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Background on South Pacific Albacore MSE development

June 2022

South Pacific Albacore



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Initial focus on empirical management procedures

- Empirical – stock status determined from relatively unprocessed data – e.g. CPUE
- Challenges
 - Difficult to obtain a reliable estimate of stock status from CPUE trends
 - Some limited success, but difficult to use CPUE trends to reliably drive a HCR.

Shift to investigating model-based management procedures

- Model-based – stock status determined from an assessment model of some description
- Surplus production models (JABBA / SPICT)
 - Still some reliance on CPUE

Modelling Framework



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Operating Models

Axis	Levels	Option
Historical uncertainty (from stock assessment)		
Steepness	3	0.65, 0.8 or 0.95
Natural mortality	2	0.3, 0.4
Growth	2	Estimated or fixed
Size frequency weighting	3	20, 50, or 80
Recruitment	1	1970-2015
CPUE	2	2018, 2021 method

- Grid should cover the range of uncertainty in the fishery and the stock
- Grid of alternative model assumptions (mostly from stock assessment)
 - Growth
 - Natural mortality
 - etc.
- Must also consider uncertainty in future conditions
 - Climate change
 - Effort creep
 - etc.

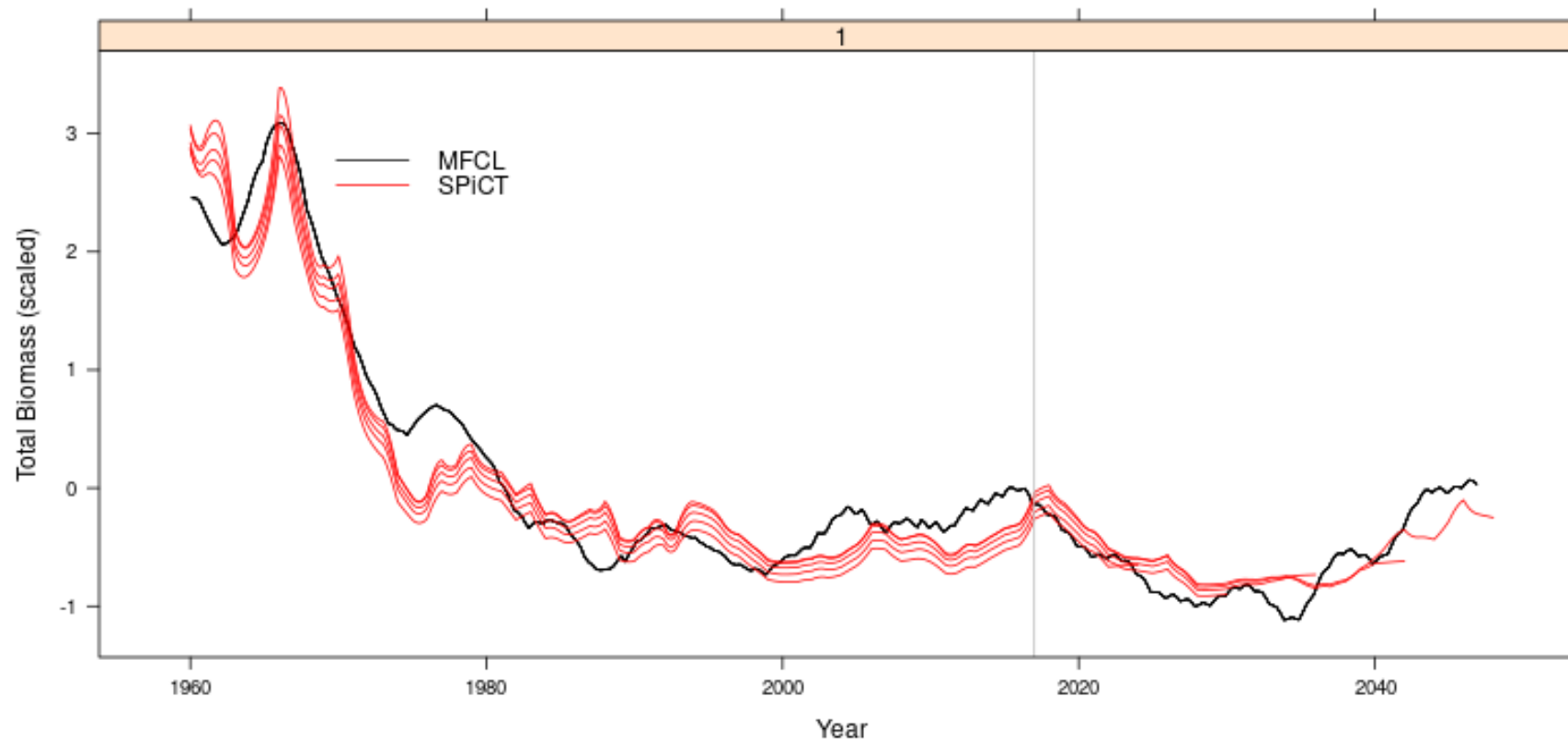
Estimation model (SPICT)



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Can use SPICT to determine an indication of stock status (total biomass)

Uses catch and CPUE to estimate total biomass – continued reliance on CPUE

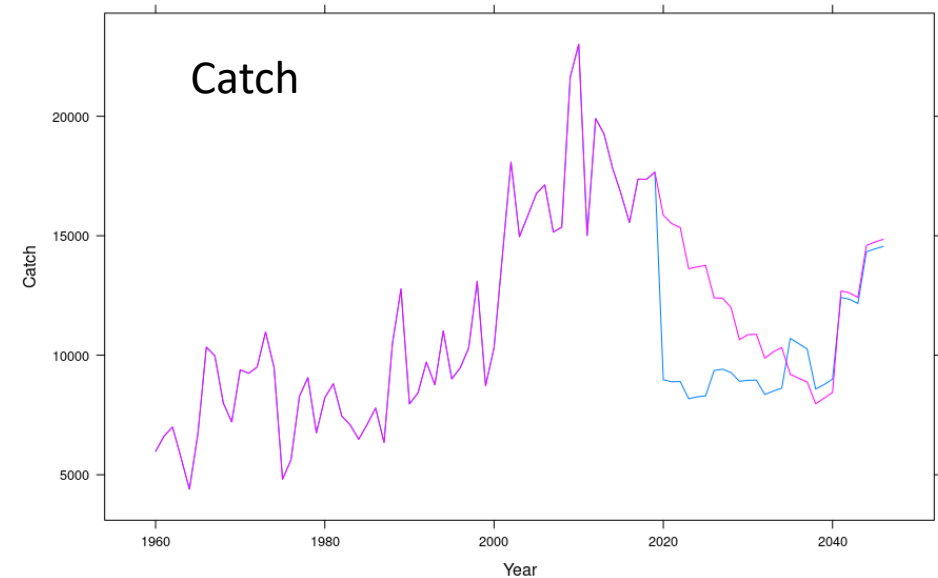
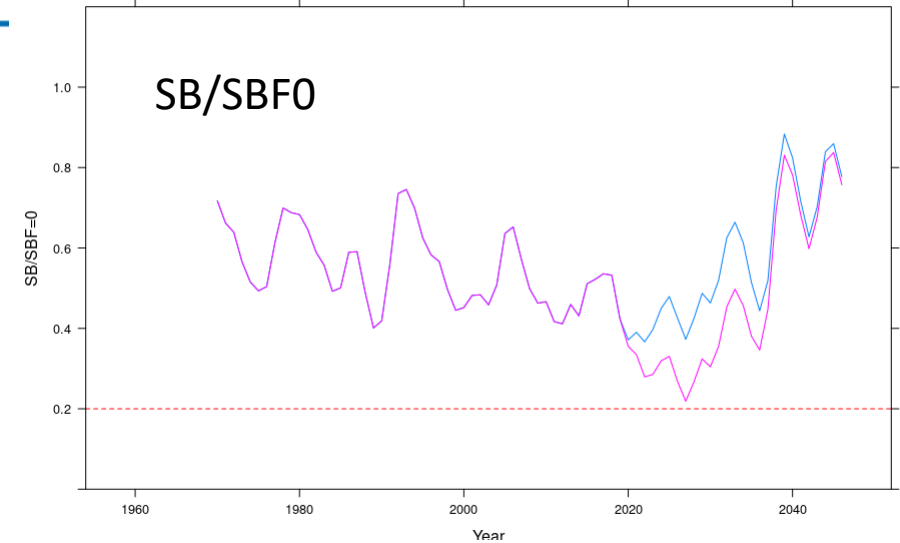
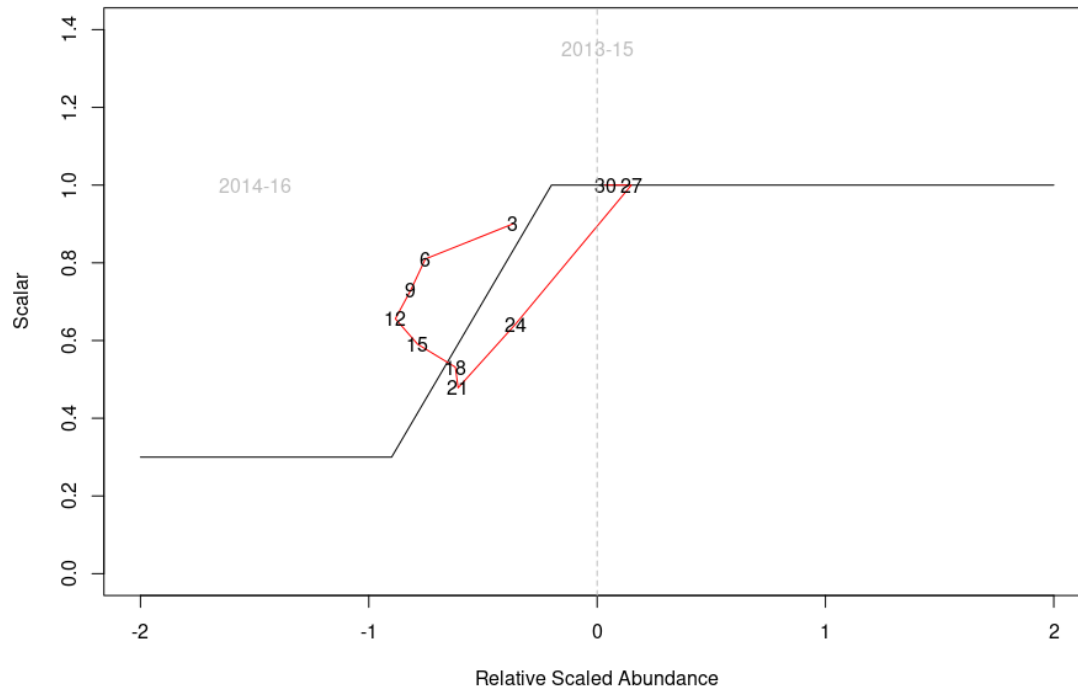


Example MP using SPICT

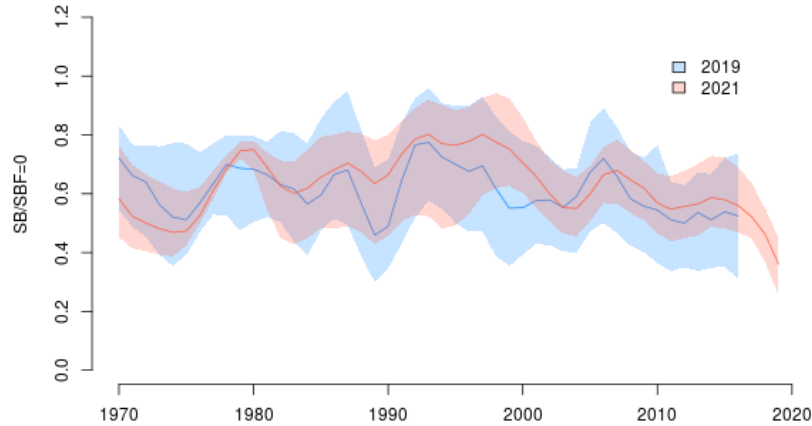
HCR:

Scales total biomass relative to 2013-15 (input)
scales catches on 2014-16 average (output)

Additional constraint that catch cannot reduce by more than 10% from one period to the next.



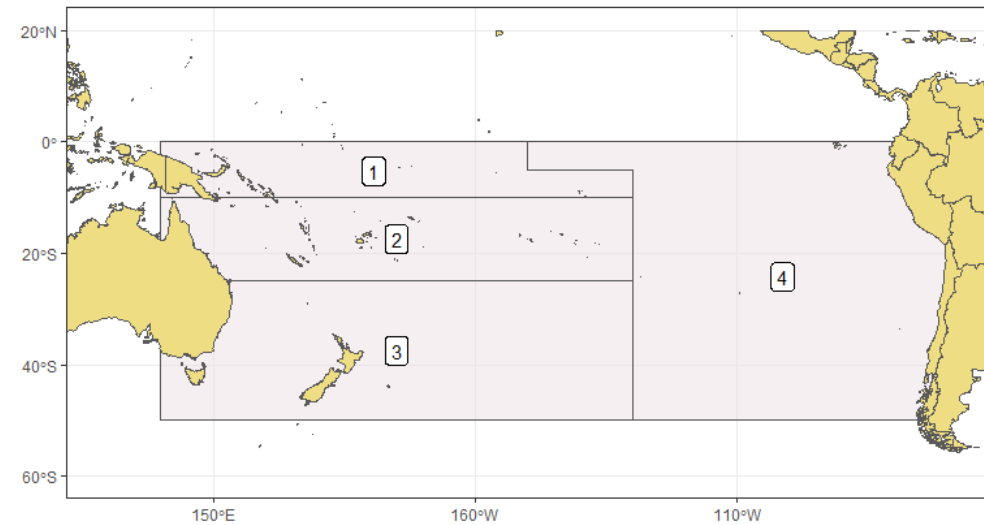
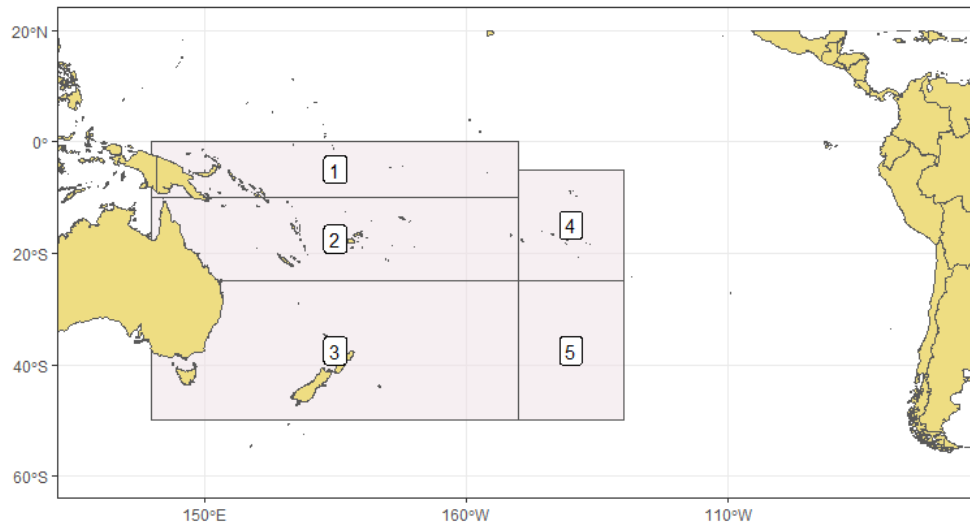
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Focus so far on using 2018 assessment
Additional CPUE standardisation axis (2021 approach)

CPUE modelling issues unlikely to be resolved with a switch to the 2021 assessment

Other considerations
movement
EPO management implications



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OM selection

1. Paper to SC18 on albacore OMs
2. likely to be further work required – inclusion of EPO areas – other sources of uncertainty

MP design considerations

1. Which fisheries should be subject to the management procedure (longline; troll, ...)
2. Should the management procedure operate on catches or effort.
3. What reference years should be considered for setting targets
 1. Reference period for catch/effort scaling
 2. Reference period for stock status (SB/SBF0, total biomass,)
4. Other management priorities besides CPUE.

HCR design considerations

1. Catch constraints