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Jack mackerel MSE: technical information and work remaining

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¹Generative AI tools assisted with document organization, editing, and formatting. The authors retain responsibility for the scientific content and conclusions.

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Scope

This paper allows a reviewer to find the CMP description, OM, performance measure, and results that support the [full MSE report](#) and the [SC14 questions and tasks paper](#). It also distinguishes completed work from scientific and practical work that remains.

Which files control the results

The official set of files is organized in this order:

1. the saved source code, CMP settings, simulation settings, and complete runs;
2. the checked result files, including the 500-draw Slick file;
3. the CMP list, tables, figures, and scorecard inputs made from those results;
4. the explanation in the technical and main papers; and
5. the CMP and annual-use pages made from the same settings.

The current status is documented on the [sources and changes page](#). The named release also has an [automatic agreement report](#) with the code versions, model runs, paper files, file fingerprints, numerical comparisons, and products that are no longer current.

Where to find the supporting information

Table 1: Where to find the information needed for each decision.

Topic	Current detailed source	Additional information needed
Development from SCW17	Current report: development	Completed for submission: dated candidate translation table and decision status
OM set and simulation	Operating models	Completed for submission: definitions, analytical role, and proposed decision treatment; SC14 plausibility judgments remain
Index errors	Generating OM data indices	Core documentation completed: equation, values, coverage, overlap, gaps, and scope; additional index stress tests remain
CMP definitions	CMP list and individual CMP pages	One table with names, roles, units, settings, and file version
Tuning	Candidate procedures	Exact quantity used for tuning, result for every CMP, uncertainty due to the number of runs, and effect of small changes to the trigger
Performance measures	Performance evaluation	Submission framing completed: calculations, periods, directions, weights, exclusions, and preliminary status; final measures await SC14 guidance
Alternative OMs	Main findings	Completed for submission: 112-row CMP-by-OM/stock table, including om23 and both two-stock components
Banking and borrowing	Current analysis	Matched with/without comparison using identical OM draws before implementation conclusions

Topic	Current detailed source	Additional information needed
Annual calculation	Annual workflow and input data	Complete instructions for calculating advice from every shortlisted CMP
Exceptional circumstances	Current framework	Indicators, thresholds, false alarms, missed detections, authority, and response options

Results to report for each CMP and OM

The current decision table reports dynamic Kobe status, biomass and overfishing risks, catch, and IACC for every CMP and OM or stock-component combination. The complete downloadable table has 112 rows:

[Download the CMP-by-OM biological decision table.](#)

The probabilities below are calculated over 2041–2050 from the checked SC14-MSE-2026-RC1 Slick object. $SB < 1$ means spawning biomass below the draw- and year-specific dynamic SB_{MSY} ; it is a candidate diagnostic, not an agreed B_{lim} criterion. Catch is total catch for one-stock OMs and component catch for two-stock OMs. None of the eight CMPs is yet operationally ready for annual use.

Table 2: Complete CMP-by-OM and stock-component biological decision table, 2041–2050.

OM	Stock	CMP	Green %	SB<1 %	Max annual %	Any year %	F>1 %	Catch	IACC
om11	CJM	HS+20	61.0	30.2	31.8	45.2	37.0	1570.8	5.5
om11	CJM	HS-20	59.2	32.1	33.2	47.2	38.7	1552.0	5.6
om11	CJM	HSsym	60.4	30.9	32.0	45.4	37.4	1557.9	5.4
om11	CJM	HS-30	60.4	30.6	32.2	46.4	37.5	1568.7	6.0
om11	CJM	PR+20	60.3	30.4	32.8	52.0	36.6	1881.5	10.5
om11	CJM	PR-20	59.8	29.7	32.2	52.2	36.4	1923.2	10.7
om11	CJM	PRsym	59.5	30.5	33.4	52.0	37.5	1914.4	10.1
om11	CJM	PR-30	60.6	29.4	30.6	53.2	33.8	1865.6	11.6
om11_1	CJM	HS+20	41.2	51.3	54.0	61.2	57.2	1436.4	6.2
om11_1	CJM	HS-20	40.6	52.5	55.0	62.2	57.7	1411.2	6.1
om11_1	CJM	HSsym	41.5	51.2	53.6	61.0	57.0	1428.5	5.9
om11_1	CJM	HS-30	40.8	52.2	54.4	62.4	57.4	1429.9	6.3
om11_1	CJM	PR+20	25.7	61.4	68.2	83.2	70.6	1797.1	10.9
om11_1	CJM	PR-20	25.3	58.6	67.2	82.8	70.7	1912.3	11.3
om11_1	CJM	PRsym	26.0	59.4	67.8	82.2	70.8	1873.6	10.7
om11_1	CJM	PR-30	24.7	61.3	66.6	85.0	69.4	1805.4	11.9
om11_2	CJM	HS+20	45.2	42.9	48.0	63.8	51.8	1396.8	8.7
om11_2	CJM	HS-20	42.8	45.6	53.2	67.2	53.8	1371.9	8.7
om11_2	CJM	HSsym	44.6	43.7	48.4	64.0	52.3	1381.8	8.4
om11_2	CJM	HS-30	44.4	43.2	51.2	65.2	51.9	1402.0	9.2
om11_2	CJM	PR+20	52.9	34.8	40.6	57.2	42.2	1472.5	12.1
om11_2	CJM	PR-20	54.5	32.4	38.6	55.8	40.1	1498.3	12.3
om11_2	CJM	PRsym	52.4	34.2	39.2	55.8	43.3	1506.5	11.3
om11_2	CJM	PR-30	57.5	30.9	39.8	56.2	34.2	1429.0	13.9
om11_3	CJM	HS+20	45.9	45.2	49.2	63.8	51.1	1428.0	7.6
om11_3	CJM	HS-20	44.1	47.0	50.8	65.6	53.5	1408.0	7.7
om11_3	CJM	HSsym	46.1	45.6	48.6	64.0	51.3	1417.4	7.3
om11_3	CJM	HS-30	44.2	46.4	51.2	65.6	52.8	1428.1	8.0
om11_3	CJM	PR+20	50.9	39.7	42.2	64.4	44.2	1625.8	11.1
om11_3	CJM	PR-20	51.5	38.5	40.6	65.0	42.9	1652.3	11.4
om11_3	CJM	PRsym	50.4	39.8	42.6	64.6	45.1	1660.4	10.7
om11_3	CJM	PR-30	53.1	37.4	39.0	64.8	38.3	1597.4	12.5
om12	CJM	HS+20	69.5	23.2	24.6	44.0	28.7	1406.3	8.7
om12	CJM	HS-20	68.8	24.0	25.8	46.4	29.0	1391.7	8.7
om12	CJM	HSsym	68.5	23.9	25.8	43.6	29.6	1392.7	8.4
om12	CJM	HS-30	71.6	21.4	23.6	43.2	26.0	1415.5	9.4
om12	CJM	PR+20	73.6	21.4	23.4	40.8	24.2	1437.1	11.8
om12	CJM	PR-20	74.3	20.6	22.4	41.2	23.1	1421.4	12.1
om12	CJM	PRsym	72.1	22.2	24.4	41.0	25.6	1446.1	11.2
om12	CJM	PR-30	78.8	17.1	18.4	38.0	18.6	1387.0	13.9
om13	CJM	HS+20	91.4	7.0	8.2	14.6	6.8	1652.1	6.4
om13	CJM	HS-20	90.0	8.0	9.2	16.6	7.6	1657.8	6.1
om13	CJM	HSsym	90.8	7.4	8.6	14.8	7.5	1650.4	6.1
om13	CJM	HS-30	91.3	6.8	8.2	15.0	6.4	1661.4	6.5
om13	CJM	PR+20	94.8	4.3	5.8	8.2	4.2	1811.9	10.2
om13	CJM	PR-20	96.0	3.4	4.6	7.8	3.1	1814.1	10.0
om13	CJM	PRsym	95.1	4.1	5.6	8.6	4.0	1812.0	9.6
om13	CJM	PR-30	96.5	2.8	3.8	7.4	2.4	1820.7	11.0
om21	North	HS+20	0.0	100.0	100.0	100.0	100.0	216.2	12.3
om21	North	HS-20	0.0	100.0	100.0	100.0	100.0	211.3	12.3
om21	North	HSsym	0.0	100.0	100.0	100.0	100.0	214.5	12.2
om21	North	HS-30	0.0	100.0	100.0	100.0	100.0	213.0	12.2
om21	North	PR+20	0.0	100.0	100.0	100.0	100.0	214.8	14.4
om21	North	PR-20	0.0	100.0	100.0	100.0	100.0	214.2	14.5
om21	North	PRsym	0.0	100.0	100.0	100.0	100.0	215.5	14.2
om21	North	PR-30	0.0	100.0	100.0	100.0	100.0	214.2	15.2
om21	Southern	HS+20	61.3	23.4	28.0	35.0	29.7	1070.2	4.9
om21	Southern	HS-20	43.7	41.0	49.2	55.8	44.5	1061.1	4.9
om21	Southern	HSsym	55.9	28.2	34.2	41.6	34.3	1067.5	4.8
om21	Southern	HS-30	50.1	33.7	39.4	48.0	39.3	1064.8	4.9
om21	Southern	PR+20	91.3	1.6	4.4	7.4	7.8	1049.2	9.1
om21	Southern	PR-20	90.4	1.6	4.2	7.2	8.8	1054.8	8.9
om21	Southern	PRsym	89.7	2.3	6.6	8.6	9.0	1054.1	8.5
om21	Southern	PR-30	90.0	2.0	4.0	8.6	9.1	1062.7	9.7

Table 2: Complete CMP-by-OM and stock-component biological decision table, 2041–2050.

OM	Stock	CMP	Green %	SB<1 %	Max annual %	Any year %	F>1 %	Catch	IACC
om21_1	North	HS+20	0.0	99.8	100.0	100.0	100.0	230.6	11.2
om21_1	North	HS-20	0.0	99.9	100.0	100.0	100.0	229.2	11.2
om21_1	North	HSsym	0.0	99.8	100.0	100.0	100.0	230.2	11.2
om21_1	North	HS-30	0.0	99.8	100.0	100.0	100.0	229.8	11.2
om21_1	North	PR+20	0.0	99.8	99.8	99.8	100.0	221.5	14.0
om21_1	North	PR-20	0.0	99.7	99.8	99.8	100.0	221.1	14.0
om21_1	North	PRsym	0.0	99.6	99.8	99.8	100.0	220.1	13.5
om21_1	North	PR-30	0.0	99.8	99.8	99.8	100.0	226.4	14.9
om21_1	Southern	HS+20	45.9	46.1	54.6	62.4	34.4	989.9	5.0
om21_1	Southern	HS-20	25.3	69.0	75.2	82.4	49.4	983.7	5.0
om21_1	Southern	HSsym	39.1	53.8	62.2	70.0	38.9	987.9	5.0
om21_1	Southern	HS-30	31.9	61.6	68.8	76.6	44.2	986.4	5.0
om21_1	Southern	PR+20	89.7	3.6	7.0	14.2	8.7	950.6	10.2
om21_1	Southern	PR-20	89.3	3.9	7.6	17.0	9.1	948.8	10.1
om21_1	Southern	PRsym	88.4	4.4	9.0	17.6	9.6	944.3	9.6
om21_1	Southern	PR-30	88.5	4.3	7.4	17.2	9.9	972.0	10.9
om22	North	HS+20	16.6	82.8	83.6	83.6	83.0	214.9	11.4
om22	North	HS-20	16.3	83.3	84.2	84.2	83.3	215.8	11.3
om22	North	HSsym	16.5	82.9	84.0	84.2	83.1	215.0	11.3
om22	North	HS-30	16.4	83.1	84.0	84.2	83.2	215.6	11.4
om22	North	PR+20	17.1	82.4	82.8	83.6	82.3	201.4	14.7
om22	North	PR-20	16.9	82.7	83.0	83.8	82.5	200.6	14.7
om22	North	PRsym	17.0	82.7	83.0	83.8	82.4	199.1	14.1
om22	North	PR-30	16.9	82.5	83.0	83.8	82.6	208.0	15.6
om22	Southern	HS+20	99.9	0.1	0.6	1.0	0.0	959.4	5.0
om22	Southern	HS-20	99.1	0.9	2.6	3.8	0.0	969.6	5.0
om22	Southern	HSsym	99.8	0.2	0.8	1.4	0.0	962.2	5.0
om22	Southern	HS-30	99.6	0.4	1.8	2.2	0.0	966.6	5.0
om22	Southern	PR+20	100.0	0.0	0.0	0.0	0.0	892.5	11.0
om22	Southern	PR-20	100.0	0.0	0.0	0.0	0.0	890.2	10.9
om22	Southern	PRsym	100.0	0.0	0.2	0.2	0.0	882.7	10.4
om22	Southern	PR-30	100.0	0.0	0.0	0.0	0.0	924.4	11.8
om23	North	HS+20	1.1	98.6	99.0	99.0	98.9	4.2	0.6
om23	North	HS-20	0.9	98.8	99.0	99.0	99.1	3.2	0.3
om23	North	HSsym	1.0	98.7	99.0	99.0	99.0	3.8	0.5
om23	North	HS-30	1.0	98.8	99.0	99.0	99.0	3.5	0.4
om23	North	PR+20	2.7	96.3	97.4	97.4	97.2	10.3	1.6
om23	North	PR-20	2.9	96.2	97.0	97.0	97.1	11.2	1.8
om23	North	PRsym	2.7	96.3	97.2	97.2	97.2	10.8	1.7
om23	North	PR-30	2.7	96.6	97.2	97.2	97.3	10.1	1.6
om23	Southern	HS+20	100.0	0.0	0.0	0.0	0.0	1284.5	4.5
om23	Southern	HS-20	99.9	0.0	0.0	0.0	0.1	1304.2	4.3
om23	Southern	HSsym	100.0	0.0	0.0	0.0	0.0	1291.0	4.4
om23	Southern	HS-30	99.9	0.0	0.0	0.0	0.1	1297.9	4.4
om23	Southern	PR+20	100.0	0.0	0.0	0.0	0.0	1234.0	6.6
om23	Southern	PR-20	100.0	0.0	0.0	0.0	0.0	1243.4	6.4
om23	Southern	PRsym	100.0	0.0	0.0	0.0	0.0	1237.0	6.2
om23	Southern	PR-30	100.0	0.0	0.0	0.0	0.0	1250.1	6.8

Before a final recommendation, the results package should add criteria based on an agreed B_{lim} , finalize near- and medium-term decision periods, retain the low-catch and mean-reduction diagnostics, report catch-rate or effort-feasibility measures and the frequency of a binding effort cap, and complete the operational-readiness test.

The finite-run precision analysis also remains. It should distinguish posterior/model uncertainty from future process and observation draws, confirm the use of common draws among CMPs, provide uncertainty intervals for key probabilities, and test whether conclusions change with more simulations or different random seeds.

Separate biological requirements from management preferences

The technical paper keeps three steps distinct:

1. **Minimum biological performance:** the requirements that determine whether a CMP can advance.
2. **Alternative assumptions:** performance and plausibility across alternative OMs, including component-specific outcomes.
3. **Management preferences:** trade-offs among candidates that meet the requirements in the first two steps.

The scorecard belongs only in the third step. Its measures, scaling, weights, candidate set, and current comparison tests are saved in downloadable files. The present worked examples show sensitivity to measures and weights and the interactive application recalculates after candidate changes. Sensitivity to OM choice and finite-run random variation remains work before a final recommendation.

Spatial structure and movement

The technical paper reports northern and southern components separately for every two-stock OM and shows the regional indices used by the CMP. It explains:

- the fixed catch splits used to test different assumptions;
- the `split.is` method used in the CMP definitions; and

- any separate northern assessment or management process relevant to interpreting the results.

The allocation work is treated as complete for the present analysis. This section documents what was tested and why; it does not open a new line of allocation analysis. The author's response to the reviewer provides the interpretation to accompany it.

Instructions for annual calculation

Each shortlisted CMP will have one complete set of instructions containing its indicator equation, HCR equation, allocation rule, parameters, data rules, fallback rules, calculation sequence, and ECP interface. A saved retrospective example will include the source data, intermediate values, unrounded advice, annual-limit calculation, allocation, rounding, and final result.

An automatic test will run the example independently and compare every intermediate and final value with saved expected results. Explanatory text may explain the CMP but does not redefine its settings.

Work remaining after SC14

Unless completed before submission, the paper records:

- final operational units, cut-offs, missing/revised-data rules, and rounding;
- matched banking-and-borrowing evaluation;
- advice-versus-realized-catch simulation or justification;
- simulation-precision analysis;
- final performance measures and agreed biological requirements;
- tests of whether the ECP detects problems, and rules for who decides what happens next; and
- an independent check that the annual calculation can be repeated.

Each item should have a named person or group responsible for it, a clear test for completion, and a date for decision before a CMP is recommended for adoption.