Model progression/stepwise workplan v1 (12/5/2023)

Step	Description	Sensitivities	Target date	Comments	Status
1	Rerun 2020 diagnostics	No	30/1/20233	9 region/old data	Complete
2	Update MFCL version	No		9 region/old data	
3	Catch condition model (constant catchability for index fish via eff-F regress.)	No		9 region/old data	
4	Catch Condition model – CPUE Likelihood	No		9 region/old data	
5	Adjust Tag RR (zero/very low recapture groups removed)	No		9 region/old data	
6	Updated L/W, W/W conversion factors	No		9 region/old data	
7	Apply old CPUE replicated with sdmTMB	No		9 region/old data	
8	Growth models: CAAL – Richards and VB or CAAL growth external – choose one for diagnostic.	Yes		9 region/old data	
9	M – new base M options, Hoyle et al., estimated internal, previous M at age formulation, Lorenzen M at age formulation – combinations, choose one for diagnostic.	Yes		9 region/old data	
10	Size data: refined reweighting method	No		9 region/old data	
11	Size data: stricter filters x ? – choose one for diagnostic.	Yes		9 region/old data	
12	Size data: high confidence extraction fish (truncations and filters)	?		9 region/old data	
13	Size data: high confidence index fish (remove flags? and filters)	?		9 region/old data	
14	Size data: set/trip for PS *(may need to do after data updates)*	No		9 region/old data	
15	New tagger effects (2020 data)	No		9 region/old data	
16	Update reporting rate priors	Yes?		9 region/old data	
17	Data weighting changes: size (self-scale v RN), tag (overall overdispersion aka skipjack), CAAL (arbitrary down weighting sensitivity analysis). Chose one for diagnostic model.	Yes		9 region/old data	
Major review point – end May					
18	New CPUE formulations – expect several. Choose one a diagnostic.	Yes		9 region/old data	
19	Update catch, size and tag data	No		9 region/new data	
20	Update CPUE	No		9 region/new data	
Major review point: 9 region 2023 diagnostic model					
21	Alternative spatial stratifications: 1. 8 regions (remove region 9 – make long tag mixing for region 9 tags) 2. 6 regions (merge 1/2 and 5/6)	Yes		Alternative regions/new data	

	3. <u>5 regions</u> (merge 1/2, 5/6, and 3/4 – what to do about tag mixing) **4. <u>4 regions</u> (merge 1/2, 5/6, and 3/4/8 – what to do about tag mixing)** • **For each configuration make decisions on tag mixing assumption to apply.** • **All other inputs keep same, except for the index fisheries that will need to be regrouped for the particular configurations.**				
22	**Decide the grid**				

Tom P's work

Size compositions

1. Finish generating size compositions with 'stronger' filters using data from 2020 assessment

2*. Generate extraction fishery size compositions using data which we consider to be a 'high(er) confidence' set of size comps (e.g. truncated time-series).

3*. Generate index fishery size compositions with a 'higher(er) confidence' dataset (e.g. more selective filtering of flags)

4. Generate PS comps with sets (or trips) as unit of sampling (i.e. not individual fish)

I'm not sure though if you want me to continue working with the 2020 dataset, or whether I can or with the updated dataset for this year's assessment?

Then it's a question of which inputs actually get used in the assessment model. At this stage, I'd suggest the following three:

A. Compositions from step 1.

B. High(er) confidence compositions – i.e. combining extraction and index fisheries from step 2 and 3.

C. PS compositions from step 4, and longline fishery compositions from step 2 and 3 (or from step 1).

Tagger effects corrections

1. Create tagger effects models using updated tagging dataset, with separate models for WP and CP cruises

2. I can also apply the 'new' tagger effects models to selected model specifications to 2020 tagging dataset, so can look at old vs 'new' tagger effects correction approach using the 2020 assessments (as part of stepwise updates). This would be easier than redoing the 2020 analysis with the 2023 dataset, as Joe took the lead on the 2020 correction factors.

I think Nicholas also mentioned that it's now possible to account for tag-shedding within MFCL(?) I'm not sure how whether this functionality is for base rates of shedding (ie applied to all tag release groups within a programme), or for both base and additional rates of shedding and mortality (ie specific to each release group). I'll checkout out the MFCL documentation, but may need to discuss with you and the team.

Reporting rates

1. Update reporting rate priors using approach from 2020 assessments

2*. Generate reporting rate priors using "high reporting" period only, in case there's interest in running models without PTTP releases in the apparent "low reporting" period

Species compositions

1*. Generate approximate uncertainty in PS species proportions so can assess sensitivity of MFCL outputs to plausible ranges of PS catch histories. Will do this by bootstrapping from observer samples to estimate uncertainty in design-based estimates.