

# Interim OMP-18: the directed Harvest Control Rule

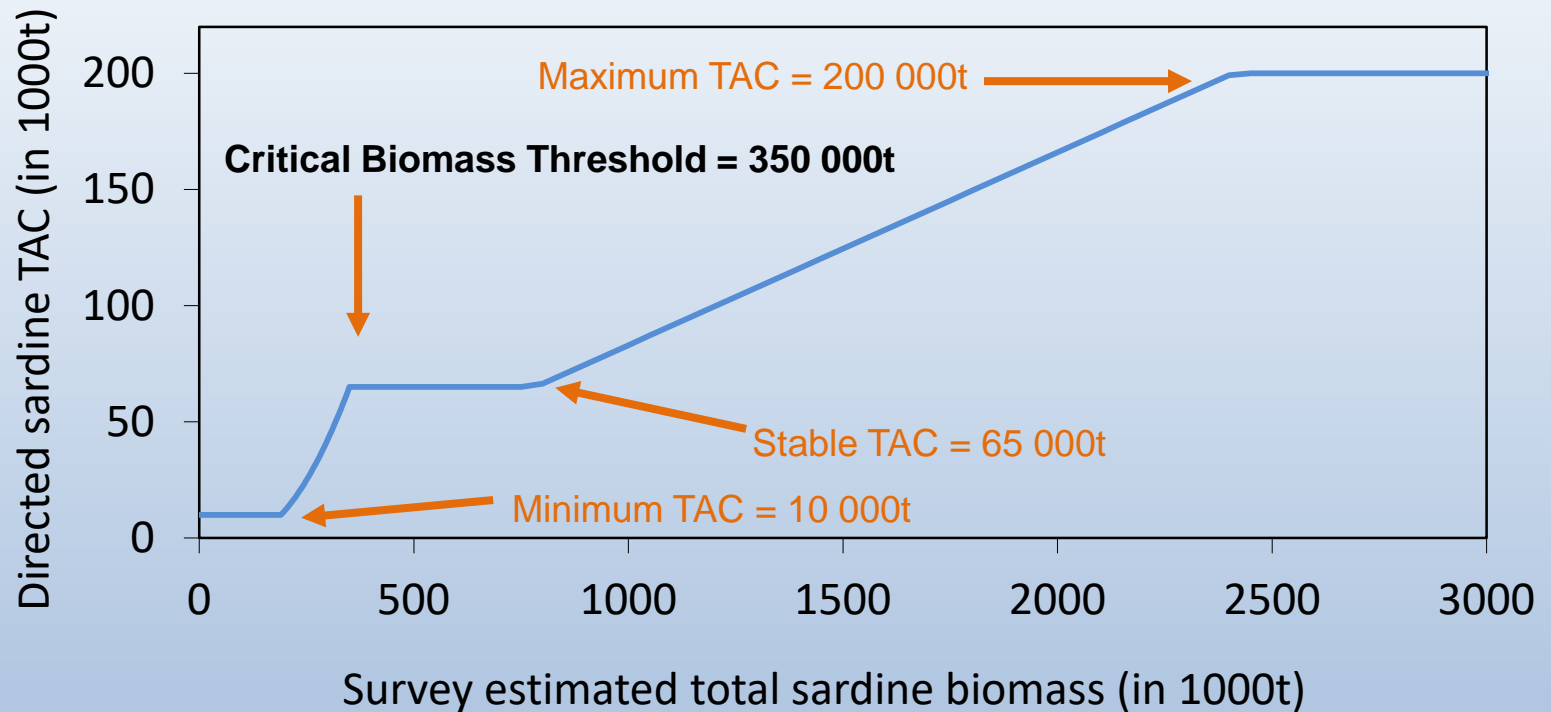
SWG-PEL Meeting  
2<sup>nd</sup> August 2018

Carryn de Moor

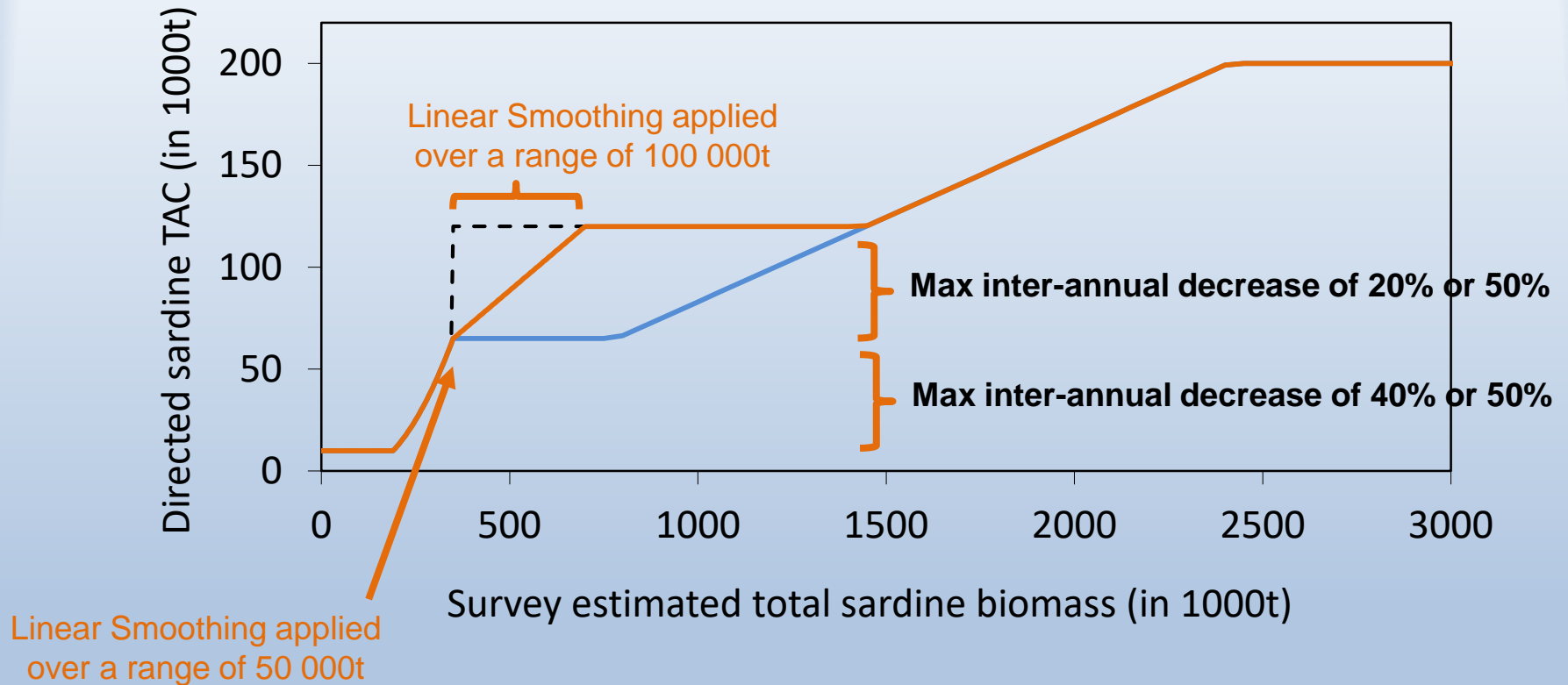


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# Interim OMP-18: Sardine HCR



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If  $TAC_{y-1} = 150\ 000t$ , 20% constraint on inter-annual decrease applies:  
 $0.8 \times 150\ 000t = 120\ 000t$

# Interim OMP-18: Sardine HCR

- CMP1:  $B_{crit}^S = 350$ ,  $c_{mxdn}^S = 0.2$ ,  $p_{crit}^S = 0.4$
- CMP2:  $B_{crit}^S = 300$ ,  $c_{mxdn}^S = 0.2$ ,  $p_{crit}^S = 0.4$
- CMP3:  $B_{crit}^S = 350$ ,  $c_{mxdn}^S = 0.5$ ,  $p_{crit}^S = 0.5$
- CMP4:  $B_{crit}^S = 300$ ,  $c_{mxdn}^S = 0.5$ ,  $p_{crit}^S = 0.5$

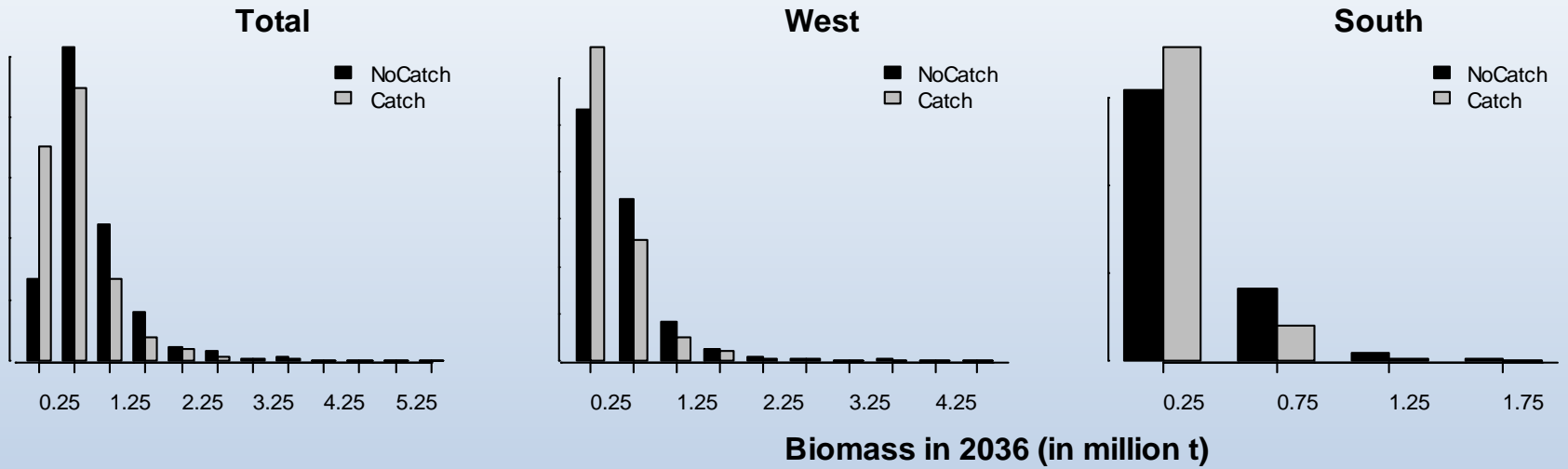
Tuned using one OM only with  $p = 0.08$  and MoveR

# Leftward Shift

		Total	Total	Total		West		South	
		OMP-08	OMP-14						
CMP1	10%ile	0.50	0.59						
	20%ile	<b>0.68</b>	<b>0.68</b>						
	30%ile	0.72	0.73						
	40%ile	0.73	0.76						
	50%ile	0.72	0.78						
CMP2		OMP-08	OMP-14						
	10%ile	0.50	0.59						
	20%ile	<b>0.68</b>	<b>0.68</b>						
	30%ile	0.72	0.73						
	40%ile	0.73	0.76						
	50%ile	0.72	0.78						

Proportions in table are (%ile of  $B_{catch}$ ) / (%ile of  $B_{nocatch}$ ) after 20 years projection

# Leftward Shift



# Leftward Shift

		Total	Total	Total	West	South
		OMP-08	OMP-14	$\beta = 0.126$		
CMP1	10%ile	0.50	0.59	0.60		
	20%ile	<b>0.68</b>	<b>0.68</b>	<b>0.68</b>		
	30%ile	0.72	0.73	0.71		
	40%ile	0.73	0.76	0.73		
	50%ile	0.72	0.78	0.73		
CMP2		OMP-08	OMP-14	$\beta = 0.102$		
	10%ile	0.50	0.59	0.62		
	20%ile	<b>0.68</b>	<b>0.68</b>	<b>0.68</b>		
	30%ile	0.72	0.73	0.72		
	40%ile	0.73	0.76	0.74		
	50%ile	0.72	0.78	0.75		

Proportions in table are (%ile of  $B_{catch}$ ) / (%ile of  $B_{nocatch}$ ) after 20 years projection

Tune  $\beta$  until (20%ile of  $B_{catch}$ ) / (20%ile of  $B_{nocatch}$ ) = 0.68

# Leftward Shift

		Total	Total	Total		West		South	
		OMP-08	OMP-14	$\beta = 0.125$	$\beta = 0.126$				
CMP1	10%ile	0.50	0.59	0.61	0.60				
	20%ile	<b>0.68</b>	<b>0.68</b>	0.69	<b>0.68</b>				
	30%ile	0.72	0.73	0.71	0.71				
	40%ile	0.73	0.76	0.73	0.73				
	50%ile	0.72	0.78	0.73	0.73				
CMP2		OMP-08	OMP-14	$\beta = 0.101$	$\beta = 0.102$				
	10%ile	0.50	0.59	0.62	0.62				
	20%ile	<b>0.68</b>	<b>0.68</b>	0.69	<b>0.68</b>				
	30%ile	0.72	0.73	0.72	0.72				
	40%ile	0.73	0.76	0.74	0.74				
	50%ile	0.72	0.78	0.75	0.75				

Proportions in table are (%ile of  $B_{catch}$ ) / (%ile of  $B_{nocatch}$ ) after 20 years projection

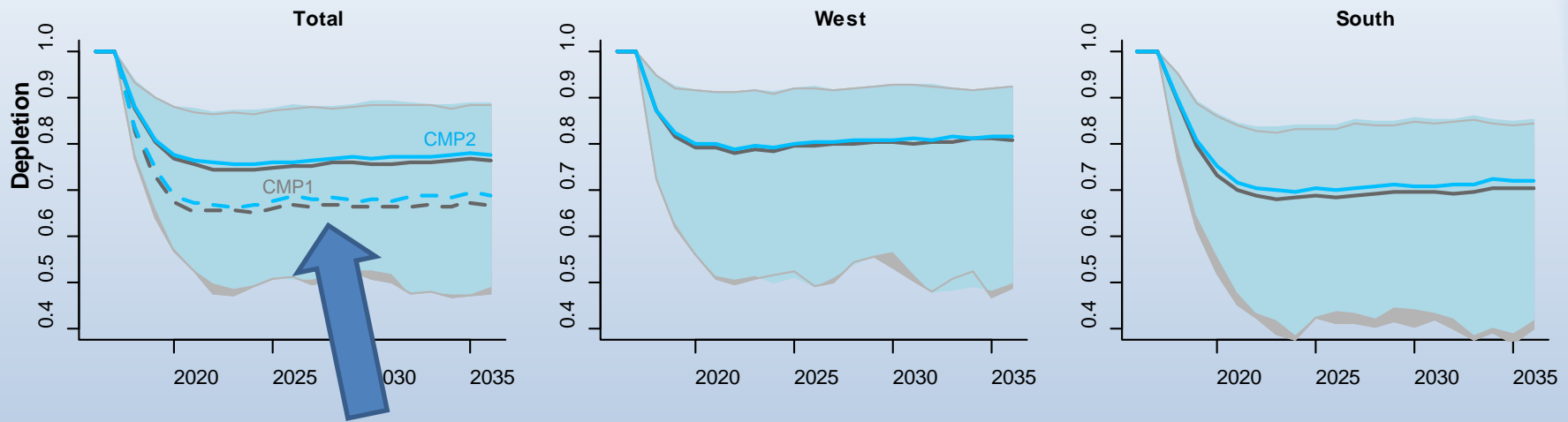


# Leftward Shift

		Total	Total	Total		West		South	
		OMP-08	OMP-14	$\beta = 0.125$	$\beta = 0.126$	$\beta = 0.125$	$\beta = 0.126$	$\beta = 0.125$	$\beta = 0.126$
CMP1	10%ile	0.50	0.59	0.61	0.60	0.67	0.67	0.56	0.56
	20%ile	<b>0.68</b>	<b>0.68</b>	0.69	<b>0.68</b>	0.72	0.72	0.61	0.60
	30%ile	0.72	0.73	0.71	0.71	0.74	0.74	0.62	0.62
	40%ile	0.73	0.76	0.73	0.73	0.77	0.77	0.66	0.66
	50%ile	0.72	0.78	0.73	0.73	0.77	0.77	0.68	0.68
CMP2		OMP-08	OMP-14	$\beta = 0.101$	$\beta = 0.102$	$\beta = 0.101$	$\beta = 0.102$	$\beta = 0.101$	$\beta = 0.102$
	10%ile	0.50	0.59	0.62	0.62	0.67	0.67	0.57	0.57
	20%ile	<b>0.68</b>	<b>0.68</b>	0.69	<b>0.68</b>	0.72	0.72	0.63	0.63
	30%ile	0.72	0.73	0.72	0.72	0.75	0.75	0.63	0.63
	40%ile	0.73	0.76	0.74	0.74	0.77	0.77	0.68	0.67
	50%ile	0.72	0.78	0.75	0.75	0.77	0.77	0.70	0.70

Proportions in table are (%ile of  $B_{catch}$ ) / (%ile of  $B_{nocatch}$ ) after 20 years projection

# Leftward Shift or Depletion relative to No Catch Scenario

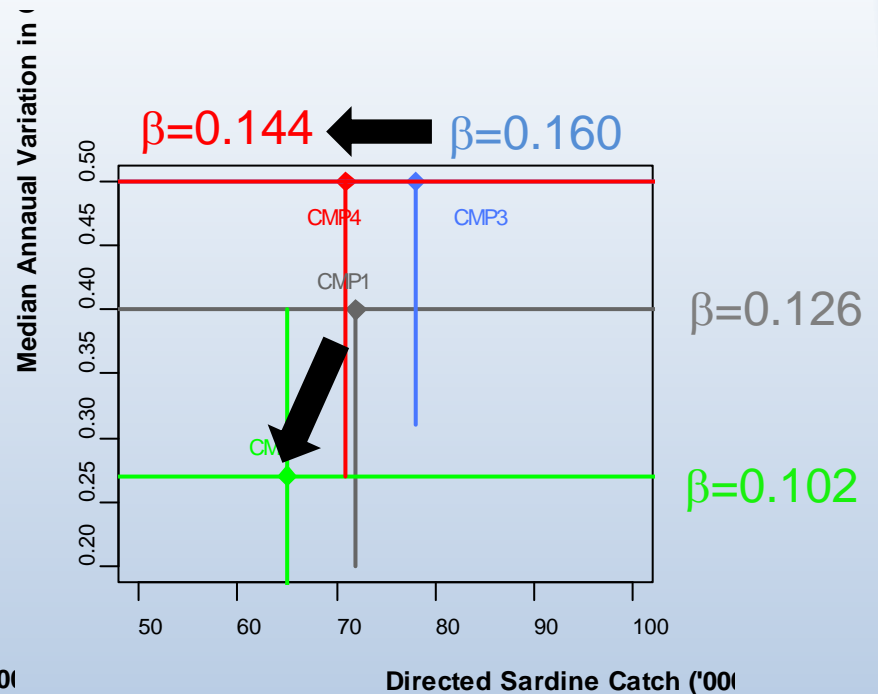
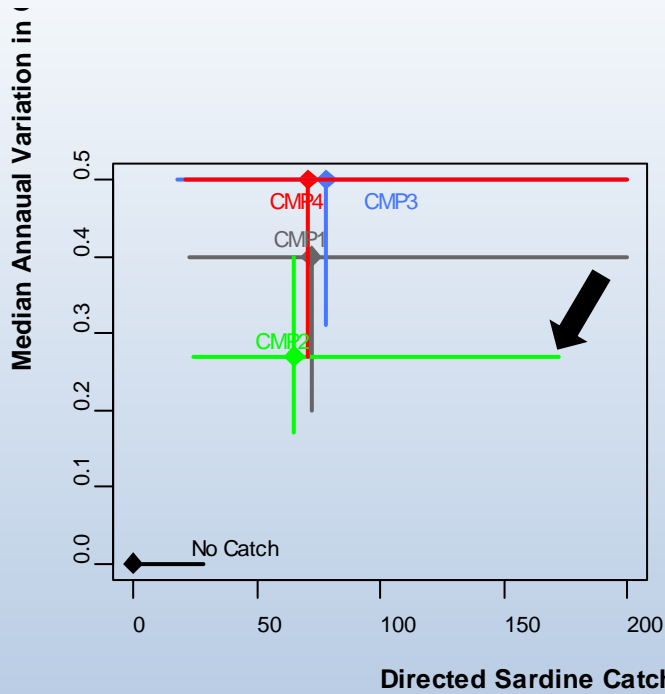


Here dashed line is 20%ile of  $(B_{\text{catch}} / B_{\text{nocatch}})$ , and not  $(20\%ile \text{ of } B_{\text{catch}}) / (20\%ile \text{ of } B_{\text{nocatch}})$  which = 0.68 after 20 years of projection

# Leftward Shift

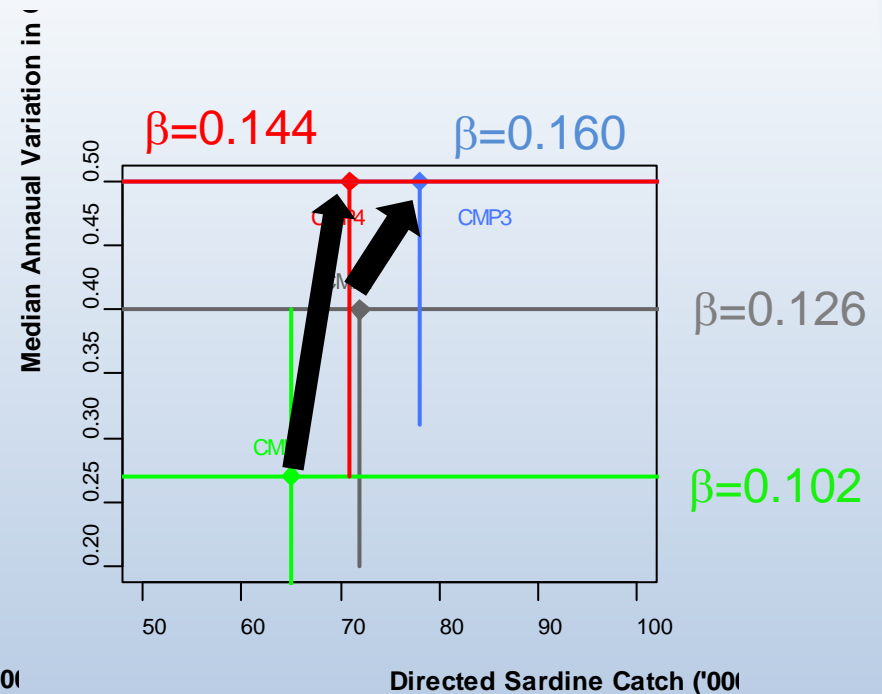
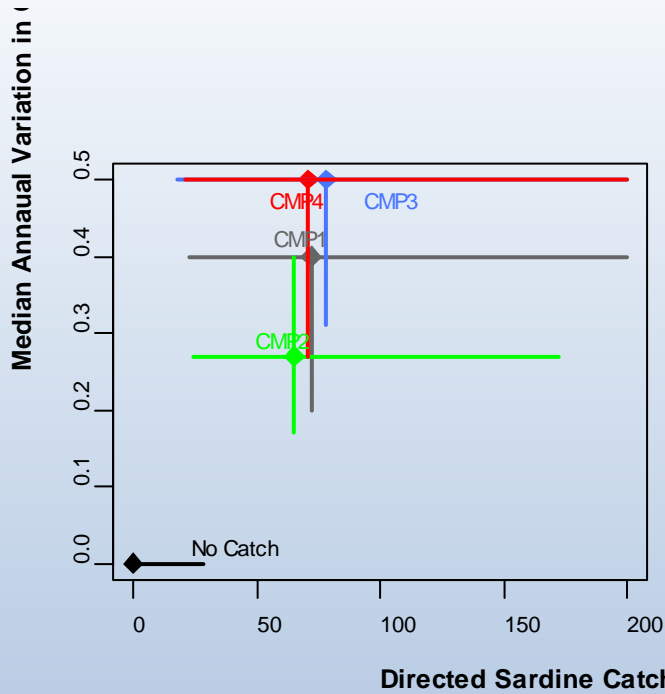
		Total	Total	Total		West		South	
		OMP-08	OMP-14	$\beta = 0.159$	$\beta = 0.160$	$\beta = 0.159$	$\beta = 0.160$	$\beta = 0.159$	$\beta = 0.160$
CMP3	10%ile	0.50	0.59	0.62	0.62	0.66	0.66	0.54	0.54
	20%ile	<b>0.68</b>	<b>0.68</b>	0.69	<b>0.68</b>	0.71	0.71	0.59	0.59
	30%ile	0.72	0.73	0.70	0.70	0.74	0.74	0.62	0.62
	40%ile	0.73	0.76	0.73	0.73	0.77	0.77	0.65	0.65
	50%ile	0.72	0.78	0.72	0.72	0.77	0.77	0.67	0.67
CMP4		OMP-08	OMP-14	$\beta = 0.143$	$\beta = 0.144$	$\beta = 0.143$	$\beta = 0.144$	$\beta = 0.143$	$\beta = 0.144$
	10%ile	0.50	0.59	0.63	0.63	0.67	0.67	0.56	0.56
	20%ile	<b>0.68</b>	<b>0.68</b>	0.69	<b>0.68</b>	0.72	0.72	0.60	0.60
	30%ile	0.72	0.73	0.71	0.71	0.75	0.75	0.62	0.62
	40%ile	0.73	0.76	0.73	0.73	0.77	0.77	0.66	0.66
	50%ile	0.72	0.78	0.73	0.73	0.77	0.77	0.68	0.68

# Trade-offs between CMPs



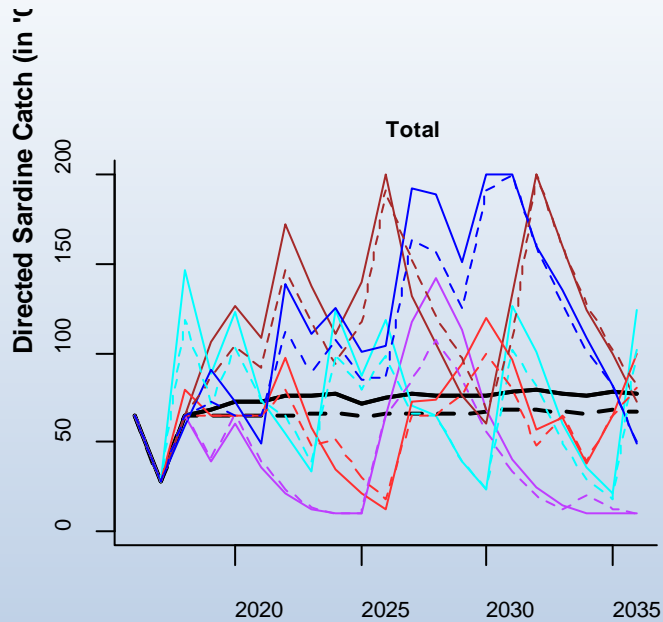
Decreasing  $B_{crit}^S$  from 350 00t to 300 000t

# Trade-offs between CMPs

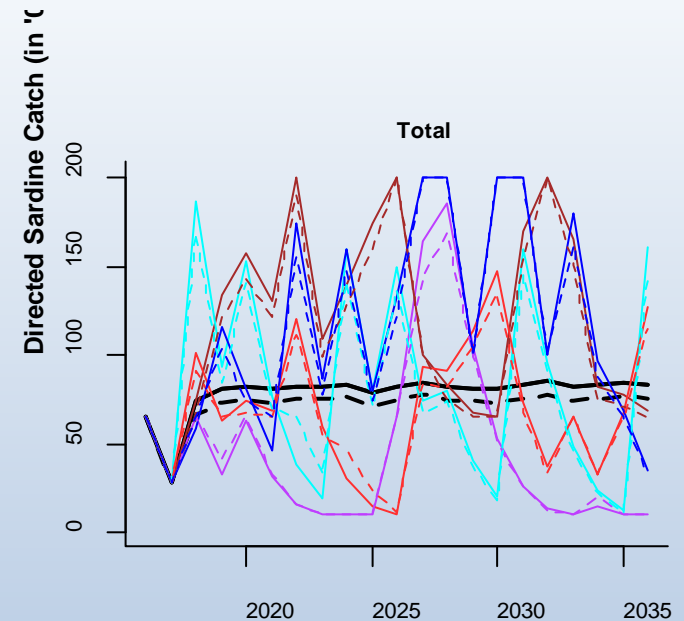


Decreasing restrictions on inter-annual variability in TACs

# Alternative Critical Biomass Thresholds

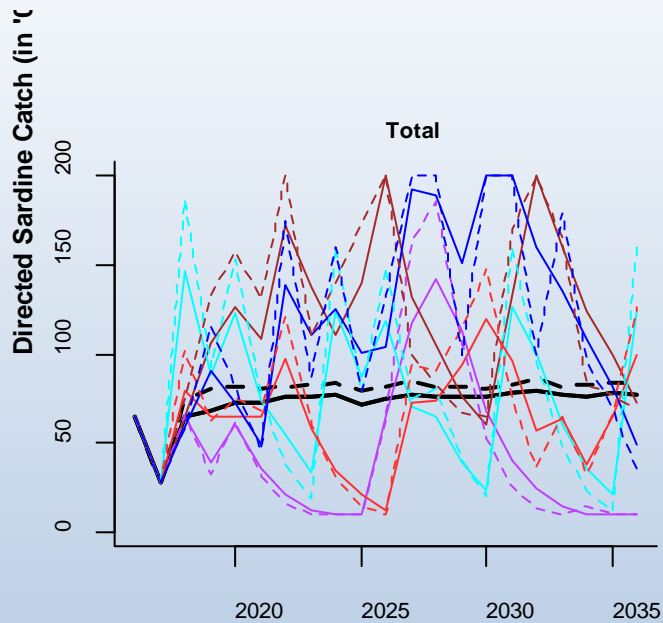


CMP1 (solid) v CMP2 (dashed)

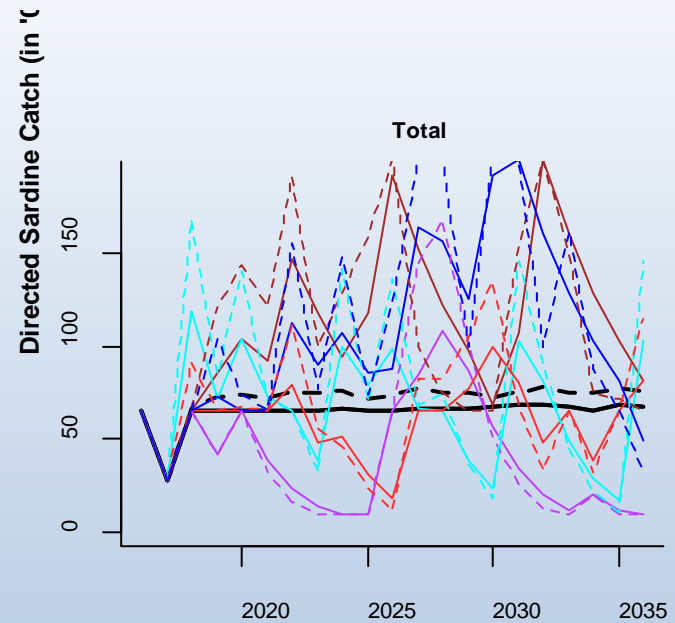


CMP3 (solid) v CMP4 (dashed)

# Restrictions on inter-annual variability



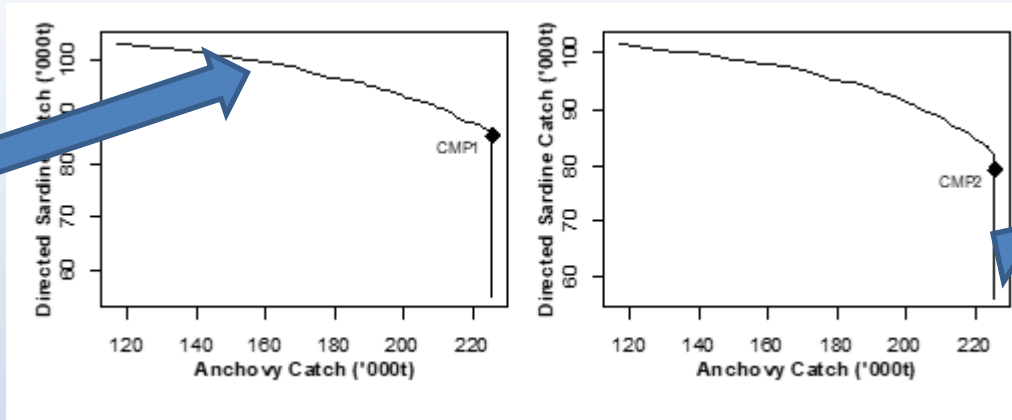
CMP1 (solid) v CMP3 (dashed)



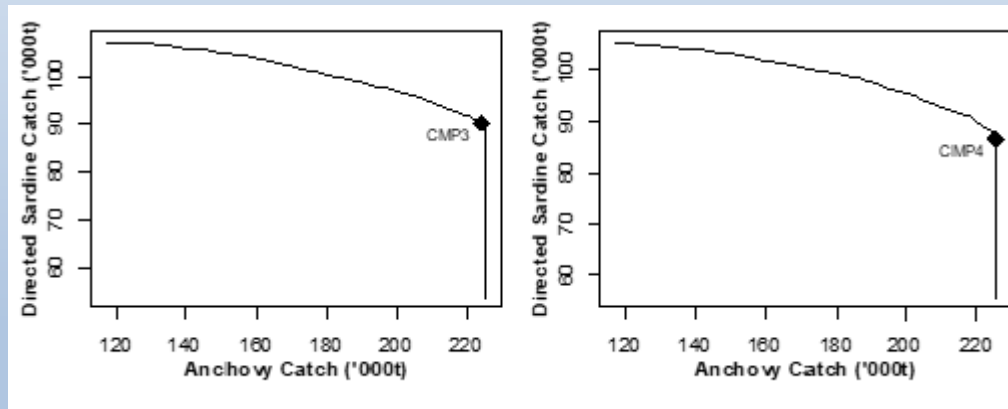
CMP2 (solid) v CMP4 (dashed)

# Trade-off Curves

$\text{risk}_S < 0.199$



$\text{risk}_A < 0.082$





# Note

- In finalizing OMP-18, retuning will include
  - final directed sardine and anchovy TACs
    - e.g. 2018 directed sardine TAC  $\geq 59\ 214\text{t}$
    - e.g. 2018 anchovy TAC  $\geq 247\ 500\text{t}$

# Note

- In finalizing OMP-18, retuning will include
  - reference set of sardine OMs

