Fisheries and Oceans Canada | Pêches et Océans Canada
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Canadian Science Advisory Secretariat
Pacific Region **Science Response 2019/nnn**

EVALUATING THE ROBUSTNESS OF CANDIDATE MANAGEMENT PROCEDURES IN THE BC SABLEFISH (*ANOPLOPOMA FIBRIA*) FOR 2019-2020.

October 2019

Canada

Tables

*Table 1. Operating model posterior distribution mean (standard deviation) biological parameter, reference point estimates, and stock status indicators for fits to the 2016 data and 2018 data. The columns **2016 Fit** and **2018 Fit** show the mean and standard deviation of the full posterior for the respective fits, while the remaining columns show posterior mean values from the five posterior strata defining the productivity/biomass scenarios indicated by the column label (see Figure 1). Stock status is shown relative to unfished (B_t/B_0), theoretical most productive spawning biomass (B_t/B_{MSY}), and the limit reference point ($B_t/(.4B_{MSY})$) for $t \in \{2016, 2018\}$. The bottom two rows show the posterior probability of spawning biomass being above the limit reference point in both 2016 and 2018.*

	2016 Fit	**2018 Fit**	**hiB**	**hih**	**loB**	**loh**	**mhmB**
B_0	57 (1.3)	54.1 (3.3)	55.6	53.9	52.2	54.2	54
M_m	0.0411 (0.00027)	0.0421 (0.0026)	0.0425	0.0419	0.0412	0.0422	0.042
M_f	0.0788 (0.0014)	0.0877 (0.0025)	0.087	0.0874	0.0879	0.0879	0.0876
h	0.556 (0.064)	0.617 (0.062)	0.62	0.689	0.617	0.545	0.618
B_{2016}	10.9 (1.2)	12.5 (1.4)	14	12.4	11	12.5	12.5
B_{2018}		16.3 (2)	18.6	16.2	14.1	16.4	16.3
B_{MSY}	23.4 (0.96)	20.4 (1.7)	20.9	18.9	19.8	21.9	20.4
U_{MSY}	0.0433 (0.0062)	0.0734 (0.01)	0.0736	0.0853	0.0729	0.0619	0.0733
Legal U_{MSY}	0.0423 (0.006)	0.0773 (0.011)	0.0775	0.0902	0.0766	0.0647	0.0771
MSY	2.79 (0.27)	4.37 (0.45)	4.46	4.75	4.27	3.98	4.38
B_{2016}/B_0	0.191 (0.018)	0.231 (0.021)	0.253	0.231	0.212	0.232	0.231
B_{2016}/B_{MSY}	0.467 (0.049)	0.613 (0.065)	0.673	0.66	0.558	0.573	0.612
$B_{2016}/(.4B_{MSY})$	1.17 (0.12)	1.53 (0.16)	1.68	1.65	1.39	1.43	1.53
B_{2018}/B_0		0.301 (0.032)	0.335	0.301	0.271	0.304	0.302
B_{2018}/B_{MSY}		0.8 (0.096)	0.891	0.86	0.714	0.75	0.799
$B_{2018}/(.4B_{MSY})$		2 (0.24)	2.23	2.15	1.79	1.88	2
$P(B_{2016} \geq .4B_{MSY})$	0.93	1					
$P(B_{2018} \geq .4B_{MSY})$		1					

*Table 2. Weighted performance metrics for all candidate management procedures on the **reference operating models**. Conservation performance metrics that pass the criteria in the header are indicated by a bullet. Catch is given in biomass units, which are measured in kilotonnes. Table is sorted by 10 year average catch $\bar{C}_{2019:2028}$. For Objective 2, Obs refers to the observed probability of decline, and Acc to the acceptable probability of decline, linearly interpolated between 0.05 at $0.4B_{MSY}$ and 0.5 at B_{MSY}.*

		Objective 1	**Objective 2**	**Objective 3**	**Objective 4**	**Objective 5**	**Other Important Quantities**			
		P > .95	**Obs < Acc**	**P > .5**	**min**	**max**				
No.	**MP Label**	$P(B_t \geq .4B_{MSY})$	$P(Decline)$	$P(B_{2052} > B_{MSY})$	$P(C_t < 1.992)$	$\bar{C}_{2019:2028}$	AAV	C_{2019}	$B_{2019}/B0$	F_{2022}
14	NSL	•	•	•	0.01	4.510	8	3.39	0.35	0.0738
17	cap0_am5	•	•	•	0.02	4.112	8	3.39	0.35	0.0783
3	cap.5_hstAl_am5	•	•	•	0.02	4.005	8	3.39	0.35	0.0728
16	cap0_am10	•	•	•	0.02	4.005	8	3.39	0.35	0.0699
5	cap.5_rctAl_am5	•	•	•	0.02	3.930	8	3.39	0.35	0.0712
7	cap1.0_hstAl_am5	•	•	•	0.02	3.927	8	3.39	0.35	0.0680
2	cap.5_hstAl_am10	•	•	•	0.02	3.921	8	3.39	0.35	0.0665
4	cap.5_rctAl_am10	•	•	•	0.02	3.864	8	3.39	0.35	0.0654
6	cap1.0_hstAl_am10	•	•	•	0.02	3.850	8	3.39	0.35	0.0636
11	cap1.5_hstAl_am5	•	•	•	0.02	3.842	8	3.39	0.35	0.0638
10	cap1.5_hstAl_am10	•	•	•	0.02	3.804	8	3.39	0.35	0.0613
8	cap1.0_rctAl_am10	•	•	•	0.03	3.782	8	3.39	0.35	0.0624
9	cap1.0_rctAl_am5	•	•	•	0.02	3.767	8	3.39	0.35	0.0651
15	noCap	•	•	•	0.03	3.729	7	3.39	0.35	0.0582
12	cap1.5_rctAl_am10	•	•	•	0.03	3.721	8	3.39	0.35	0.0603
13	cap1.5_rctAl_am5	•	•	•	0.02	3.702	8	3.39	0.35	0.0621
1	NoFish	•	•	•	1.00	0.000	0	0.00	0.35	0.0550

Table 3. Price per pound of Sablefish in each weight class. Weight classes are defined by the limits of that class, in pounds (e.g., 2/3 is the class of fish between 2 and 3 pounds).

Weight Class (lb)	Price ($/lb)
0/2	6.0
2/3	7.7
3/4	8.0
4/5	9.0
5/7	11.0
7+	12.0

*Table 4. Weighted economic performance metrics for the first 10 years of the projections in the **reference operating models**. Column 3 shows the average catch over the first 10 years, and the remaining columns show the total cumulative revenue ($m) of catch C and discards D for each sector, catch revenue C^{tot} for all sectors combined, and the yearly average revenue R in dollars per tonne of catch, over the next 10 years. All values are taken at 4 significant figures. Table is sorted by 10 year average catch $\bar{C}_{2019:2028}$.*

		Av. Catch (kt)	10 year revenue ($ millions)							Av. revenue ($/t)		
No.	**MP Label**	$\bar{C}_{2019:2028}$	C^{trap}	C^{hook}	C^{trawl}	D^{trap}	D^{hook}	D^{trawl}	C^{tot}	R^{trap}	R^{hook}	R^{trawl}
14	NSL	4.510	417.6	335.4	60.81	0.000	0.00	0.00	813.9	17970	18320	16270
17	cap0_am5	4.112	385.7	321.0	42.67	10.950	13.45	25.81	749.4	18130	18340	17320
3	cap.5_hstAl_am5	4.005	370.9	312.5	46.34	10.550	13.08	27.75	729.7	18130	18340	17330
16	cap0_am10	4.005	375.1	306.2	47.97	10.680	12.83	28.92	729.3	18130	18340	17330
5	cap.5_rctAl_am5	3.930	362.8	302.2	50.54	10.320	12.65	29.97	715.6	18140	18340	17330
7	cap1.0_hstAl_am5	3.927	358.3	305.8	50.07	10.210	12.78	29.71	714.2	18140	18340	17330
2	cap.5_hstAl_am10	3.921	364.1	299.3	49.78	10.400	12.53	29.86	713.2	18130	18340	17330
4	cap.5_rctAl_am10	3.864	358.6	292.9	52.15	10.240	12.27	31.12	703.6	18140	18340	17340
6	cap1.0_hstAl_am10	3.850	355.3	294.0	51.77	10.160	12.31	30.90	701.1	18140	18340	17340
11	cap1.5_hstAl_am5	3.842	348.0	298.1	52.75	9.943	12.46	31.14	698.9	18140	18340	17340
10	cap1.5_hstAl_am10	3.804	349.1	289.1	53.25	10.000	12.11	31.70	691.5	18140	18340	17340
8	cap1.0_rctAl_am10	3.782	348.5	284.7	55.07	9.982	11.93	32.71	688.3	18140	18340	17340
9	cap1.0_rctAl_am5	3.767	343.6	286.5	55.58	9.818	12.00	32.67	685.7	18140	18340	17340
15	noCap	3.729	347.9	277.5	53.58	10.010	11.66	32.11	679.0	18140	18340	17340
12	cap1.5_rctAl_am10	3.721	342.4	279.8	54.97	9.830	11.73	32.73	677.2	18140	18340	17340
13	cap1.5_rctAl_am5	3.702	336.7	280.8	56.10	9.642	11.76	33.18	673.6	18140	18340	17340
1	NoFish	0.000	0.0	0.0	0.00	0.000	0.00	0.00	0.0	0	0	0

*Table 5. Weighted performance metrics for all candidate management procedures on the **robustness operating models**. Conservation performance metrics that pass the criteria in the header are indicated by a bullet. Catch is given in biomass units, which are measured in kilotonnes. Table is sorted by 10 year average catch $\bar{C}_{2019:2028}$. For Objective 2, Obs refers to the observed probability of decline, and Acc to the acceptable probability of decline, linearly interpolated between 0.05 at $0.4B_{MSY}$ and 0.5 at B_{MSY}.*

		Objective 1	**Objective 2**	**Objective 3**	**Objective 4**	**Objective 5**	**Other Important Quantities**			
		P > .95	**Obs < Acc**	**P > .5**	**min**	**max**				
No.	**MP Label**	$P(B_t \geq .4B_{MSY})$	$P(Decline)$	$P(B_{2052} > B_{MSY})$	$P(C_t < 1.992)$	$\bar{C}_{2019:2028}$	AAV	C_{2019}	$B_{2019}/B0$	F_{2022}
14	NSL	•	•	•	0.08	2.767	11	3.39	0.24	0.0674
17	cap0_am5	•	•	•	0.15	2.505	14	3.40	0.24	0.0719
3	cap.5_hstAl_am5	•	•	•	0.18	2.440	15	3.40	0.24	0.0643
16	cap0_am10	•	•	•	0.18	2.435	15	3.40	0.24	0.0635
7	cap1.0_hstAl_am5	•	$0.27 > 0.26$	•	0.20	2.392	15	3.40	0.24	0.0589
2	cap.5_hstAl_am10	•	•	•	0.21	2.385	15	3.40	0.24	0.0592
5	cap.5_rctAl_am5	•	•	•	0.21	2.377	15	3.40	0.24	0.0622
6	cap1.0_hstAl_am10	•	•	•	0.22	2.364	15	3.40	0.24	0.0564
11	cap1.5_hstAl_am5	•	$0.27 > 0.26$	•	0.22	2.358	14	3.40	0.24	0.0556
4	cap.5_rctAl_am10	•	•	•	0.23	2.349	15	3.40	0.24	0.0580
10	cap1.5_hstAl_am10	•	•	•	0.24	2.340	14	3.40	0.24	0.0543
12	cap1.5_rctAl_am10	•	•	•	0.24	2.322	15	3.40	0.24	0.0540
8	cap1.0_rctAl_am10	•	•	•	0.24	2.322	15	3.40	0.24	0.0552
13	cap1.5_rctAl_am5	•	•	•	0.24	2.312	15	3.40	0.24	0.0546
9	cap1.0_rctAl_am5	•	•	•	0.24	2.309	16	3.40	0.24	0.0567
15	noCap	•	•	•	0.25	2.305	14	3.40	0.24	0.0524
1	NoFish	•	•	•	1.00	0.000	0	0.00	0.24	0.0550

*Table 6. Weighted economic performance metrics for the first 10 years of the projections in the **robustness operating models**. Column 3 shows the average catch over the first 10 years, and the remaining columns show the total cumulative revenue ($m) of catch C and discards D for each sector, catch revenue C^{tot} for all sectors combined, and the yearly average revenue R in dollars per tonne of catch, over the next 10 years. All values are taken at 4 significant figures. Table is sorted by 10 year average catch $\bar{C}_{2019:2028}$.*

		Av. Catch (kt)	**10 year revenue ($ millions)**							**Av. revenue ($/t)**		
No.	**MP Label**	$\bar{C}_{2019:2028}$	C^{trap}	C^{hook}	C^{trawl}	D^{trap}	D^{hook}	D^{trawl}	C^{tot}	R^{trap}	R^{hook}	R^{trawl}
14	NSL	2.767	256.2	205.8	36.44	0.000	0.000	0.00	498.5	18030	18340	15880
17	cap0_am5	2.505	237.6	195.3	22.96	6.304	8.055	17.00	455.8	18190	18360	17170
3	cap.5_hstAl_am5	2.440	226.8	189.8	26.25	5.976	7.804	19.56	442.8	18200	18370	17220
16	cap0_am10	2.435	229.9	186.1	26.50	6.061	7.657	20.09	442.5	18200	18360	17210
7	cap1.0_hstAl_am5	2.392	220.4	184.6	29.42	5.778	7.571	22.07	434.5	18200	18370	17230
2	cap.5_hstAl_am10	2.385	223.0	182.3	28.56	5.853	7.482	21.69	433.9	18200	18370	17230
5	cap.5_rctAl_am5	2.377	220.6	181.0	29.58	5.776	7.426	22.12	431.2	18200	18370	17230
6	cap1.0_hstAl_am10	2.364	219.4	179.3	30.70	5.741	7.351	23.39	429.4	18200	18370	17240
11	cap1.5_hstAl_am5	2.358	218.2	178.0	31.63	5.696	7.292	23.92	427.8	18200	18370	17240
4	cap.5_rctAl_am10	2.349	219.3	177.4	30.72	5.735	7.274	23.37	427.4	18200	18370	17240
10	cap1.5_hstAl_am10	2.340	217.2	175.1	32.03	5.670	7.176	24.50	424.3	18210	18370	17240
12	cap1.5_rctAl_am10	2.322	214.6	173.2	33.28	5.590	7.083	25.58	421.1	18210	18370	17240
8	cap1.0_rctAl_am10	2.322	215.0	173.8	33.06	5.605	7.114	25.30	421.9	18210	18370	17240
13	cap1.5_rctAl_am5	2.312	212.5	173.4	33.49	5.526	7.091	25.62	419.4	18210	18370	17240
9	cap1.0_rctAl_am5	2.309	212.7	174.3	33.22	5.537	7.131	25.16	420.2	18210	18370	17250
15	noCap	2.305	214.7	171.1	32.79	5.600	7.004	25.31	418.6	18210	18370	17240
1	NoFish	0.000	0.0	0.0	0.00	0.000	0.000	0.00	0.0	0	0	0

*Table 7. Weighted performance metrics for all candidate management procedures, with harvest rates tuned to performance on the **reference operating models**, and applied to the **robustness operating models** where recruitment is simulated stochastically off the stock-recruit curve for the 2015 year class. Conservation performance metrics that pass the criteria in the header are indicated by a bullet. Catch is given in biomass units, which are measured in kilotonnes. Table is sorted by 10 year average catch $\bar{C}_{2019:2028}$. For Objective 2, Obs refers to the observed probability of decline, and Acc to the acceptable probability of decline, linearly interpolated between 0.05 at $0.4B_{MSY}$ and 0.5 at B_{MSY}.*

		Objective 1	**Objective 2**	**Objective 3**	**Objective 4**	**Objective 5**	**Other Important Quantities**			
		P > .95	**Obs < Acc**	**P > .5**	**min**	**max**				
No.	**MP Label**	$P(B_t \geq .4B_{MSY})$	$P(Decline)$	$P(B_{2052} > B_{MSY})$	$P(C_t < 1.992)$	$\bar{C}_{2019:2028}$	AAV	C_{2019}	$B_{2019}/B0$	F_{2022}
14	NSL	•	•	$0.42 < 0.5$	0.09	2.920	11	3.39	0.24	0.0738
17	cap0_am5	•	$0.3 > 0.26$	$0.42 < 0.5$	0.13	2.632	14	3.40	0.24	0.0783
3	cap.5_hstAl_am5	•	$0.32 > 0.26$	$0.41 < 0.5$	0.14	2.612	14	3.40	0.24	0.0728
7	cap1.0_hstAl_am5	•	$0.34 > 0.26$	$0.4 < 0.5$	0.15	2.589	14	3.40	0.24	0.0680
16	cap0_am10	•	$0.32 > 0.26$	$0.41 < 0.5$	0.15	2.573	14	3.40	0.24	0.0699
5	cap.5_rctAl_am5	•	$0.33 > 0.26$	$0.4 < 0.5$	0.16	2.558	14	3.40	0.24	0.0712
2	cap.5_hstAl_am10	•	$0.32 > 0.26$	$0.42 < 0.5$	0.15	2.545	14	3.40	0.24	0.0665
11	cap1.5_hstAl_am5	•	$0.35 > 0.26$	$0.41 < 0.5$	0.17	2.542	14	3.40	0.24	0.0638
6	cap1.0_hstAl_am10	•	$0.34 > 0.26$	$0.42 < 0.5$	0.17	2.530	14	3.40	0.24	0.0636
4	cap.5_rctAl_am10	•	$0.33 > 0.26$	$0.42 < 0.5$	0.18	2.517	14	3.40	0.24	0.0654
10	cap1.5_hstAl_am10	•	$0.34 > 0.26$	$0.43 < 0.5$	0.19	2.499	13	3.40	0.24	0.0613
9	cap1.0_rctAl_am5	•	$0.34 > 0.26$	$0.41 < 0.5$	0.18	2.493	14	3.40	0.24	0.0651
8	cap1.0_rctAl_am10	•	$0.34 > 0.26$	$0.42 < 0.5$	0.19	2.489	14	3.40	0.24	0.0624
13	cap1.5_rctAl_am5	•	$0.34 > 0.26$	$0.41 < 0.5$	0.19	2.479	14	3.40	0.24	0.0621
12	cap1.5_rctAl_am10	•	$0.33 > 0.26$	$0.43 < 0.5$	0.20	2.464	14	3.40	0.24	0.0603
15	noCap	•	$0.33 > 0.26$	$0.44 < 0.5$	0.21	2.449	13	3.40	0.24	0.0582
1	NoFish	•	•	•	1.00	0.000	0	0.00	0.24	0.0550

*Table 8. Weighted performance metrics for all candidate management procedures, with harvest rates tuned to performance on the **robustness operating models**, and applied to the **reference operating models** accepting the high 2015 year class. Conservation performance metrics that pass the criteria in the header are indicated by a bullet. Catch is given in biomass units, which are measured in kilotonnes. Table is sorted by 10 year average catch $\bar{C}_{2019:2028}$. For Objective 2, Obs refers to the observed probability of decline, and Acc to the acceptable probability of decline, linearly interpolated between 0.05 at $0.4B_{MSY}$ and 0.5 at B_{MSY}.*

		Objective 1	**Objective 2**	**Objective 3**	**Objective 4**	**Objective 5**	**Other Important Quantities**			
		P > .95	**Obs < Acc**	**P > .5**	**min**	**max**				
No.	**MP Label**	$P(B_t \geq .4B_{MSY})$	$P(Decline)$	$P(B_{2052} > B_{MSY})$	$P(C_t < 1.992)$	$\bar{C}_{2019:2028}$	AAV	C_{2019}	$B_{2019}/B0$	F_{2022}
14	NSL	•	•	•	0.01	4.214	7	3.39	0.35	0.0674
17	cap0_am5	•	•	•	0.01	3.855	8	3.39	0.35	0.0719
16	cap0_am10	•	•	•	0.02	3.729	8	3.39	0.35	0.0635
3	cap.5_hstAl_am5	•	•	•	0.01	3.659	8	3.39	0.35	0.0643
2	cap.5_hstAl_am10	•	•	•	0.02	3.593	8	3.39	0.35	0.0592
5	cap.5_rctAl_am5	•	•	•	0.02	3.563	8	3.39	0.35	0.0622
4	cap.5_rctAl_am10	•	•	•	0.02	3.543	9	3.39	0.35	0.0580
6	cap1.0_hstAl_am10	•	•	•	0.02	3.541	9	3.39	0.35	0.0564
7	cap1.0_hstAl_am5	•	•	•	0.02	3.539	9	3.39	0.35	0.0589
11	cap1.5_hstAl_am5	•	•	•	0.02	3.489	9	3.39	0.35	0.0556
10	cap1.5_hstAl_am10	•	•	•	0.02	3.484	8	3.39	0.35	0.0543
8	cap1.0_rctAl_am10	•	•	•	0.02	3.466	9	3.39	0.35	0.0552
15	noCap	•	•	•	0.02	3.463	8	3.39	0.35	0.0524
12	cap1.5_rctAl_am10	•	•	•	0.02	3.438	9	3.39	0.35	0.0540
9	cap1.0_rctAl_am5	•	•	•	0.02	3.411	9	3.39	0.35	0.0567
13	cap1.5_rctAl_am5	•	•	•	0.02	3.380	9	3.39	0.35	0.0546
1	NoFish	•	•	•	1.00	0.000	0	0.00	0.35	0.0550

Figures

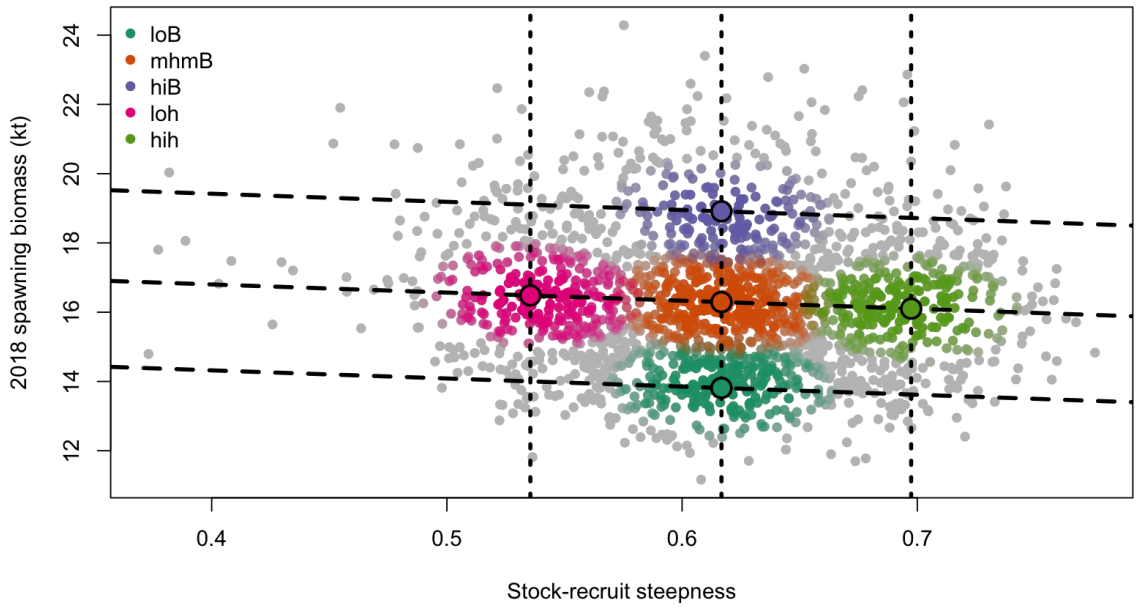

Figure 1. Joint marginal posterior distribution MCMC samples (grey dots) for stock-recruit steepness (h; x-axis) and spawning biomass in 2018 (B_{2018}; y-axis). Dashed lines indicate the mean, 10th and 90th percentiles of each marginal distribution, with the percentiles of the spawning biomass distribution adjusted to match the regression line between the two marginal distributions. Coloured dots with black borders at the intersections of selected percentiles are the sample centres for the 5 productivity and biomass operating model scenarios with labels matching columns of Table 1, with the coloured posterior MCMC samples showing the set of all points within a Mahalanobis distance of .6 from the centre of the same colour.

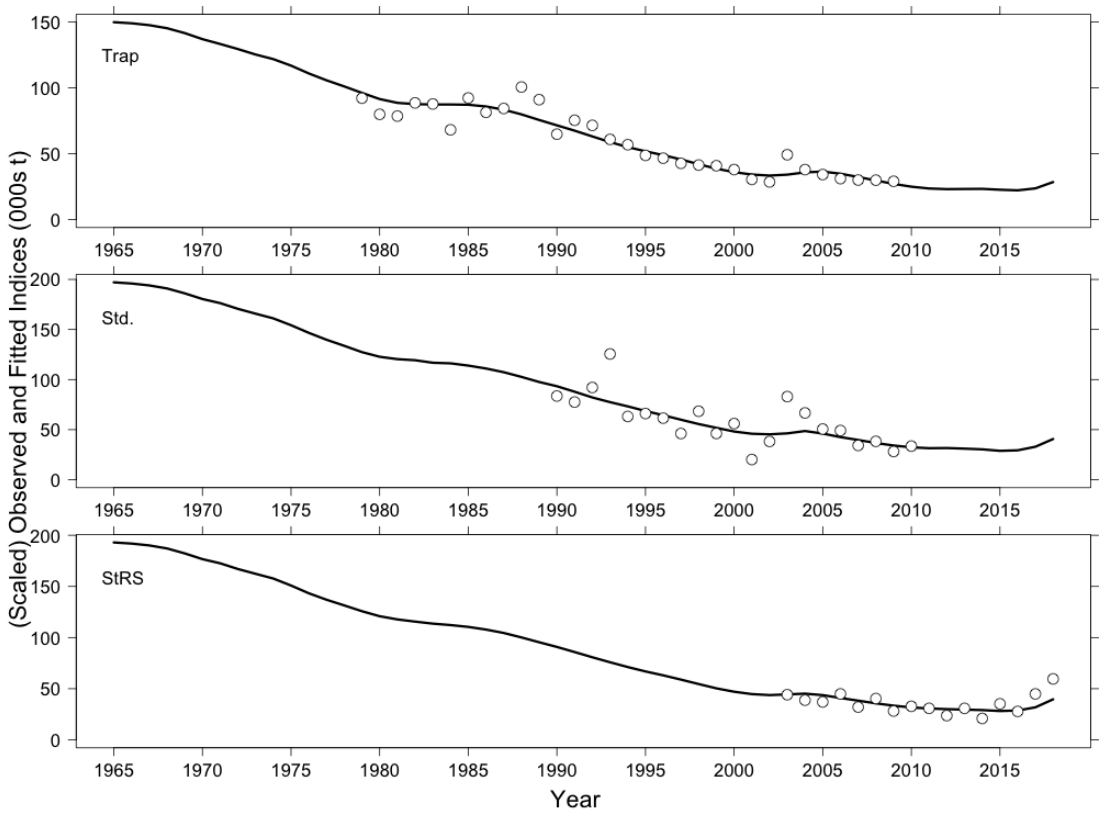

Figure 2. Operating model fits to Catch per Unit of Effort (CPUE) indices (kg/trap) from the commercial trap fishery (Trap, top), standardized Sablefish survey (Std., middle), and stratified random Sablefish survey (StRS, bottom). Points show observations scaled by catchability, and lines show operating model vulnerable biomass.

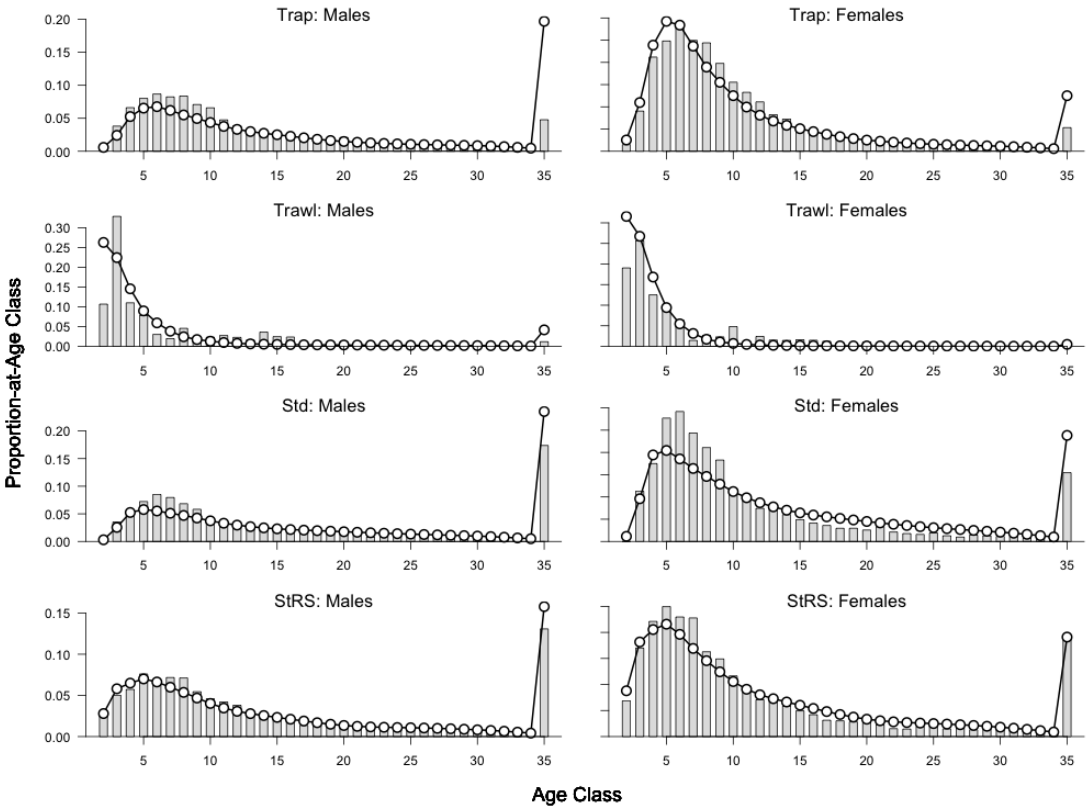

Figure 3. Averaged operating model fits to age observations for, from top to bottom, the commercial trap fishery (Trap), commercial trawl fishery (Trawl), standardized survey (Std.), and stratified random survey (StRS). Grey bars are the average proportion of age observations, and the points joined with a line show the average expected distribution of age observations in the operating model. Averages are taken over the years with observations.

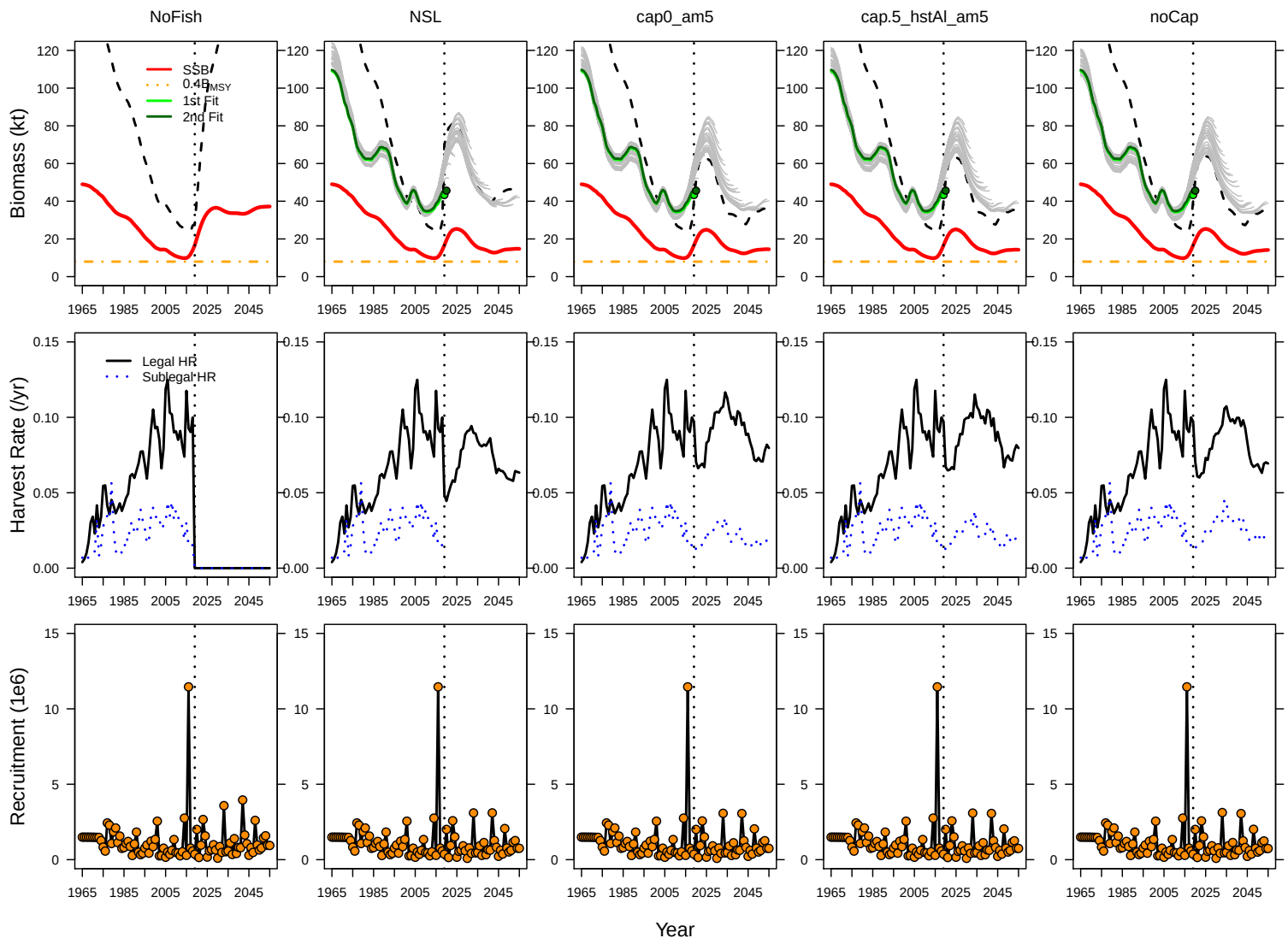

*Figure 4. A single simulation replicate drawn from the **reference operating models** with the high estimated 2015 year class. The top row of panels show the spawning biomass (red line), legal biomass (black dashed line), and surplus production model estimated biomass (green and grey lines) when estimated as part of the management procedure. The middle row shows the legal (black solid line) and sub-legal (blue dotted line) harvest rates, and the bottom row shows the OM recruitments (black line with orange points). First and second fit refer to the first and second years that the management procedure was applied.*

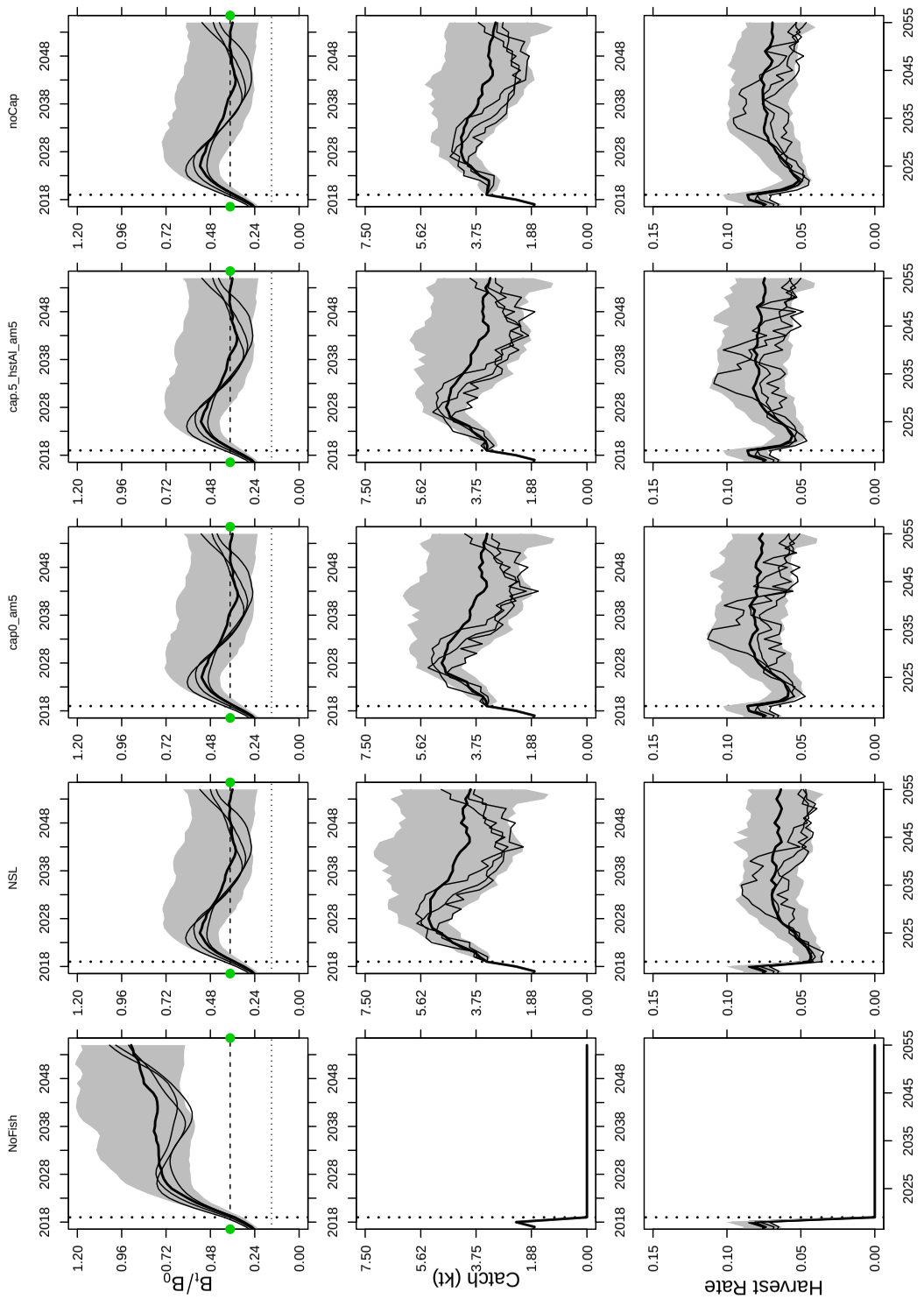

*Figure 5. Weighted combined simulation envelopes from the 5 productivity and biomass operating models in the **reference recruitment scenario**, showing the current MP (noCap),three illustrative at-sea-release regulation MPs, and the no fishing MP (NoFish). The top row shows projected biomass relative to unfished, the second row shows the landed catch, and the bottom row shows the legal harvest rate. In each panel, median projections are shown as thick black lines, the central 90 % of the envelope is shown as grey shading, and the three illustrated simulationa replicates as thin black lines.*

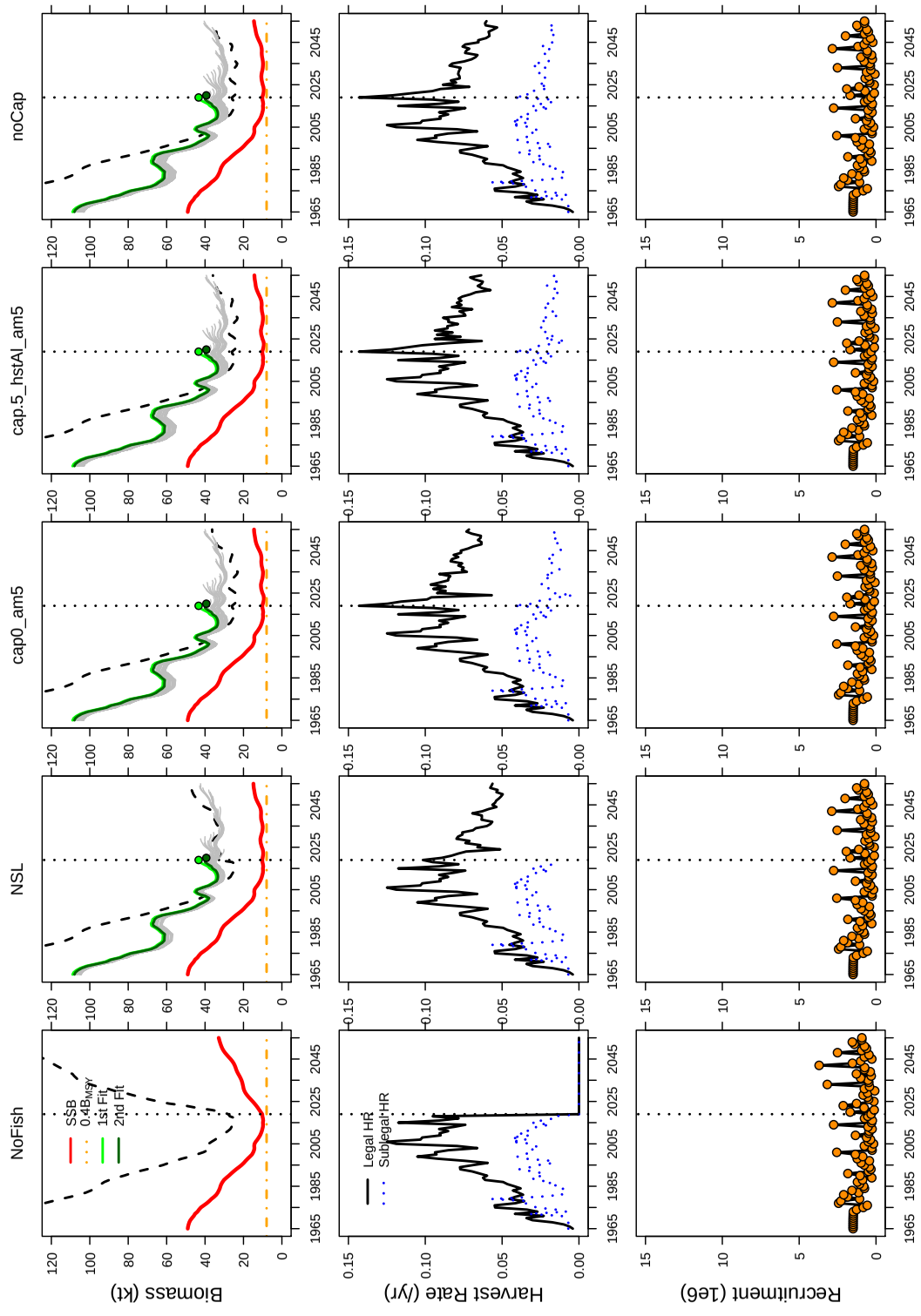

*Figure 6. A single simulation replicate drawn from the **robustness operating models** with a stochastically simulated 2015 year class. The top row of panels show the spawning biomass (red line), legal biomass (black dashed line), and surplus production model estimated biomass (green and grey lines) when estimated as part of the management procedure. The middle row shows the legal (black solid line) and sub-legal (blue dotted line) harvest rates, and the bottom row shows the OM recruitments (black line with orange points). First and second fit refer to the first and second years that the management procedure was applied.*

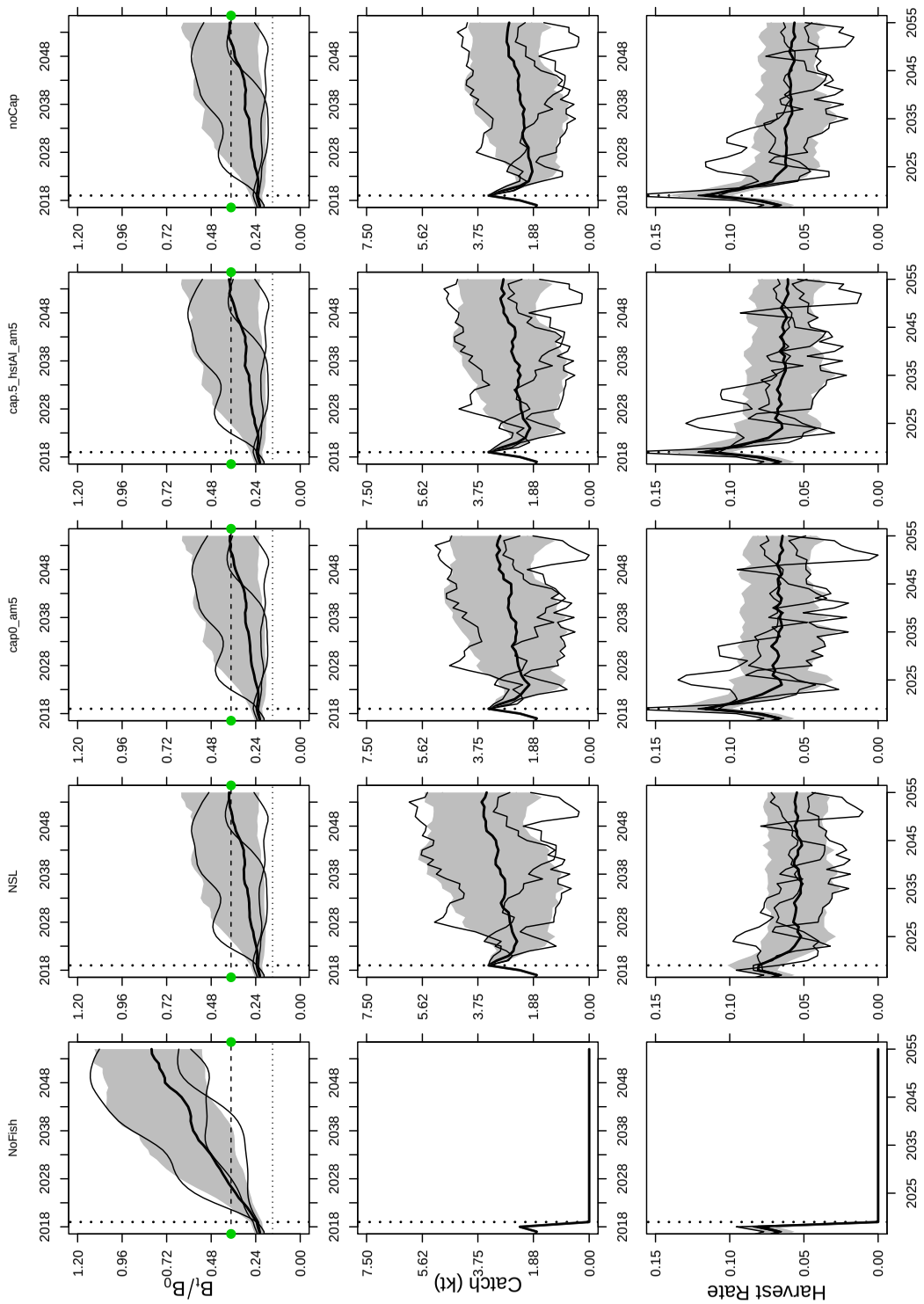

*Figure 7. Weighted combined simulation envelopes from the 5 productivity and biomass operating models in the **robustness recruitment scenario**, showing showing the current MP (noCap), three illustrative at-sea-release regulation MPs, and the no fishing MP (NoFish). The top row shows projected biomass relative to unfished, the second row shows the landed catch, and the bottom row shows the legal harvest rate. In each panel, median projections are shown as thick black lines, the central 90 % of the envelope is shown as grey shading, and the three illustrated simulationa replicates as thin black lines.*

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