

ESTIMATING THE LENGTH-BASED SPAWNING POTENTIAL RATIO (LBSPR) OF FOUR KEY DEMERSAL FISH SPECIES IN LIBERIA'S ARTISANAL FISHERIES



STUDY DESIGN



Liberia's artisanal fisheries contribute more than 15% of national animal protein supply.



It also supports approximately 33,000 people and their households across the fisheries sector.



The stock status of key demersal species remained unquantified for decades due to a lack of long-term monitoring

OBJECTIVE



Quantifying the spawning potential and exploitation status of four key demersal species using LBSPR and supporting analyses.

METHODOLOGY



22,239 length measurements from 9 coastal counties, 36 landing sites between April 2023 and June 2025

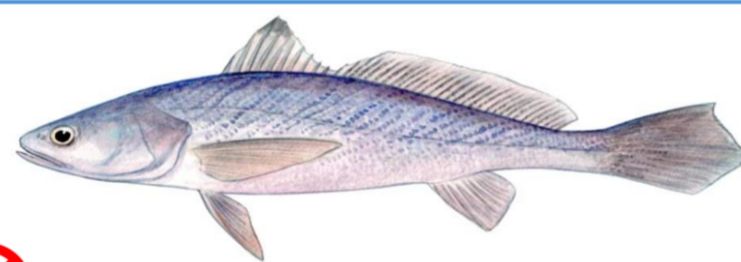
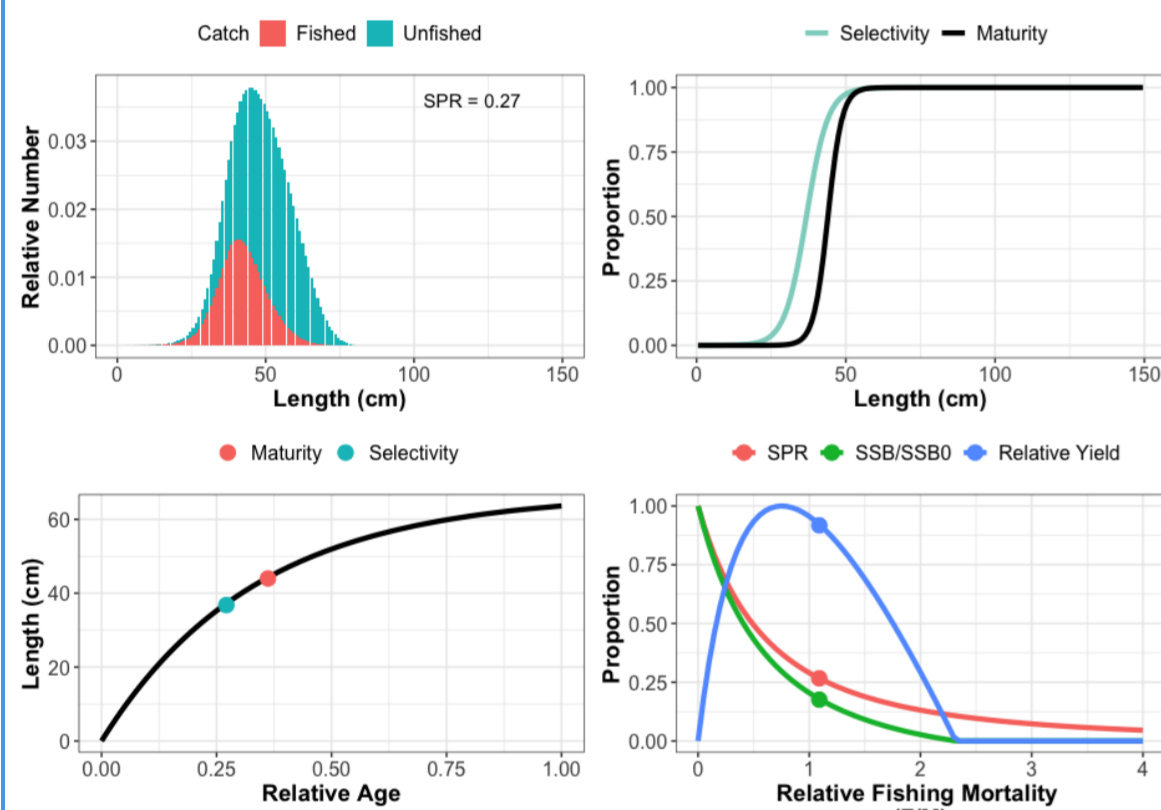


Analyzed in R with life history parameters from peer-reviewed literature.



KEY FINDINGS AND RECOMMENDATIONS

1 *Pseudotolithus senegalensis*

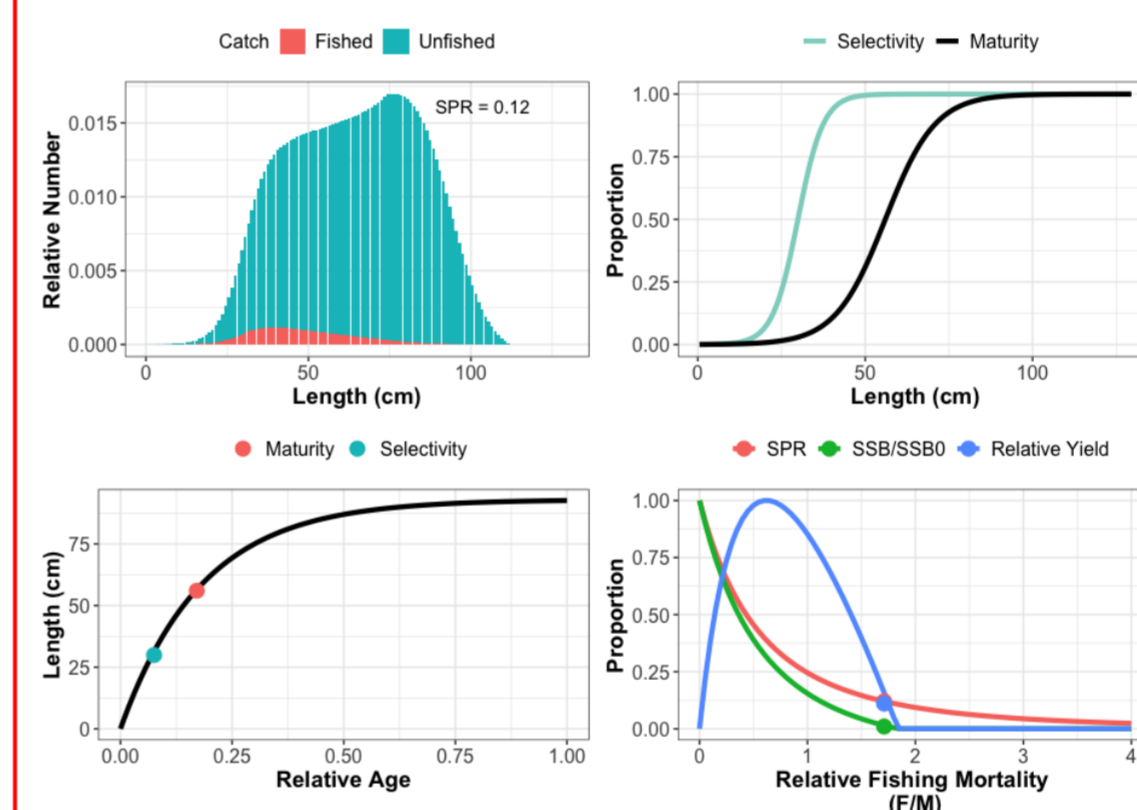


Stock is overfished
An SPR of 0.27 is below the target reference point of 0.40

Recommendation

Increase bottom-gillnet mesh size to allow fish to reach reproductive maturity before they are vulnerable to capture

2 *Pseudotolithus typus*

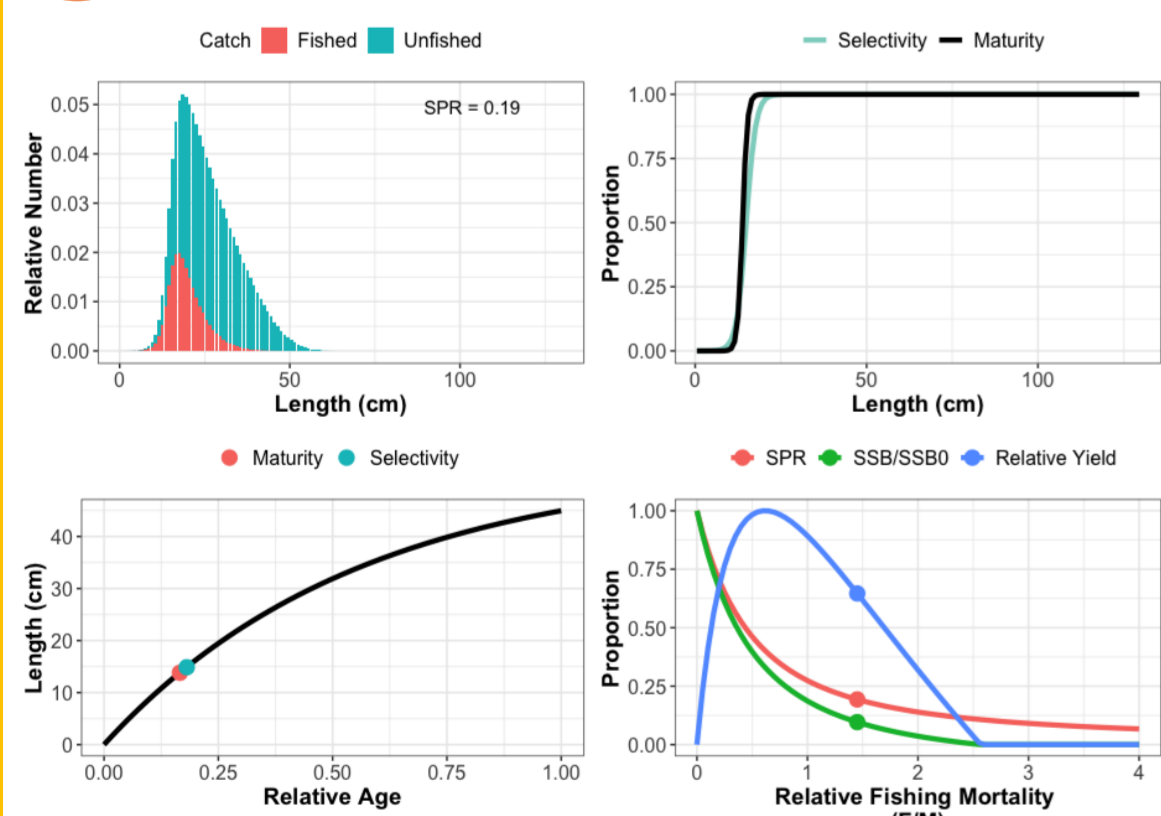


Stock is severely depleted
An SPR of 0.12
High risk of recruitment failure

Recommendation

Restrict ringnet use during peak spawning periods
Protect spawning areas through CMA co-management

3 *Galeoides decadactylus*

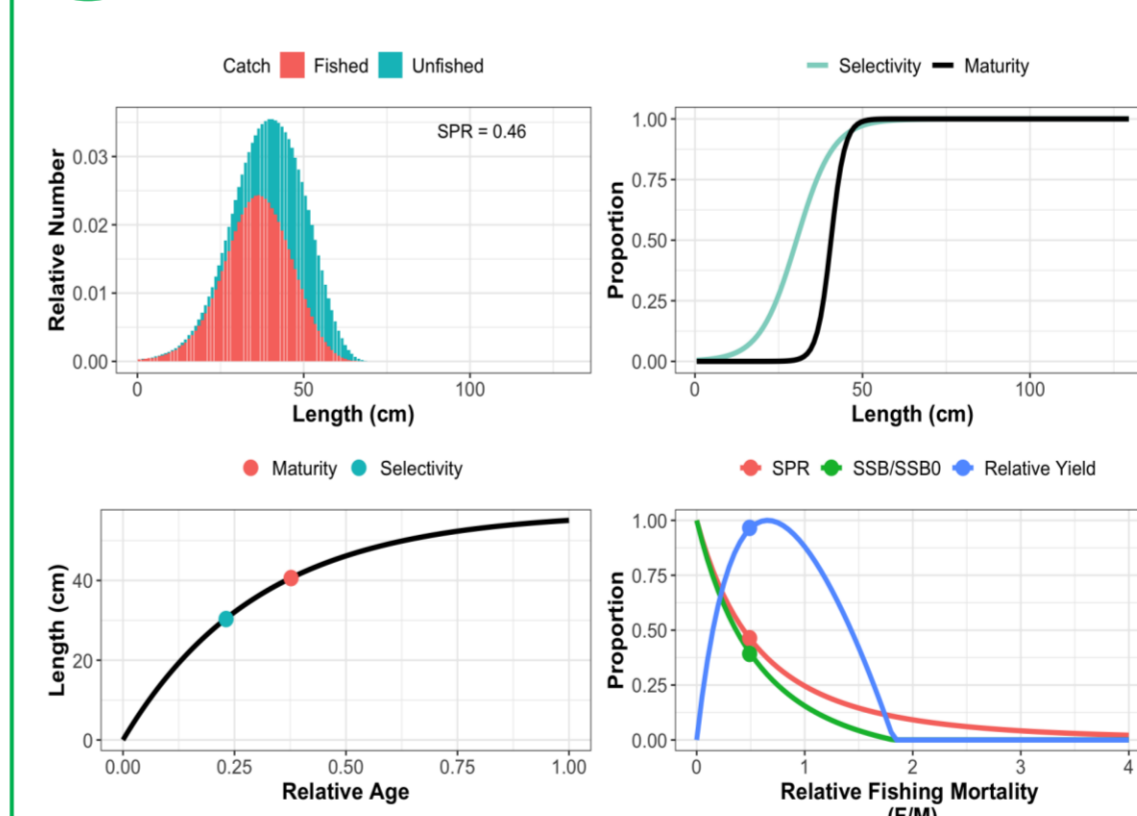


Stock is overfished
An SPR of 0.19 is below the target reference point of 0.40

Recommendation

Use larger gillnet mesh sizes and protect spawning grounds to ensure fish reproduce before capture

4 *Cynoglossus senegalensis*



Stock near sustainable threshold
An SPR of 0.46 is above the 40% threshold

Recommendation

Protect spawning areas through CMA co-management.

PSS	PTY	GAL	YOE
<i>P. senegalensis</i>	<i>P. typus</i>	<i>G. decadactylus</i>	<i>C. senegalensis</i>
F/M	F/M	F/M	F/M
1.09	1.71	1.45	0.49
OVERFISHED	CRITICAL	OVERFISHED	SUSTAINABLE

Three of four species are overexploited
PSS, PTY, & GAL below the 40% FMSY proxy

STRUCTURAL SELECTIVITY ISSUE



All species are caught before they reach reproductive maturity across all gear types
PTY most extreme.

CONSISTENT OVER TIME



Modal lengths stable across 2023-2025. No recovery signal detected

NO SPATIAL REFUGIA



Small mean catch lengths are consistent across all landing sites in Liberia



TAKE HOME MESSAGE

Liberia's artisanal demersal fisheries are in a state of multi-species overexploitation, driven by gear selectivity that captures fish below maturity. Targeted gear regulations and seasonal management under the CMA framework could improve stock status.

ACKNOWLEDGEMENTS

