NOAA FISHERIES

SEDAR 76 Black Seabass Projections

SSC February 9th

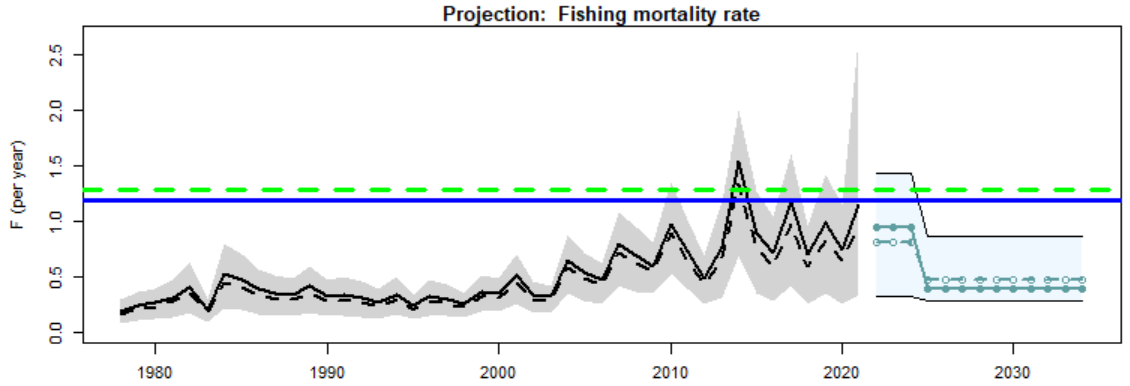
Where we left off

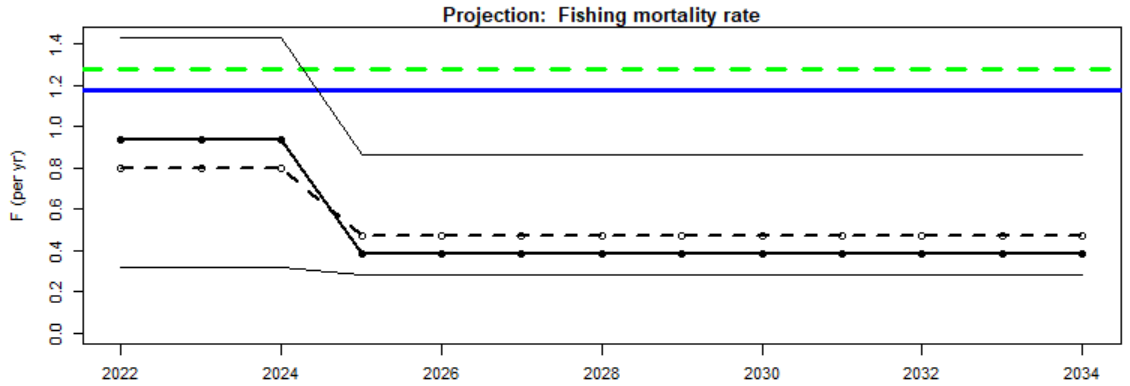
- Proposed using the recent recruitment, current discards, P* $F_{40\%}$ for landings scenario for the ABC and Long-term recruitment with reference F and current discards scenario for the OFL
  - Found that the OFL was greater than ABC in some years.
- Decided to use the rebuilding scenario for ABC and a similar scenario with recent mean recruitment for OFL
- Concerns that the F in 2022 from fitting to removals were high
  - Estimate of F > 3 from base model
  - Median F from stochastic projections 2.392
  - 95% confidence interval (0.51,7.53)

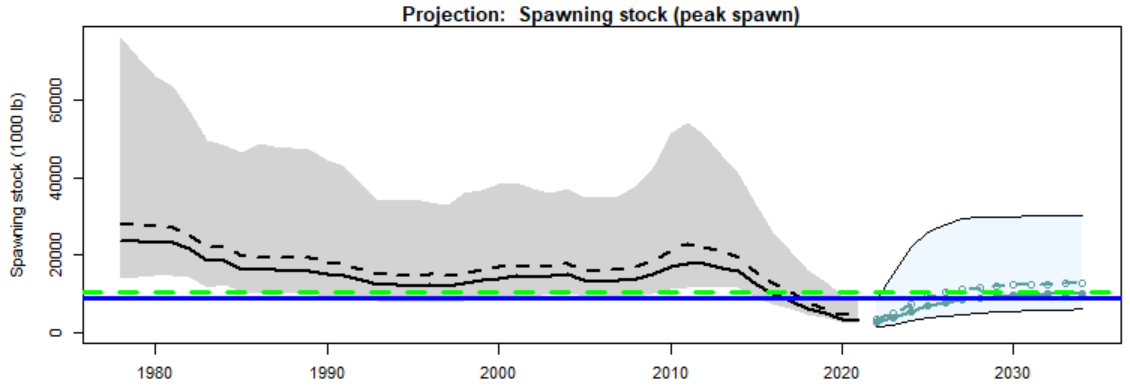
Projections

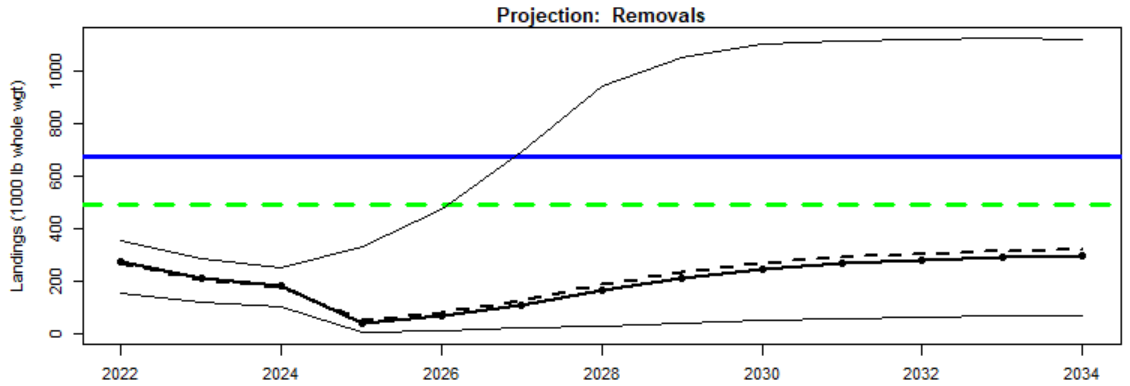
- Methodology remains the same except that F for 2022 is not calculated as fitting to 2022 landings but is average F of 2019-2021 from the stock assessment
- ABC scenario determined an $F_{Landings}$ that gives a 70% probability of rebuild assuming $F_{Discards} = D_{current}$ and long-term average recruitment
- OFL scenario assumes recent mean recruitment, $F_{Discards} = D_{current}$ and $F_{landings}$ from the ABC scenario.

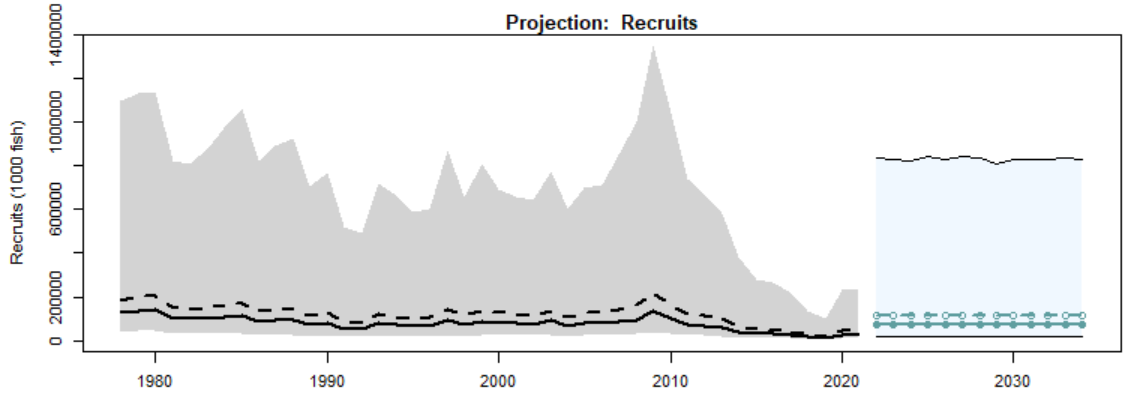
OFL Scenario – R0 $D_{current}$ $F_{70\% Rebuild}$

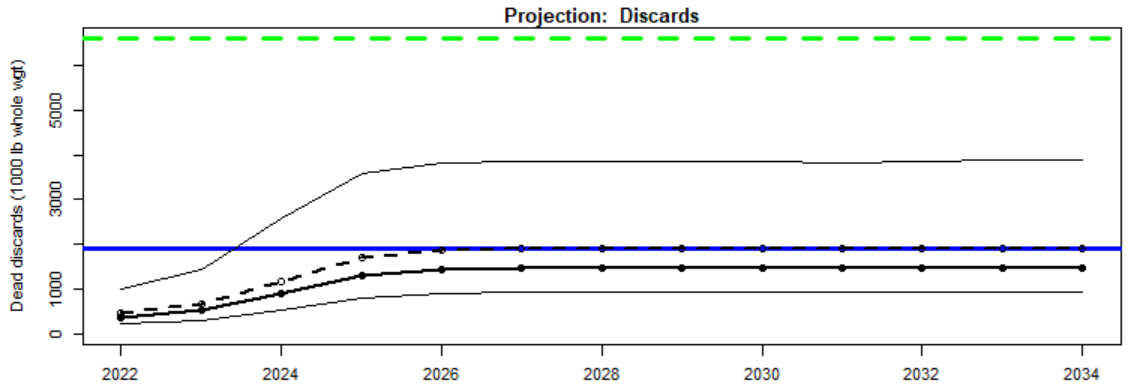




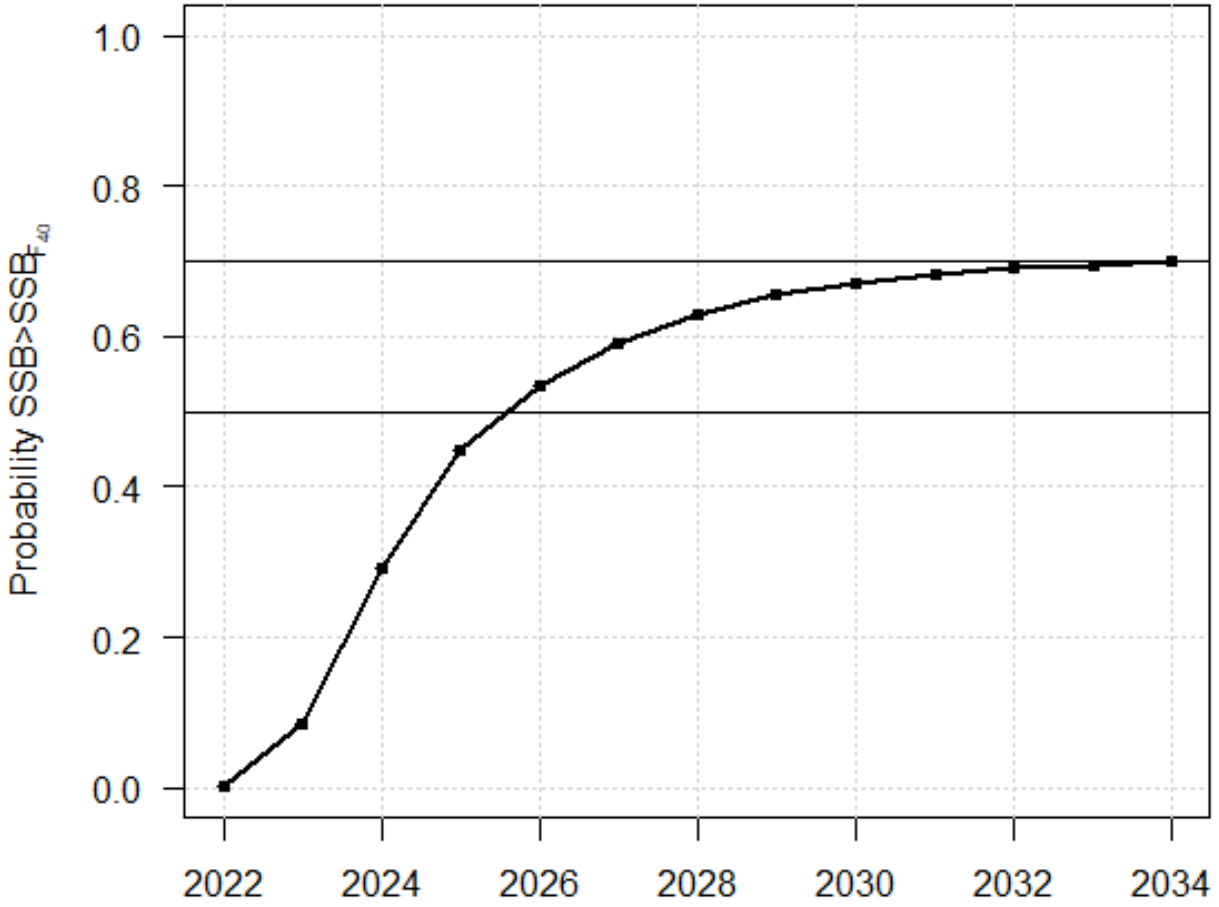


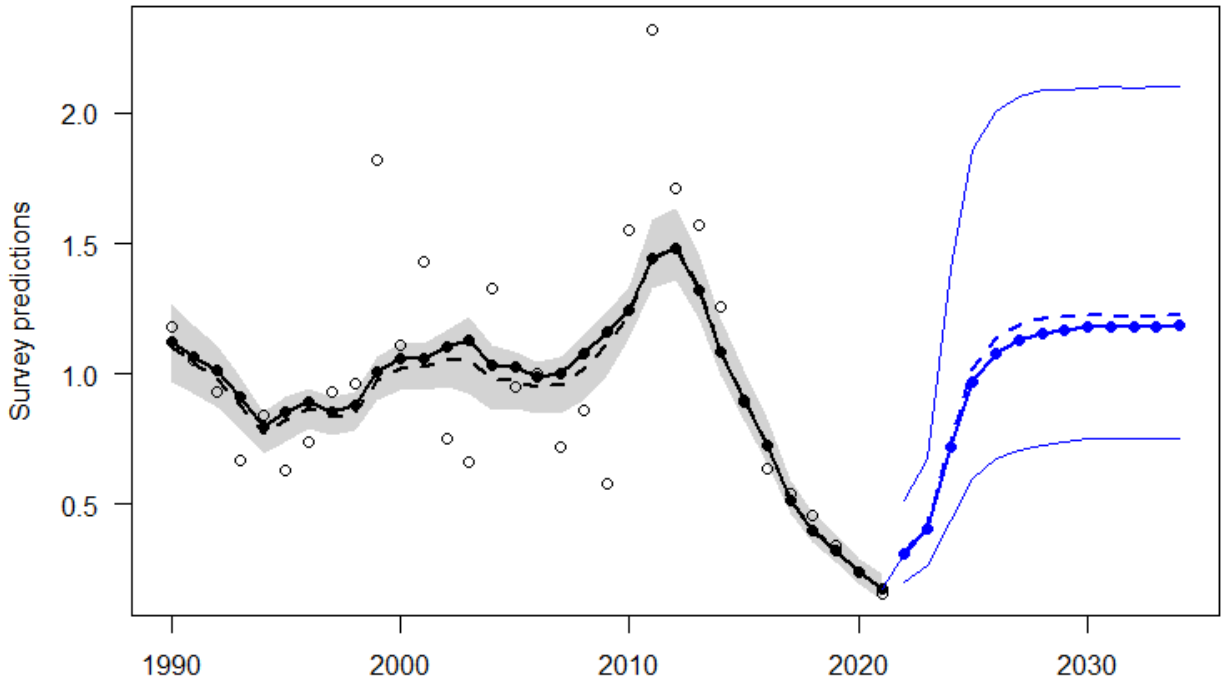






OFL Scenario – R0 $D_{current}$ $F_{70\% Rebuild}$



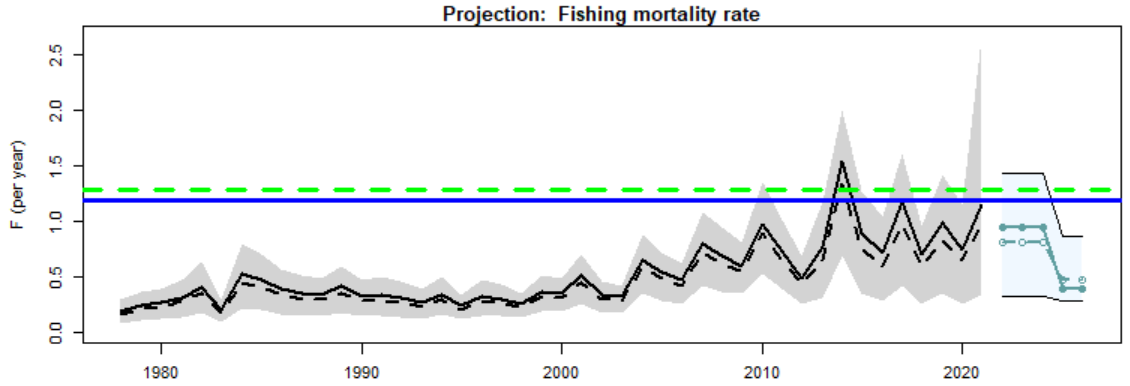


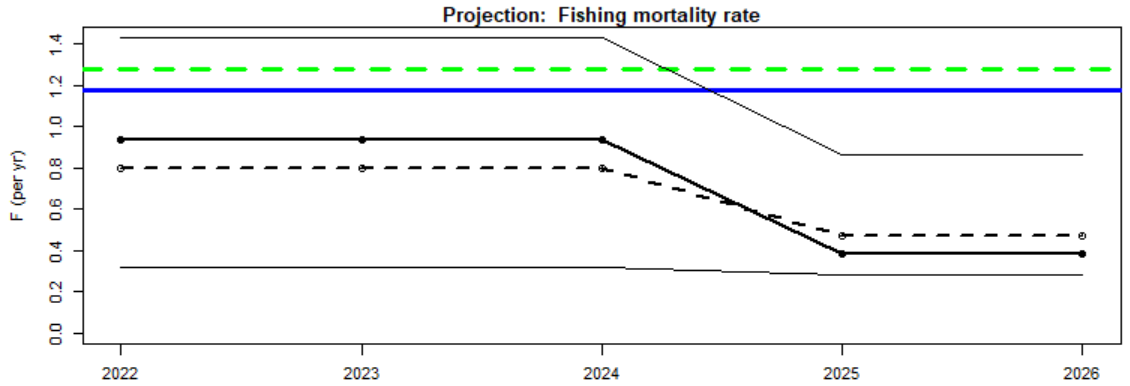
OFL Scenario – R0 $D_{current}$ $F_{70\%\ Rebuild}$

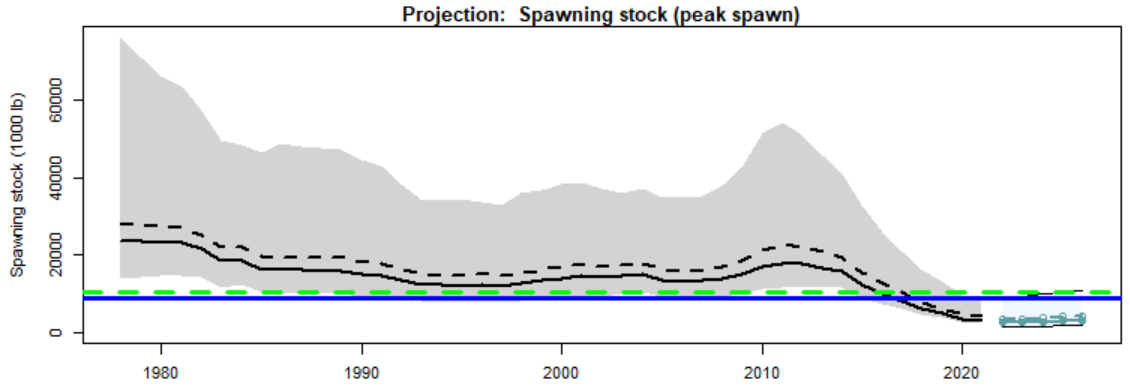
Table 1. Projection results with fishing mortality rate fixed at $F_{\text{Landed}} = F_{\text{Rebuild70\%}}$ *and* $F_{\text{Discard}} = F_{\text{current}}$ *starting in 2025 and longterm recruitment starting in 2023. R = number of age-0 recruits (in millions), F = fishing mortality rate (per year), S = spawning stock (1000* lb*), L = landings and D = discards expressed in numbers (n, in 1000s) or whole weight (w, in 1000* lb*), pr.reb = proportion of stochastic projection replicates with* $\text{SSB} \geq \text{SSB}_{\text{F40\%}}$*. The extension* b *indicates expected values (deterministic) from the base run; the extension* med *indicates median values from the stochastic projections.*

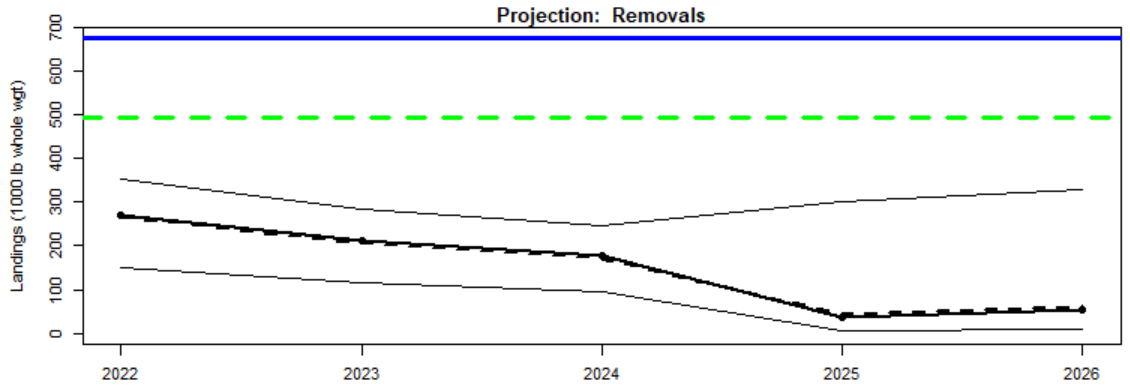
Year	R.b	R.med	F.b	F.med	S.b	S.med	L.b(n)	L.med(n)	L.b(w)	L.med(w)	D.b(n)	D.med(n)	D.b(w)	D.med(w)	pr.reb
2022	71	116	0.936	0.801	2469	3155	222	212	271	265	994	1293	359	459	0.002
2023	71	115	0.936	0.801	3644	4881	179	171	212	206	1489	1971	516	663	0.084
2024	71	114	0.936	0.801	5370	7280	168	160	179	174	2481	3309	892	1168	0.293
2025	71	116	0.383	0.474	6753	9078	39	49	39	48	3174	4266	1299	1709	0.450
2026	71	114	0.383	0.474	7721	10244	66	79	68	80	3331	4471	1430	1880	0.536
2027	71	115	0.383	0.474	8403	11009	100	118	109	125	3354	4500	1454	1906	0.592
2028	71	114	0.383	0.474	8901	11555	140	162	165	185	3356	4505	1456	1917	0.629
2029	71	115	0.383	0.474	9249	11862	170	193	211	233	3356	4497	1457	1906	0.655
2030	71	114	0.383	0.474	9487	12125	188	212	244	266	3356	4501	1457	1914	0.672
2031	71	115	0.383	0.474	9647	12244	199	224	266	289	3356	4491	1457	1906	0.681
2032	71	116	0.383	0.474	9754	12341	206	231	280	302	3356	4482	1457	1904	0.691
2033	71	115	0.383	0.474	9824	12469	211	235	290	311	3356	4473	1457	1907	0.695
2034	71	115	0.383	0.474	9869	12479	214	237	296	316	3356	4477	1457	1900	0.700

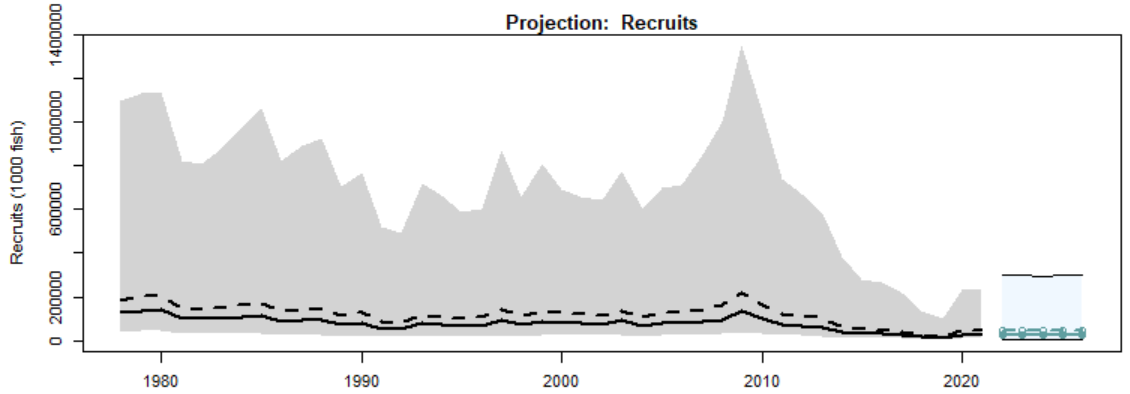
ABC Scenario – Rec-mu $D_{current}$ $F_{70\% Rebuild}$

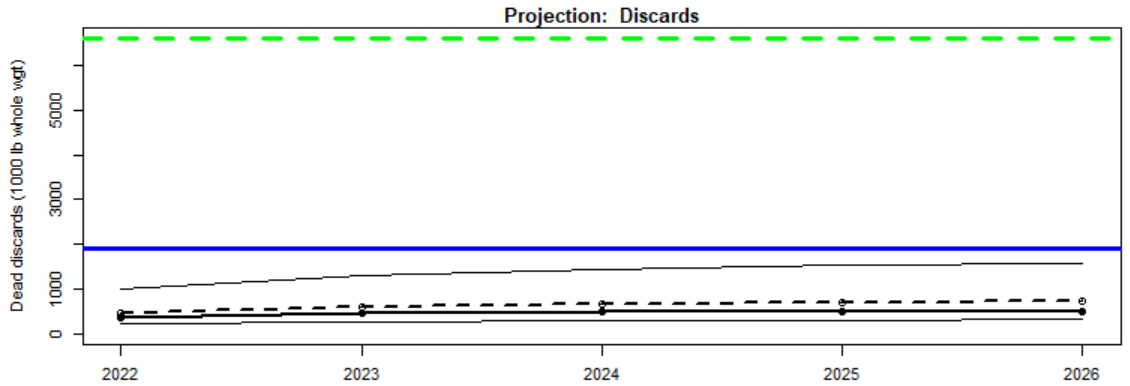




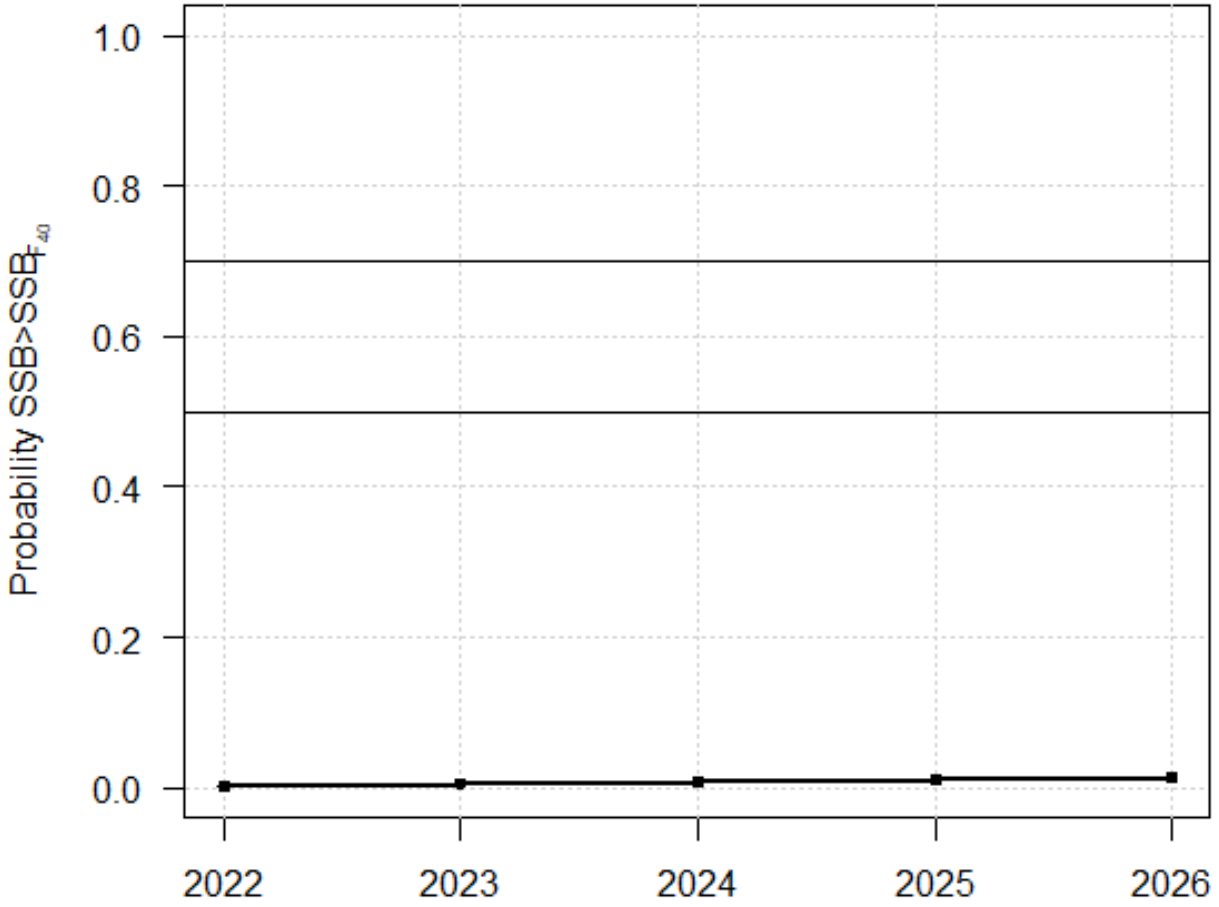


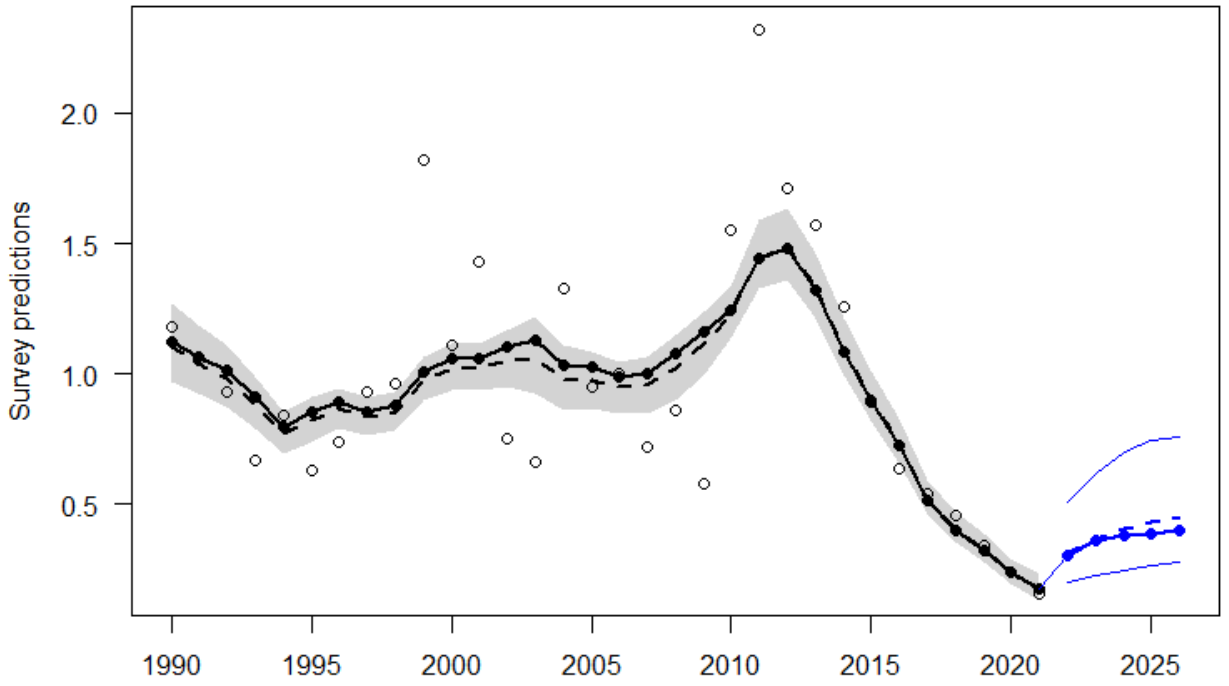






ABC Scenario – Rec-mu $D_{current}$ $F_{70\% \text{ Rebuild}}$





ABC Scenario – Rec-mu $D_{current}$ $F_{70\%\ Rebuild}$

Table 2. Projection results with fishing mortality rate fixed at $F_{\text{Landed}} = F_{\text{Rebuild70\%}}$ *and* $F_{\text{Discard}} = F_{\text{current}}$ *starting in 2025 and recent average recruitment starting in 2023. R = number of age-0 recruits (in millions), F = fishing mortality rate (per year), S = spawning stock (1000* lb*), L = landings and D = discards expressed in numbers (n, in 1000s) or whole weight (w, in 1000* lb*), pr.reb = proportion of stochastic projection replicates with* $\text{SSB} \geq \text{SSB}_{\text{F40\%}}$*. The extension* b *indicates expected values (deterministic) from the base run; the extension* med *indicates median values from the stochastic projections.*

Year	R.b	R.med	F.b	F.med	S.b	S.med	L.b(n)	L.med(n)	L.b(w)	L.med(w)	D.b(n)	D.med(n)	D.b(w)	D.med(w)	pr.reb
2022	25	44	0.936	0.801	2469	3155	222	212	271	265	924	1192	355	454	0.002
2023	25	43	0.936	0.801	2620	3449	178	169	211	206	1109	1454	458	582	0.005
2024	25	43	0.936	0.801	2734	3740	159	151	176	171	1151	1602	492	659	0.009
2025	25	43	0.383	0.474	2876	3979	32	40	35	43	1164	1678	503	708	0.012
2026	25	43	0.383	0.474	3062	4216	46	54	54	62	1167	1713	506	726	0.013