Addendum to WG/08/08/WCRL11

A number of further results have been produced which relate to the information reported in WG/08/08/WCRL11.

Fix all future σ values used in generating input data into the OMP to zero

This is clearly an extreme test, which assumes that in the future all CPUE, FIMS and somatic growth data will be perfectly know, with σ=0. The rationale is what is the incentive for industry and data collectors to improve the precision in the data collection procedures.

The motivation is to show a limit to the benefit that could be obtained by improving the precision of OMP input indices in the future. The results (see Table A1 and Figure A1) show distinct improvements in TAC stability, but relatively little improvement in target abundance achievement. Further work could examine how OMP parameters could be adjusted to improve the latter at the expense of the former.

Further robustness tests

Two further category II robustness results are now reported – these being SG1 (where it is assumed all adult growth is 0.5mm more than actually measured/reported), and P1 which assumes poaching is reduced to 200 MT over the next 5 years.

Table A1: Median and 5th and 95th percentile values for the "2245" tuned OMP, compared with scenario (using the "2245" MT tuning) where all σ values used in generating future data are set equal to zero. Results are for the full stochastic integration over the Reference Set.

		OMP Tuning 2245 MT	**σ =0 for future data [2245 MT tuning]**
10-yr Ave commercial TAC	A1-2	30 [30; 30]	30 [30; 30]
	A3-4	186 [145; 234]	191 [164; 221]
	A5-6	40 [40; 40]	40 [40; 40]
	A7	633 [490; 774]	633 [562; 719]
	A8	1340 [1092; 1578]	1344 [1229; 1491]
	T	2245 [1830; 2587]	2243 [2037; 2446]
2007-2009 Ave commercial TAC	T	2100 [2021; 2229]	2089 [2072; 2119]
10-yr Ave offshore TAC	A1-2	0 [0; 0]	0 [0; 0]
	A3-4	96 [55; 144]	101 [75; 131]
	A5-6	0 [0; 0]	0 [0; 0]
	A7	633 [490; 774]	633 [562; 719]
	A8	940 [692; 1178]	944 [829; 1090]
	T	1655 [1241; 1997]	1653 [1447; 1855]
Ave Total Recreational Take	T	262 [202; 294]	262 [229; 280]
Ave V commercial	A1-2	0 [0; 0]	0 [0; 0]
	A3-4	13 [10; 18]	12 [9; 16]
	A5-6	0 [0; 0]	0 [0; 0]
	A7	17 [14; 22]	17 [14; 20]
	A8	7 [5; 9]	6 [5; 7]
	T	9 [6; 11]	8 [6; 10]
B_m(16/06)	A1-2	0.79 [0.50; 1.32]	0.79 [0.50; 1.32]
	A3-4	1.06 [0.62; 2.58]	1.05 [0.63; 2.55]
	A5-6	1.77 [0.61; 11.30]	1.77 [0.61; 11.30]
	A7	1.26 [0.36; 3.26]	1.27 [0.39; 3.20]
	A8	1.01 [0.39; 2.83]	1.00 [0.39; 2.77]
	T	1.26 [0.62; 3.00]	1.24 [0.63; 2.91]
B_m(16/80)	A1-2	0.25 [0.16; 0.42]	0.25 [0.15; 0.42]
	A3-4	0.72 [0.42; 1.79]	0.72 [0.43; 1.78]
	A5-6	0.39 [0.13; 2.45]	0.39 [0.13; 2.45]
	A7	0.54 [0.15; 1.40]	0.54 [0.16; 1.40]
	A8	1.14 [0.44; 3.24]	1.13 [0.45; 3.21]
	T	0.72 [0.35; 1.76]	0.73 [0.36; 1.70]

B_m(16/1910)	A1-2	0.01 [0.01; 0.02]	0.01 [0.01; 0.02]
	A3-4	0.04 [0.02; 0.09]	0.04 [0.02; 0.09]
	A5-6	0.02 [0.01; 0.15]	0.02 [0.01; 0.15]
	A7	0.02 [0.01; 0.06]	0.02 [0.01; 0.06]
	A8	0.06 [0.02; 0.17]	0.06 [0.02; 0.16]
	T	0.04 [0.02; 0.09]	0.04 [0.02; 0.09]
B_m(16)/ K_m^{curr}	A1-2	0.32 [0.15; 0.50]	0.32 [0.15; 0.50]
	A3-4	0.29 [0.14; 0.93]	0.28 [0.14; 0.88]
	A5-6	0.13 [0.05; 1.13]	0.13 [0.05; 1.13]
	A7	0.23 [0.08; 0.50]	0.22 [0.09; 0.47]
	A8	0.18 [0.09; 0.36]	0.17 [0.09; 0.34]
	T	0.21 [0.12; 0.41]	0.21 [0.12; 0.41]
Effort(15/06)	T	0.72 [0.33; 1.72]	0.75 [0.43; 1.33]

Table A2a: Robustness test results using the "2245 MT" tuned OMP. Median values are presented with values in parenthesis being the 5th and 95th %iles. These results refer to the resource as a whole. Tests marked * involve refitting the assessment model; other tests use the Reference Set of operating models, changing only some assumptions regarding the future.

TEST		B(16/06)	TAC^{ave}_{comm}	Effort(16/06)
Reference Set		**1.26 [0.62; 3.00]**	**2245 [1831; 2587]**	**0.72 [0.33; 1.72]**
CC fixed (2210 MT)		**1.24 [0.53; 2.98]**	**2245 [2245; 2245]**	**0.91 [0.34; 3.11]**
CC flexible (2210 MT)		**1.23 [0.52; 2.98]**	**2245 [2245; 2245]**	**0.70 [0.28; 2.26]**
		Priority I tests		
NS1*	Male natural survivorship = 0.88	1.22 [0.52; 3.29]	2230 [1835; 2580]	1.01 [0.49; 2.22]
NS2*	Male natural survivorship = 0.92	1.27 [0.60; 3.66]	1954 [1632; 2458]	0.57 [0.25; 1.31]
D2*	Discard mortality = 0.20	1.24 [0.56; 3.89]	2145 [1755; 2524]	0.64 [0.29; 1.55]
SG2*	1910-1967 growth = 68-88 average	1.28 [0.60; 3.54]	2054 [1696; 2491]	0.56 [0.25; 1.42]
W1 future*	Future walkouts continue at 1990s rate	1.19 [0.51; 3.17]	2203 [1807; 2585]	0.66 [0.32; 1.48]
W1 future* With Zero future commercial catch	Future walkouts continue at 1990s rate	2.27 [1.48; 4.30]	0 [0; 0]	0 [0; 0]
		Priority II tests		
SG low	Future somatic growth remains low for all simulations	1.07 [0.54; 2.21]	2118 [1788; 2385]	0.73 [0.31; 1.66]
SG1	Adult growth is 0.5mm more than thought			
SG3	Pre-1990 growth shifted down to 1990+ average level			
D3	Discard mortality increases 5 yrs prior to min size change			
B1	CPUE 2007+ stays constant			
B3	Future adult somatic growth 0.5mm less than reported			
E1	R drops 50% for 3 years, once in 1998-2006	1.03 [0.49; 2.54]	2203 [1805; 2568]	0.85 [0.35; 2.10]
E3	25% all lobsters die once during 2006-2015	0.81 [0.35; 2.31]	2125 [1699; 2540]	1.02 [0.38; 2.88]
P1	Poaching reduced next 5 years to 200 MT			

Table A2b: Robustness test results using the "2245 MT" tuned OMP. Median values are presented with values in parenthesis being the 5th and 95th %iles. These results refer to the individual super-areas *B*(16/06) values.

	A12	**A34**	**A56**	**A7**	**A8**
Reference Set	0.79 [0.50; 1.32]	1.06 [0.62; 2.58]	1.78 [0.61; 11.29]	1.26 [0.36; 3.26]	1.06 [0.39; 2.83]
CC fixed (2210 MT)	0.77 [0.48; 1.30]	1.22 [0.77; 2.80]	1.75 [0.56; 11.26]	1.05 [0.20; 3.19]	0.93 [0.18; 2.82]
CC flexible (2210 MT)	0.77 [0.48; 1.30]	1.05 [0.58; 2.60]	1.75 [0.58; 11.26]	1.23 [0.36; 3.31]	0.95 [0.19; 2.86]
NS1*	0.81 [0.51; 1.33]	1.00 [0.50; 3.67]	1.30 [0.22; 19.32]	2.06 [0.88; 4.70]	0.79 [0.21; 2.42]
NS2*	0.77 [0.54; 1.23]	0.98 [0.54; 4.54]	1.08 [0.47; 11.56]	1.51 [0.39; 3.85]	1.01 [0.31; 3.13]
D2*	0.78 [0.50; 1.33]	0.88 [0.42; 5.17]	1.10 [0.34; 18.29]	1.49 [0.42; 3.93]	0.99 [0.37; 2.78]
SG2*	0.66 [0.53; 0.85]	0.94 [0.44; 4.19]	1.26 [0.29; 20.56]	1.42 [0.30; 3.96]	1.11 [0.46; 2.97]
W1 future*	0.79 [0.51; 1.32]	0.78 [0.30; 3.53]	0.86 [0.02; 17.77]	1.36 [0.55; 3.33]	1.02 [0.41; 2.82]
W1 future* with zero future commercial catch	1.34 [1.05; 1.89]	1.20 [0.68; 4.06]	1.32 [0.16; 18.42]	2.54 [1.64; 4.70]	2.43 [1.60; 4.45]
SG low	0.79 [0.51; 1.33]	0.95 [0.56; 2.01]	1.55 [0.55; 8.48]	1.25 [0.41; 3.10]	0.77 [0.33; 1.53]
SG1					
SG3					
D3					
B1					
B3					
E1	0.66 [0.42; 1.12]	0.94 [0.57; 2.21]	1.55 [0.56; 9.88]	1.09 [0.27; 3.01]	0.77 [0.30; 2.19]
E3	0.52 [0.29; 0.96]	0.78 [0.43; 2.01]	1.33 [0.43; 0.78]	0.89 [0.17; 2.69]	0.58 [0.16; 1.94]
P1					

Figure A1: Comparative plots of some performance statistics comparing the “2245” OMP tuning with the variant which forces all future sigma values for the OMP input data to be zero.