The Status of Cited Working Papers and Attachment 3 from Working Paper 1 from the 2005 Extended Scientific Committee Meeting

Tom Polacheck
Marinelle Basson
Dale Kolody
Jason Hartog

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Abstract

A solution is proposed to the problem that arose at last year's CCSBT Scientific Committee Meeting with respect to the status of working papers produced at the meeting and are cited in the SAG or SC report but have no formal status.

The Problem of the Status of Cited Working Papers

At the 2005 Extended Scientific Committee Meeting, a working paper was produced and tabled during the meeting (Anon. 2005). This working paper was formally presented to the ESC and extensive discussion of portions of it occurred. Results in this working paper were used to form part of the agreed conclusions from the meeting (see paragraphs 40 and 49 to 53 in the report).The final report of the 2005 ESC references this working paper and acknowledges the extensive discussion of it that occurred at the meeting. However, at the time of adoption of the final report, there was disagreement as to whether the working paper and/or that portion of it that was extensively discussed should be included as an attachment to the report. The Chair ruled that since it was not an agreed product of the meeting that it should not be included in the report. It also was ruled by the Chair that the paper could not be included among the list of documents considered by the meeting. As such, the ESC Final Report makes reference to a document that was important in the committee's forming it conclusions and recommendations that has no "existence" and is essentially unobtainable. As such, there is no record or documentation of the basis of the actual results that the ESC used to form its conclusions. This is essentially equivalent to saying that the ESC relied on "hearsay" to form some of its conclusions. This would appear to not constitute an appropriate level of documentation and transparency for a scientific report. It is also not constituent with the practices of at least some other international scientific committees. Options used for cited working papers in other fora include either changing the status of them to meeting documents at the discretion of the chair and/or including them as authored attachments. In the latter case, it is clear understood that there is no explicit or implicit consensus about the content of the working paper or conclusions contained within it.

Proposed Solution

To ensure that in the future the ESC Reports can be appropriately documented in situations where working papers are referenced in ESC Reports but there is no agreement to include them as attachments to the Report, it is proposed that such working papers automatically tabled by the Secretariat at the next subsequent meeting of the ESC. Such working papers would then be included in the document lists for that subsequent meeting. This would allow for a forward referencing of the working paper in the ESC Report [e.g. "a working paper 1 entitled xx was presented and discussed … (WP1 will be included in documents for the 200x ESC)"]. It would also allow for future ESC to be able to evaluate the basis on which the ESC arrived at its conclusions, utilize the information in such working papers and to provide any subsequent comments/clarifications about the results in such working paper. Such a procedure would also not compromise the current procedure for submission of documents nor the 2005 Chair's ruling that attachments need to be agreed products of the ESC. This

procedure would only be applied to working papers that are actually cited in the SC or SAG Reported and for which there is no consensus to either include the working paper as an attachment or up-grade it to a formal document of the meeting. As such it is anticipated that the proposed procedure would not be used frequently.

Finally, to ensure that the documentation for 2005 ESC report is complete, the working paper referenced on paragraphs 49-53 in last year's ESC Report (Anon. 2005) is included here un-changed as Appendix 1[1].

Literature Cited

Anon. 2005. CCSBT Report of the Tenth Meeting of the Scientific Committee. 9 September 2005. Narita, Japan.

[1] Note Appendix 1 was separately authored Attachment 3 of a larger working paper tabled at the SC meeting. Attachment 3 contained the material referenced in paragraphs 49-53 and was that portion of the working paper used in reaching the conclusions in paragraph 40 of the Report. Other portions of the Working Paper are reference in paragraph 28 and 29 of the Report. Ideally, these other portions should be tabled to ensure complete documentation is available for the 2005 SC meeting. However, the authors of the current paper were not the authors on these other portions and it is up to the discretion of the original author as to whether they should be tabled.

Appendix 1: Attachment 3 to CCSBT-ESC/0509/WP01

Exploratory Fitting of the SBT Conditioning Model with Alternative Catch Scenarios

Marinelle Basson, Dale Kolody, Jason Hartog, Tom Polacheck

Introduction

Potential errors in the estimation of catch levels, particularly since the imposition of restrictive catch limits has been recognized as a potentially important uncertainty in the stock assessments, and various scenarios involving additional catches have been included in some past assessments (e.g Polacheck et al 1998; Polacheck and Preece 2001). The work on the management procedure has also recognised the importance of considering this source of uncertainty. For example, the 2nd MP workshop report (Report from the second Management Procedure Workshop, 2003; paragraph 15 in section 4.4) notes that:

> "All participants agreed that errors in catch estimation were important but could not agree on how to specify these during the workshop. Another issue involved how to incorporate catch by "unregulated" fisheries. Vivian Haist will provide a facility within the projection and conditioning code to allow for these factors."

The intention at the time was to progress these two issues intersessionally and discuss them further at the SAG/ESC meetings. However, these issues have not yet been resolved.

In this paper, four scenarios of alternative catches have been used in the SBT conditioning model with the specification of the most recent reference set Cfull2_h60, and results are presented to explore the effect these alternative scenarios would have on estimates of current and future stock status under constant catch projections. There are clearly other scenarios that could have been explored, and this paper is not a full exploration of uncertainties in catches.

Conditioning model Scenarios

Four scenarios were explored and compared to the operating model reference case. These are meant to explore potential effects but the scenarios do not constitute specific estimates of actual additional catches Two scenarios are based on hypothesised additional catches of 5750t (this would be equivalent to 5000t gilled and gutted, with a whole weight conversion rate of 1.15) in the longline fisheries since 1995. In one scenario the additional catch is assumed to have the same selectivity as LL1. In the second scenario, half of the catch is assumed to have the same selectivity as LL1, and the other half of the catch is assumed to have the same selectivity as LL2. The third scenario assumes systematic errors in the estimation of the size distribution in the juvenile surface catches. The fourth scenario is a combination of the first and third scenarios. The scenarios are detailed in Table 1.

Table1. Summary of Scenarios. The left hand column gives the identifiers for each scenario as used in the figures.

OM	Reference case inputs and results (Cfull2_h60)
LL1 (LL15750)	5750 *t* extra catch in LL1, years 1995-2003
LL1&2 (LL1LL25750)	5750 *t* extra catch in LL1 and LL2 equally (i.e. 2875t each), years 1995-2003
Surf (Surf20)	Total catch numbers as in the reference case, but numbers-at-age were redistributed so that age 2 was limited to a maximum of 2% of the catch in numbers, and numbers at age 3 and age 4 were recalculated, such that total numbers remain constant and the total mass is increased by 20% for years 1996-2003
LL1Surf (LL15750Surf20)	includes both the additional 5750 *t* catch in LL1 and the alternative age structure in the surface catch

In all the scenarios, it is assumed that the Japanese longline CPUE time series remains unchanged. The SBT operating model was refit for the full grid of 720 cells for each scenario (i.e. a full cross of 3h x 2M x 2m x 5CPUE x 2Omega x 2 q_Age_range x 2ESS weightings = 720). Projection results are as for the reference case, i.e. based on 2000 samples from the grid of 720, which are selected on the basis of priors for some model factors, and priors multiplied by likelihoods for others (such that many elements of the grid of 720 are probably not represented at all).

Summary of results

1. Implications for current level of depletion: LL15750 shows possibly slightly higher productivity but worse depletion - for LL1LL2 5750, the depletion is less severe and for Surf it is similar to the OM.

2. Absolute SSB and recruitment levels: There is not a great difference in patterns of MPD estimates of R and SSB over time, though in absolute terms, the LL1 scenario often has the lower R and the lowest SSB trajectories for any grid point (e.g. Figure 1). The LL1&2 scenario leads to higher R trajectories and also higher SSB trajectories, presumably because of the different selectivity pattern in LL2 (compared to LL1). The surface catch scenario has the smallest effect on absolute levels of SSB and R (perhaps in part because of the selectivity differences, but probably more importantly due to the difference in the relative magnitude of the alternative catch scenarios).

3. Relative SSB levels: Figure 2 provides comparison of the estimated current depletions relative to various historical levels. Note that, due to time constraints, we did not weight the results from the grid in the way they are in the projections. Thus, all the grid points were given equal weights in this figure. As such, they are only indicative of the effects of the different scenarios and are not directly comparable with the weighted condition results from the OM. There are not substantial differences in the depletion among the various scenarios, although the LL1 scenario yields results that suggest that the stock was more depleted.

4. Likelihood: There is no strong indication that the model fits the alternative catch scenarios any better or worse than the original catches in the reference case.

5. Productivity/Steepness: There is less difference between the objective function for h3 and h1 under the LL1 scenario than for OM. This suggests that in the LL1 case the higher h is somewhat more 'acceptable' relative to low h than in the OM case (Figures 3 and 4). However, it is still not possible to distinguish between different levels of steepness on the basis of the data. There is essentially no difference between the OM reference case and the Surf scenario in this regard (Figure 5).

6. Projections: Projections under constant future catch of 14,930 (i.e. the additional catches do not continue into the future), the LL1 scenario is most pessimistic in the medium and longer term (e.g. B2014/B2004 and B2022/B2004). Due to transient age-structure effects, the LL1 scenario looks slightly more optimistic in B2009/B2004. The LL1&2 scenario is between the LL1 and OM scenarios.

   Projections under constant future catches in which the additional catches continue into the future for scenarios 1 (LL1) and 2 (LL1&2) results in higher levels of depletion than for the OM reference case with constant current catches. Note, however, that the projection code distributes the total catch in the projection years to each fleet according to the default proportions (i.e. those associated with current catch).

In general, the results presented here are qualitatively similar in terms of the magnitude of the effects to previous assessments which have included additional catch scenarios (e,g. Polacheck et al 1998; Polacheck and Preece 2001). Overall, the largest differences are between projections in which the additional catches are either assumed not to occur in the future or to continue into the future, and the degree of differences in these additional catch scenarios compared to the OM results depends upon this assumption.

Literature Cited

Polacheck, T., A. Preece and N. Klaer. 1998. Assessment of the status of the southern bluefin tuna stock using virtual population analyses- 1998. CCSBT-SC/9807/17.

Polacheck, T. and A. Preece. 2001. An integrated statistical time series assessment of the southern bluefin tuna stock based on catch at age data. CCSBT-SC/0108/19.

Figure 1. Biomass and recruitment trajectories for the 4 scenarios and the operating model reference case.

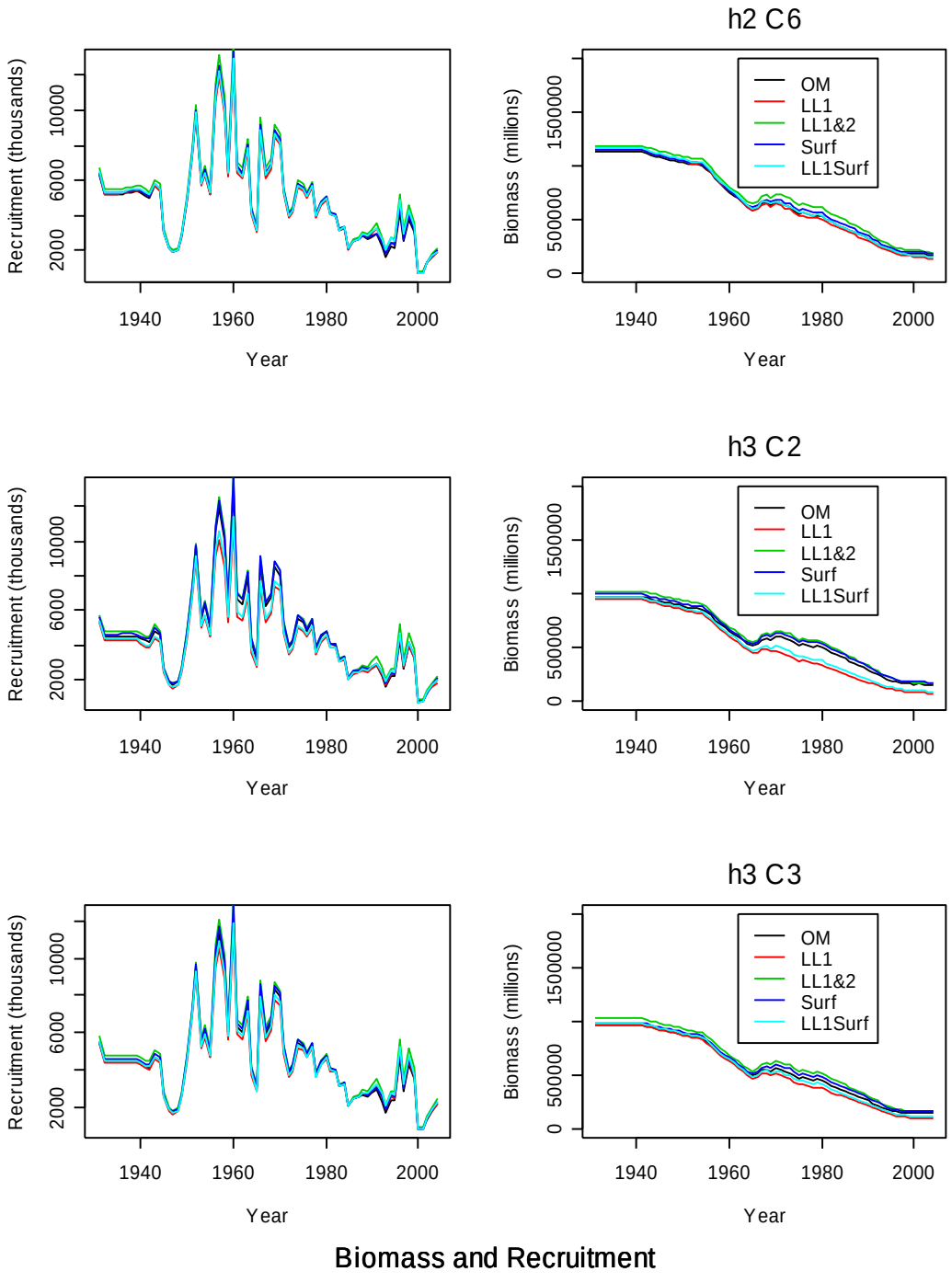


Figure 2. Results of estimated current biomass relative to a range of estimated historic biomass levels from 720 MPD estimates, shown here unweighted, for the different scenarios.

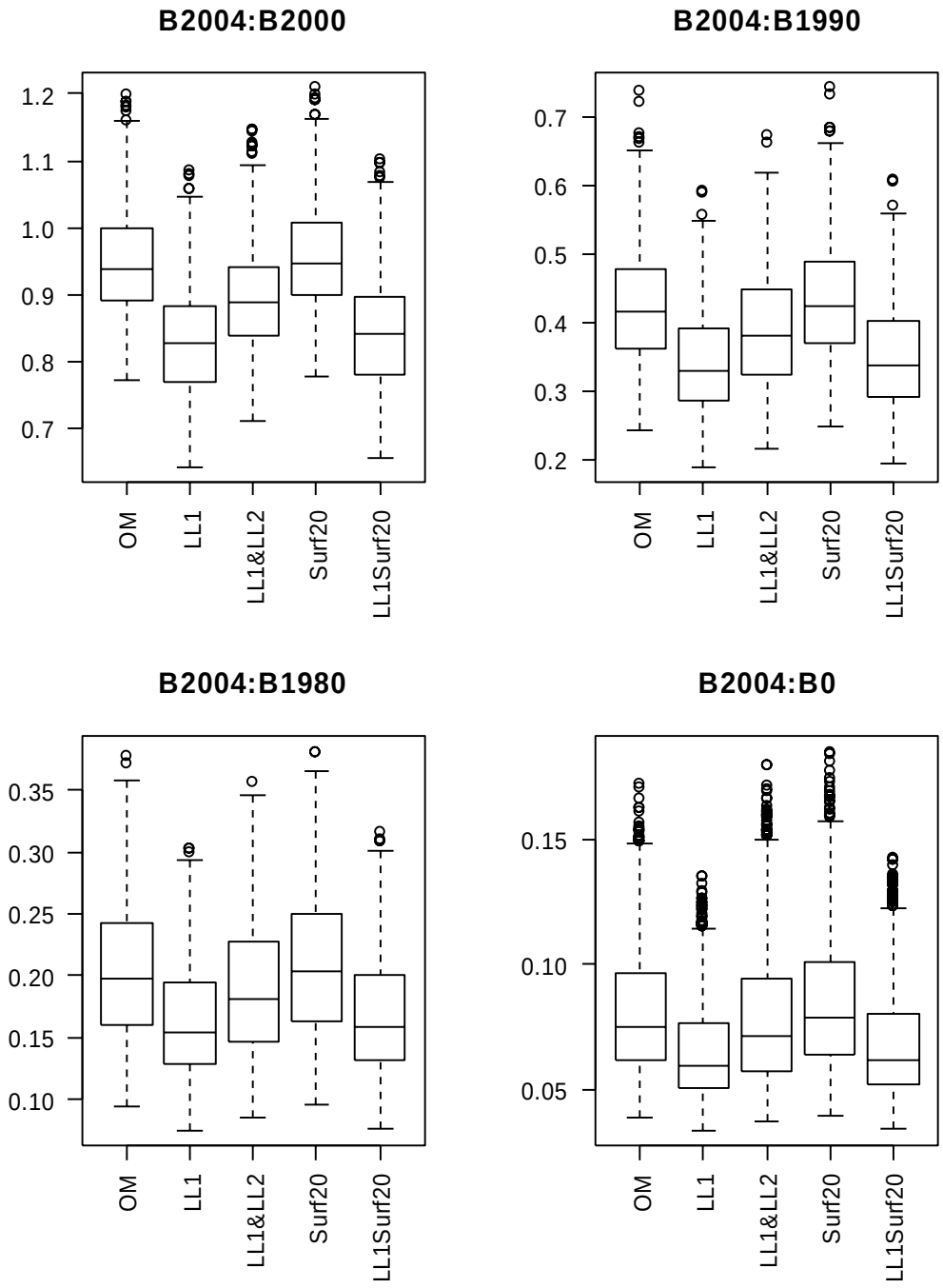


Figure 3. Histograms of the difference between the objective function values for h2 and h1 with all the other grid points equal (in histogram H2H1) for the LL1 scenario. Similarly H3H2 is the difference between h3 and h2. Recall that these are differences between the negative "log likelihood" which is being minimised, so a positive value for h2-h1 means h1 gives a better fit, whereas a negative value for h2-h1 means h2 gives a better fit. The red dashed line is the reference case differences between steepness values.

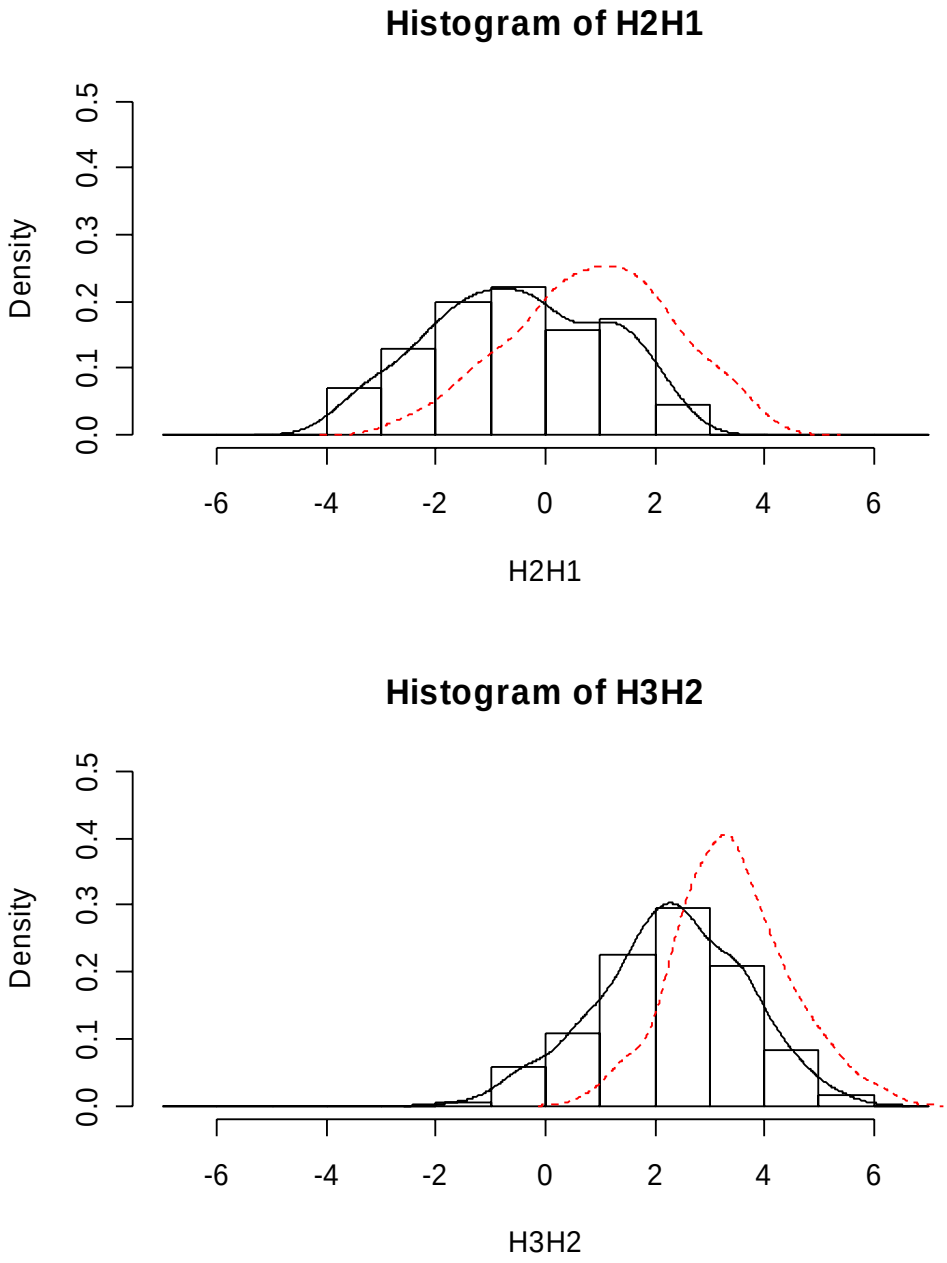
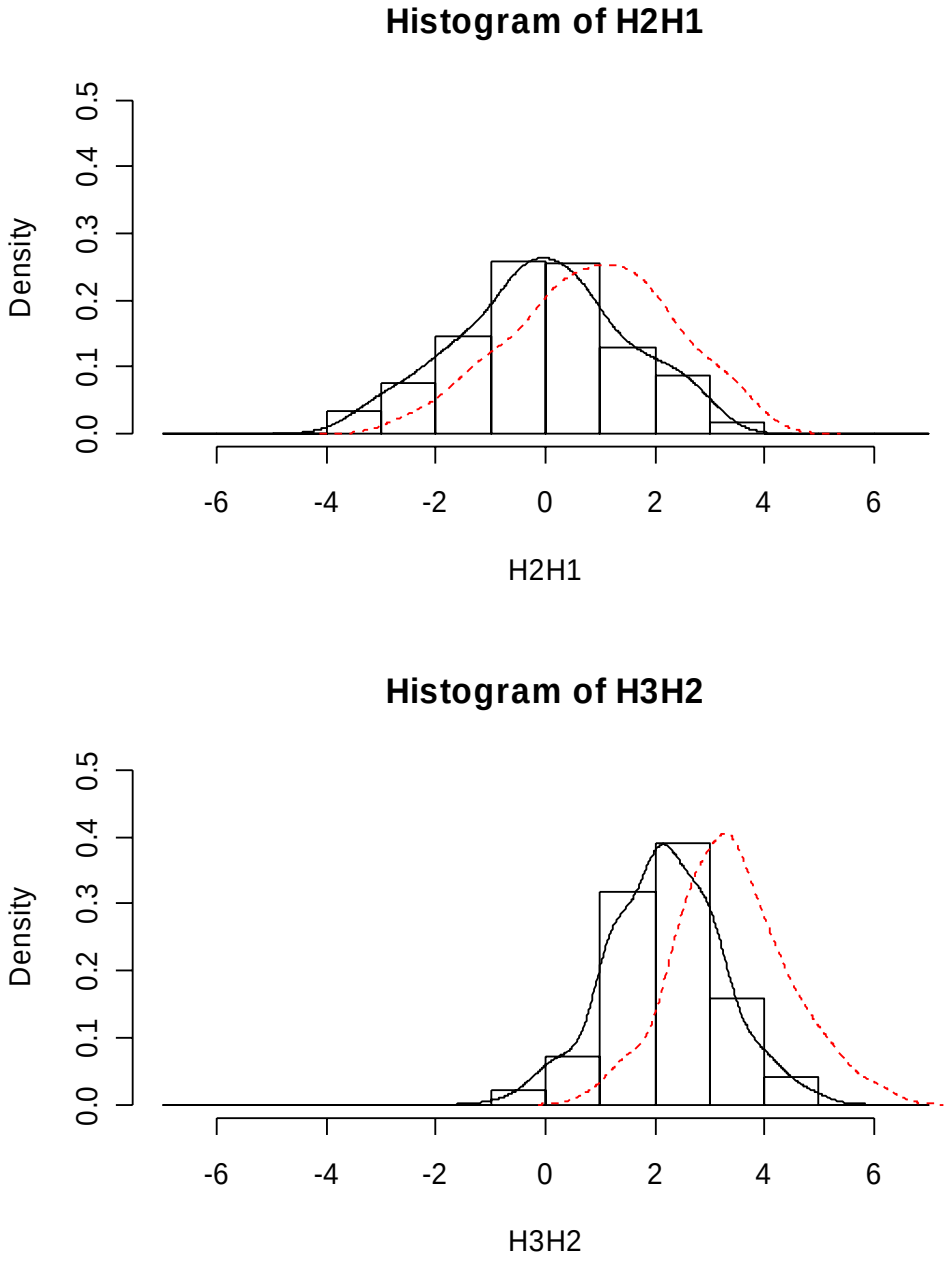


Figure 4. Histograms of the difference between the objective function values for h2 and h1 with all the other grid points equal (in histogram H2H1) for the LL1&2 scenario. Similarly H3H2 is the difference between h3 and h2. Recall that these are differences between the negative "log likelihood" which is being minimised, so a positive value for h2-h1 means h1 gives a better fit, whereas a negative value for h2-h1 means h2 gives a better fit. The red dashed line is the reference case differences between steepness values.



Likelihood differences for trial:ExtraCatchLL1LL25750

Figure 5. Histograms of the difference between the objective function values for h2 and h1 with all the other grid points equal (in histogram H2H1) for the LL1&2 scenario. Similarly H3H2 is the difference between h3 and h2. Recall that these are differences between the negative "log likelihood" which is being minimised, so a positive value for h2-h1 means h1 gives a better fit, whereas a negative value for h2-h1 means h2 gives a better fit.. The red dashed line is the reference case differences between steepness values.

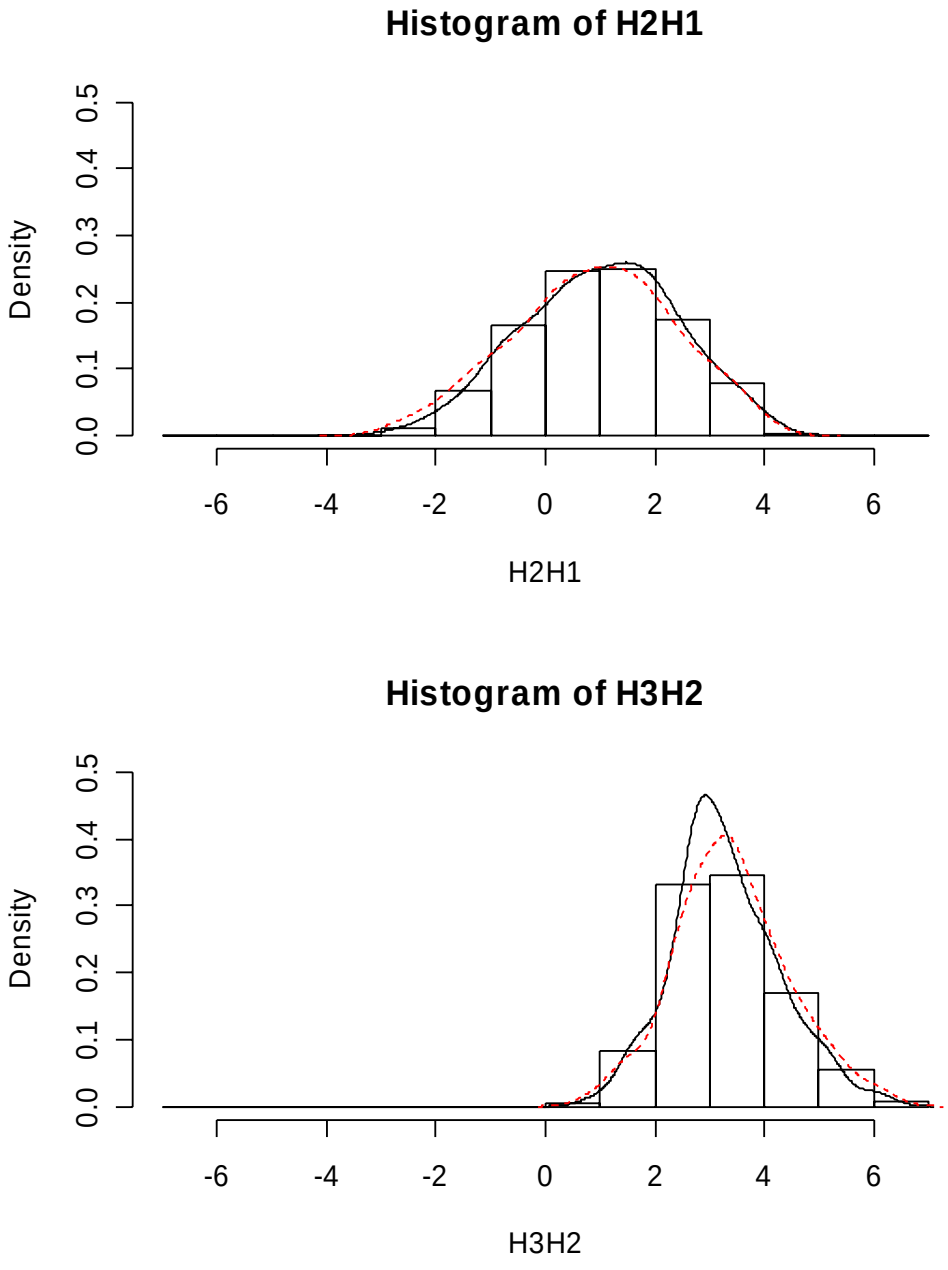


Figure 6. Projection results under a catch of 14,930t projected forward from 2006 for all scenarios and the OM reference case (Cfull2_h60).

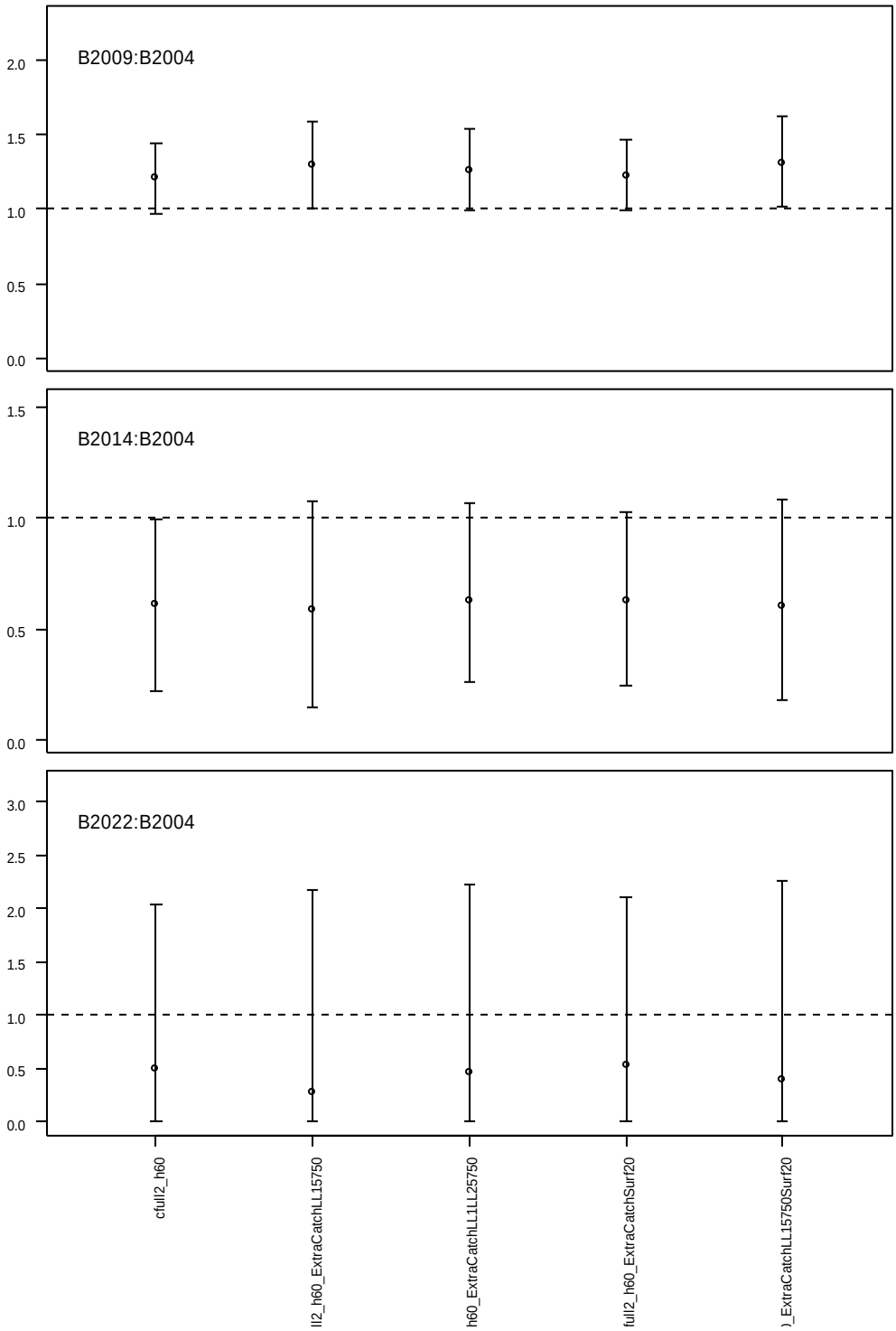


Figure 7. Projection results under a total catch of 20,000 t from 2006, done only for LL1 and LL1&LL2 scenarios due to time constraints. Note that the projection code would re-distribute the 20,000 amongst all fleets using the default percentages.