Red Snapper Projections: the SSC Alternative (1 December 2008)

1 Introduction

This report presents red snapper projections requested by the SAFMC SSC at the December 2008 Council meeting. These projections extend from the assessment described in the red snapper addendum report. The addendum assessment estimated the MFMT proxy of $F_{40\%} = 0.104$ and steepness of $h = 0.95$, estimates that were used in these projections.

2 Projection scenarios

Several constant-F projection scenarios were considered:

- Scenario R2: $F = F_{40\%}$
- Scenario R3: $F = 65\%F_{40\%}$
- Scenario R4: $F = 75\%F_{40\%}$
- Scenario R5: $F = 85\%F_{40\%}$

3 Projection results

Projection results are tabulated in Tables 4.1 –4.4, and presented graphically in Figures 5.1– 5.4.

4 Tables

Table 4.1. Red snapper, SSC Alternative: Projection results under scenario R2—fishing mortality rate fixed at $F = F_{40\%}$. F = fishing mortality rate (per year), SSB = mid-year spawning stock biomass (mt), R = recruits (1000 fish), L.klb = landings (1000 lb whole weight), Sum L = cumulative landings (1000 lb), L.knum = landings (100 fish), D.klb = discard mortalities (1000 lb whole weight), and D.knum = discard mortalities (1000 fish). For reference, the estimated proxy reference MFMT is $F_{40\%} = 0.104$.

Year	F(per yr)	SSB(mt)	R(1000)	L.klb(1000 lb)	Sum L(1000 lb)	L.knum(1000)	D.klb(1000 lb)	D.knum(1000)
2007	0.918	204	286	450	450	94	152	98
2008	0.918	207	322	455	905	96	154	103
2009	0.104	213	324	67	972	14	23	15
2010	0.104	444	329	112	1084	22	31	18
2011	0.104	662	458	174	1257	31	35	21
2012	0.104	930	519	249	1506	41	42	25
2013	0.104	1254	564	338	1844	52	51	29
2014	0.104	1626	596	444	2288	64	57	32
2015	0.104	2034	619	561	2849	76	61	33
2016	0.104	2465	636	685	3534	88	64	35

Table 4.2. Red snapper, SSC Alternative: Projection results under scenario R3—fishing mortality rate fixed at F = 65%$F_{40\%}$. F = fishing mortality rate (per year), SSB = mid-year spawning stock biomass (mt), R = recruits (1000 fish), L.klb = landings (1000 lb whole weight), Sum L = cumulative landings (1000 lb), L.knum = landings (100 fish), D.klb = discard mortalities (1000 lb whole weight), and D.knum = discard mortalities (1000 fish). For reference, the estimated proxy reference MFMT is $F_{40\%}$ = 0.104.

Year	F(per yr)	SSB(mt)	R(1000)	L.klb(1000 lb)	Sum L(1000 lb)	L.knum(1000)	D.klb(1000 lb)	D.knum(1000)
2007	0.918	204	286	450	450	94	152	98
2008	0.918	207	322	455	905	96	154	103
2009	0.068	213	324	44	949	9	15	10
2010	0.068	458	329	75	1024	15	21	12
2011	0.068	696	463	119	1143	21	24	14
2012	0.068	994	526	173	1316	28	28	17
2013	0.068	1359	571	239	1555	36	35	19
2014	0.068	1785	604	318	1873	45	39	21
2015	0.068	2259	627	406	2279	54	41	22
2016	0.068	2767	643	502	2781	62	43	23

Table 4.3. Red snapper, SSC Alternative: Projection results under scenario R4—fishing mortality rate fixed at F = 75%$F_{40\%}$. F = fishing mortality rate (per year), SSB = mid-year spawning stock biomass (mt), R = recruits (1000 fish), L.klb = landings (1000 lb whole weight), Sum L = cumulative landings (1000 lb), L.knum = landings (100 fish), D.klb = discard mortalities (1000 lb whole weight), and D.knum = discard mortalities (1000 fish). For reference, the estimated proxy reference MFMT is $F_{40\%}$ = 0.104.

Year	F(per yr)	SSB(mt)	R(1000)	L.klb(1000 lb)	Sum L(1000 lb)	L.knum(1000)	D.klb(1000 lb)	D.knum(1000)
2007	0.918	204	286	450	450	94	152	98
2008	0.918	207	322	455	905	96	154	103
2009	0.078	213	324	51	956	11	17	11
2010	0.078	454	329	86	1041	17	24	13
2011	0.078	686	461	135	1177	24	27	16
2012	0.078	975	524	196	1373	32	32	19
2013	0.078	1328	569	269	1642	41	40	22
2014	0.078	1738	602	357	1998	51	44	24
2015	0.078	2192	625	455	2453	61	47	26
2016	0.078	2676	641	559	3012	70	49	27

Table 4.4. Red snapper, SSC Alternative: Projection results under scenario R5—fishing mortality rate fixed at F = 85%$F_{40\%}$. F = fishing mortality rate (per year), SSB = mid-year spawning stock biomass (mt), R = recruits (1000 fish), L.klb = landings (1000 lb whole weight), Sum L = cumulative landings (1000 lb), L.knum = landings (100 fish), D.klb = discard mortalities (1000 lb whole weight), and D.knum = discard mortalities (1000 fish). For reference, the estimated proxy reference MFMT is $F_{40\%}$ = 0.104.

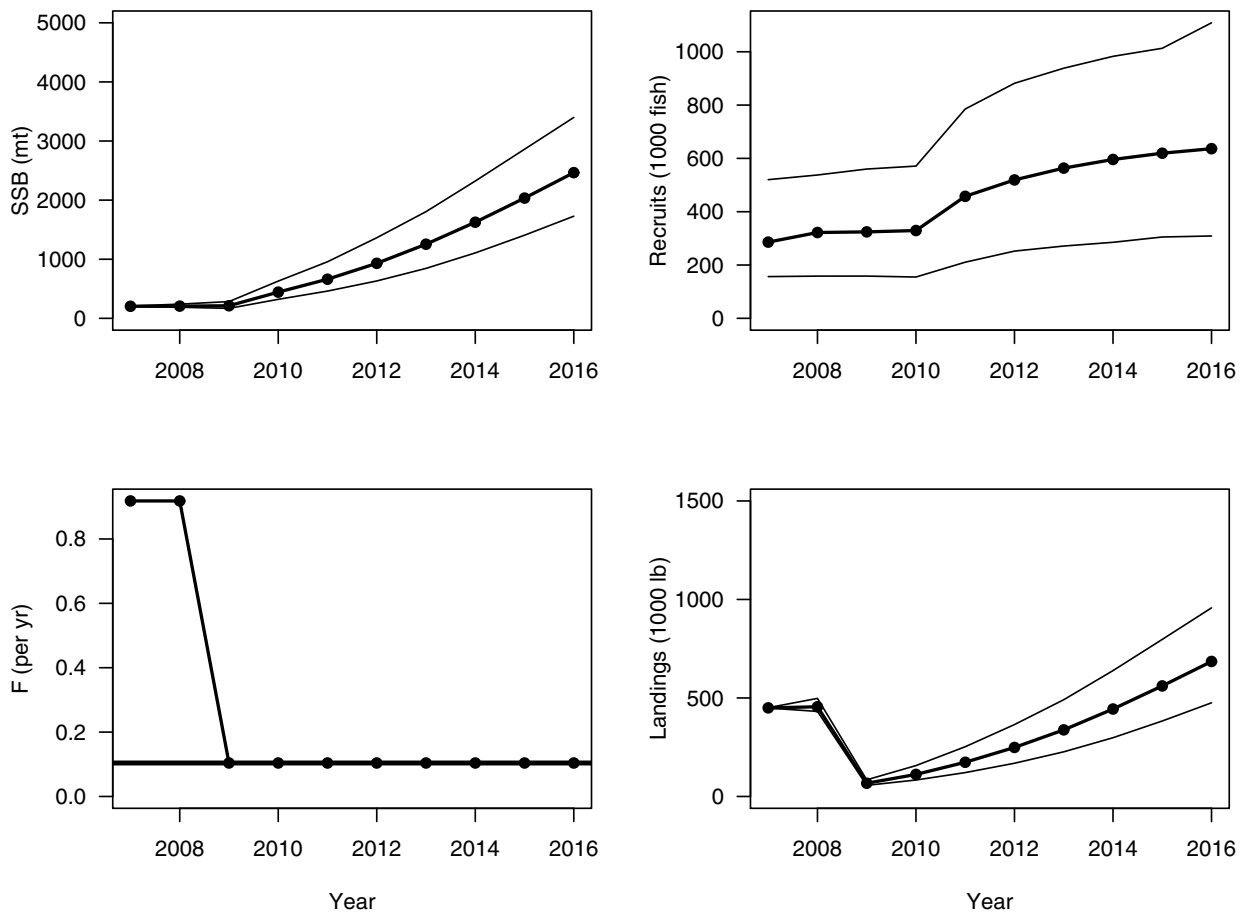| Year	F(per yr)	SSB(mt)	R(1000)	L.klb(1000 lb)	Sum L(1000 lb)	L.knum(1000)	D.klb(1000 lb)	D.knum(1000)
2007	0.918	204	286	450	450	94	152	98
2008	0.918	207	322	455	905	96	154	103
2009	0.088	213	324	57	962	12	20	12
2010	0.088	450	329	96	1059	19	27	15
2011	0.088	677	460	151	1209	27	30	18
2012	0.088	957	522	218	1427	36	36	22
2013	0.088	1298	567	298	1725	46	45	25
2014	0.088	1692	599	393	2118	56	49	27
2015	0.088	2127	623	500	2618	67	53	29
2016	0.088	2589	639	613	3231	77	55	30

5 Figures

Figure 5.1. Red snapper: Projection results under scenario R2—fishing mortality rate fixed at F = F$_{40\%}$. Expected values represented by dotted solid lines, and uncertainty represented by thin lines corresponding to 10th and 90th percentiles of 2000 replicate projections.
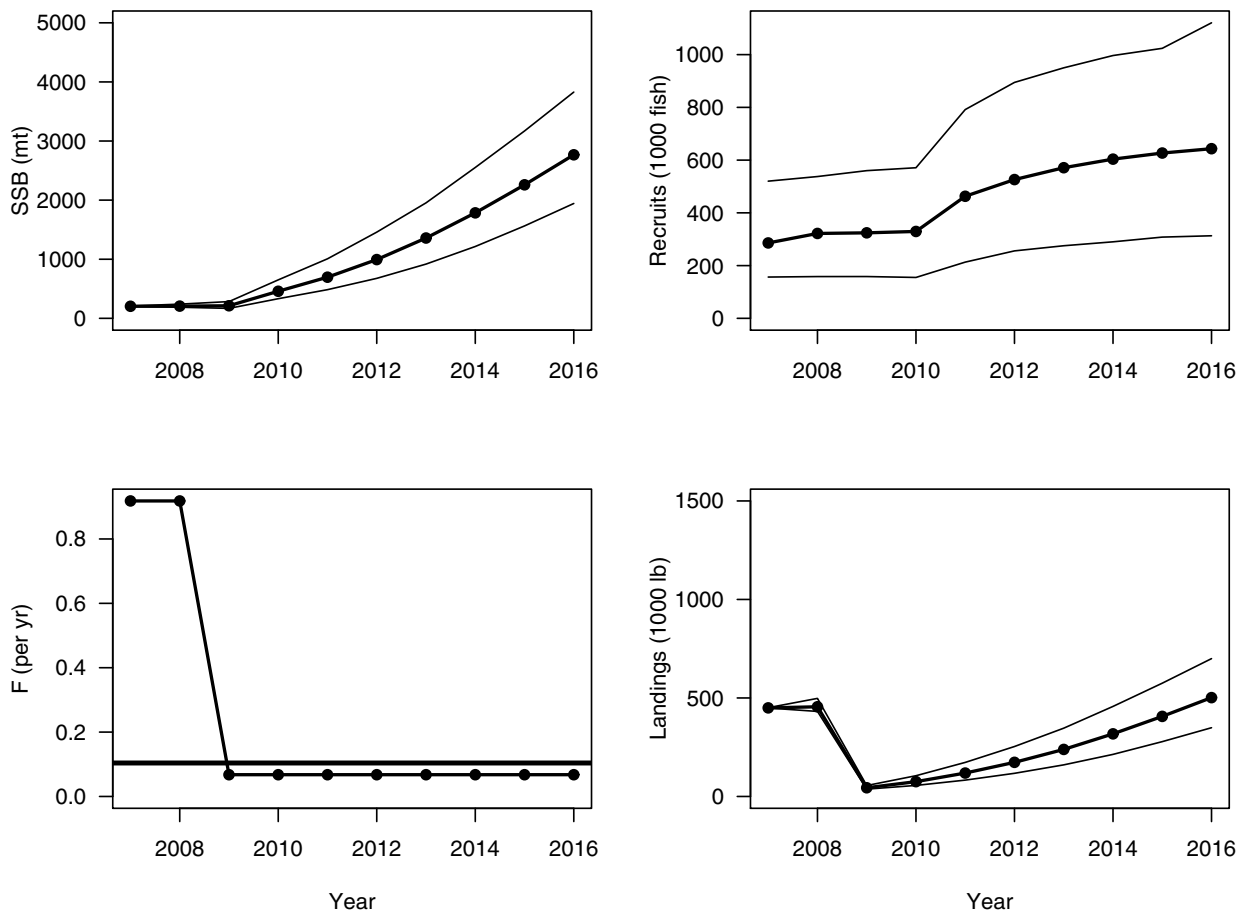
Figure 5.2. Red snapper: Projection results under scenario R3—fishing mortality rate fixed at F = 65%F$_{40\%}$. Expected values represented by dotted solid lines, and uncertainty represented by thin lines corresponding to 10th and 90th percentiles of 2000 replicate projections.
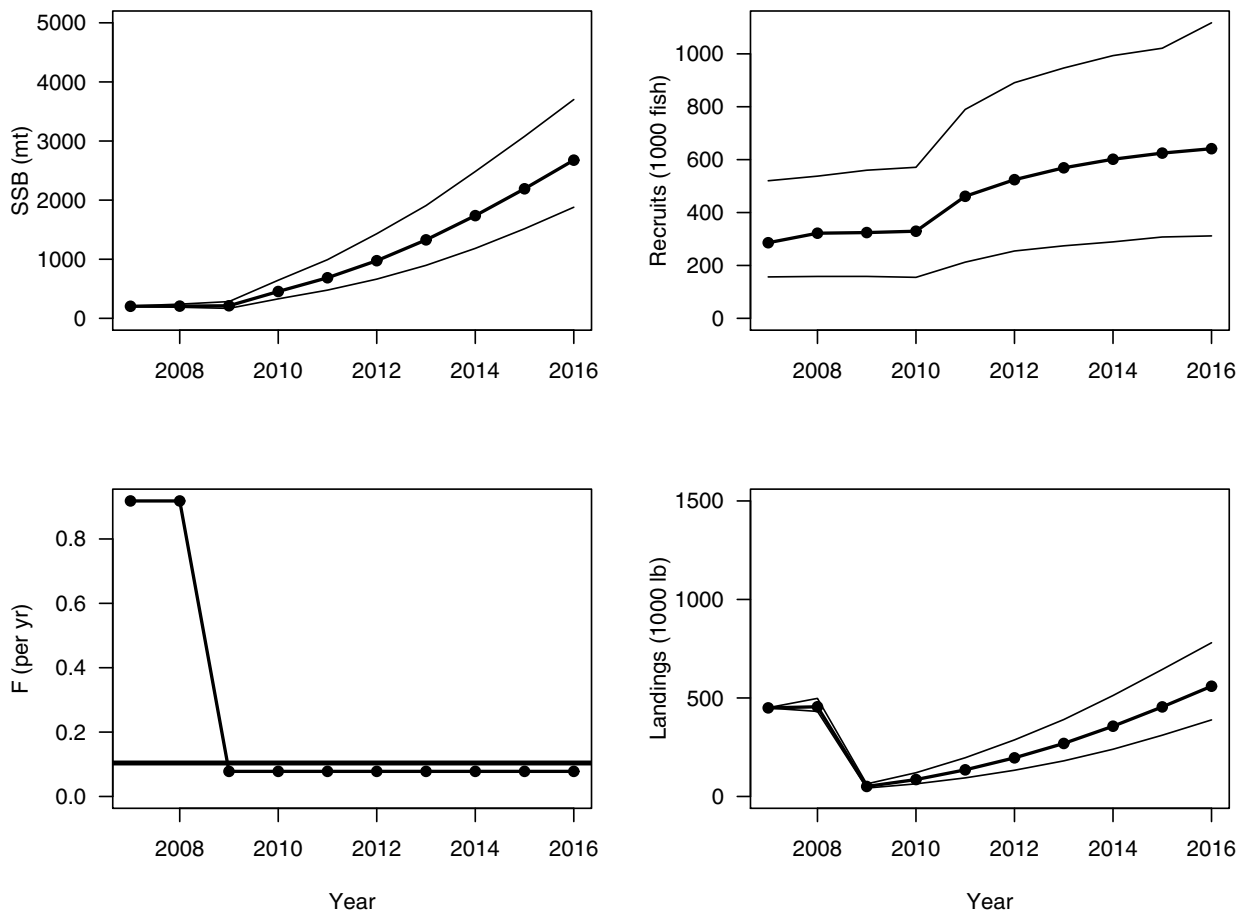
Figure 5.3. Red snapper: Projection results under scenario R4—fishing mortality rate fixed at F = 75%$F_{40\%}$. Expected values represented by dotted solid lines, and uncertainty represented by thin lines corresponding to 10th and 90th percentiles of 2000 replicate projections.

Figure 5.4. Red snapper: Projection results under scenario R5—fishing mortality rate fixed at F = 85%F$_{40\%}$. Expected values represented by dotted solid lines, and uncertainty represented by thin lines corresponding to 10th and 90th percentiles of 2000 replicate projections.