

Stock Assessment for Opakapaka (*Pristipomoides filamentosus*) on U.S. West Coast in 2024

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1 Executive Summary

1.1 Assessment Model

1.2 Reference Points, Stock Status, and Projections

2 Introduction

Testing adding in an introduction for Opakapaka. There is currently no read of parameters for child documents.

2.1 Management History

2.2 Fishery Descriptions

2.3 Ecosystem Considerations

3 Data

3.1 Stock ID

3.2 Life History

3.3 Landings

3.4 Indices and Standardization

3.5 Composition Data

3.6 Absolute Abundance

3.7 Environmental/Ecosystem Indicator Data

4 Assessment

4.1 Current Modeling Approach

4.2 Configuration of the Base Model

4.3 Modeling Results

4.3.1 Parameter Estimates

4.3.2 Recruitment Estimates and Deviations

4.3.3 Model Fits

4.3.4 Model Diagnostics

4.4 Sensitivity Analyses

4.5 Management Benchmarks

4.6 Projections

5 Discussion

6 Acknowledgements

This document was produced using the Schiano, Breitbart, and Saul (2025) R package, which is free to use and publicly available on [GitHub](#).

7 References

Schiano, Samantha, Sophie Breitbart, and Steve Saul. 2025. *Asar: Build NOAA Stock Assessment Report*. <https://github.com/nmfs-ost/asar>.

8 Tables

Table 1: Historical biomass, spawning biomass, abundance, and catch time series estimated by the base configuration of the stock assessment model.

Year	Biomass (mt)	Spawning biomass (mt)	Abundance	Catch (mt)
1947	4,777.11		1,896	0.00
1948	4,777.11		1,896	0.00
1949	4,777.11	2,246.66	1,896	279.66
1950	4,641.52	2,179.63	1,858	289.44
1951	4,510.81	2,113.32	1,843	316.88
1952	4,377.74	2,044.76	1,799	302.22
1953	4,258.18	1,986.62	1,738	256.64
1954	4,160.80	1,948.78	1,684	258.92
1955	4,062.04	1,906.64	1,667	205.58
1956	3,997.79	1,869.64	1,692	262.90
1957	3,923.48	1,818.09	1,720	375.54
1958	3,827.78	1,752.89	1,780	237.14
1959	3,925.15	1,740.59	2,604	196.54
1960	4,183.90	1,757.48	2,524	178.72
1961	4,494.05	1,873.05	2,400	144.48
1962	4,775.95	2,190.18	2,275	193.42
1963	4,944.66	2,336.93	2,150	231.90

Year	Biomass (mt)	Spawning biomass (mt)	Abundance	Catch (mt)
1964	4,997.77	2,379.22	2,030	238.32
1965	4,963.74	2,368.27	1,920	264.26
1966	4,856.64	2,316.78	1,852	182.36
1967	4,757.41	2,261.79	1,826	307.54
1968	4,591.50	2,164.76	1,831	217.08
1969	4,495.83	2,096.09	1,927	217.34
1970	4,439.49	2,042.35	1,967	178.74
1971	4,426.33	2,027.56	1,895	150.76
1972	4,420.24	2,054.83	1,795	299.44
1973	4,312.23	2,041.11	1,674	238.52
1974	4,201.11	2,005.03	1,584	341.66
1975	4,012.52	1,915.49	1,499	260.32
1976	3,850.02	1,831.88	1,441	236.26
1977	3,696.23	1,751.52	1,405	239.40
1978	3,547.70	1,672.98	1,383	347.26
1979	3,359.19	1,574.78	1,337	322.42
1980	3,199.41	1,493.66	1,305	339.56
1981	3,047.92	1,419.27	1,275	445.64
1982	2,867.47	1,325.33	1,286	400.10

Year	Biomass (mt)	Spawning biomass (mt)	Abundance	Catch (mt)
1983	2,745.11	1,251.12	1,337	512.28
1984	2,615.34	1,163.14	1,388	352.66
1985	2,685.02	1,142.05	2,100	440.28
1986	2,834.91	1,128.24	1,958	392.12
1987	3,037.18	1,208.65	1,804	578.58
1988	3,095.31	1,400.97	1,621	674.46
1989	3,023.50	1,410.88	1,474	693.96
1990	2,879.00	1,337.82	1,414	474.26
1991	2,812.16	1,287.87	1,388	306.24
1992	2,812.18	1,275.74	1,348	384.94
1993	2,757.57	1,257.98	1,292	297.96
1994	2,733.16	1,257.61	1,281	386.08
1995	2,660.30	1,220.74	1,275	423.24
1996	2,570.25	1,168.69	1,241	312.64
1997	2,536.68	1,150.76	1,227	360.72
1998	2,474.57	1,128.19	1,159	336.50
1999	2,409.57	1,107.91	1,077	231.94
2000	2,374.23	1,107.91	1,013	381.42
2001	2,243.68	1,053.68	946	281.64

Year	Biomass (mt)	Spawning biomass (mt)	Abundance	Catch (mt)
2002	2,151.38	1,008.03	928	241.64
2003	2,080.79	964.42	939	290.04
2004	2,006.32	911.90	1,017	163.42
2005	2,022.04	901.62	1,039	194.64
2006	2,047.75	902.96	1,103	140.34
2007	2,123.17	942.88	1,156	168.74
2008	2,205.65	973.89	1,236	179.08
2009	2,306.03	1,015.27	1,330	248.50
2010	2,386.17	1,045.87	1,321	193.60
2011	2,489.15	1,104.69	1,300	278.18
2012	2,533.00	1,149.78	1,270	194.50
2013	2,610.81	1,190.45	1,386	176.88
2014	2,690.77	1,217.15	1,317	299.40
2015	2,687.39	1,217.20	1,239	285.80
2016	2,654.87	1,240.99	1,129	254.78
2017	2,595.31	1,229.21	1,026	249.48
2018	2,503.63	1,195.56	978	219.00
2019	2,420.13	1,145.25	1,059	129.70
2020	2,393.37	1,104.82	1,052	119.22

Year	Biomass (mt)	Spawning biomass (mt)	Abundance	Catch (mt)
2021	2,398.06	1,083.91	1,180	104.28
2022	2,447.46	1,101.09	1,256	150.38
2023	2,523.91	1,108.16	1,457	179.72

Table 2: Calculated indices of abundance and their corresponding CVs for the fleets and surveys identified in the column headers.

Year	Fleet 1		Fleet 2		Fleet 4	
	Estimated CPUE	Uncertainty	Estimated CPUE	Uncertainty	Estimated CPUE	Uncertainty
1949	91.71	0.09				
1950	88.99	0.10				
1951	86.26	0.08				
1952	83.74	0.08				
1953	81.86	0.07				
1954	80.08	0.07				
1955	78.30	0.08				
1956	76.50	0.08				
1957	74.34	0.08				
1958	73.02	0.08				
1959	73.36	0.08				
1960	77.90	0.08				
1961	89.24	0.09				
1962	95.23	0.08				
1963	97.79	0.06				
1964	98.07	0.07				

Year	Fleet 1		Fleet 2		Fleet 4	
	Estimated CPUE	Uncertainty	Estimated CPUE	Uncertainty	Estimated CPUE	Uncertainty
1965	96.65	0.07				
1966	94.37	0.08				
1967	91.28	0.07				
1968	88.10	0.08				
1969	85.85	0.07				
1970	84.91	0.07				
1971	85.58	0.07				
1972	85.52	0.06				
1973	83.79	0.07				
1974	80.84	0.06				
1975	77.20	0.06				
1977	70.71	0.06				
1978	67.18	0.06				
1979	63.63	0.06				
1980	60.53	0.05				
1981	57.08	0.05				
1982	53.69	0.05				
1983	50.52	0.05				

Year	Fleet 1		Fleet 2		Fleet 4	
	Estimated CPUE	Uncertainty	Estimated CPUE	Uncertainty	Estimated CPUE	Uncertainty
1984	48.70	0.06				
1985	48.32	0.05				
1986	51.20	0.05				
1987	58.78	0.04				
1988	59.65	0.04				
1989	57.34	0.05				
1990	54.69	0.06				
1991	53.64	0.05				
1992	53.35	0.05				
1993	52.88	0.05				
1994	51.86	0.05				
1995	49.99	0.04				
1996	48.71	0.04				
1997	47.97	0.05				
1998	46.99	0.05				
1999	46.46	0.05				
2000	45.05	0.05				
2001	42.80	0.05				

Year	Fleet 1		Fleet 2		Fleet 4	
	Estimated CPUE	Uncertainty	Estimated CPUE	Uncertainty	Estimated CPUE	Uncertainty
2002	40.92	0.05				
2003	39.05	0.05				
2004	37.97	0.06				
2005	38.09	0.06				
2006	39.25	0.07				
2007	40.57	0.07				
2008	42.22	0.07				
2009	43.77	0.06				
2010	45.83	0.06				
2011	47.98	0.05				
2012	49.28	0.05				
2013	50.44	0.06				
2014	51.20	0.06				
2015	52.00	0.05				
2016	51.47	0.06				
2017	50.26	0.06	28.75	0.33	1.61	0.20
2018	48.26	0.06	27.70	0.23	1.49	0.25
2019	46.35	0.06	26.91	0.23	1.43	0.29

Fleet 1			Fleet 2		Fleet 4	
Year	Estimated CPUE	Uncertainty	Estimated CPUE	Uncertainty	Estimated CPUE	Uncertainty
2020	45.53	0.07	26.62	0.23	1.51	0.29
2021	45.96	0.07	26.75	0.37	1.55	0.24
2022	46.39	0.07	27.25	0.22	1.65	0.17
2023	47.85	0.07	28.13	0.19	1.74	0.26

Table 3: Landed catch by fleet and year in mt.

Year	Fleet 1		Fleet 3	
	Landings (mt)	SE	Landings (mt)	SE
1949	50	0.01	90	0.01
1950	52	0.01	93	0.01
1951	56	0.01	102	0.01
1952	54	0.01	97	0.01
1953	46	0.01	83	0.01
1954	46	0.01	83	0.01
1955	36	0.01	66	0.01
1956	47	0.01	84	0.01
1957	68	0.01	120	0.01
1958	42	0.01	76	0.01
1959	35	0.01	63	0.01
1960	32	0.01	58	0.01
1961	26	0.01	47	0.01
1962	34	0.01	63	0.01
1963	42	0.01	74	0.01
1964	42	0.01	77	0.01
1965	48	0.01	85	0.01
1966	32	0.01	59	0.01
1967	54	0.01	99	0.01
1968	39	0.01	70	0.01
1969	39	0.01	70	0.01
1970	32	0.01	57	0.01
1971	27	0.01	48	0.01
1972	54	0.01	96	0.01
1973	42	0.01	77	0.01

Year	Fleet 1		Fleet 3	
	Landings (mt)	SE	Landings (mt)	SE
1974	61	0.01	110	0.01
1975	52	0.01	78	0.01
1976	48	0.01	70	0.01
1977	48	0.01	72	0.01
1978	71	0.01	102	0.01
1979	65	0.01	96	0.01
1980	69	0.01	101	0.01
1981	90	0.01	133	0.01
1982	80	0.01	120	0.01
1983	104	0.01	152	0.01
1984	71	0.01	105	0.01
1985	91	0.01	129	0.01
1986	79	0.01	117	0.01
1987	118	0.01	172	0.01
1988	136	0.01	201	0.01
1989	141	0.01	206	0.01
1990	96	0.01	141	0.01
1991	62	0.01	91	0.01
1992	78	0.01	115	0.01
1993	60	0.01	89	0.01
1994	78	0.01	115	0.01
1995	86	0.01	126	0.01
1996	63	0.01	93	0.01
1997	72	0.01	108	0.01
1998	68	0.01	100	0.01
1999	47	0.01	69	0.01
2000	76	0.01	114	0.01

Year	Fleet 1		Fleet 3	
	Landings (mt)	SE	Landings (mt)	SE
2001	57	0.01	84	0.01
2002	50	0.01	71	0.01
2003	59	0.01	86	0.01
2004	41	0.01	41	0.01
2005	48	0.01	50	0.01
2006	34	0.01	36	0.01
2007	41	0.01	44	0.01
2008	44	0.01	45	0.01
2009	60	0.01	64	0.01
2010	48	0.01	49	0.01
2011	68	0.01	71	0.01
2012	48	0.01	49	0.01
2013	43	0.01	45	0.01
2014	73	0.01	77	0.01
2015	71	0.01	72	0.01
2016	63	0.01	65	0.01
2017	61	0.01	64	0.01
2018	54	0.01	55	0.01
2019	32	0.01	33	0.01
2020	29	0.01	30	0.01
2021	26	0.01	26	0.01
2022	38	0.01	38	0.01
2023	44	0.01	46	0.01

9 Figures

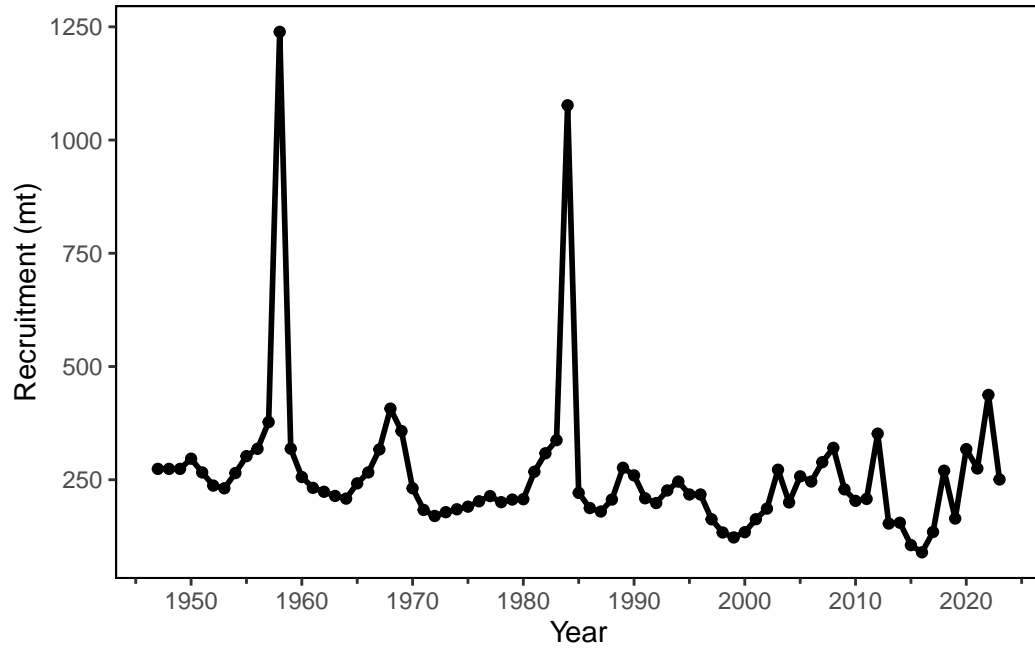


Figure 1: Estimated recruitment by the assessment model each year in mt.

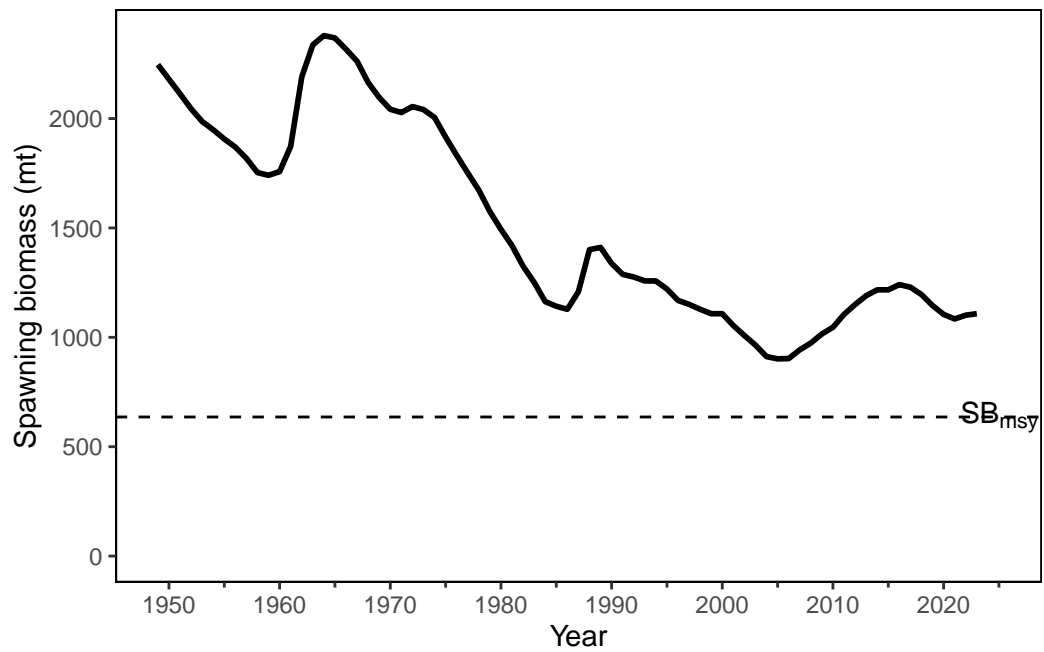


Figure 2: Model-estimated spawning stock biomass (SSB) time series. The horizontal dashed line represents the spawning stock biomass associated with the biomass limit reference point ($ssb.ref.pt$ mt).

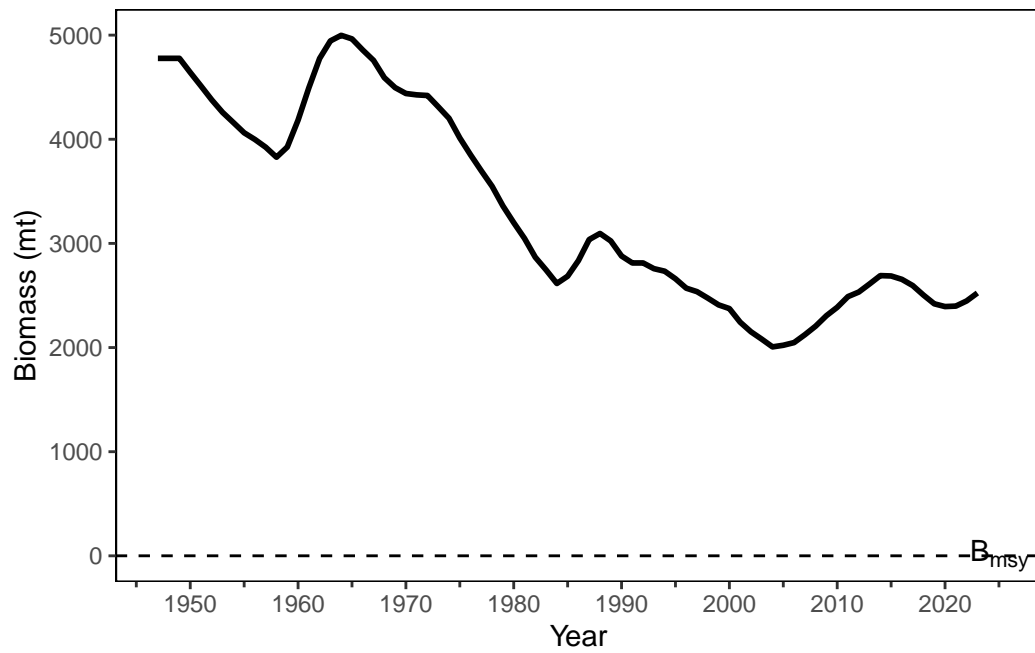


Figure 3: Biomass (B) time series. The horizontal dashed line represents the limit reference point ($B_{ref.pt}$ mt).

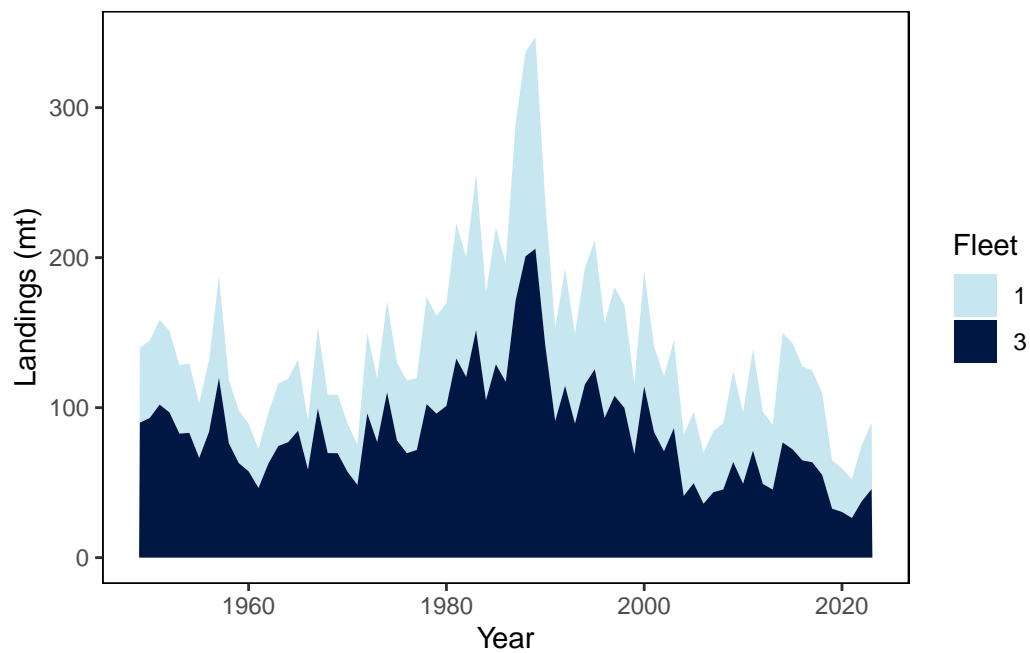


Figure 4: Historical landings by fleet.

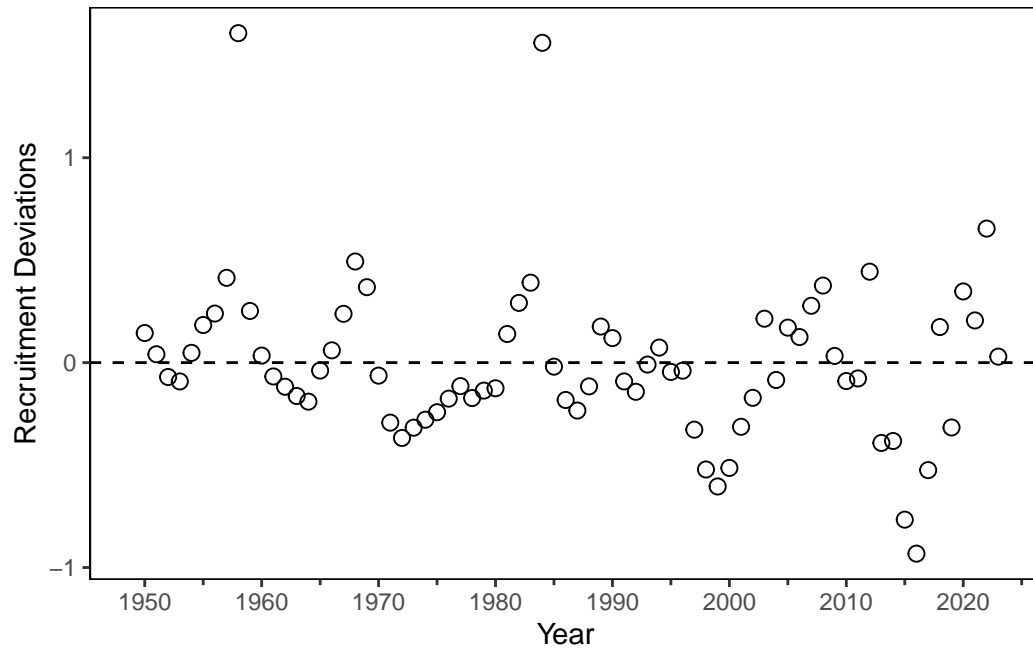


Figure 5: Annual deviations (on natural log scale) in the number of newly recruited fish the model estimates each year.

10 Notes

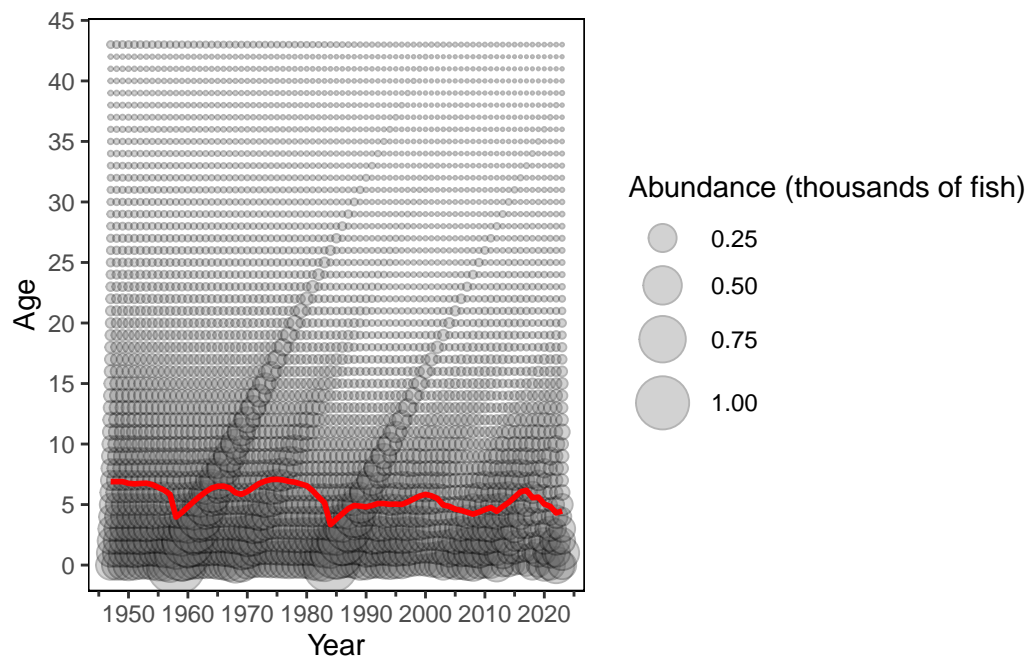


Figure 6: Model estimate of population numbers at age over time. The relative size of each bubble for a given year and age indicates the relative abundance in that category compared with others.

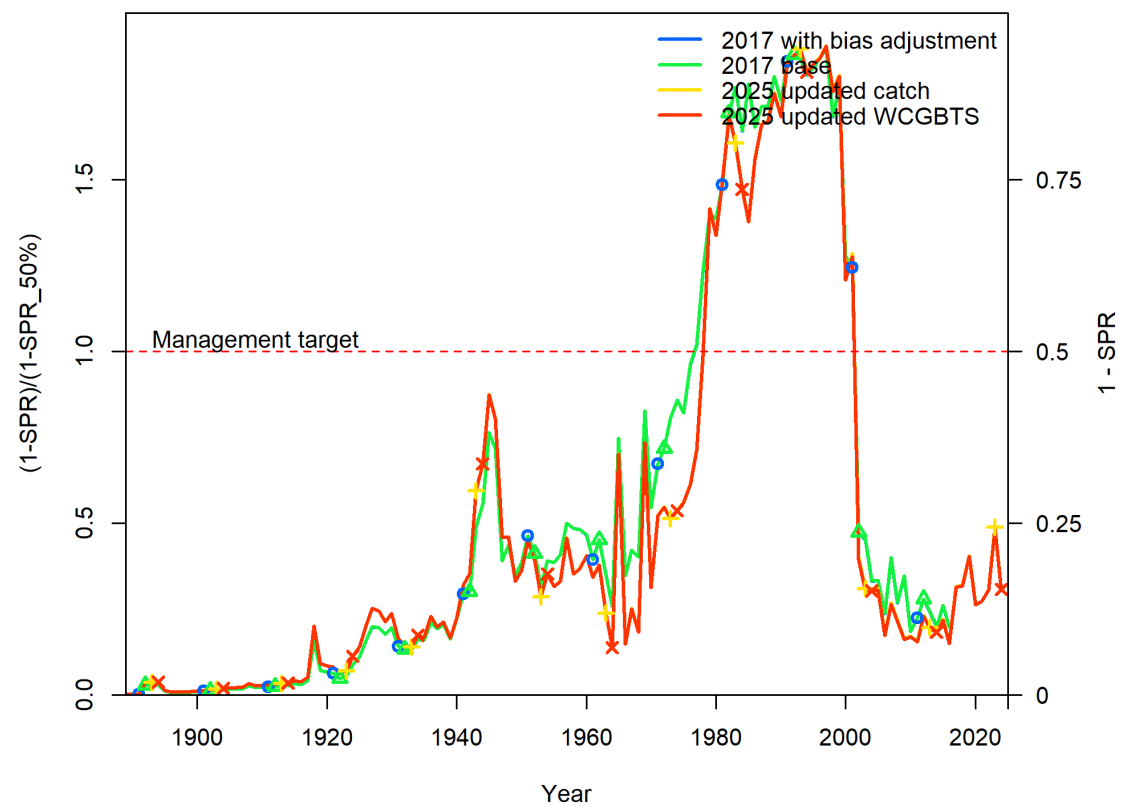


Figure 7: Plot showing the ratio of SPR to SPR50 4 models.

11 Appendices