OMP-14: Alternative initial directed sardine TAC rules

SPSWG Meeting
29th October 2014
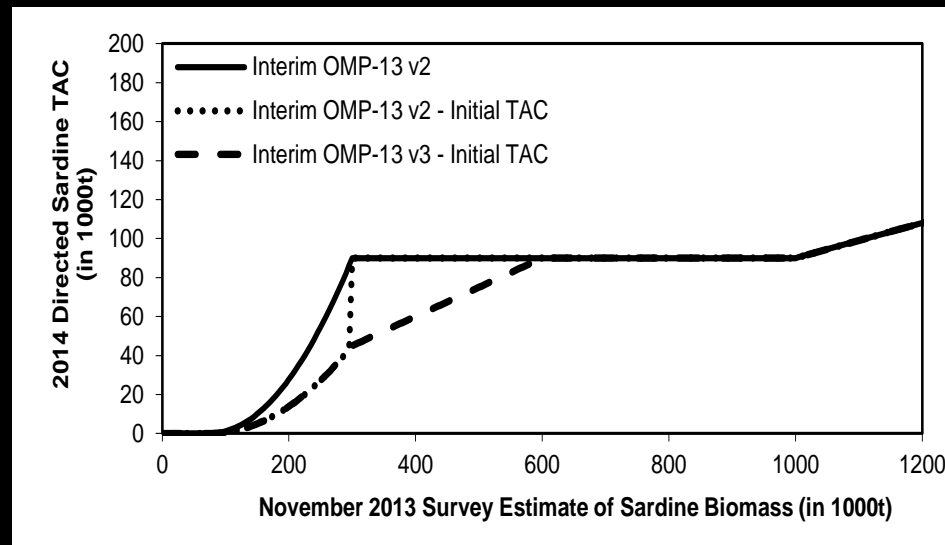
Carryn de Moor

Marine Resource Assessment and Management Group (MARAM)
Department of Mathematics and Applied Mathematics
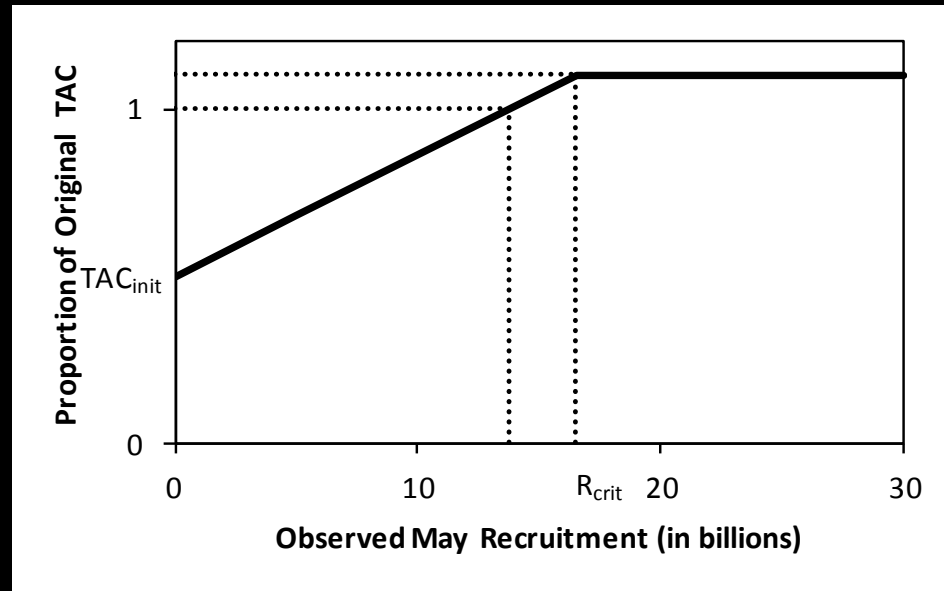University of Cape Town

Re-cap of OMP-14 development

- Agreement to finalise OMP-14 based on Interim OMP-13v3 (which defines initial sardine TAC) with rules for possible top-up of initial sardine TAC to be quantified.

Re-cap of OMP-14 development

- Mid-year top-up of sardine TAC proportional to the difference between maximum possible (110% Original TAC) and the initial TAC
  (CMP-14.2 of FISHERIES/2014/JUN/SWG-PEL/26rev)

Re-cap of OMP-14 development

- Tested alternative values governing the level of observed May/June recruitment required to result in the revised TAC equalling the original TAC (*Avg*) and maximum possible TAC (R_{crit}).
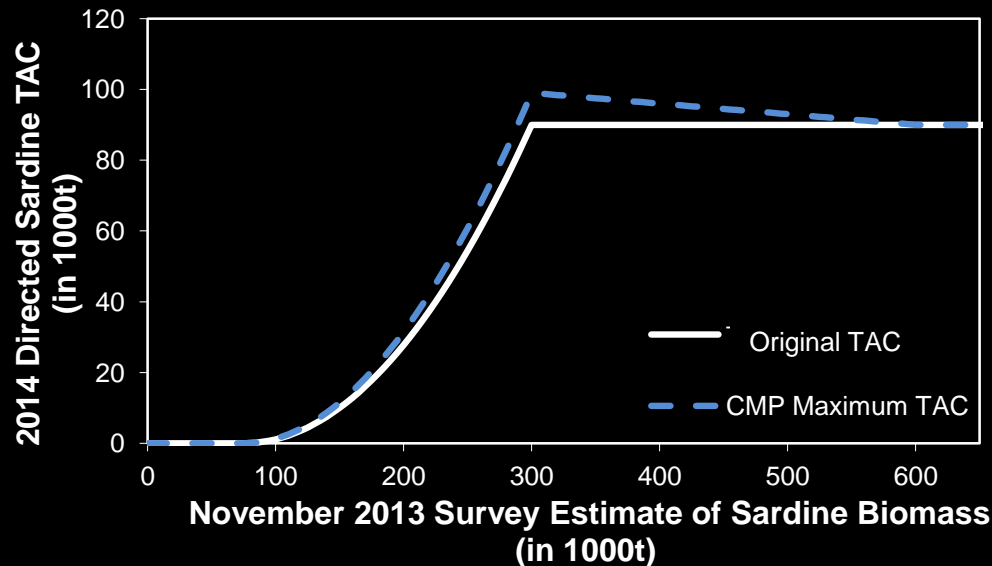
  (FISHERIES/2014/SEP/SWG-PEL/45)

- OMP TT agreed to continue to base the "top-up" on the observed annual May/June recruitment compared to the average observed from 1985 to 2011

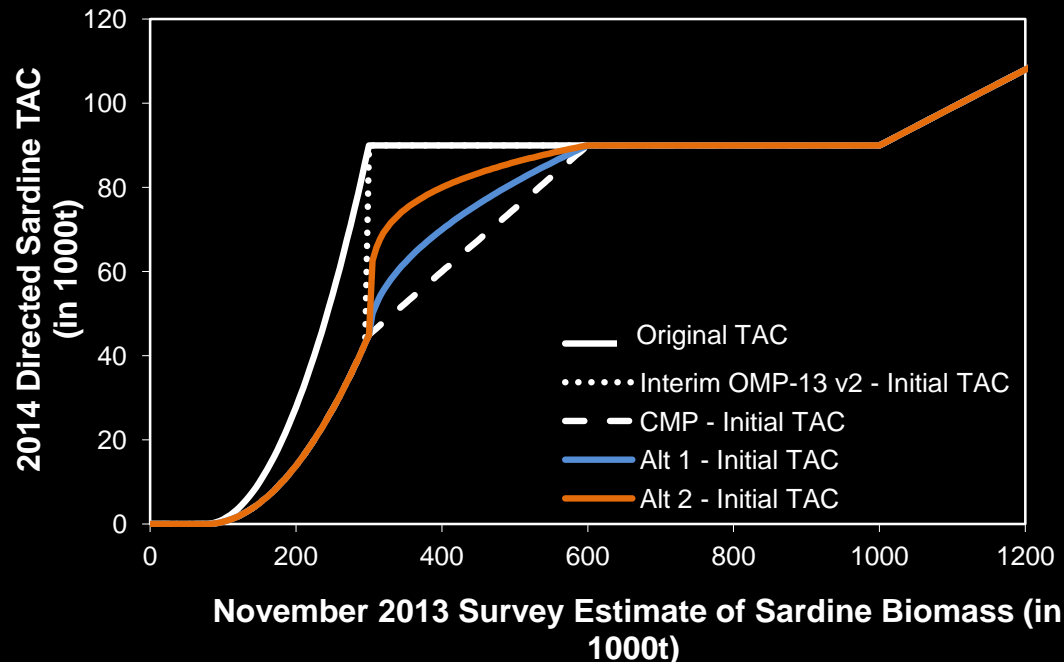 (Avg=13.74 billion and R_{crit}=16.48 billion recruits)

Revised Candidate MP

- The maximum possible TAC is smoothed from 110% of original TAC at 300 000t to 100% of original TAC at 600 000t.

Chart — Y-axis: **2014 Directed Sardine TAC (in 1000t)** (0 to 120); X-axis: **November 2013 Survey Estimate of Sardine Biomass (in 1000t)** (0 to 600). Legend: Original TAC (solid line), CMP Maximum TAC (dashed line).
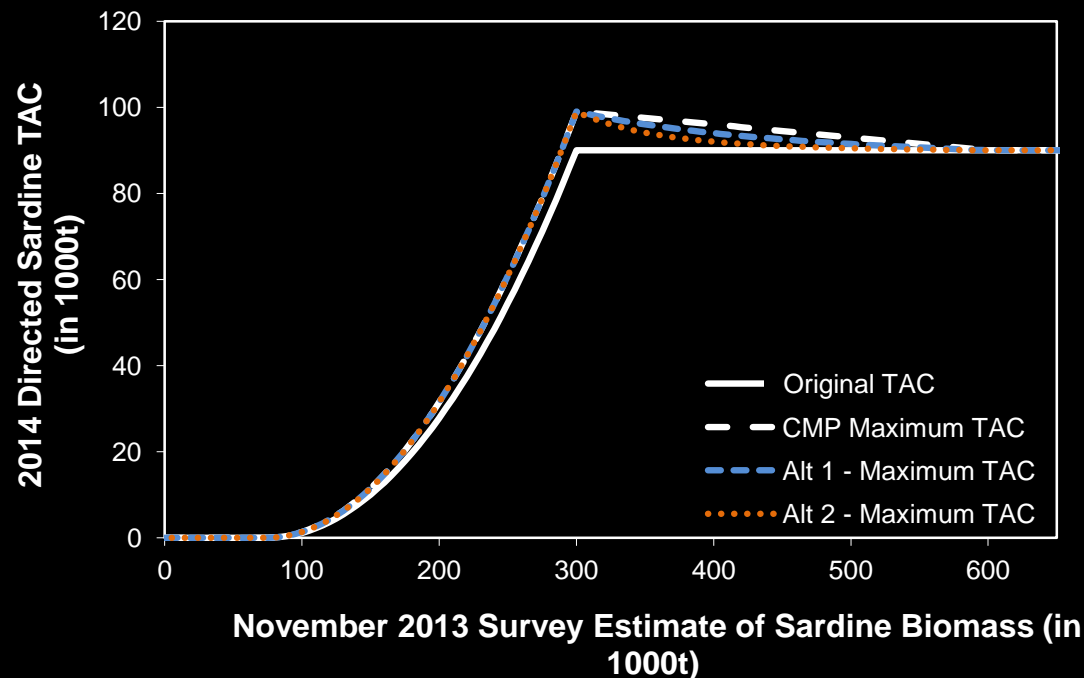
Alternative rules for initial sardine TAC

- <u>CMP</u>: increases linearly ~67% of original TAC at 400 000t
- <u>Alt1</u>: increases non-linearly ~78% of original TAC at 400 000t
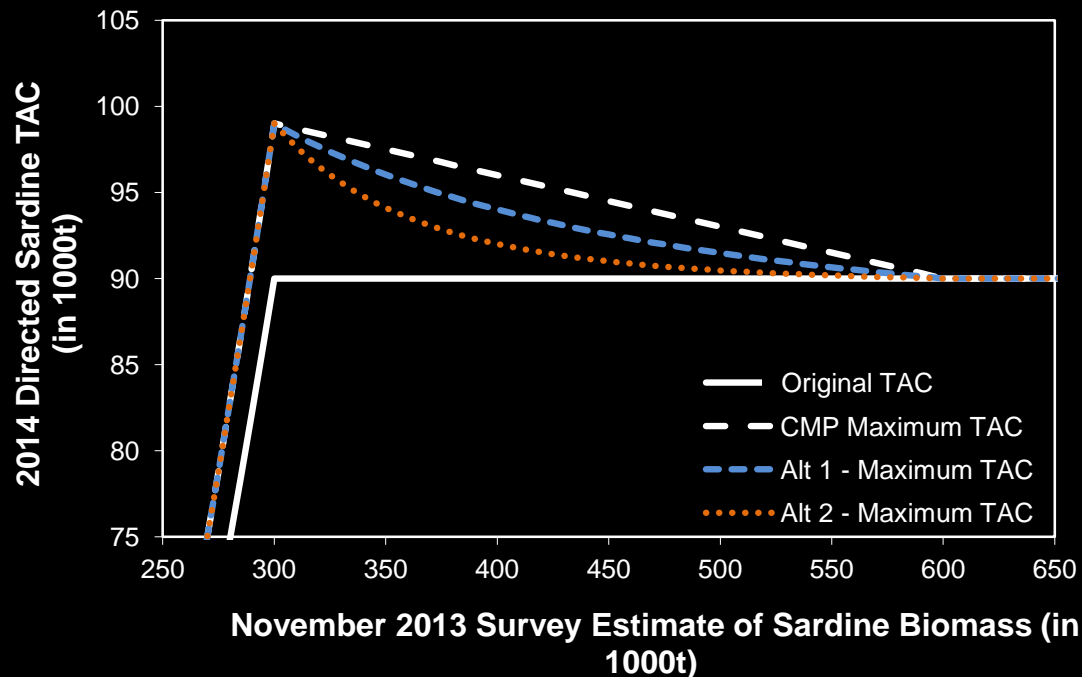- <u>Alt2</u>: increases non-linearly ~89% of original TAC at 400 000t

Alternative rules for initial sardine TAC

- The "bonus" TAC possible thus decreases faster under Alt1 and Alt2 than CMP as the "initial sacrifice" is less
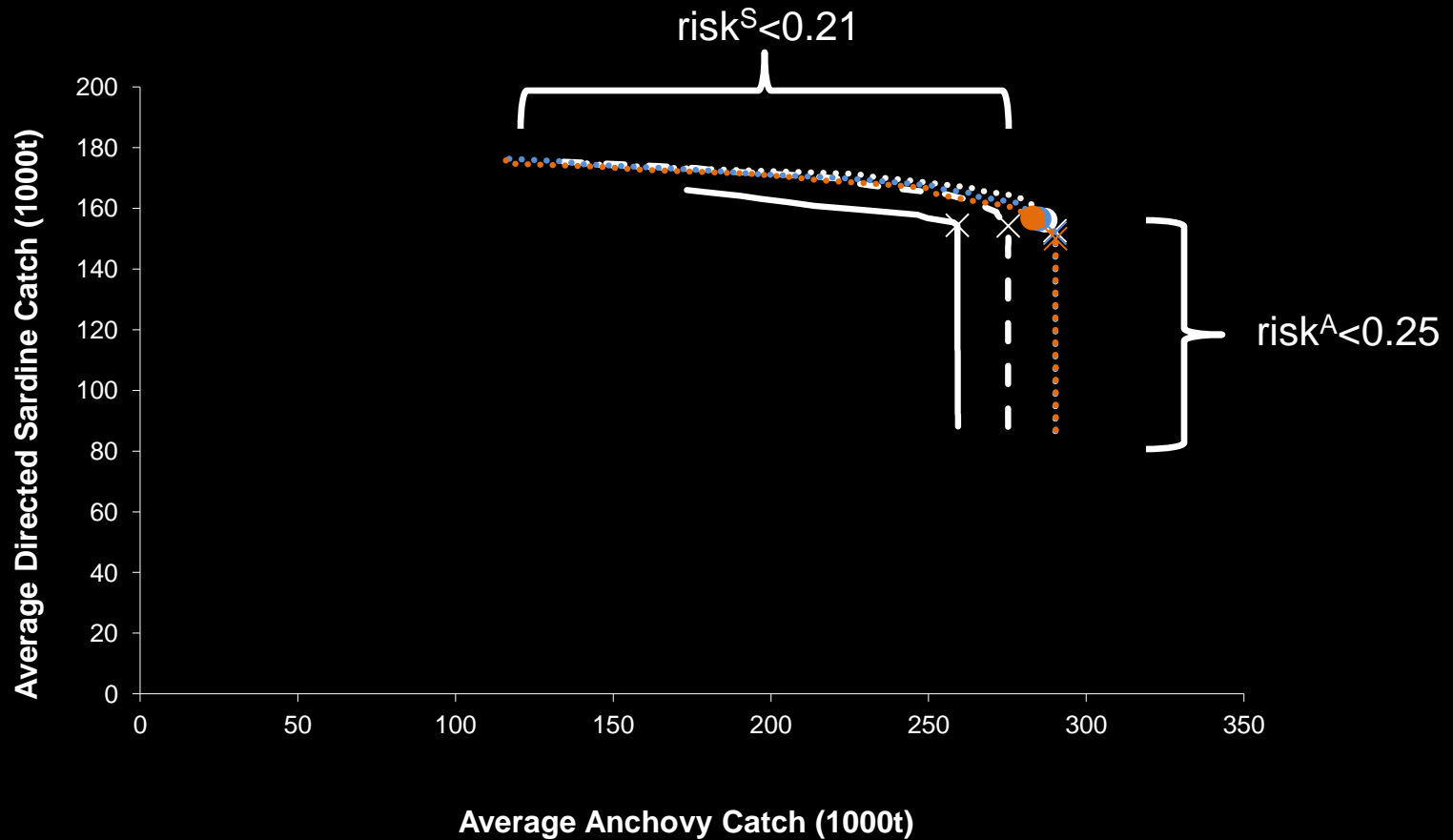
Alternative rules for initial sardine TAC

- The "bonus" TAC possible thus decreases faster under Alt1 and Alt2 than CMP as the "initial sacrifice" is less
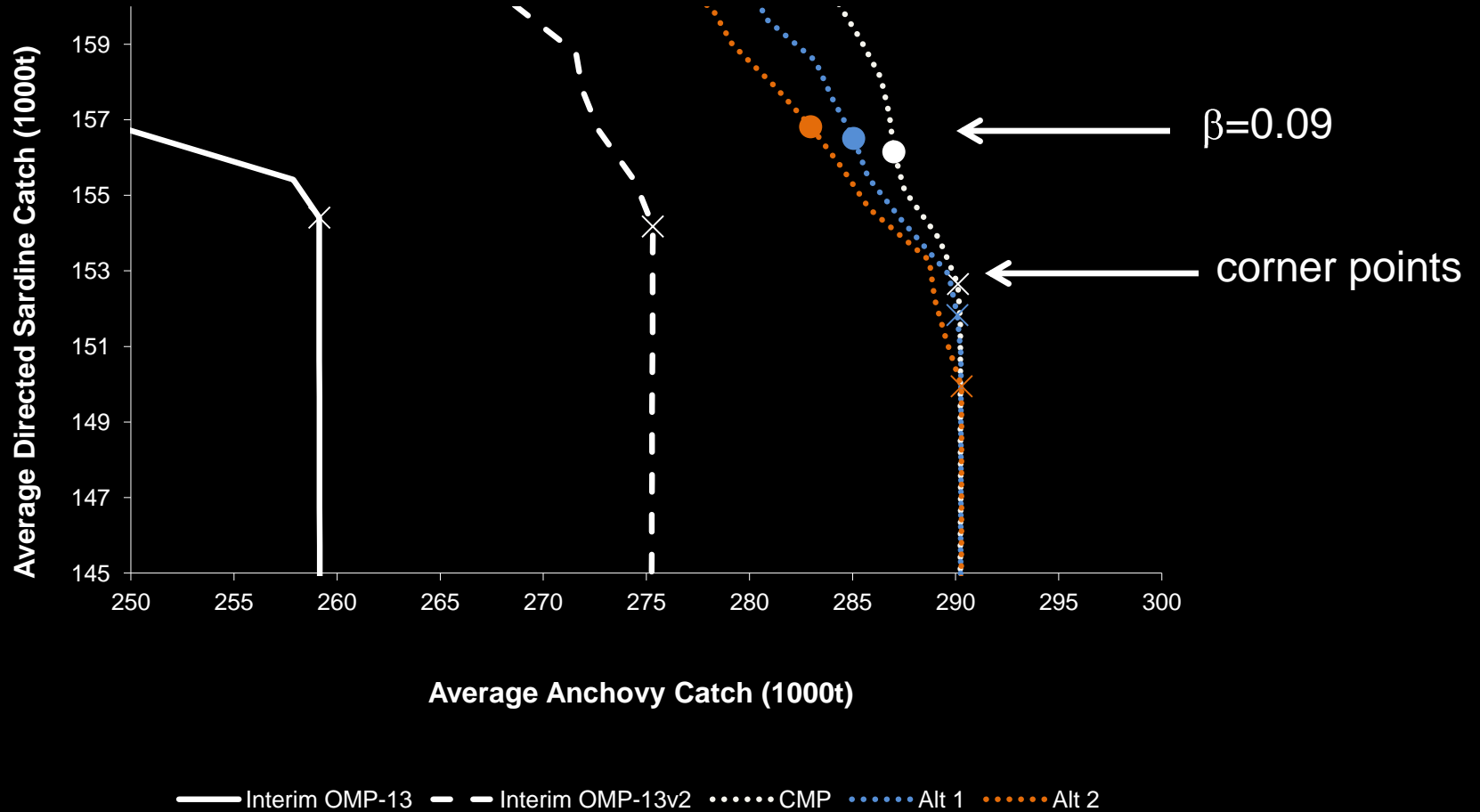
Alternative rules for initial sardine TAC

- Note that with the change in the "top-up" rules:

- the sardine TAC increases mid-year if observed recruitment >0

- the mid-year revision to the annual TAC = original TAC when observed recruitment = historic average (Avg=13.74 billion recruits)

- the mid-year revision to the annual TAC = maximum (>original TAC) when observed recruitment = R_{crit} = 16.48 billion <u>under CMP only</u>

- the maximum possible TAC is only reached when a higher recruitment is observed for Alt1 and Alt2

Trade-off Curves

Trade-off Curves

Key Performance Statistics

	β	α_{ns}	$risk_A$	$risk_S$	C^A	AAV^A	C^S	C^S_{by}	AAV^S
No catch			0.008	0.047	0 (0)	0.00 (0.00)	0	0	0.00 (0.00)
CMP	0.087	0.898	0.239	0.209	290 (342) 322 (377)	0.21 (0.13)	153 (121) 129 (96)	33	0.39 (0.62)
Alt 1	0.086	0.895	0.239	0.209	290 (341) 322 (376)	0.21 (0.13)	152 (120) 128 (95)	33	0.36 (0.62)
Alt 2	0.084	0.913	0.244	0.209	290 (343) 324 (381)	0.21 (0.13)	150 (119) 125 (93)	33	0.33 (0.61)

By design risk stats are similar at the corner point

Small decrease in β → Slight decrease in C^S

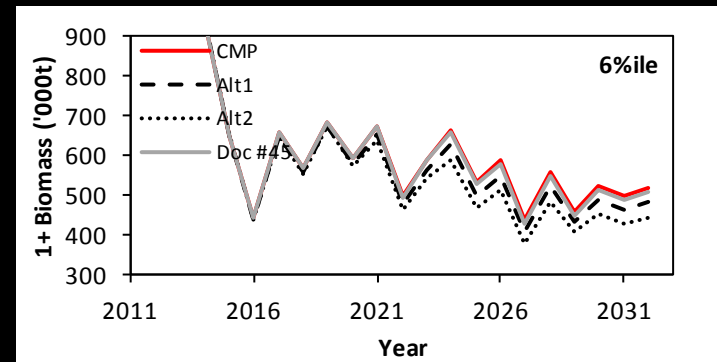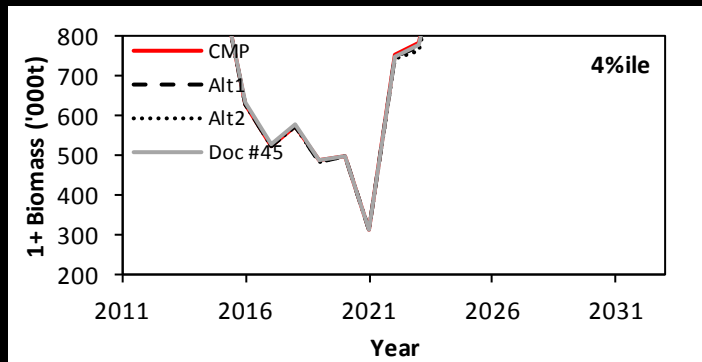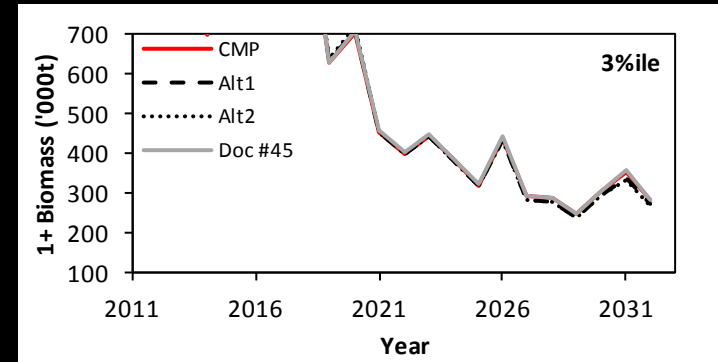Decrease in initial sardine TAC → Increase in AAV^S

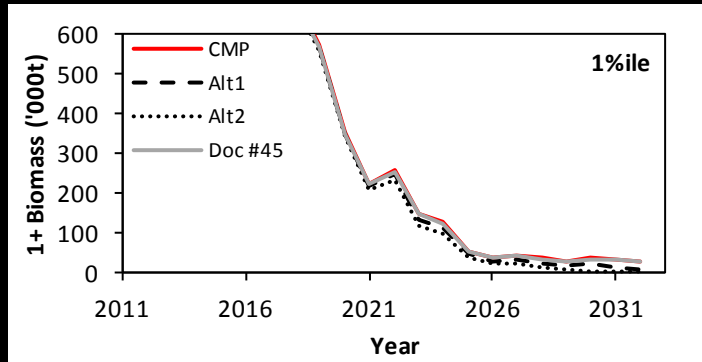# Key Performance Statistics

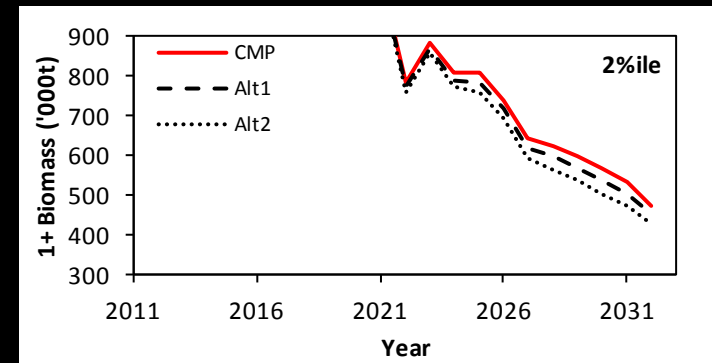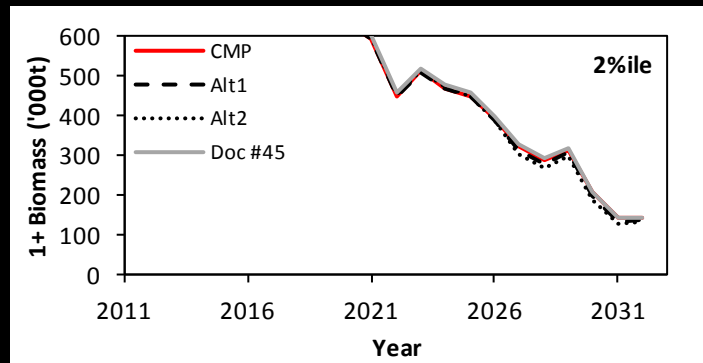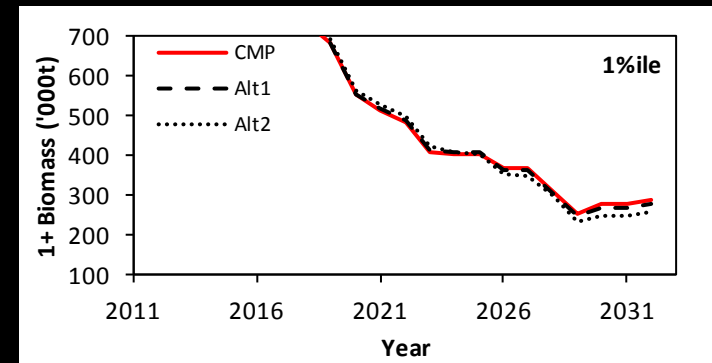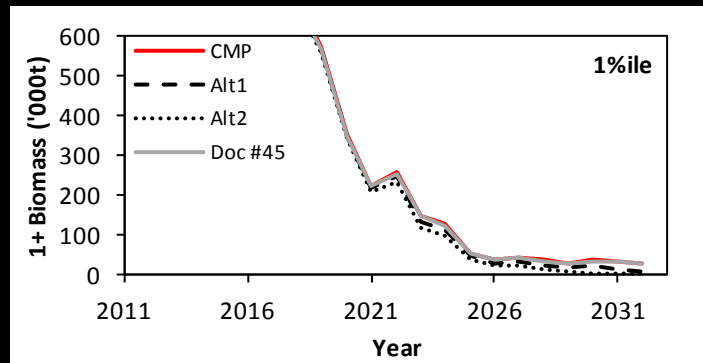|	β	α_{ns}	$risk_A$	$risk_S$	C^A	AAV^A	C^S	C^S_{by}	AAV^S
No catch			0.008	0.047	0 (0)	0.00 (0.00)	0	0	0.00 (0.00)
CMP	0.090	0.754	0.175	0.209	287 (324) 301 (328)	0.23 (0.13)	156 (124) 131 (98)	31	0.40 (0.62)
Alt 1	0.090	0.705	0.163	0.209	285 (318) 290 (309)	0.24 (0.13)	157 (124) 131 (98)	30	0.39 (0.62)
Alt 2	0.090	0.664	0.149	0.209	283 (312) 282 (293)	0.24 (0.13)	157 (124) 131 (98)	30	0.37 (0.62)

α and anchovy risk decreases for higher β

Lower C^A (max TAC influences long term C^A)

Lowest Percentiles

Lowest Percentiles

Without recruitment error :
less pessimistic
"bigger" difference

OMP-14: Alternative initial directed sardine TAC rules

Thank you for your attention