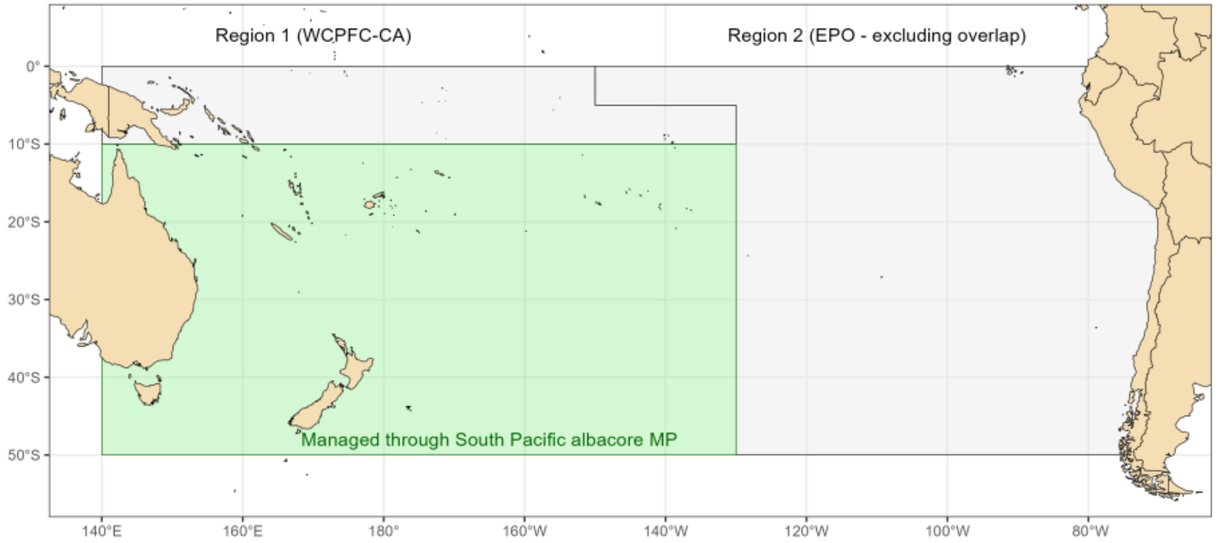
South Pacific albacore management procedure evaluations

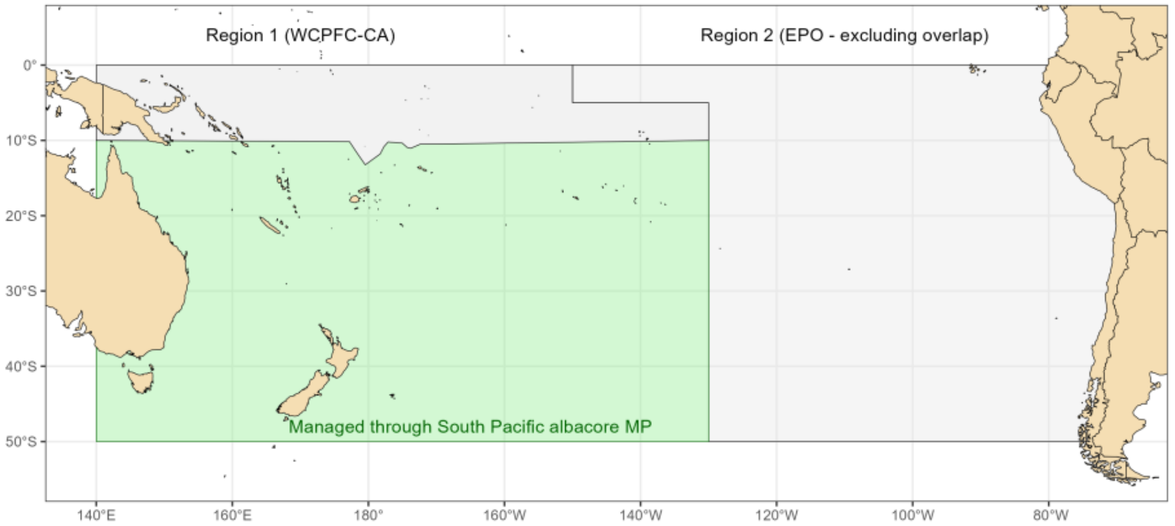
SPAMWS02 2025

SPC-OFP

Three streams of evaluations based on spatial range of MP

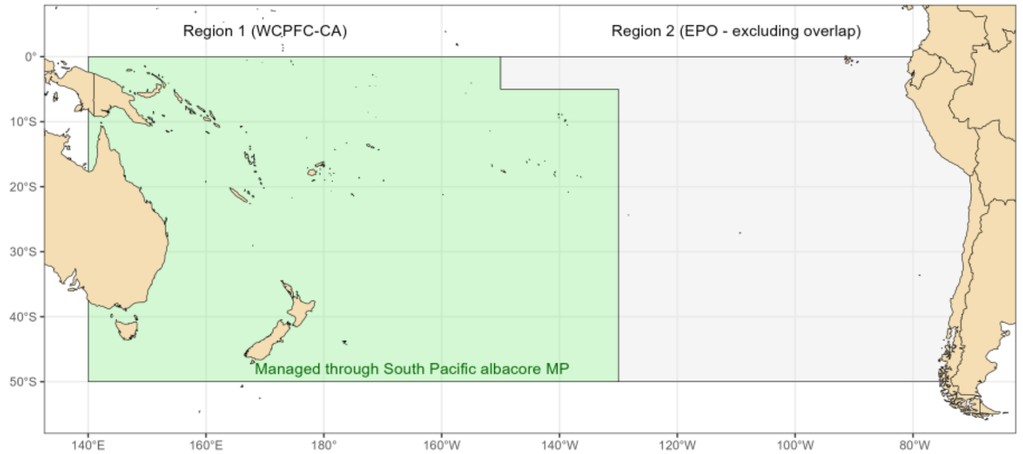


(a) The MP applies to all fisheries operating south of 10°S in the WCPFC-CA.



(b) The MP applies to all fisheries operating south of 10°S in the WCPFC-CA, excluding those operating in the slivers of the EEZs of Tokelau and Tuvalu that are south of 10°S.

Presented to WCPFC21 in 2024.
No further work done but results remain available.

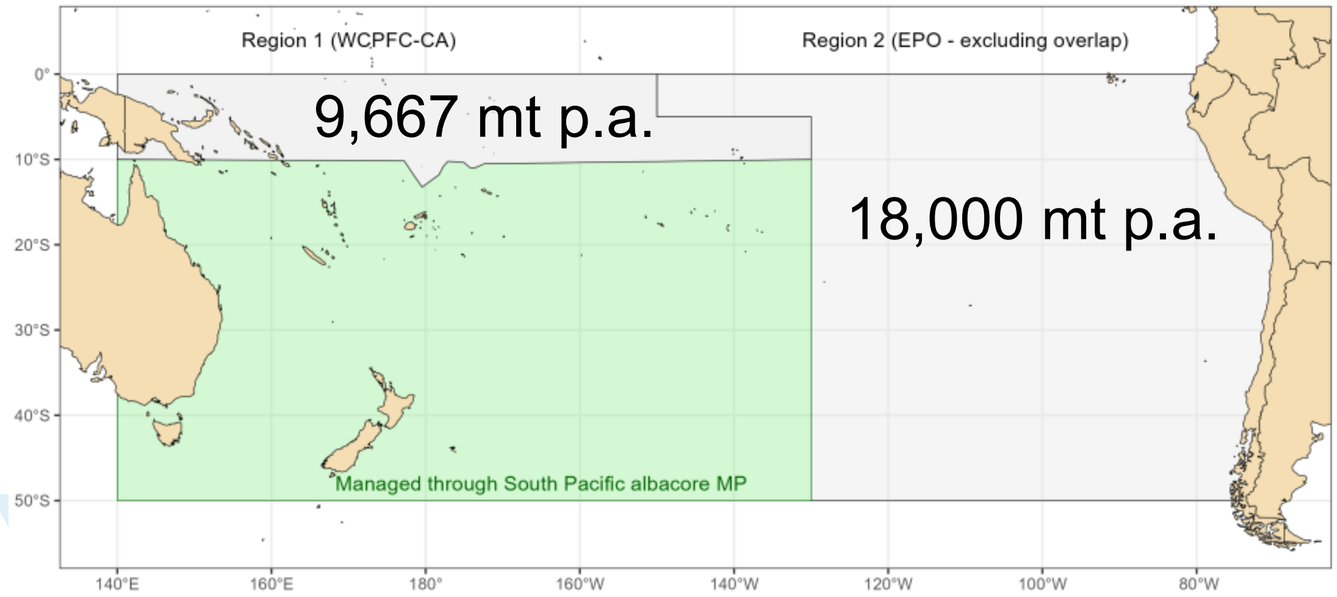


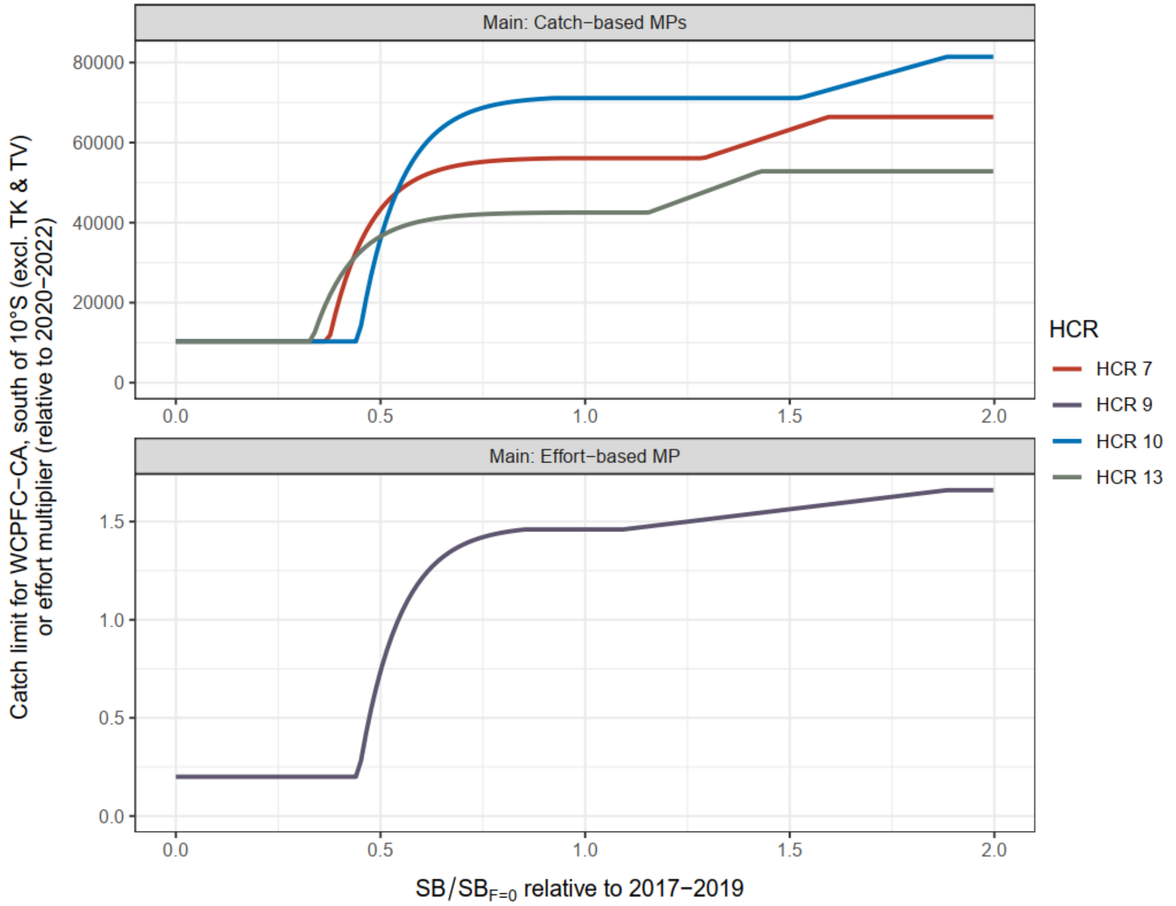
(c) The MP applies to all fisheries operating south of the equator in the WCPFC-CA.

Focus on this stream.
Results unaffected by inclusion / exclusion of TK & TV.
Same HCRs used for both.

HCRs

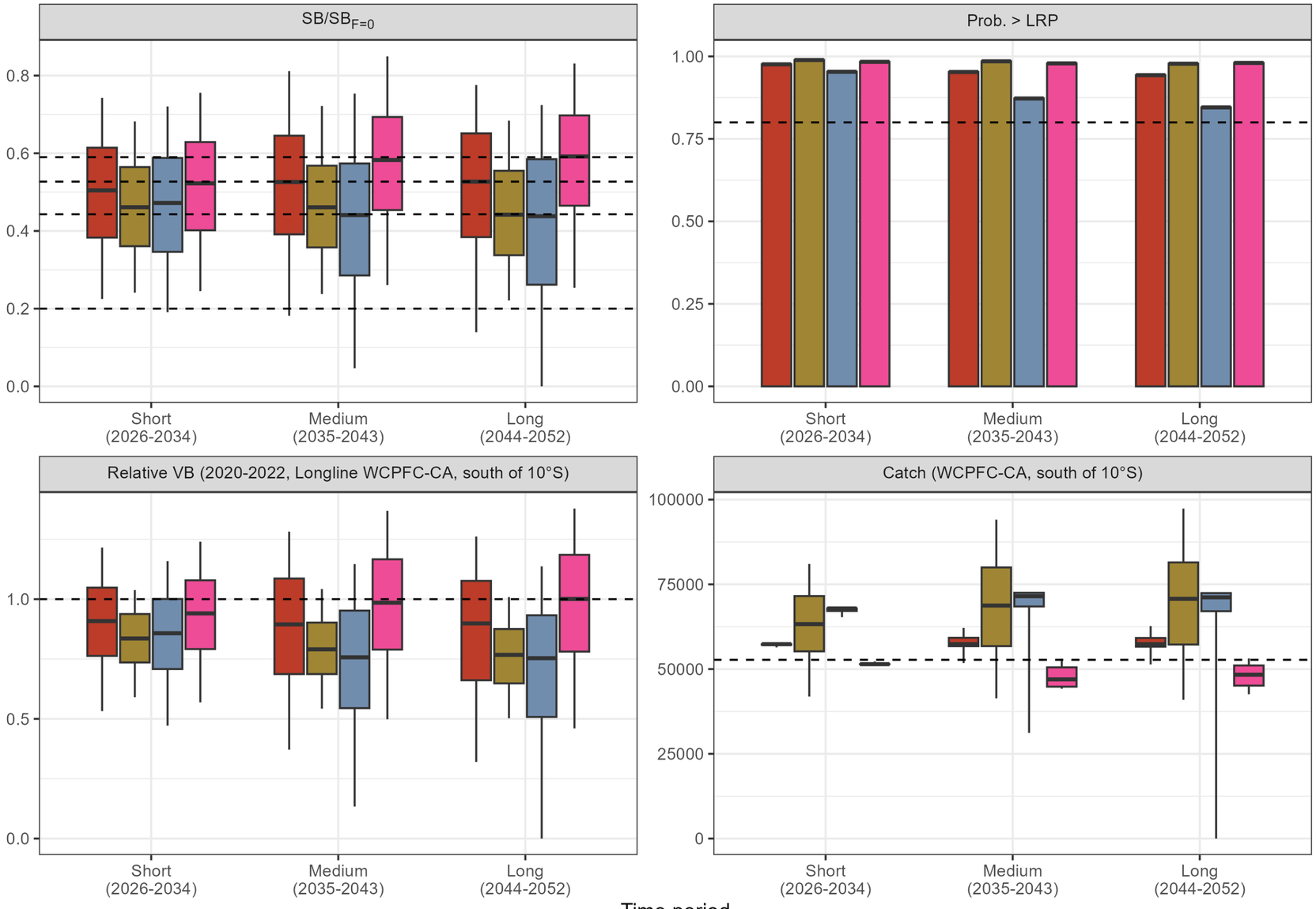
- Four main MPs with same assumptions.
  - Three catch-based, one effort-based.
  - How MP output is implemented can be catch or effort, e.g. convert MP catch output to effort limit.
- Assumptions tested through sensitivity tests.
- Additional MP evaluations have different assumptions.
- Full results are in the paper, including all the work requested by SPAMWS01 and SC21.
- https://ofp-sam.shinyapps.io/SPAMPLE/





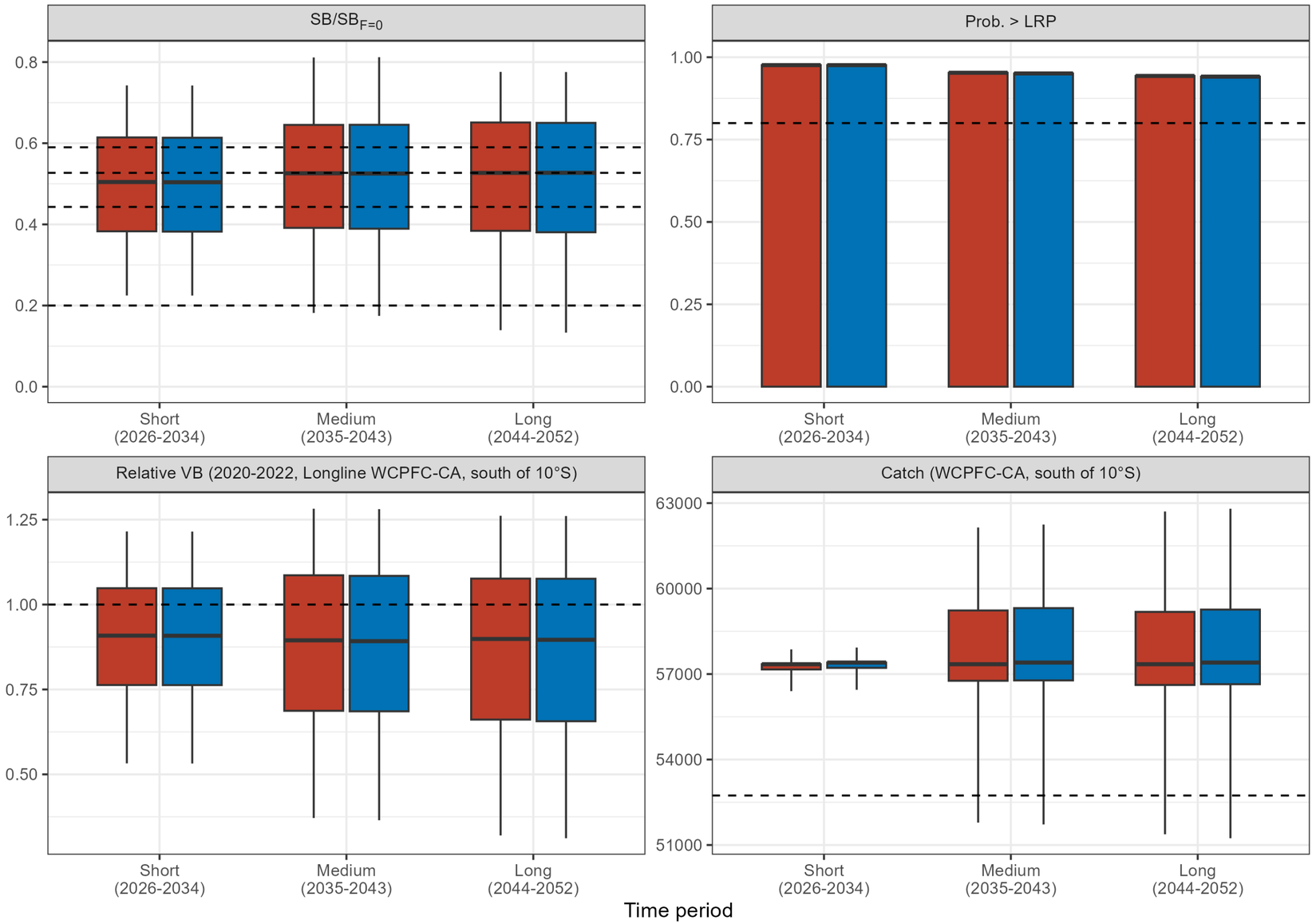
HCR	Constraint	Target	Management
HCR 7	+10% -5%	Interim TRP	Catch
HCR 9	+-5%	Lower TRP	Effort
HCR 10	+10% -5%	Lower TRP	Catch
HCR 13	+10% -5%	Upper TRP	Catch

Key results



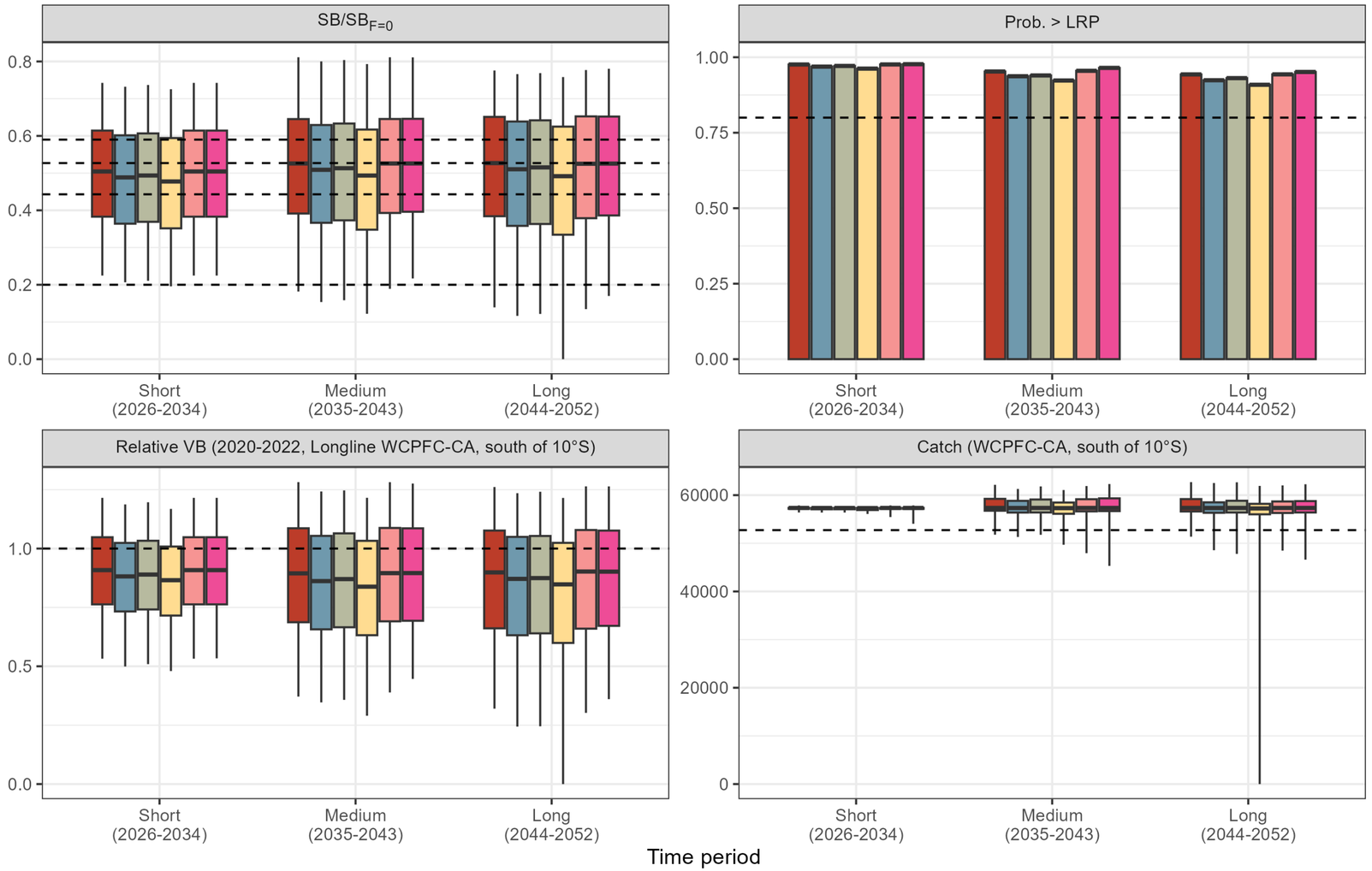
- Long-term SB/SB$_{F=0}$ at TRPs
- Probability > LRP is above 0.8 (WCPFC requirement)
  - HCR 10 noticeably lower probability > LRP: 0.85 in the long-term, i.e. 15% of falling below LRP
- Vulnerable biomass (VB) proxy for catch rates.
- Higher the SB/SB$_{F=0}$, the higher the catch-rate
- Trade off between catch and catch-rate

Include or exclude TKTV



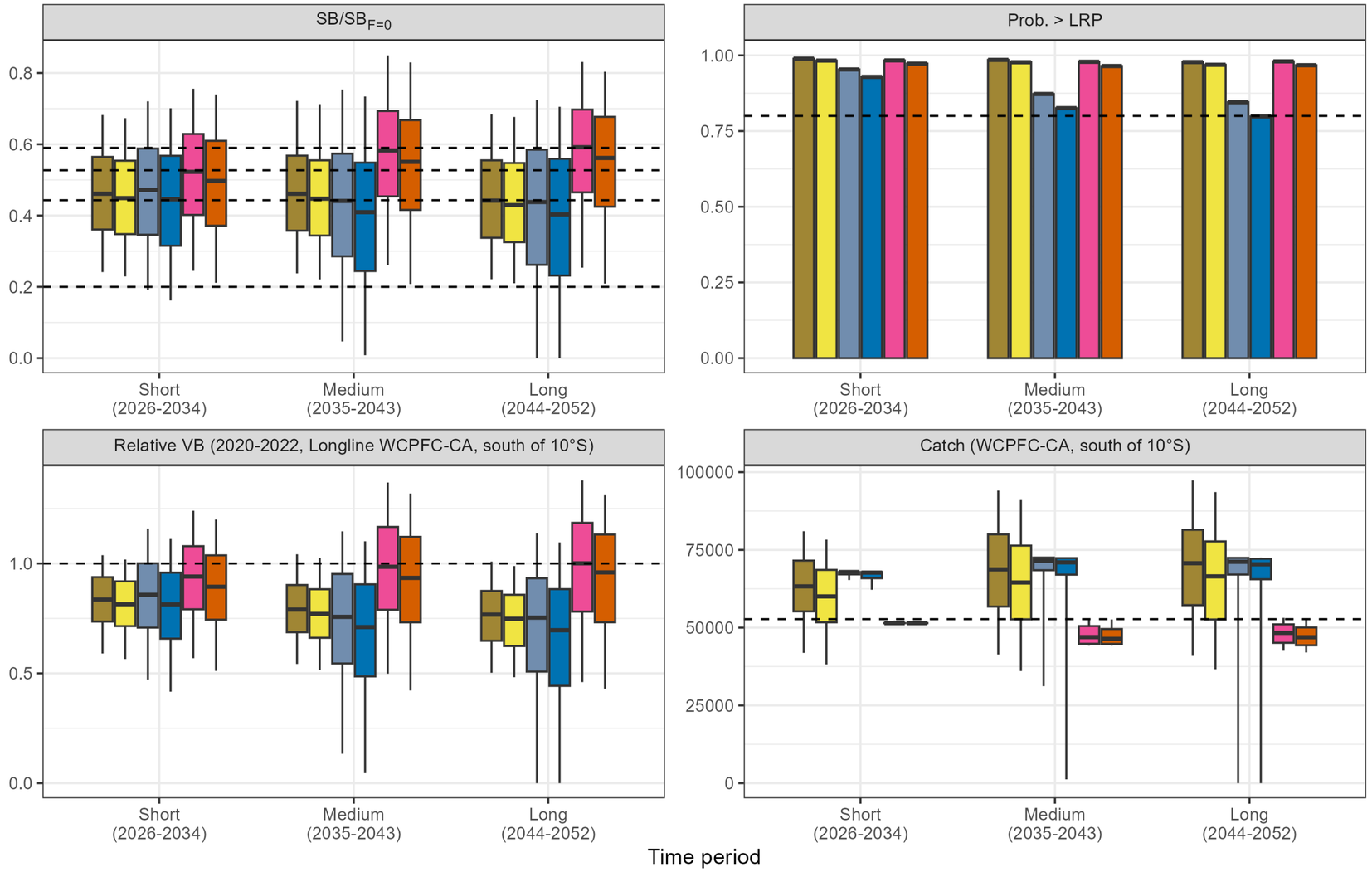
- Including or excluding TK & TV EEZs makes little difference to performance.
- Catches still happen in TK & TV EEZ slivers, just not managed through MP.
- In evaluations the catches in those slivers are set to 2014-2023 average (667 mt).

Sensitivity tests



- Based on HCR 7 (+10% -5%)
- Explores alternative assumptions about catches in EPO and 0-10°S (TLL), and level of constraint.
- Does MP still perform as expected if assumptions change?
- Small impact on SB/SB$_{F=0}$, VB and catch.
- High probability of > LRP
- HCR not tuned (unlike ‘additional’ MPs).

Additional sensitivity tests

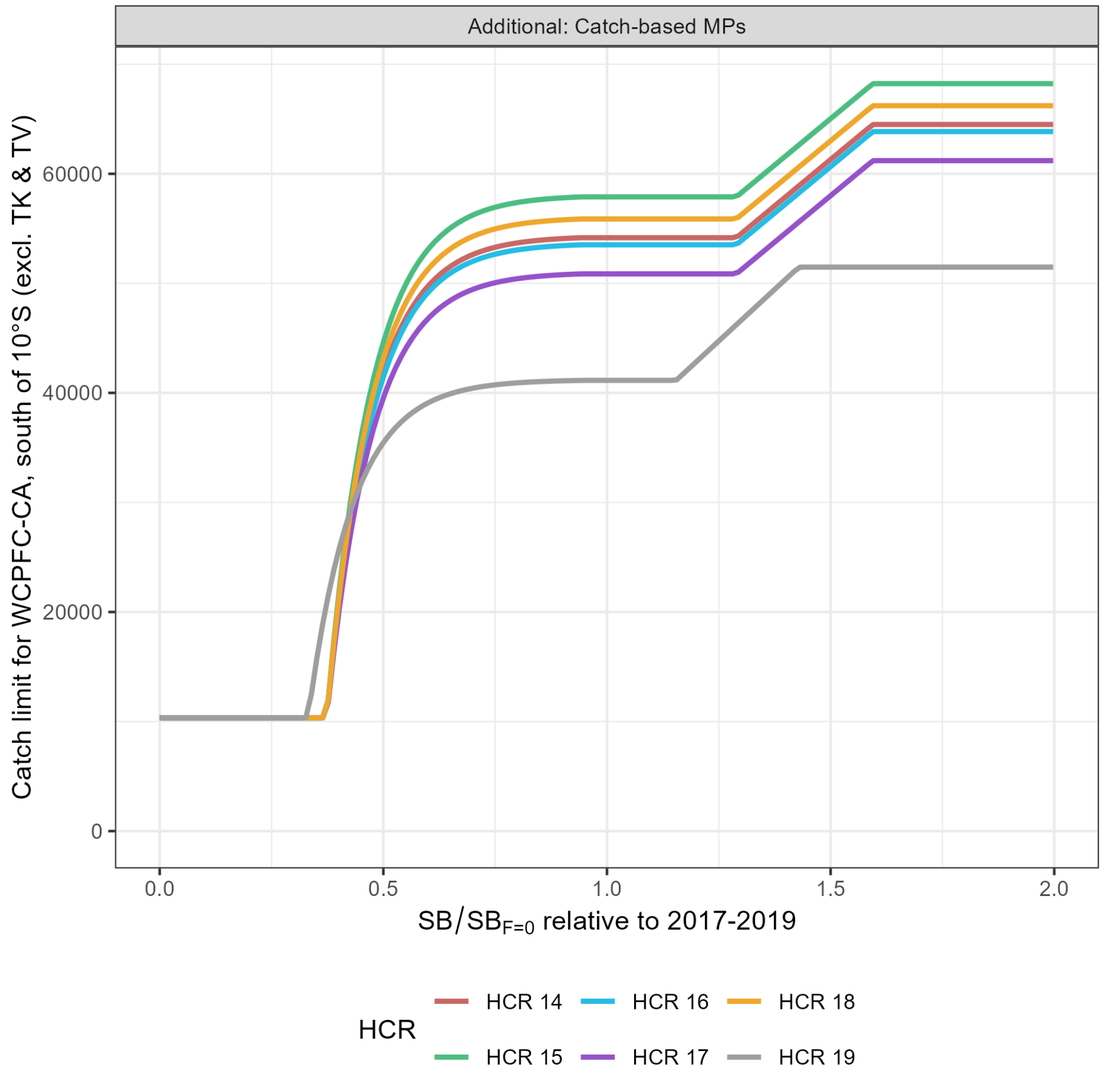


- Remaining three main MPs tested with highest EPO and TLL assumptions.
- Small impact on SB/SB$_{F=0}$, VB and catch.
- Note HCR 10 has probability of > LRP of 0.8 under the higher assumptions.

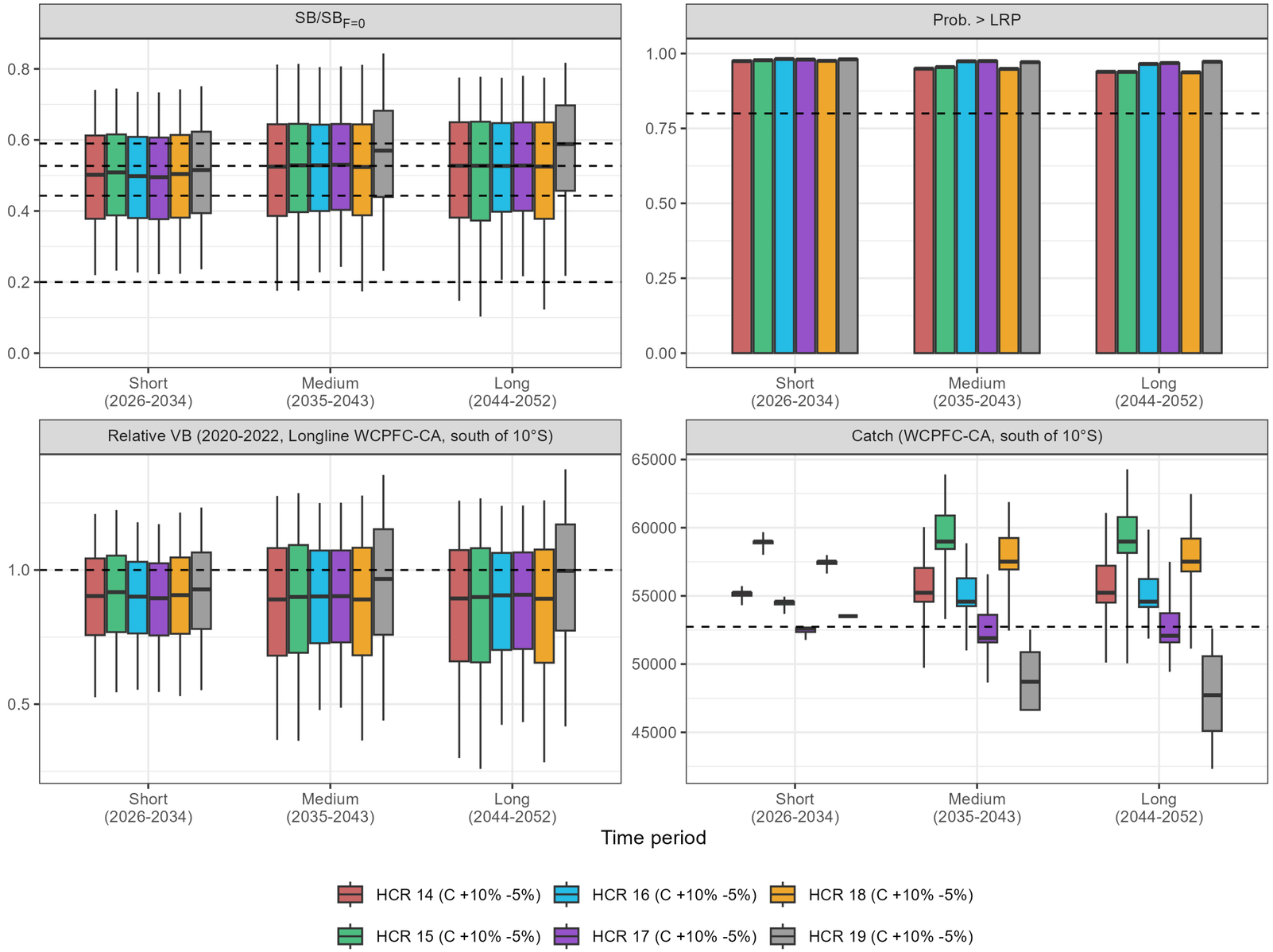
Additional catch-based MPs

- MPs have different underlying assumptions to main results.
- Tuned to achieve specific target.
- Different to sensitivity tests.
- Care taken when comparing results as these are specific evaluations.
- Same constraint (+10% -5%)

HCR	Target	EPO catch (mt)	TLL	WCPFC-CA troll
HCR 14	iTRP	22,500	9,000 mt	Included
HCR 15	iTRP	13,500	9,000 mt	Included
HCR 16	iTRP	18,000	144 million hooks	Included
HCR 17	iTRP	22,500	144 million hooks	Included
HCR 18	iTRP	18,000	9,000 mt	Excluded
HCR 19	Upper TRP	18,000	9,000 mt	Excluded



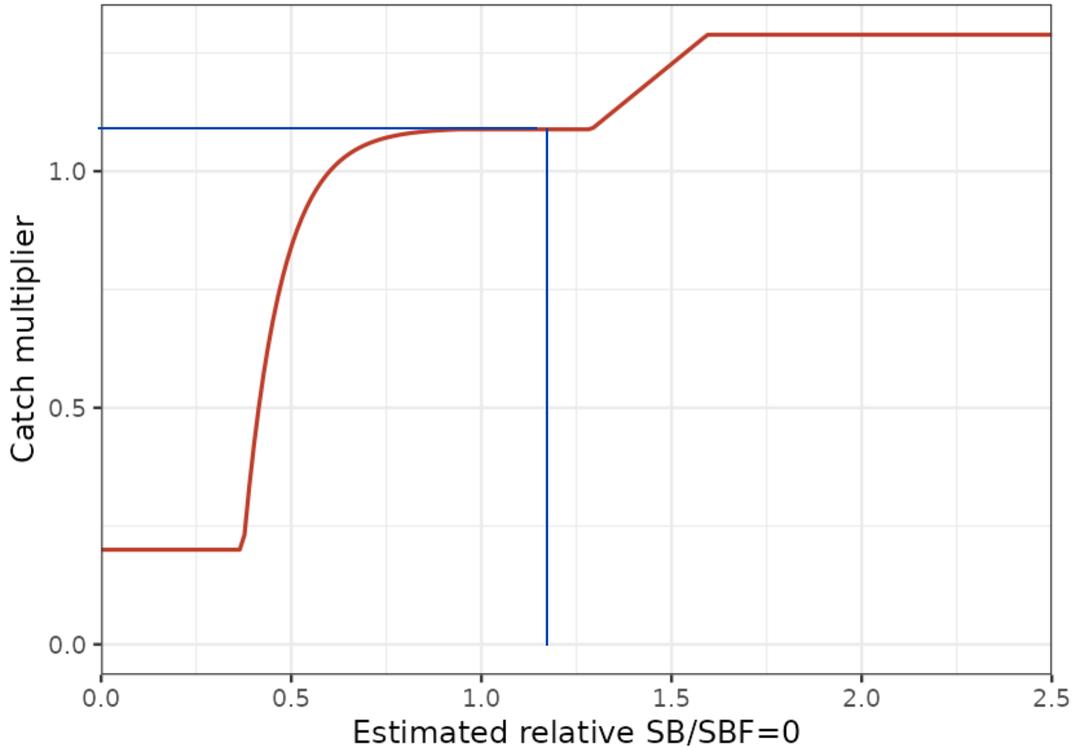
Additional MP evaluations



- Not sensitivity tests
- Careful comparing results
- Results are a combination of the HCR shape and the different underlying assumptions.
- Similar VB and SB/SB$_{F=0}$ as objective is iTRP (except HCR 19)
- High probability of > LRP
- Main difference is in expected catch.

Running the MP with real data

- Data up to 2023
- Run estimation method with data
  - Result: 1.180
  - ($SB/SB_{F=0}$ 2021-23 relative to $SB/SB_{F=0}$ 2017-19)
- Put value into HCR to get scalar
- Apply constraint (if any) to modify scalar
- Apply scalar to 2020-2022 catch or effort to give catch or effort limit for management period 2026-2028



HCR	New scalar (unconstrained)	New output (unconstrained)	New scalar (constrained)	New output (constrained)
HCR 7 (C +10% -5%)	1.088	56,095 mt	1.088	56,095 mt
HCR 9 (E +-5%)	1.482	3,635,731 00s hooks	0.859	2,106,281 00s hooks
HCR 10 (C +10% -5%)	1.380	71,117 mt	1.108	57,084 mt
HCR 13 (C +10% -5%)	0.843	43,549 mt	0.957	59,300 mt