SEDAR 96: Southeastern U.S. Yellowtail Snapper

Joint SSC Meeting

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SEDAR 96: Yellowtail Snapper
Projections

https://www.saltwatersportsman.com/howto/fishing-for-snappers-in-the-bahamas/

Projection Scenarios

- *"Once projections are parameterized and the scientific uncertainty evaluated, provide yield and spawning stock biomass streams for the overfishing limit and acceptable biological catch in pounds (whole weight; TOR #2 sub-bullet 3):*
  - *Annually for five years using constant F*
  - *Under a "constant catch" scenario for both three and five years*
  - *For the equilibrium yield at F_{MSY}, when estimable"*

Projection Scenarios

Projection Methods

- Developed by SEFSC staff:
  - An iterative process to set fleet-specific Fs each year to ensure that a given constant fishing mortality rate (or constant catch) scenario is achieved
- Growth, stock-recruit parameters, fleet allocations, selectivity & retention
  - Set as the average of the last 3-year estimates from the base model
    - Fleet allocations: Comm (40.8%), Headboat (5.0%), MRIP SRFS (54.2%)
- Recruitment (age-0) in Jan 2024
  - SSC Catch Level Projections Workgroup Final Report, April 2022
  - For equilibrium (long-term) projections: predicted by using the estimated S-R parameters & SSB in 2023.
  - For short-term projections: equal to the geometric mean of 2019 – 2023.

Projection Scenarios

- *Annually for five years using constant F*
  - $F_{30\%SPR} = 0.392\ yr^{-1}$
  - $F_{P^*=0.375} = 0.385\ yr^{-1}$
  - $F_{current} = 0.263\ yr^{-1}$
  - $F_{75\%\_F30\%SPR} = 0.294\ yr^{-1}$
  - $F_{40\%SPR} = 0.248\ yr^{-1}$
- *Under a "constant catch" scenario for both three and five years*
  - 3-yr and 5-yr based on $F_{30\%SPR}$
  - 3-yr and 5-yr based on $F_{P^*=0.375}$
  - *For the equilibrium yield at F_{MSY}, when estimable*

Constant F Projection Scenarios

- $F_{30\%SPR} = 0.392\ yr^{-1}$
- $F_{P^*=0.375} = 0.385\ yr^{-1}$
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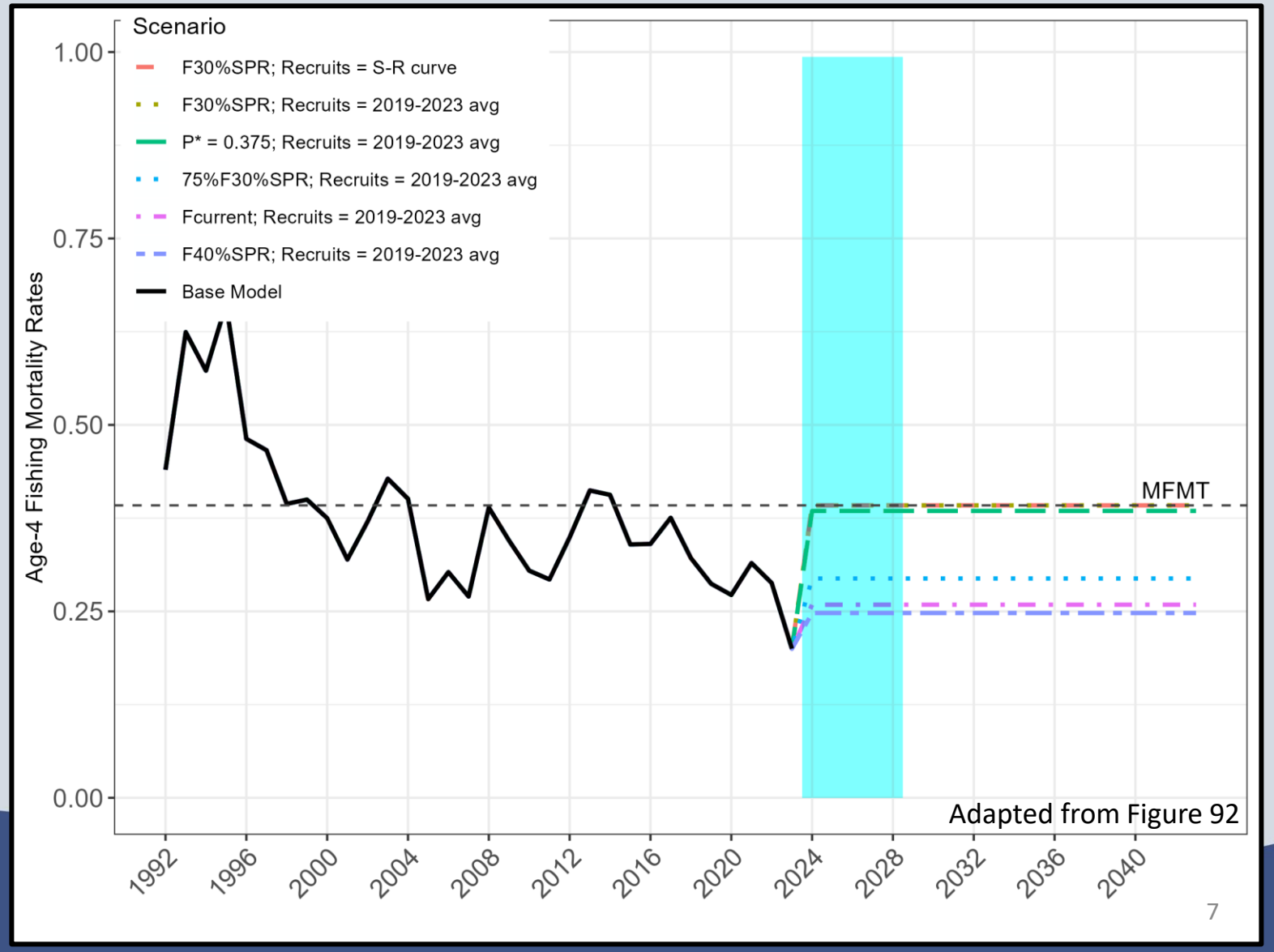
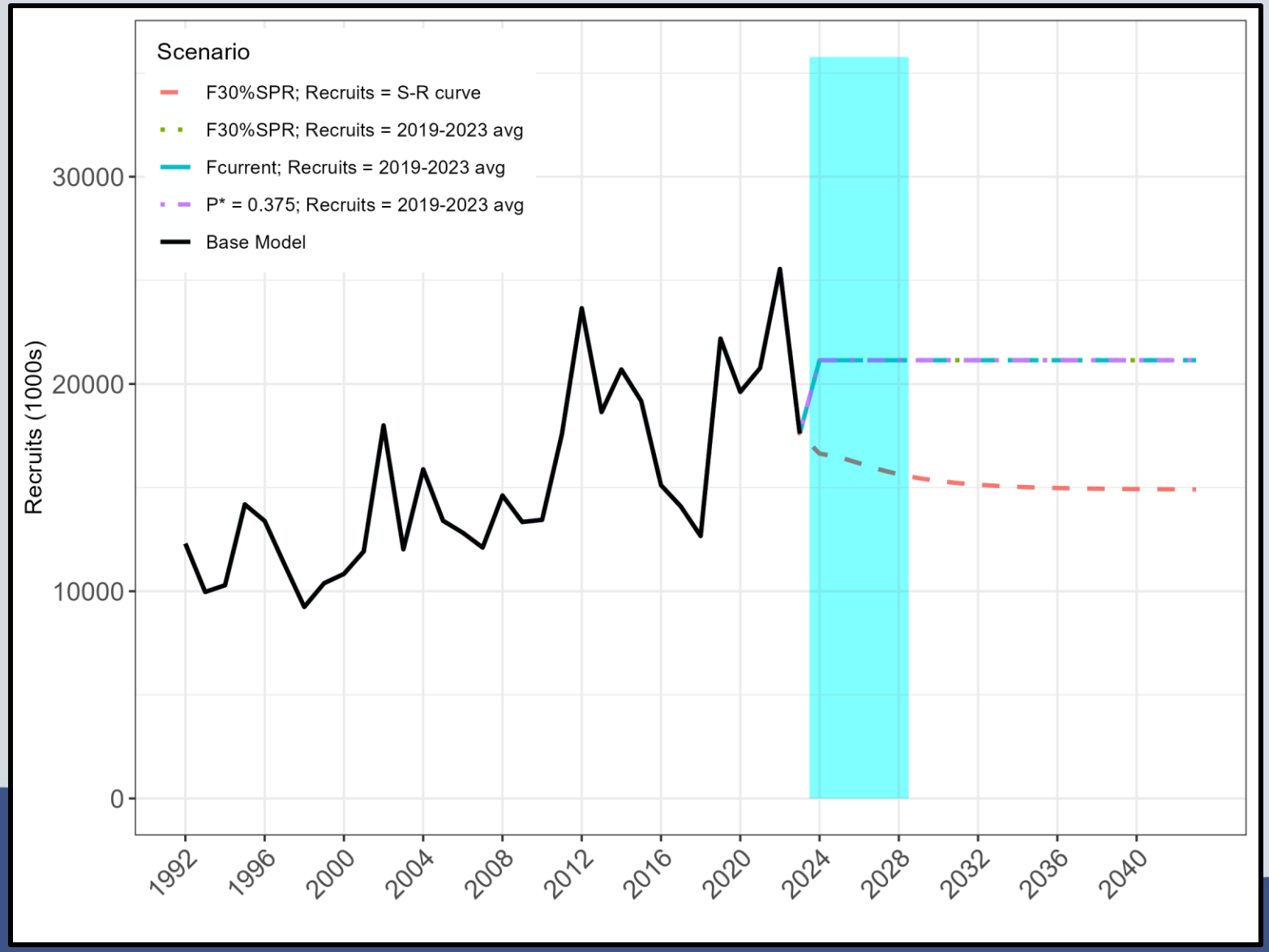
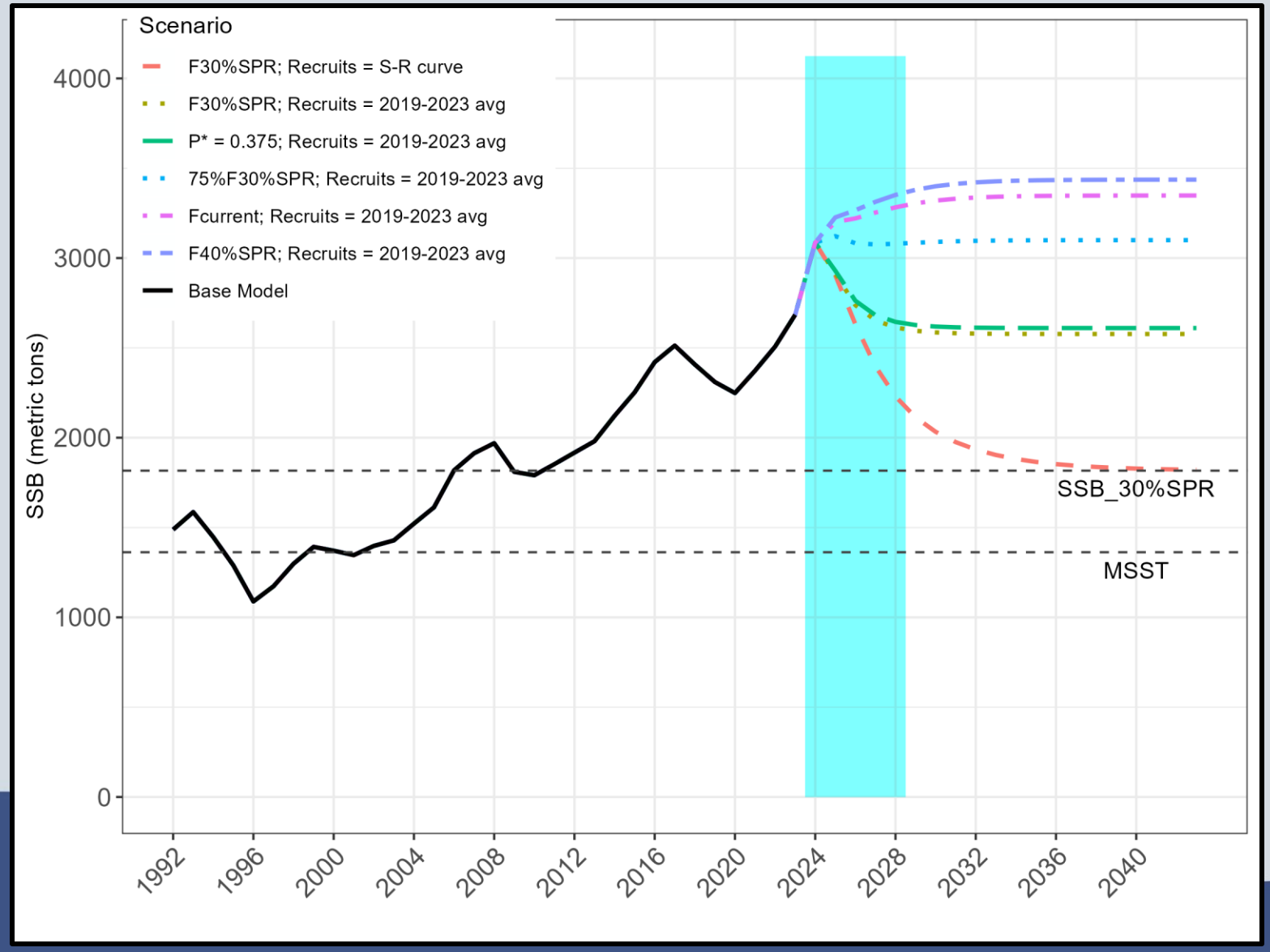


Constant F Projections: Recruitment (thousands)



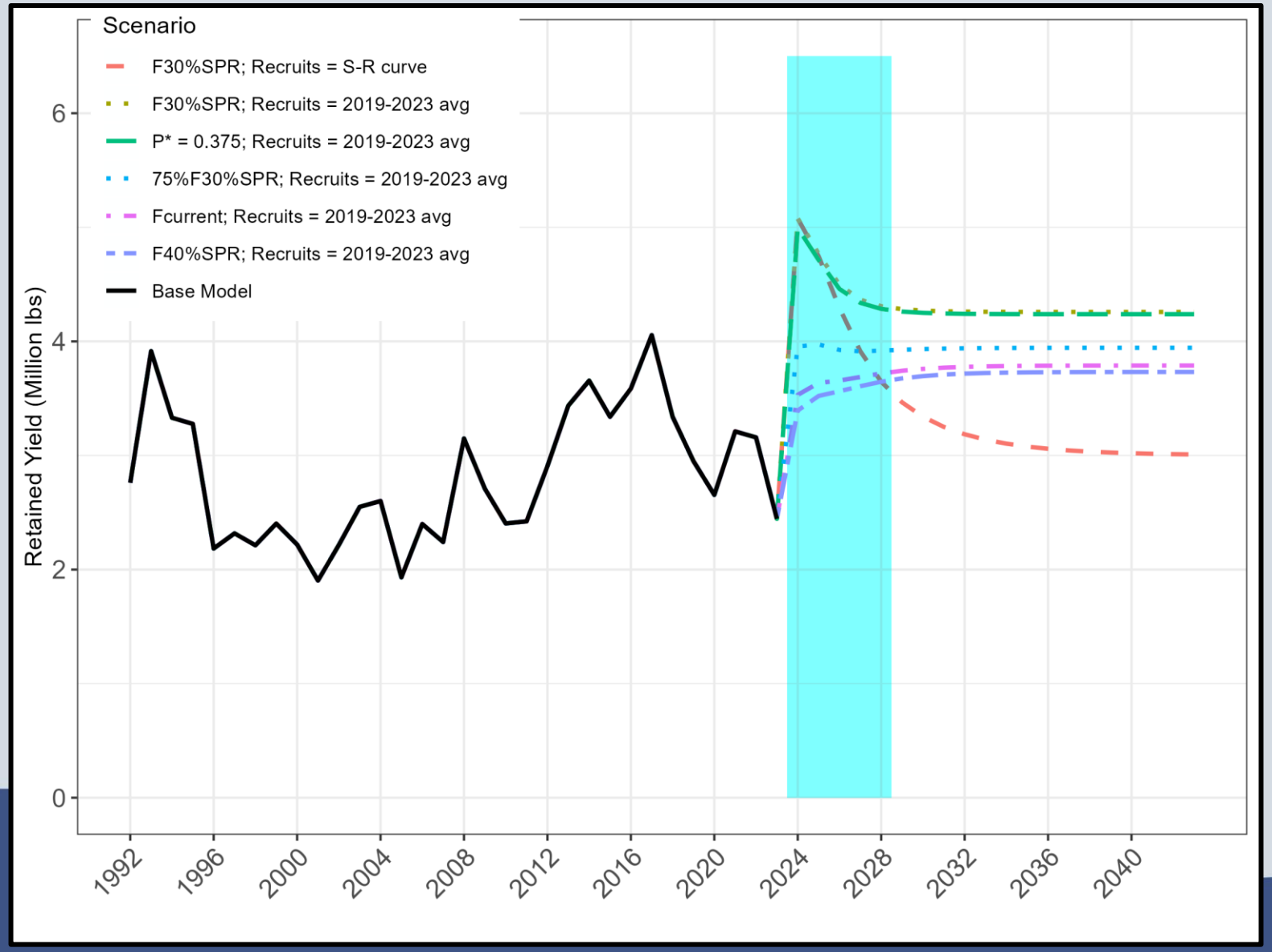
Adapted from Figure 95

Constant F Projections: SSB (mt)



Adapted from Figure 94

Constant F Scenarios: Retained Yield (lbs.)



Adapted from Figure 93

Constant F Scenarios: Projected Retained Yield (lbs.)

$F_{30\%SPR}$ Equilibrium Long-Term Projections							$F_{30\%SPR}$ Short-Term Projections					
Year	Age-0 Recruits	F	SSB	Retained Yield	Retained Num	Released Num	Age-0 Recruits	F	SSB	Retained Yield	Retained Num	Released Num
2024	16.639	0.392	3,085.78	5,076,521	4,288,054	3,583,339	21.145	0.392	3,085.87	5,076,490	4,288,033	3,588,738
2025	16.468	0.392	2,904.67	4,746,037	3,944,622	3,078,951	21.145	0.392	2,914.43	4,767,230	3,976,233	3,369,553
2026	16.175	0.392	2,632.10	4,293,261	3,525,017	2,822,632	21.145	0.392	2,738.20	4,495,187	3,762,820	3,392,229
2027	15.88	0.392	2,397.79	3,913,453	3,219,569	2,704,561	21.145	0.392	2,653.26	4,364,600	3,691,391	3,414,446
2028	15.639	0.392	2,229.63	3,646,868	3,026,274	2,633,062	21.145	0.392	2,613.60	4,307,856	3,668,980	3,421,988
2029	15.455	0.392	2,113.69	3,465,646	2,900,937	2,580,093	21.145	0.392	2,595.01	4,282,255	3,660,473	3,424,137
2030	15.318	0.392	2,032.95	3,339,999	2,814,534	2,539,297	21.145	0.392	2,586.07	4,270,093	3,656,546	3,424,712
2031	15.215	0.392	1,975.60	3,250,658	2,752,462	2,508,182	21.145	0.392	2,581.69	4,264,116	3,654,562	3,424,835
2032	15.138	0.392	1,934.20	3,185,992	2,706,983	2,484,745	21.145	0.392	2,579.51	4,261,118	3,653,519	3,424,866
2033	15.08	0.392	1,903.97	3,138,660	2,673,394	2,467,137	21.145	0.392	2,578.41	4,259,604	3,652,945	3,424,876

Table 34

Constant F Scenarios: Projected Retained Yield (lbs.)

P* Short-Term Projections							$F_{current}$ Short-Term Projections					
Year	**Age 0 Recruits**	**F**	**SSB**	**Retained Yield**	**Retained Num**	**Released Num**	**Age 0 Recruits**	**F**	**SSB**	**Retained Yield**	**Retained Num**	**Released Num**
2024	21.145	0.385	3,085.870	4,993,888	4,217,378	3,525,498	21.145	0.263	3,085.870	3,578,236	3,011,385	2,469,509
2025	21.145	0.385	2,929.660	4,713,550	3,928,046	3,314,804	21.145	0.263	3,192.020	3,673,941	3,019,198	2,378,446
2026	21.145	0.385	2,762.550	4,459,580	3,726,746	3,338,164	21.145	0.263	3,205.110	3,687,988	2,998,784	2,410,988
2027	21.145	0.385	2,682.190	4,337,661	3,660,110	3,360,399	21.145	0.263	3,233.100	3,714,369	3,014,787	2,433,338
2028	21.145	0.385	2,644.720	4,284,939	3,639,695	3,368,003	21.145	0.263	3,259.080	3,742,512	3,035,179	2,442,209
2029	21.145	0.385	2,627.170	4,261,219	3,632,120	3,370,182	21.145	0.263	3,279.120	3,764,516	3,049,924	2,445,566
2030	21.145	0.385	2,618.730	4,249,964	3,628,648	3,370,788	21.145	0.263	3,293.180	3,779,761	3,059,223	2,446,901
2031	21.145	0.385	2,614.600	4,244,436	3,626,871	3,370,942	21.145	0.263	3,302.580	3,789,806	3,064,875	2,447,475
2032	21.145	0.385	2,612.540	4,241,649	3,625,932	3,370,962	21.145	0.263	3,308.700	3,796,242	3,068,269	2,447,743
2033	21.145	0.385	2,611.490	4,240,239	3,625,420	3,370,972	21.145	0.263	3,312.590	3,800,302	3,070,311	2,447,875

Table 35

Constant F Scenarios: Projected Retained Yield (lbs.)

$0.75*F_{30\%SPR}$ Short-Term Projections							$F_{40\%SPR}$ Short-Term Projections					
Year	Age 0 Recruits	F	SSB	Retained Yield	Retained Num	Released Num	Age 0 Recruits	F	SSB	Retained Yield	Retained Num	Released Num
2024	21.145	0.294	3,085.870	3,955,300	3,331,712	2,745,796	21.145	0.248	3,085.870	3,393,932	2,855,053	2,335,689
2025	21.145	0.294	3,121.920	3,973,088	3,276,729	2,627,607	21.145	0.248	3,226.340	3,521,771	2,889,195	2,256,637
2026	21.145	0.294	3,082.550	3,925,031	3,214,021	2,658,354	21.145	0.248	3,266.280	3,563,127	2,887,523	2,289,825
2027	21.145	0.294	3,075.810	3,913,426	3,208,763	2,680,753	21.145	0.248	3,312.930	3,607,052	2,913,353	2,312,109
2028	21.145	0.294	3,079.460	3,918,634	3,217,546	2,689,276	21.145	0.248	3,351.500	3,646,352	2,939,384	2,321,143
2029	21.145	0.294	3,085.160	3,926,380	3,225,327	2,692,296	21.145	0.248	3,380.010	3,675,649	2,957,697	2,324,655
2030	21.145	0.294	3,089.990	3,932,615	3,230,302	2,693,394	21.145	0.248	3,399.720	3,695,721	2,969,313	2,326,123
2031	21.145	0.294	3,093.490	3,936,942	3,233,244	2,693,835	21.145	0.248	3,412.890	3,708,965	2,976,465	2,326,779
2032	21.145	0.294	3,095.840	3,939,751	3,234,953	2,694,000	21.145	0.248	3,421.500	3,717,520	2,980,842	2,327,107
2033	21.145	0.294	3,097.330	3,941,509	3,235,930	2,694,092	21.145	0.248	3,427.020	3,722,975	2,983,524	2,327,271

Constant Catch Scenarios: Retained Yield (million lbs.)

3-yr Constant Catch

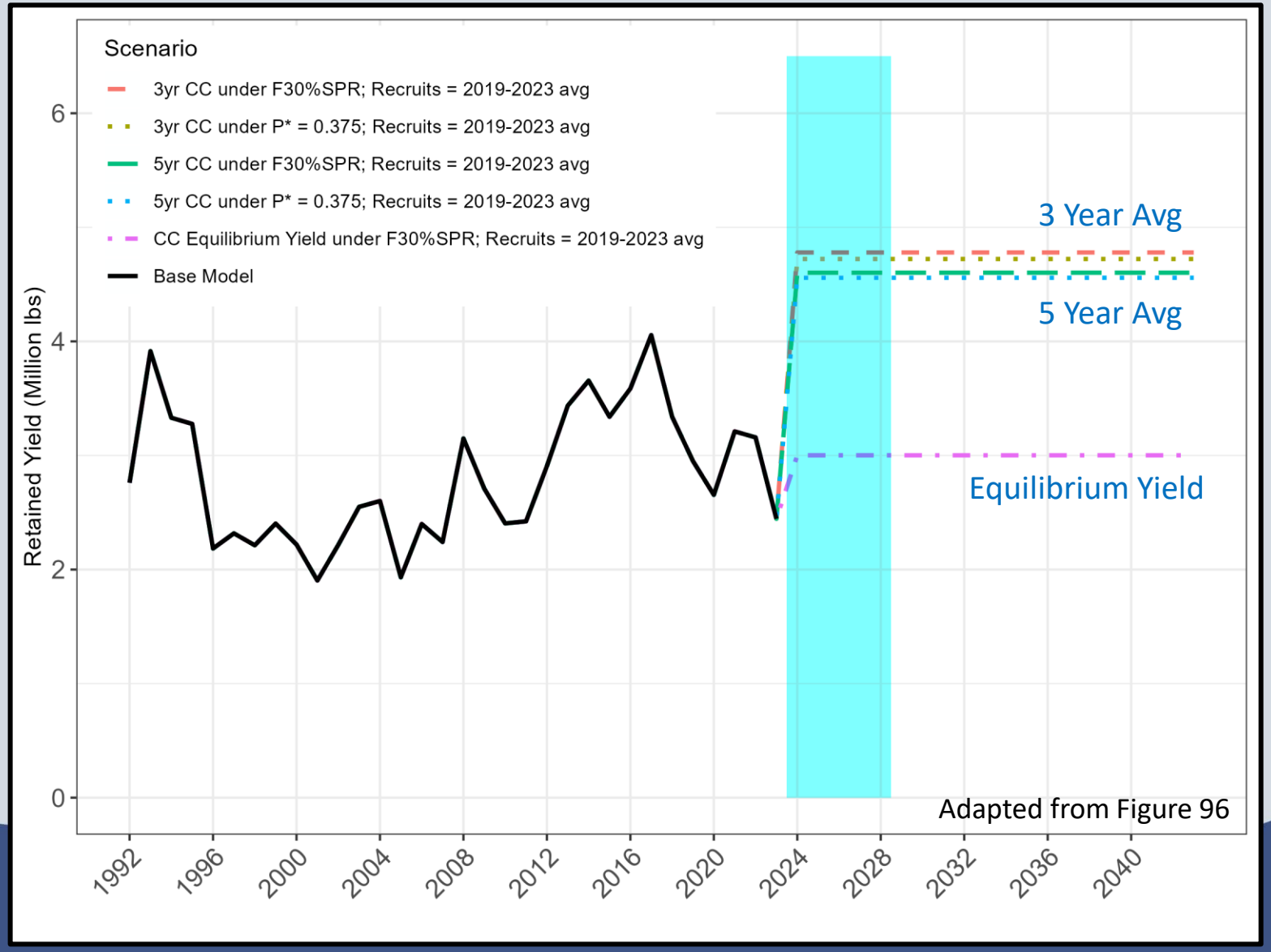
- $F_{30\%SPR}$ = 4.779 million lbs.
- $F_{P^*=0.375}$ = 4.602 million lbs.

5-yr Constant Catch

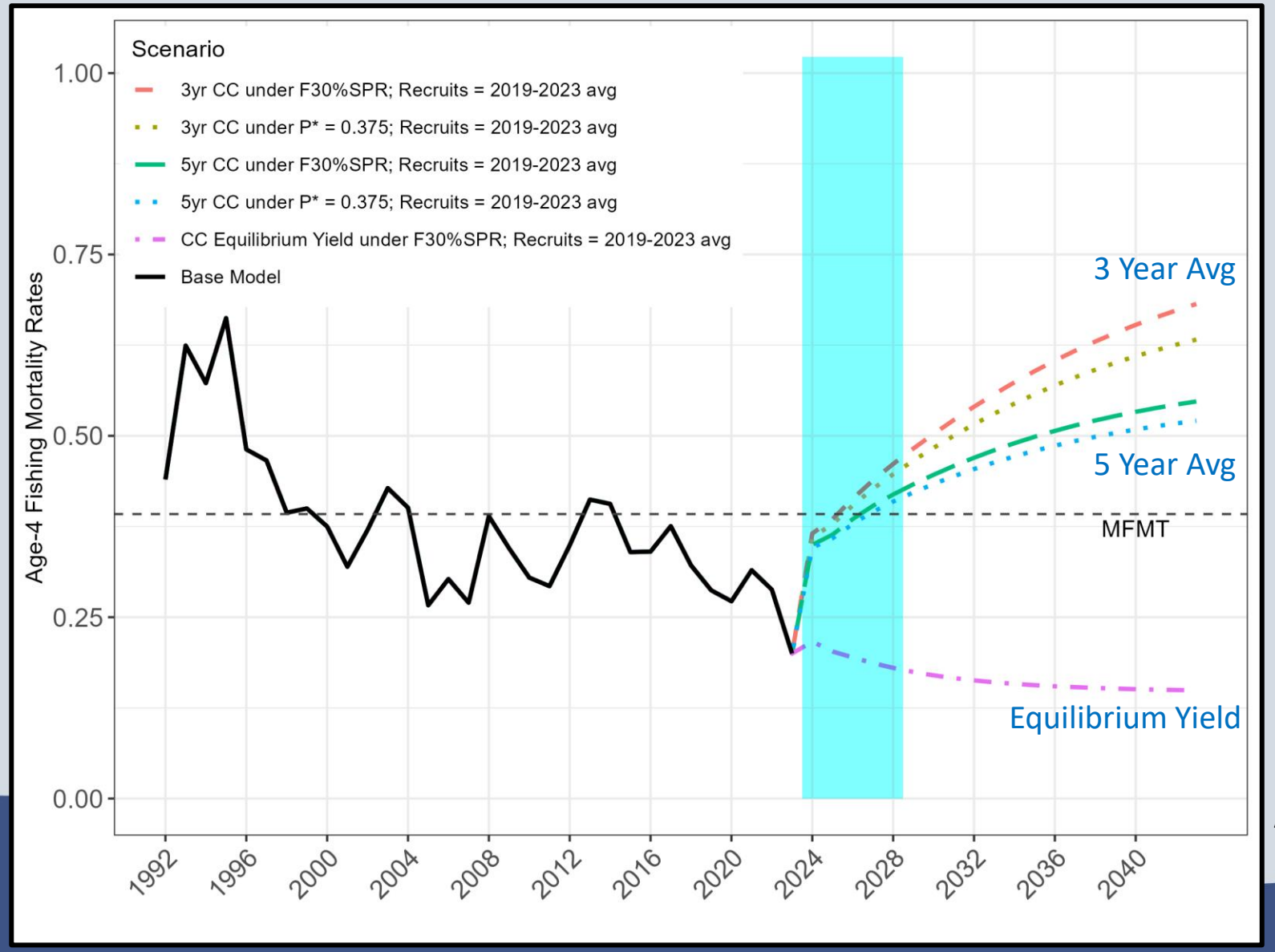
- $F_{30\%SPR}$ = 4.772 million lbs.
- $F_{P^*=0.375}$ = 4.557 million lbs.

Equilibrium Yield under $F_{30\%SPR}$

- 3.001 million lbs.

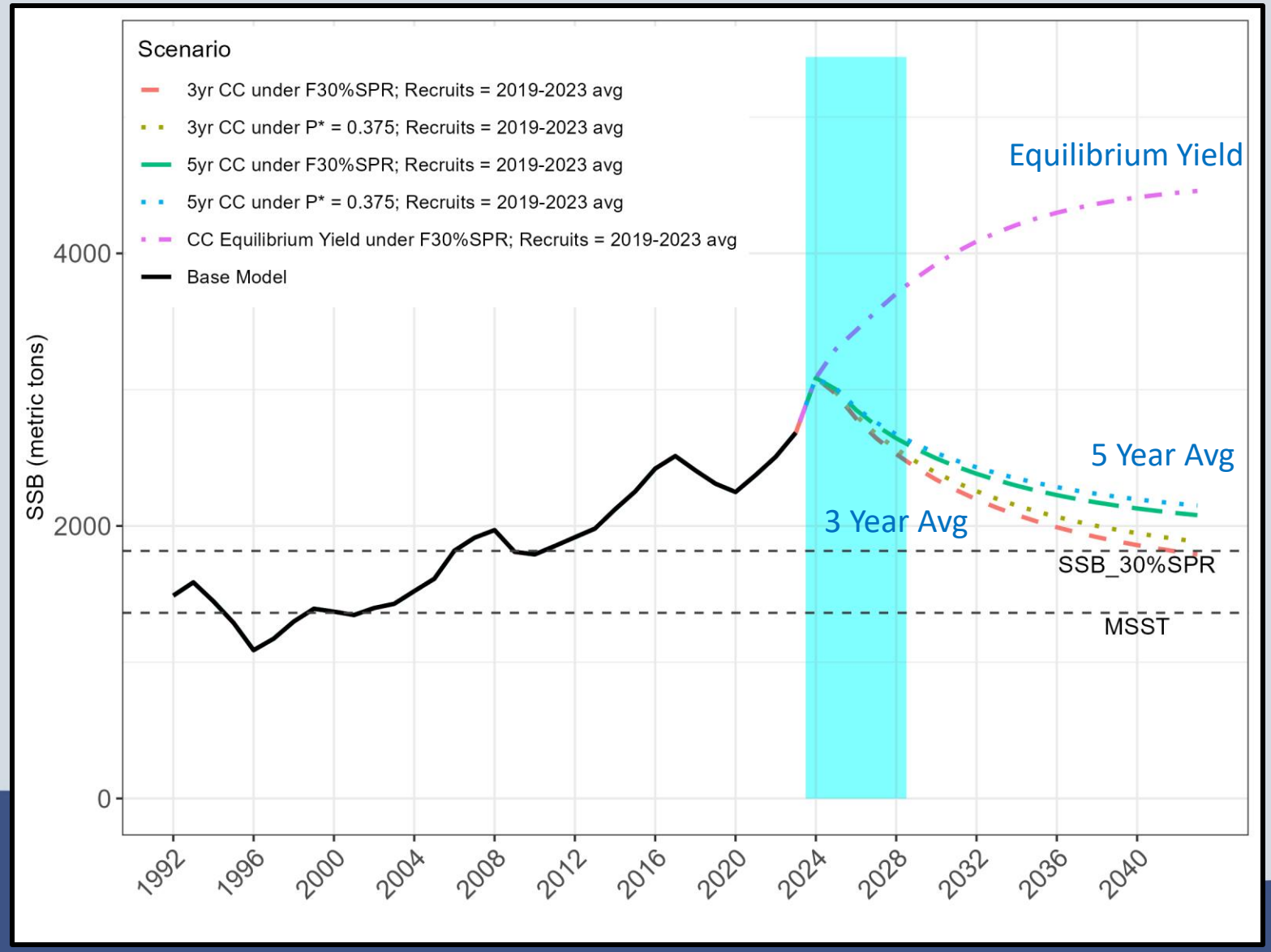


Constant Catch Scenarios: Fishing Mortality Rates



Adapted from Figure 97

Constant Catch Scenarios: SSB (mt)



Adapted from Figure 98

Questions?