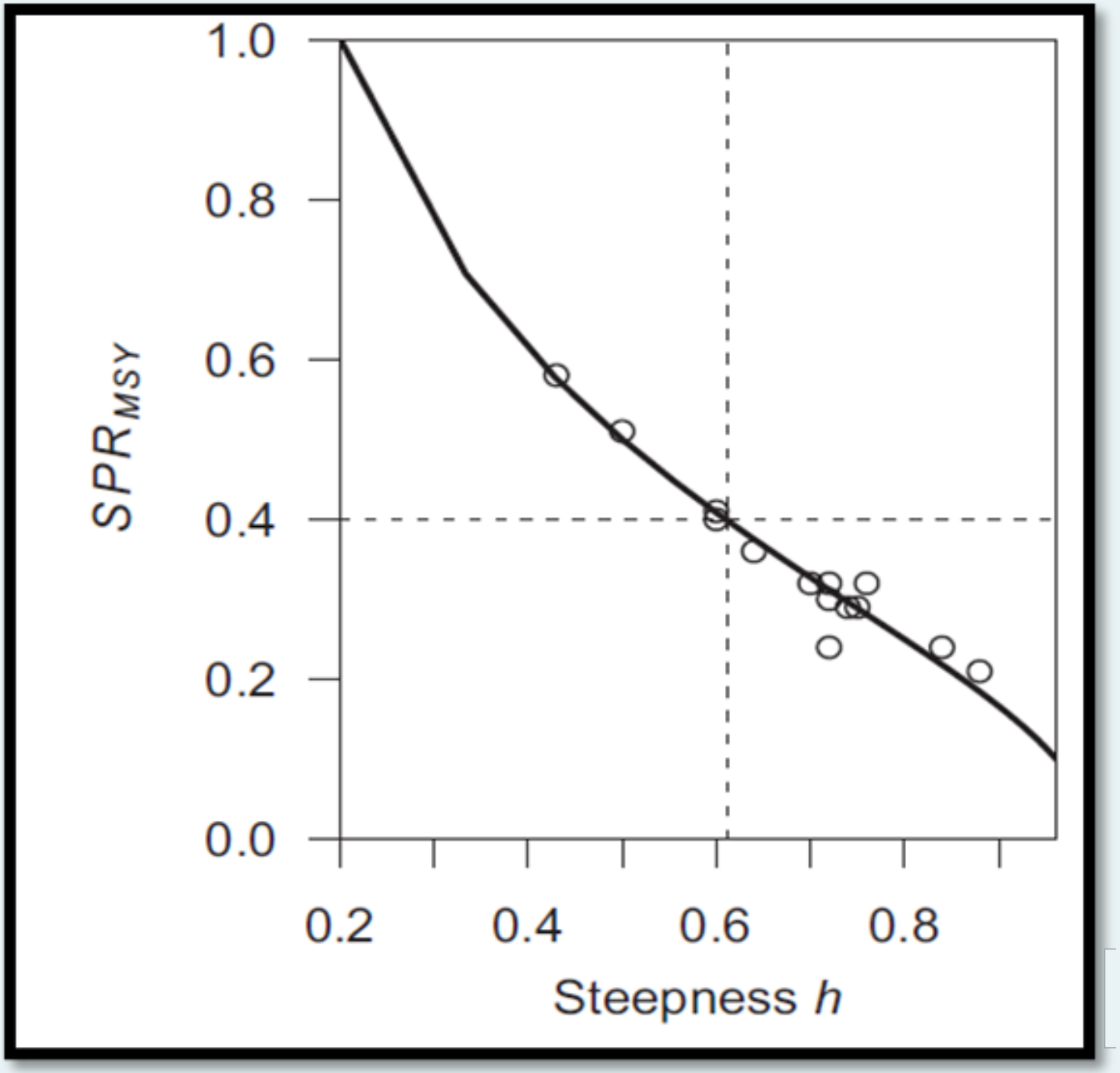
sources: NOAA stock SMART, Southeast Data Assessment and Review (SEDAR), SSC



	Est. Steepness	Fixed Steepness	F30% SPR proxy	F40% SPR proxy
Black sea bass	4	1		1
Blueline tilefish		2		
Gag	2	1		
Gray triggerfish				1
Greater amberjack	1	1		
Hogfish - FLK/EFL			1	
King mackerel			3	
Mutton Snapper	1	1	1	
Red grouper	1	1		
Red porgy	3			
Red snapper		1	2	1
Scamp				1
Snowy grouper		2		
Spanish mackerel	1	2		
Tilefish		4		
Vermilion snapper	1	1		1
Wreckfish		1		
Yellowtail Snapper	2		1	

Steepness:

- Estimated
  - Direct (rare)
  - Priors (most)
- Fixed
  - Steepness not estimable
  - Implies proxy
  - Not currently recommended
- SPR proxies
  - Mean Recruitment

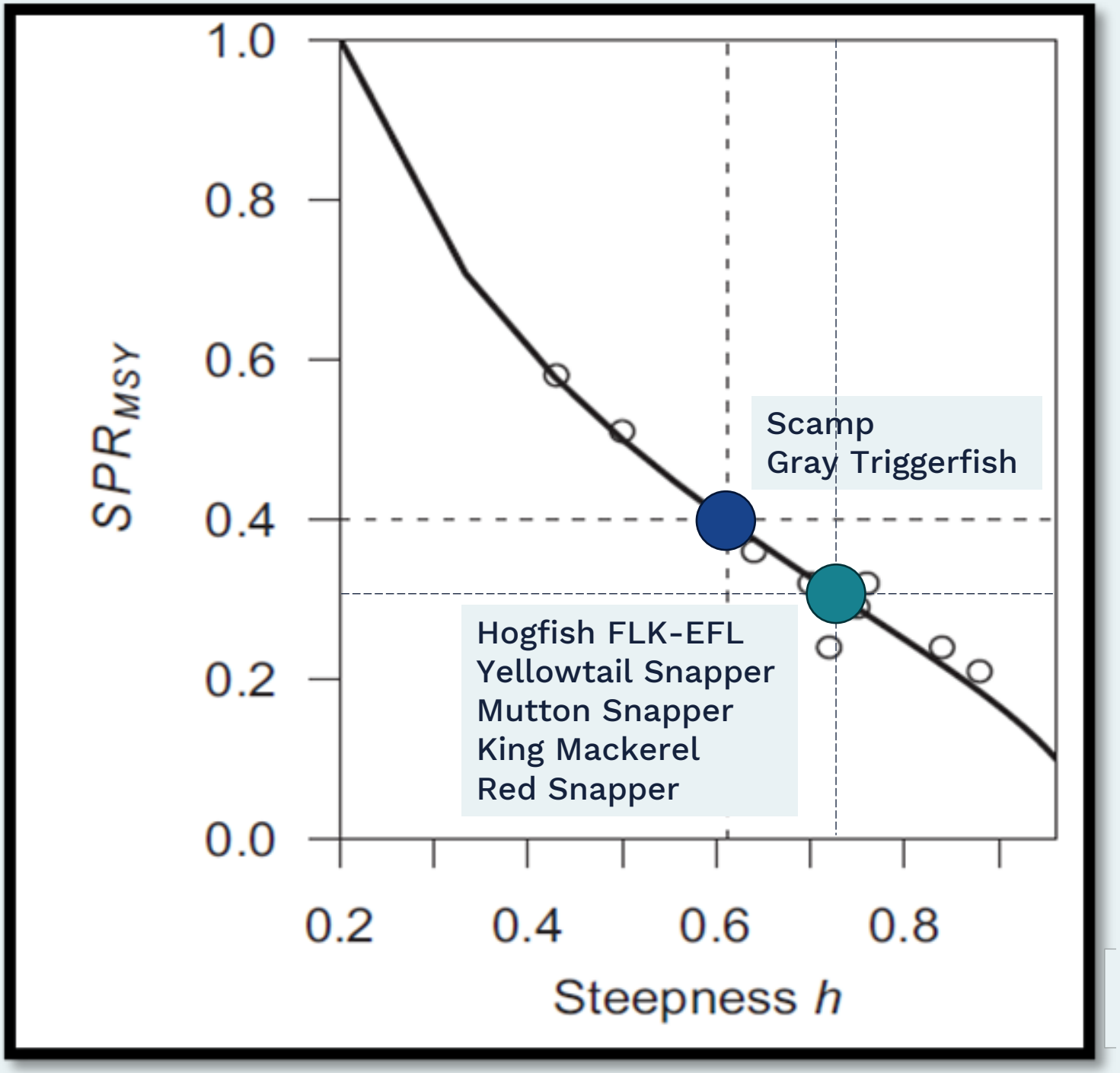


MSY benchmarks for SAFMC stock assessments

High Steepness
- Low SPR
- Less SSB influence on R

Low Steepness
- High SPR
- High SSC influence on R

From Zhou et al. 2020
*for illustrative purposes only



MSY benchmarks for SAFMC stock assessments

Species with MSY proxies

F30%SPR

F40%SPR

From Zhou et al. 2020

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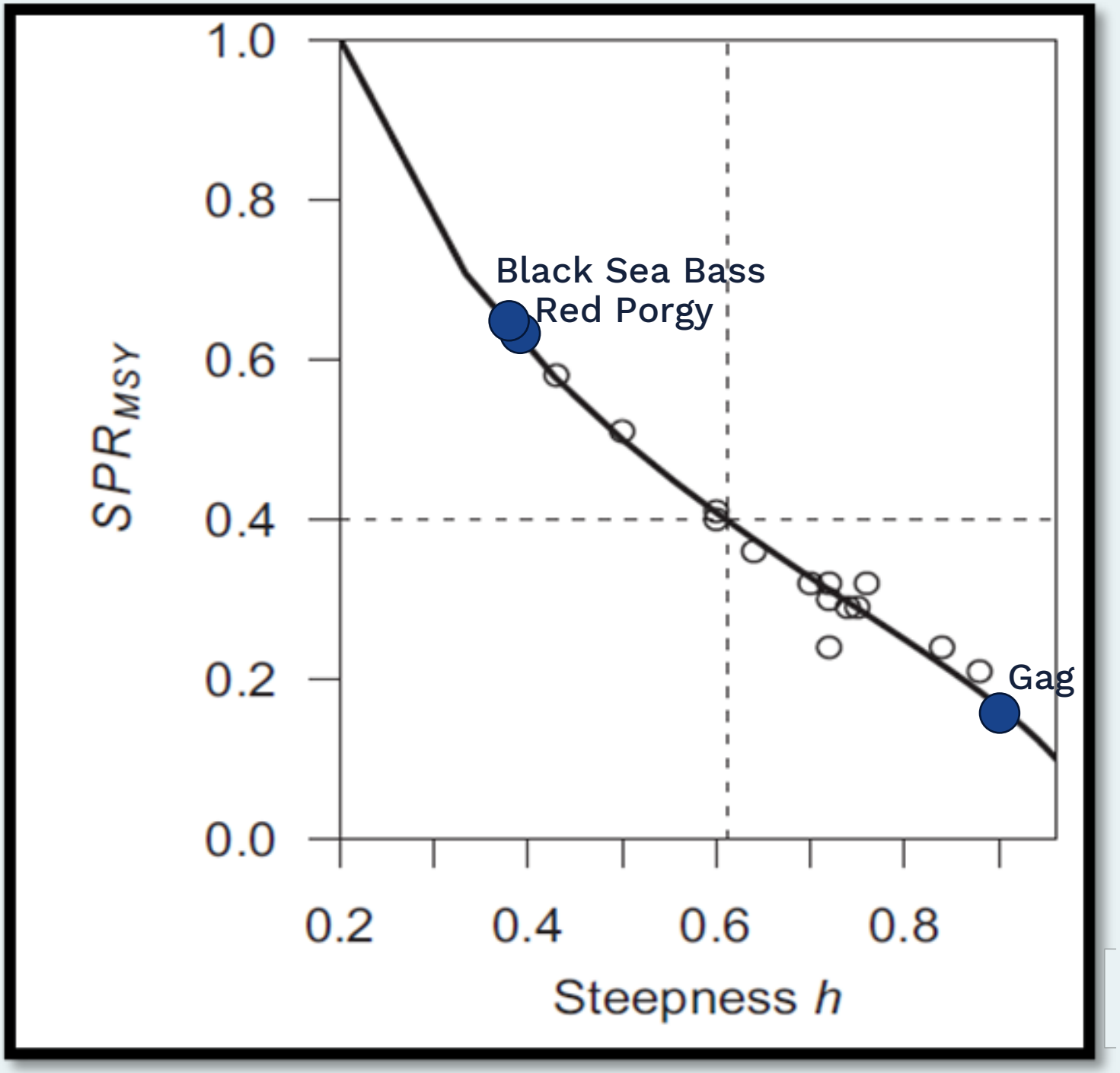
MSY benchmarks for SAFMC stock assessments

Species with estimated MSY



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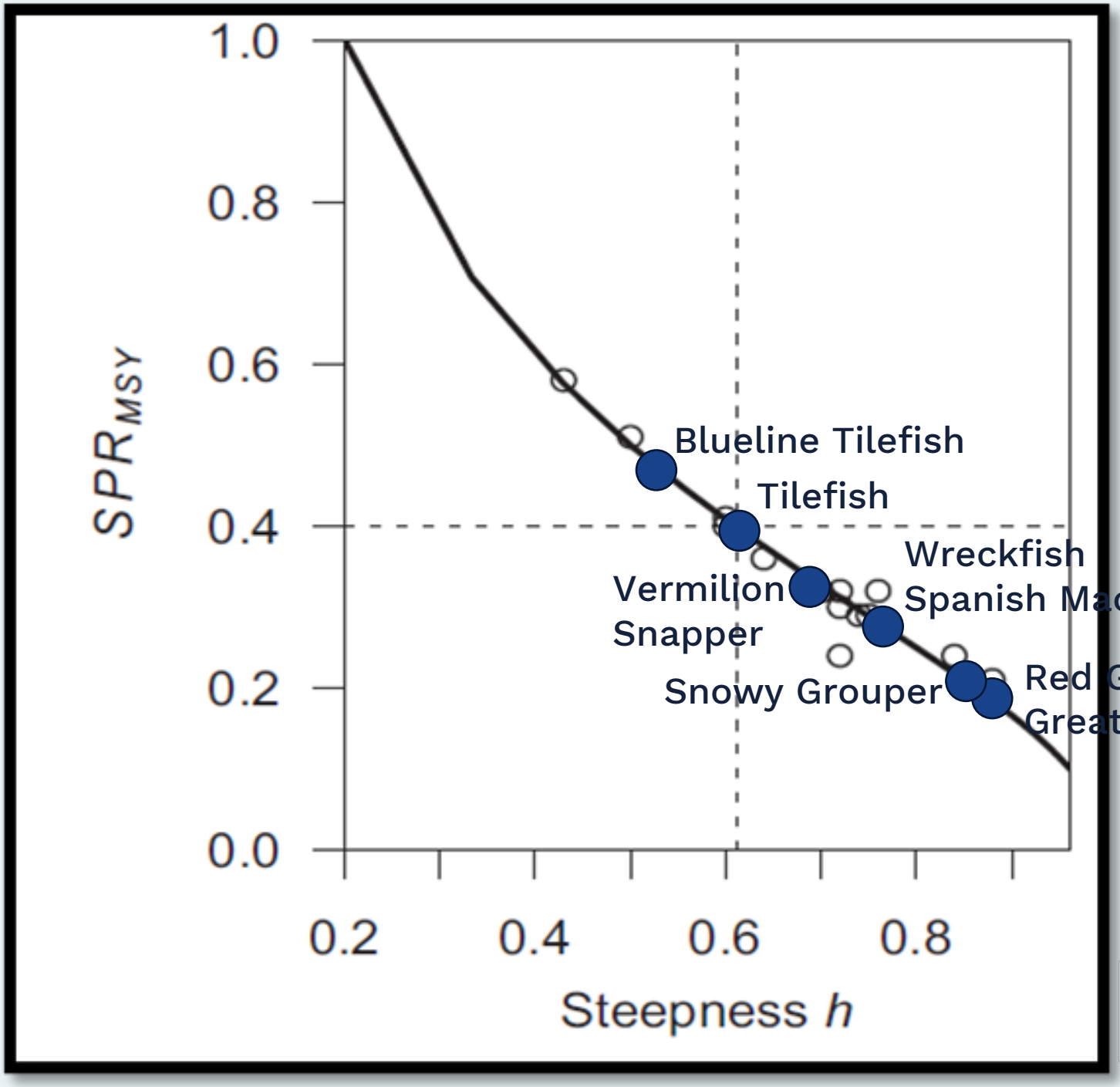
MSY benchmarks for SAFMC stock assessments



Species with fixed steepness

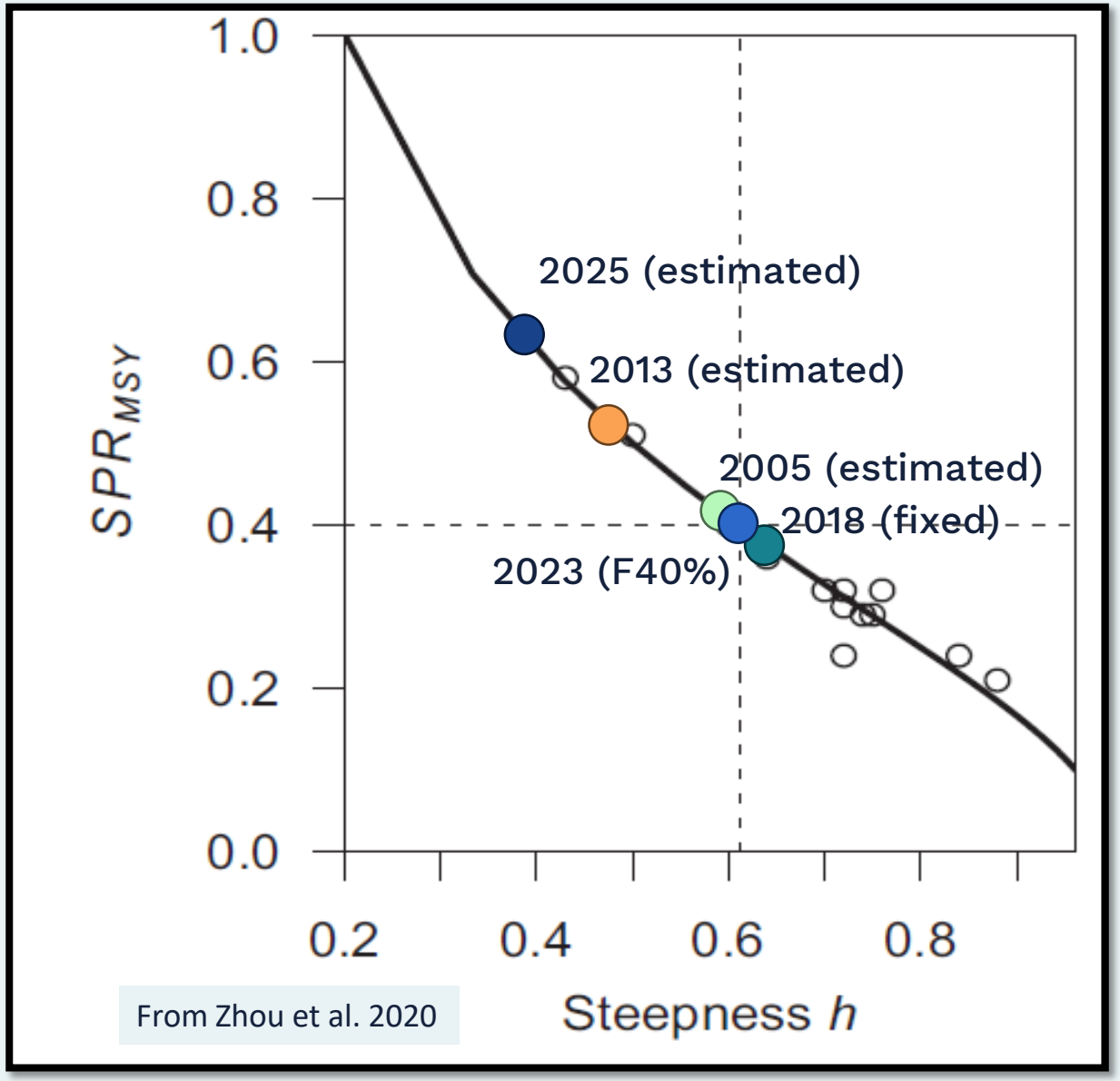
From Zhou et al. 2020
*for illustrative purposes only

MSY benchmarks for BLACK SEA BASS Stock Assessments

Steepness is difficult to estimate reliably

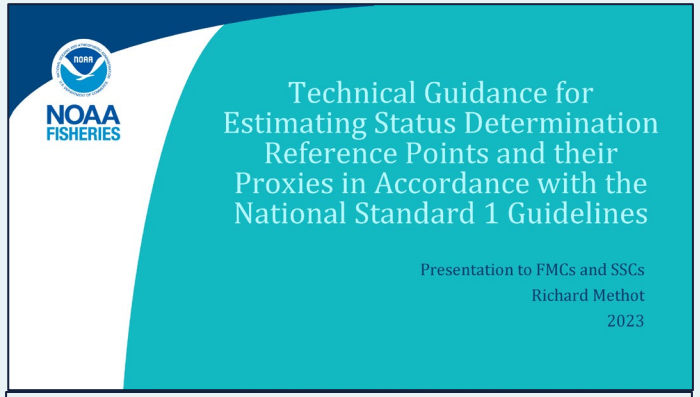
- Stock-Recruitment functions are often non-informative due to data limitations.
- Assumes stock productivity is stationary through time.
- If steepness cannot be estimated --> MSY not estimable --> use MSY proxy.

Assessment Year	Citation	MSY Basis	Steepness (h)	(h), value	F reference
2005	SEDAR 2	Fmsy	estimated	0.6	0.429
2011	SEDAR 25	Fmsy	estimated	0.49	0.698
2013	SEDAR 25 Update	Fmsy	estimated	0.48	0.61
2018	SEDAR 56	Fmsy	fixed	0.64	0.31
2023	SEDAR 76	F40% as proxy	mean R	n/a	1.178
2025	SEDAR 76 Update	Fmsy	estimated	0.39	0.32

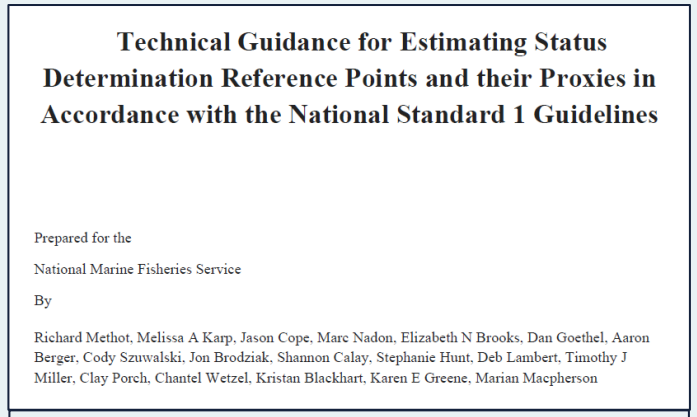


NOAA Fisheries NS1 Tech Memo *Draft* Guidelines

- Updating reference points for prevailing conditions
  - Track [recruitment] changes with empirical trailing averages. Already done for fishery conditions and biology
  - If environmental drivers are identified, explore ways to directly incorporate them in the assessment model and resultant SDC reference point updates
- Highlight and investigate changing conditions that would lead to maintaining high F on a declining stock.
  - Example: Increase in M causes stock decline, but also causes F40% to be a larger F
- Consider setting control rule inflection biomass based on long-term perspective, and setting FMSY, BMSY, MSY, and rebuilding target on the basis of more recently prevailing conditions. Such an approach needs simulation testing before being used.
- If using a %SPR for the proxy reference points, re-evaluate the choice of %SPR proxy used to ensure it is still consistent with the new perception of the stock's productivity



https://safmc.net/documents/06a_ns1_presentation_2023-pdf/



https://safmc.net/documents/06b_ns1_tech_memo_brp_5_5_2023-pdf/

SSC Review and Input

- SA-SSC Meeting (July 2023): Review of NS1 tech memo
  - More developmental guidance for density-dependent forces (outside of SRR) and biological stock composition and their impacts on reference points.
  - More exploration and testing of Dynamic B_0 approaches [and associated reference points].
  - [Exploration into] poorly defined SRR and status determination criteria. Shifts in how the SRR has been applied has changed over time.
- National SSC Meeting (SCS8, Aug 2024)
  - Non-stationarity calls into question long-term reference points and rebuilding targets.
  - Action item: Investigate the use of dynamic harvest controls and dynamic reference points as they relate to rebuilding plans to increase flexibility, adaptability and inclusion of social economic factors.
  - February 2025 Seminar Series: Dr. Jeremy Collie
- Joint SA/Gulf SSC Meeting (Feb 2025)
  - SSCs Consensus Statement:
  - *The Gulf and South Atlantic SSCs see a clear need to collectively address the* required precision to estimate steepness *(and thus estimate MSY) for management advice, as well as a* discussion of SPR proxy values given a range of life history values among fish species *(e.g., longevity, age at maturity, growth characteristics, vulnerability to environmental perturbations). The SSCs by consensus think that a follow up joint meeting to address these topics is essential to the consistent application of an agreed decision-making paradigm for present and future stock assessments.*

Questions?