

Some comments on “Illustration of the role of the pre-1978 species splitting assumptions in hake assessments”

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OLRAC (2009) notes the importance of the assumption for the pre-1978 species split of the offshore trawl catches in the assessment results and suggests that the changeover from a mainly *capensis* fishery to a mainly *paradoxus* fishery occurred later than what is assumed in the Reference Set.

A first Reference Set (RS) was developed for this resource in the beginning of 2005 (Rademeyer and Butterworth, 2005a). This initial RS included four assumptions regarding the ratio of *capensis* in the offshore trawl catches pre-1978; these are illustrated in Fig. 1.

In subsequent Working Group discussions, however, it was agreed to drop scenarios C1, C2 and C4 from the RS (Rademeyer and Butterworth, 2005b). These scenarios reflected a current spawning biomass ratio for *M. capensis* compared to *M. paradoxus* ranging between about 5:1 and 11:1, results which were deemed implausible. The current *M. capensis* to *M. paradoxus* spawning biomass ratio in the C3 scenarios on the other hand is (on average) about 2.5:1 – a value that seems more realistic. Furthermore, C3 scenarios yield much lower *M. capensis* spawning biomass estimates in absolute terms, which correspond to estimated multiplicative bias estimates for south coast research surveys which are close to 1 compared to the very low values for C1, C2 and C4 scenarios. See Table 1.

Although option C3a in OLRAC (2009) should correspond to the option C3 in Rademeyer and Butterworth (2005a) (note that after elimination of C1, C2 and C4, a narrower set of C options was adopted for the Reference Set, with the previous C3 being renamed C3a), there seems to be a glitch from the mid 1960's to 1977 as the *capensis* proportion should follow a logistic decline until 1977.

References

- OLRAC. 2009. Illustration of the role of the pre-1978 species splitting assumptions in hake assessments. Unpublished document, MCM,
- Rademeyer RA and Butterworth DS. 2005a. Final proposal for Reference Set for the joint assessment of the South African *Merluccius paradoxus* and *M. capensis* resources. Unpublished document, MCM, WG/04/05/DH17.
- Rademeyer RA and Butterworth DS. 2005b. Proposed revised Reference Set for the joint assessment of the South African *Merluccius paradoxus* and *M. capensis* resources for use in OMP testing. Unpublished document, MCM, WG/12/05/DH57.

Table 1: Total negative log-likelihood and estimated *cap/para* ratio (B_{2004}^{sp}) and South Coast spring *M. capensis* survey *q*.

					-lnL: Total	<i>cap/para</i> ratio	SC <i>capensis q</i>
33	M1	C1	H1	SR2	-166.5	6.1	0.52
34	M1	C2	H1	SR2	-159.6	10.7	0.29
35	M1	C3	H1	SR2	-166.4	2.4	1.16
36	M1	C4	H1	SR2	-166.9	8.3	0.46
37	M1	C1	H2	SR2	-156.9	5.2	0.47
38	M1	C2	H2	SR2	-154.2	5.8	0.28
39	M1	C3	H2	SR2	-160.2	1.5	1.34
40	M1	C4	H2	SR2	-151.0	4.5	0.61
41	M1	C1	H3	SR2	-164.8	7.7	0.41
42	M1	C2	H3	SR2	-158.8	10.8	0.28
43	M1	C3	H3	SR2	-159.9	4.1	0.73
44	M1	C4	H3	SR2	-164.6	7.8	0.40
45	M1	C1	H4	SR2	-155.4	6.0	0.41
46	M1	C2	H4	SR2	-147.1	8.8	0.28
47	M1	C3	H4	SR2	-152.3	3.0	0.75
48	M1	C4	H4	SR2	-155.0	5.0	0.40
49	M4	C1	H1	SR2	-173.9	6.4	0.39
50	M4	C2	H1	SR2	-175.5	8.5	0.25
51	M4	C3	H1	SR2	-169.0	1.9	1.40
52	M4	C4	H1	SR2	-176.1	8.6	0.35
53	M4	C1	H2	SR2	-167.8	5.0	0.37
54	M4	C2	H2	SR2	-170.2	6.7	0.24
55	M4	C3	H2	SR2	-163.8	1.4	1.41
56	M4	C4	H2	SR2	-169.9	6.3	0.35
57	M4	C1	H3	SR2	-168.8	7.1	0.34
58	M4	C2	H3	SR2	-171.3	8.8	0.25
59	M4	C3	H3	SR2	-165.7	3.5	0.76
60	M4	C4	H3	SR2	-174.2	8.7	0.35
61	M4	C1	H4	SR2	-163.0	5.3	0.33
62	M4	C2	H4	SR2	-166.2	6.8	0.24
63	M4	C3	H4	SR2	-158.9	2.3	0.84
64	M4	C4	H4	SR2	-168.1	6.5	0.35

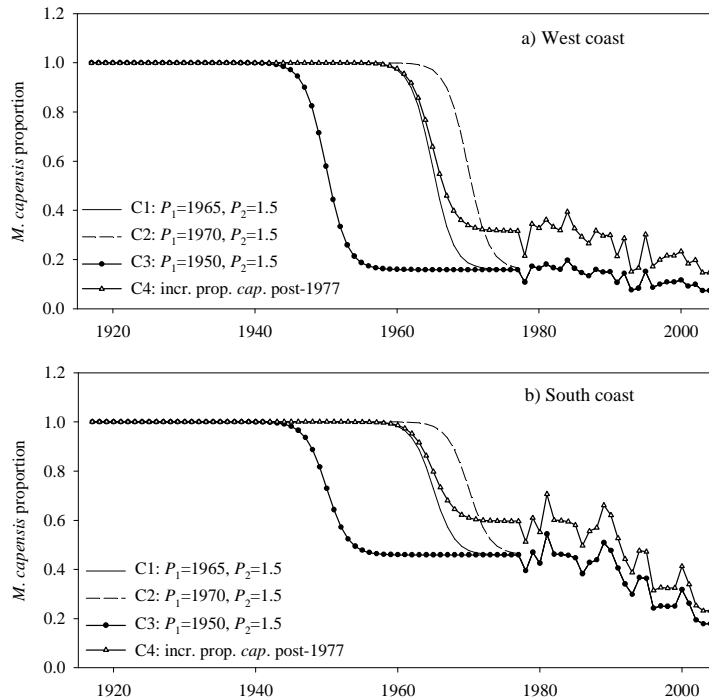


Fig. 1: Assumed proportion of *M. capensis* in the offshore catches for a) the west coast and b) the south coast for the sensitivities C1, C2, C3 and C4.