Further SCAA runs of
US South Atlantic Wreckfish

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October 2013

Introduction

To assist the discussion during the Thursday 31 October conference call, further SCAA runs have been conducted for the South Atlantic wreckfish resource. These runs are variants on the assessment presented last year (Butterworth and Rademeyer, 2012) to explore the sensitivity of the results to some of the assumptions made. All the runs presented here have fixed natural mortality (M=0.05) and steepness of the stock-recruitment curve (h=0.75):

0) Reference Case (RC) (Table 1, Butterworth and Rademeyer, 2012);

1) As the RC, but using alternative growth curve parameters provided by Adam Lytton (pers. commn) (Figure 1 plots the growth curve used in the RC and that provided by Lytton);

2) Replacing the average value used for the 2001-2008 landings by a linear trend up and down over time (Figure 2 plots the assumed catches). Recall that the landings each year during this period are confidential; only their total is known, and the RC assumed annual catches remained unchanged over this period.

Results

The results of the runs described above are given in Table 1. The spawning biomass trajectories and fit to CPUE and CAL data are compared for the RC and run 1 (Lytton's growth curve) in Figure 3.

Possible implications

- The Lytton growth curve leads to an improved fit to the data. Should this be adopted instead of the existing choice for a future Reference case run?
- Even given unrealistically large distortions away from constancy for the landings over 2001-2008, the assessment results hardly change. Is there any need to investigate the consequences of the lack of more detailed landings information over this period further?

Reference

Butterworth, D S and Rademeyer, R A. 2012. An application of Statistical Catch at Age Methodology to assess south Atlantic wreckfish. Document presented to the October 2012 meeting of the South Atlantic Fishery Management Council SSC. 15pp.

Table 1: Results for the six runs presented in this paper. Values fixed on **input are bolded**.

|	0	1	2a	2b	2c	2d
	RC	AdamGC	Cup5	Cup10	Cdown5	Cdown10
'-lnL:overall	-50.3	-53.6	-50.0	-49.7	-50.6	-50.9
'-lnL:CPUE	-29.7	-27.1	-29.3	-29.0	-30.0	-30.3
'-lnL:CAL	-20.7	-26.5	-20.7	-20.7	-20.7	-20.6
'-lnL:RecRes	0	0	0	0	0	0
h	**0.75**	**0.75**	**0.75**	**0.75**	**0.75**	**0.75**
M	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**
θ	**1**	**1**	**1**	**1**	**1**	**1**
ς	**0**	**0**	**0**	**0**	**0**	**0**
K^{sp}	7957	8820	7970	7986	7944	7934
B^{sp}_{2010}	3976	5133	3988	4000	3966	3959
B^{sp}_{2010}/K^{sp}	0.50	0.58	0.50	0.50	0.50	0.50
$MSYL^{sp}$	0.28	0.26	0.28	0.28	0.28	0.28
B^{spMSY}	2258	2306	2262	2266	2255	2252
$B^{sp}_{2010}/B^{sp}_{MSY}$	1.76	2.23	1.76	1.76	1.76	1.76
MSY	350	444	350	351	349	349
q_cpue	0.0003	0.0002	0.0003	0.0003	0.0003	0.0003
σ_cpue	0.14	0.16	0.14	0.14	0.14	0.13
σ_cal	0.11	0.10	0.11	0.11	0.11	0.11
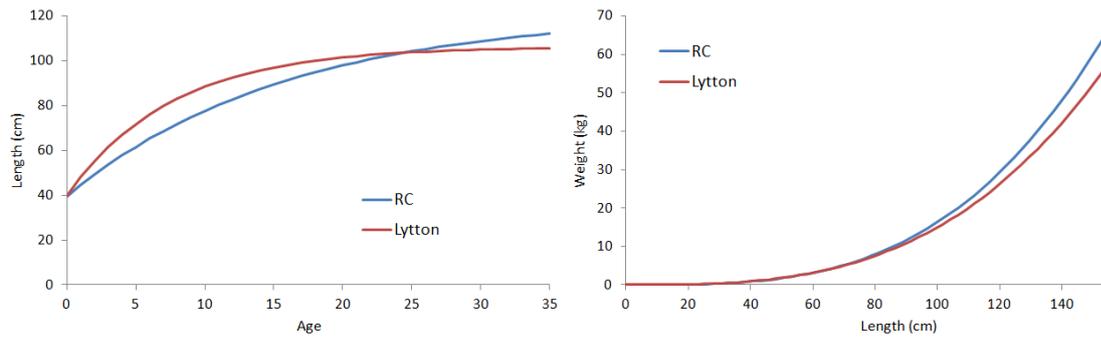
Figure 1: Growth curves and weight-at-length used in the RC and provided by Adam Lytton (pers. commn).
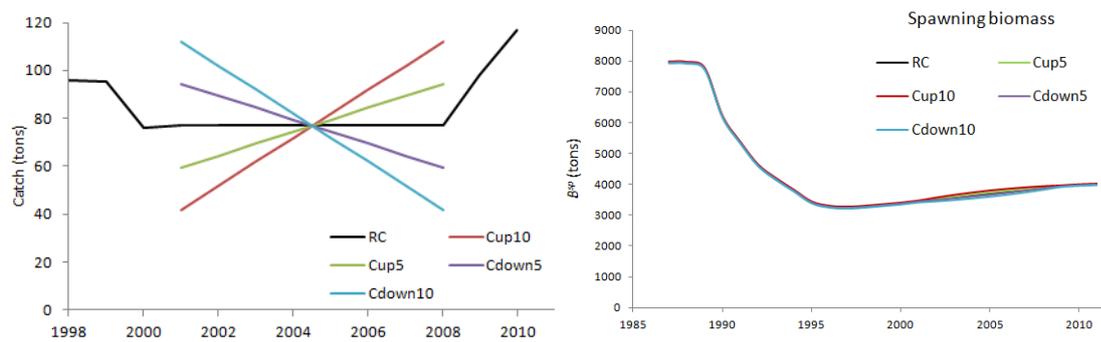

Figure 2: Assumed annual catches for the period 2001-2008 and spawning biomass trajectories for the RC and four variants.
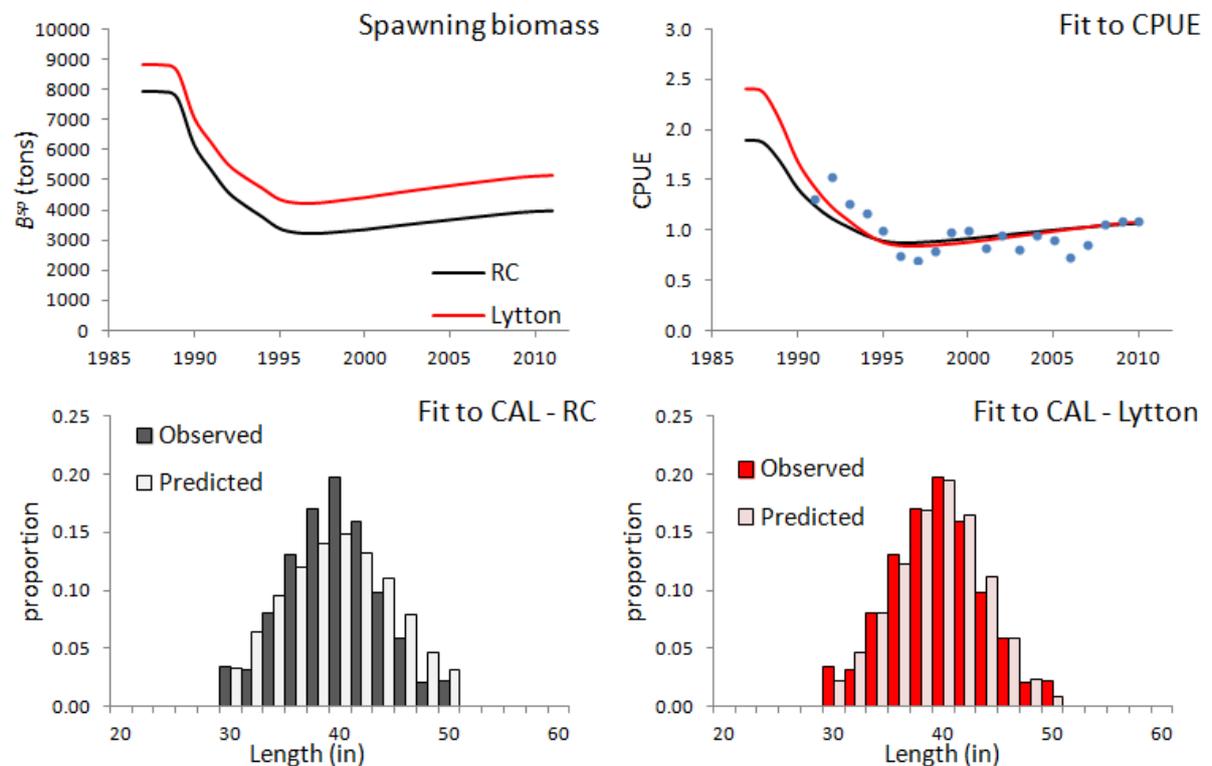

Figure 3: Some results for the RC and the run using Lytton's growth curve. The fit to CAL is averaged over the years for which data are available.