

OMP-2011 Re-tuned to account for 2012/13 TAC Decisions while Maintaining an Unchanged Recovery Target

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Executive Summary

The consequences of retuning OMP-2011 to achieve the agreed 35% median recovery level by 2021 given the decision not to decrease the 2012/13 season TAC by 150 tons as recommended are investigated. Over the next eight seasons, the aggregate TAC is forecast to be some 400 tons less than would otherwise have been the case. Most of the reduction will be borne by the offshore commercial sector, which should expect a reduction near the maximum 10% constraint over each of the next three seasons, and an allocation eventually stabilising about 100 tons (or some 7%) than would otherwise have occurred. The probability over the next two years of Exceptional Circumstances needing to be declared in super-area A7, with a consequent additional TAC reduction, roughly doubles. Certain other possible management approaches which explicitly exclude the possibility of future TAC reductions, are shown to run the risk of an appreciably larger biomass reduction by 2021.

OMP-2011, as adopted by DAFF in 2011 (described fully in Johnston *et al.* 2012, which incorporates some minor modifications agreed early 2012), was used to provide TAC recommendations by the SWG for the West Coast rock lobster fishery for the 2012/13 season¹. The resultant TAC recommendations are listed in Table 1 for each sector and each super-area. The TACs for the 2010/11 and 2011/12 seasons are also provided for comparison.

DAFF Senior Management over-turned the OMP-2011 TAC recommendations for 2012/13 and fixed those at the same levels as the previous season (2011/12). Thus the allocation to the Offshore Commercial Sector for the 2012/13 season is 149.82 tons greater than the recommended under OMP-2011; allocations to other sectors are unchanged.

The management objective of OMP-2011 agreed by DAFF in 2011 is to increase the male biomass (above 75mm) by 35% by 2021 relative to the level estimated in 2006. Note that the 2006 biomass level relative

¹ Note that where for reasons of space in Tables and Figures a single year is quoted in referring to the split-year season, it is the first of the two years concerned which is given. Thus for example, 2012 in isolation would refer to the 2012/132 season.

to pristine is very low – some 3% of pristine. It is also 20% below the 1996 biomass level, so that the target in fact corresponds to only a 15% increase over the 25-year period 1996-2021.

As the TACs set for the 2012/13 season are different from those recommended by OMP-2011, OMP-2011 is here re-tuned taking these 2012/13 TACs into account. “OMP-2011 re-tuned” is adjusted by changing the tuning parameter α so that the median biomass recovery target of 35% by 2021 is retained. The final OMP-2011 simulation results were presented in Johnston and Butterworth (2012). Table 2 reports these results again, along with the OMP-2011 re-tuned simulation results.

Two further OMP simulation outputs are also reported:

- i) TAC remains unchanged from the 2011 (and 2012) seasons for the next eight seasons, and
- ii) OMP-2011 re-tuned, except that the global TAC is never allowed to decrease.

Results

Table 2 reports the original OMP 2011 simulation results (Johnston and Butterworth, 2012) alongside those for OMP-2011 re-tuned. Medians are shown with 5th, 25th and 95th percentile values in parentheses. Table 3 compares the average median TAC values (in MT) predicted for the next eight seasons from **2013/14 to 2020/21** for these two OMPs. Figure 1 compares the OMP 2011 and re-tuned OMP 2011 expected median TACs for the different sectors, as well as the median biomass recovery trajectory. Table 4 compares the probability that the EC (Exceptional Circumstances) rule is invoked in any one super-area **during the two year period 2013/14-2014/15** for these two OMPs.

Figure 2 compares the lower 5th %iles of the biomass recovery trajectories for three alternate OMPs (OMP-2011 re-tuned, and the two further options listed above) to compare risk levels, with related statistics given in Table 5.

Discussion

Figure 1 shows that the retuning of OMP-2011 to achieve the agreed 35% recovery target by 2021 following the decision not to reduce the 2012/13 TAC from its 2011/12 level makes little difference to the median biomass trajectory, as might be expected. Consequent reductions to the TACs for the subsistence, recreational and nearshore commercial sectors would be expected only some years into the future. However, the offshore commercial sector should expect a reduction at or near the maximum 10% per season over the next three seasons, with their allocation to stabilise at a level which is about 100 tons (or some 7%) lower than would have otherwise been the case. From Table 3 it is evident that the effective extra 150 tons awarded for this season to the offshore commercial sector is expected in median terms to lead to a net loss of 336 tons over the next eight seasons to this sector.

A further concern relates to super-area A7 where abundance indices have shown a marked recent decline. The effective one-year delay in implementing the OMP-2011 recovery plan results in a near

doubling of the probability that Exceptional Circumstances, with consequent TAC reductions greater than suggested by the OMP, would need to be declared in the next two years (Table 4).

The results discussed thus far have focussed on projection medians, but in a risk context it is the lower percentiles of biomass projections that are the most pertinent. Here, broadly speaking, retuning OMP-2011 would keep resource depletion risk at about the same level (see Figure 2 and Table 5). However, if other approaches are to be considered which do not reduce TACs in the face of adverse trends in resource indicators, such as either maintaining the TAC unchanged, or implementing only increases but not decreases recommended by the retuned OMP, the results in Figure 2 and Table 5 point to an appreciable increase in the extent to which abundance might be reduced by 2021.

References

Johnston, S.J. and D.S. Butterworth. 2012. Final OMP 2011 simulation results incorporating a transfer of 40 MT commercial offshore TAC from A& to A5+6. FISHERIES/20912/JUN/SWG-WCRL/09..

Johnston, S. J., Butterworth, Glazer, J.P and Brandão, A. D.S. 2012. OMP 2011 to be used for setting TACs for the West Coast Rock Lobster fishery for the 2011+ seasons. DAFF document, FISHERIES/2012/JUL/SWG-WCRL/10.

Table 1: The TAC values (all MT) for the 2012/13 season recommended from application of the agreed OMP-2011. The first two columns report the 2010/11 and 2011/12 TAC values. The figures in parentheses indicate changes compared to the previous season's allocation. The final column shows the actual 2012/13 TAC values set by DAFF Senior Management (which are the same as the 2011/12 values).

	2010 season	2011 season	OMP-2011 TACs recommended for 2012 season	Final TACs for 2012 season
Global T	2286.20	2425.78 (6.11%)	2276.31 (-6.16%)	2425.78 (0%)
Global A1+2	37.67	36.13	40.06	36.13
Global A3+4	208.26	222.36	256.55	222.36
Global A5+6	125.93	176.93	167.86	176.93
Global A7	394.27	308.10	265.96	308.10
Global A8+	1720.09	1682.26	1545.88	1682.26
Offshore T	1528.22	1540.65 (0.81%)	1390.83 (-9.72%)	1540.65 (0%)
Offshore A1+2	0	0	0	0
Offshore A3+4	51.9	74.96	109.09	74.96
Offshore A5+6	0	60	60	60
Offshore A7	383.99	300.78	258.64	300.78
Offshore A8+	1092.33	1104.91	963.10	1104.91
Nearshore T	451	451 (0%)	451 (0%)	451 (0%)
Nearshore A1+2	24.17	24.17	24.17	24.17
Nearshore A3+4	72.48	72.48	72.48	72.48
Nearshore A5+6	32.2	32.20	32.20	32.20
Nearshore A7	0	0	0	0
Nearshore A8+	322.15	322.15	322.15	322.15
Subsistence T	200*	251.48 (25.5%)	251.48 (0%)	251.48 (25.5%)
Subsistence A1+2	6.6	8.30	12.22	8.30
Subsistence A3+4	41.4	52.06	52.11	52.06
Subsistence A5+6	49.2	61.86	52.79	61.86
Subsistence A7	0	0	0	0
Subsistence A8+	102.6107	129.00	134.37	129.00
Recreational T	107	183 (71.0%)	183 (0%)	183 (0%)

Table 2: Final OMP 2011 simulation results compared with those of the OMP-2011 re-tuned. Medians with 5th, 25th and 95th percentile values shown in parentheses. (Results for 1000 simulations.)

Tuning parameter	α	OMP 2011	OMP 2011 re-tuned
		2300	1970
10-yr (2011-2020) Ave Global TAC	A1-2	38 [24; 34; 47]	37 [25; 33; 44]
	A3-4	435 [236; 369; 629]	364 [202; 318; 532]
	A5-6	165 [141; 154; 186]	165 [141; 156; 182]
	A7	404 [0; 127; 789]	459 [62; 313; 745]
	A8	1163 [974; 1077; 1421]	1151 [995; 1078; 1379]
	T	2161 [1604; 1918; 2869]	2156 [1641; 1937; 2747]
10-yr (2011-2020) Ave offshore TAC	A1-2	0 [0; 0; 0]	0 [0; 0; 0]
	A3-4	268 [117; 210; 459]	224 [101; 184; 379]
	A5-6	60 [60; 60; 60]	60 [60; 60; 60]
	A7	397 [0; 124; 778]	452 [60; 307; 737]
	A8	608 [489; 547; 798]	602 [518; 560; 754]
	T	1314 [977; 1154; 1837]	1312 [992; 1167; 1757]
10-yr (2011-2020) Ave near shore TAC	A1-2	23 [15; 20; 29]	23 [15; 21; 28]
	A3-4	69 [44; 61; 86]	68 [45; 62; 84]
	A5-6	31 [24; 28; 39]	30 [24; 28; 37]
	A7	0 [0; 0; 0]	0 [0; 0; 0]
	A8	314 [232; 278; 387]	301 [234; 276; 372]
	T	434 [321; 387; 541]	422 [323; 383; 520]
10-yr (2011-2020) Ave subsistence TAC	A1-2	12 [7; 10; 14]	11 [7; 10; 13]
	A3-4	52 [31; 44; 60]	51 [31; 50; 58]
	A5-6	53 [40; 46; 61]	53 [41; 49; 61]
	A7	0 [0; 0; 0]	0 [0; 0; 0]
	A8	134 [97; 115; 156]	130 [97; 118; 149]
	T	251 [179; 215; 290]	244 [180; 219; 278]
10 yr (2011-2020) Ave Total Recreational Take	T	174 [118; 154; 222]	173 [124; 157; 210]
B75 _m (21/06)	A1-2	1.29 (0.64; 0.95; 3.38)	1.26 [0.66; 0.94; 3.05]
	A3-4	1.12 (0.36; 0.72; 3.70)	1.28 [0.50; 0.83; 3.77]
	A5-6	1.63 (1.15; 1.36; 3.46)	1.62 [1.14; 1.35; 3.30]
	A7	2.38 (0.55; 1.40; 9.40)	1.93 [0.48; 1.11; 8.63]
	A8	1.00 (0.41; 0.70; 2.55)	0.98 [0.44; 0.71; 2.41]
	T	1.35 (0.69; 1.05; 3.34)	1.35 [0.72; 1.04; 3.11]

Table 3: Comparison of the average median TAC values (in MT) predicted for the next eight seasons **2013/14-2020/21** for OMP 2011 and re-tuned OMP 2011.

	OMP 2011	Re-tuned OMP 2011 (% reduction from OMP 2011)
Ave Global TAC 2013-2020	2107	2058 (2.3%)
Ave Offshore TAC 2013-2020	1266	1224 (3.3%)
Ave near shore TAC 2013-2020	444	419 (5.6%)
Ave Subsistence TAC 2013-2020	251	245 (2.4%)
Ave recreational TAC 2013-2020	175	170 (2.9%)

Table 4: Probability that the EC rule is invoked in any one super-area **during the two year period 2013/14-2014/15** for the two OMPs.

	OMP 2011	OMP 2011 re-tuned
Tuning parameter	2300	1970
A1+2	0%	0%
A3+4	0.75%	1.0%
A5+6	0%	0%
A7	3.6%	6.0%
A8+	0.05%	0.05%
Total	4.4%	7.05%

Table 5: The lower 5%ile and median values of the biomass recovery level in 2021 (i.e. B75m(2021/2006)) for a range of OMPs.

	Biomass recovery B75m(2021/2006) Lower 5th %ile	Biomass recovery B75m(2021/2006) Median
OMP-2011 as intended	0.69	1.35
OMP-2011 re-tuned	0.72	1.35
TAC unchanged for 10 years	0.48	1.28
OMP-2011 re-tuned but TAC never decreased	0.42	1.19

Figure 1: Comparison between OMP 2011 and re-tuned OMP 2011 expected median TACs for the different sectors, as well as the median biomass recovery trajectory.

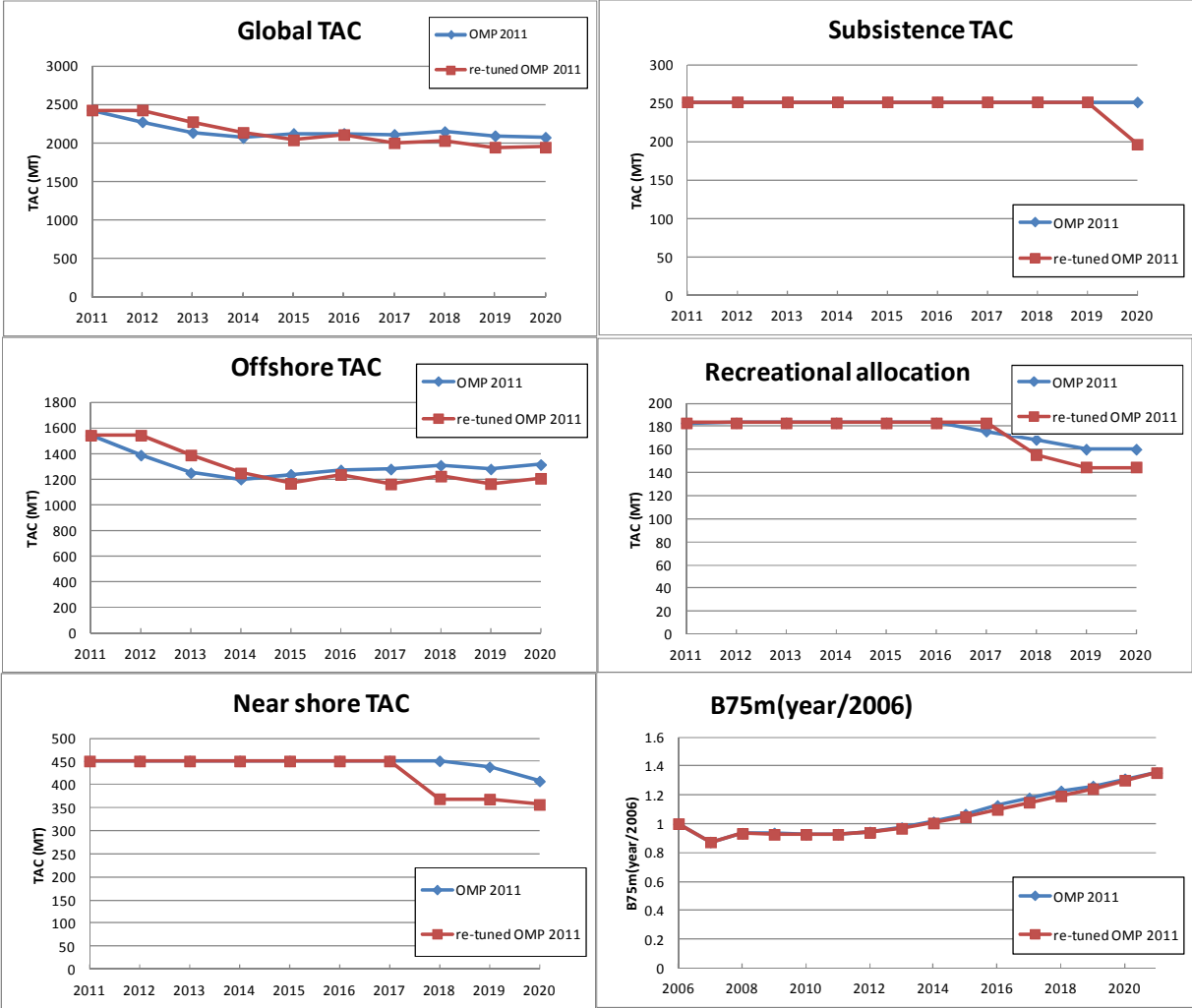


Figure 2: Lower 5th percentile biomass (B75m relative to its 2006 level) recovery trajectories for three alternative OMP possibilities.

