September 2026 Management Track Peer Review Panel Report

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Executive Summary

The September 2026 Management Track (MT) peer review panel (Panel) reviewed two stock assessments: American plaice (*Hippoglossoides platessoides*) and Gulf of Maine haddock (*Melanogrammus aeglefinus*). The Panel met in person in Woods Hole, MA with hybrid capabilities on September 22-23, 2026. The Panel was to determine whether each completed MT Assessment was technically sufficient to a) evaluate stock status, b) provide scientific catch advice, and c) successfully address the assessment Terms of Reference (TOR) (Appendix A). Table 1 presents a list of the stocks, name of the assessment lead, and conclusions about stock status. Attendance at the meeting is provided in Appendix B, and the agenda for the peer review is available in Appendix C.

American Plaice

The Panel concluded that the 2026 Management Track Assessment for American plaice is technically sufficient to evaluate stock status and provide scientific catch advice, and that it successfully addresses all the assessment Terms of Reference (TORs). This assessment updated the 2024 management track Woods Hole Assessment Model (WHAM) with minor model changes and with additional years of data. Model changes included turning off lognormal adjustments (following new best practice guidance) and a revision of survey selectivity estimation settings. The Panel considered these changes appropriate and well-justified. The assessment also addressed a priority recommendation of the 2024 MT review by incorporating corrected 2018-2023 fleet weight-at-age and age composition (due to a processing issue, these data were excluded and substituted with recent prior averages in the 2024 MT assessment). The Panel commended the systematic use of bridge runs to illustrate how the assessment was affected by model changes and additional data.

Gulf of Maine Haddock

The Panel concluded that the 2026 Management Track Assessment for Gulf of Maine haddock is technically sufficient to evaluate stock status and provide scientific catch advice, and that it successfully addresses all the assessment TORs. This assessment updated the 2024 management track WHAM model with additional years of data. In addition, the assessment addressed two Science and Statistical Committee (SSC) research recommendations. Age-dependent natural mortality was explored but did not improve model fit or diagnostics relative to the base assumption of constant (age-independent) natural mortality and was not retained in the model. An evaluation of projection performance based on retrospective forecasting indicated that longer-term projections are prone to high levels of uncertainty due to historical error and high reliance on projected recruitment. The use of projections to set management advice beyond four years (2026-29) should be avoided if possible. The Panel discussed the differential selectivity and varying catch contributions of the commercial and recreational fisheries for this stock and recommended exploring use of a two-fleet (with separate commercial and recreational fleets) model for future assessments. The Panel also recommended evaluating sensitivity of biological reference points and projections to recent changes in maturity-at-age.

Cross-cutting considerations

The Panel identified several topics that were discussed across the two stocks reviewed. The Panel decided not to make new cross-cutting recommendations for future Management or Research Track Assessments, but to emphasize the continued relevance of:

- Research recommendations from prior assessments, SSC deliberations, etc., that have not yet been addressed
- Addressing declining port sampling effort that differentially affects different fisheries (e.g., a continued issue for American plaice but improved for Gulf of Maine haddock in the current MT assessments)
- Further exploration of best practices for projections in the WHAM framework, including expanding the retrospective forecasting analyses pioneered for Gulf of Maine haddock in the current MT assessment to other stocks and synthesizing guidance.

The Panel also noted that both American plaice and Gulf of Maine haddock have been subject to dramatic long-term changes in weight-at-age with consequences for biological reference points. These changes are accounted for in the assessments and therefore do not present problems for assessment and management in the short term.

However, better understanding and ability to predict such changes may aid longer-term strategic management and adaptation to changing ocean conditions.

Table 1. Stocks reviewed at the September 2026 Management Track Assessment Peer Review meeting

Stock	**Assessment Lead**	**Peer Review Panel Conclusion on Stock Status**
American Plaice	Amanda Hart	Stock is not overfished and not subject to overfishing
Gulf of Maine Haddock	Charles Perretti	Stock is not overfished and not subject to overfishing

American Plaice

Summary

The Panel concluded that the 2026 Management Track Assessment for American plaice is technically sufficient to evaluate stock status and provide scientific catch advice, and that it successfully addresses all the assessment TORs. This assessment updated the 2024 management track WHAM model with minor model changes and with additional years of data. Model changes included turning off lognormal adjustments (following new best practice guidance) and a revision of survey selectivity estimation settings. The Panel considered these changes appropriate and well-justified. The assessment also addressed a priority recommendation of the 2024 MT review by incorporating corrected 2018-2023 fleet weight-at-age and age composition (due to a processing issue, these data were excluded and substituted with recent prior averages in the 2024 MT assessment). The Panel commended the systematic use of bridge runs to illustrate how the assessment was affected by model changes and additional data. The Panel discussed the level of commercial catch biological sampling (which has declined substantially since 2019) and recommended increasing this level in the future to increase model confidence. Impacts of temporarily reduced survey coverage in fall 2025 were discussed, concluding that coverage was sufficient and representative enough to retain the fall 2025 index in the assessment.

TOR 1. Catch

Estimate catch from all sources including landings and discards.

This TOR was met.

The Management Track updated total catch through 2025, including revised CAMS discard estimates for 2022-2025. The revisions to CAMS were small and affected only discards, which represent a relatively small component of total catch. Recent catch increased from 756 mt in 2022 to 1,564 mt in 2025, primarily because of increased commercial landings rather than as a result of discards. Discussion indicated that the increase was not considered a direct response to increasing stock abundance, as biomass has declined recently, and may instead reflect fishery or market factors. Otter trawls account for the majority of the fishery catch (more than 95% of catch in most years).

The Panel's discussion also considered changes in commercial weight-at-age (WAA) and the adequacy of fishery sampling. Fishery WAA was considered generally

consistent with survey WAA. A long-term drop in WAA has been seen since the 1980s, reaching a minimum in the early 2020s, and then increasing slightly in recent years. Commercial biological sampling has declined substantially since 2019, with current sampling at approximately 40% of previous levels. This reduction could limit the model's ability to track cohorts and the interpretation of recent changes in WAA. The assessment incorporated previously excluded commercial age-composition and WAA data from 2018-2023 (due to a processing issue, these data were excluded and substituted with recent prior averages in the 2024 MT assessment). Inclusion of these data had relatively little effect on model fit but contributed to changes in estimated selectivity and the scaling of SSB, fishing mortality, and reference points. That said, the incorporation of more recent WAA data was considered appropriate.

The panel recommended that fishery-dependent sampling be increased, if possible, to increase model confidence.

TOR 2. Indices

Evaluate indices used in the assessment (e.g., indices of relative or absolute abundance, recruitment, state surveys, age-length data, etc.).

This TOR was met.

The assessment continued to use the design-based Northeast Fisheries Science Center (NEFSC) spring and fall survey indices, with separate Albatross and Bigelow series. Alternative Vector Autoregressive Spatio-Temporal model (VAST)-based indices and state surveys had been previously explored during the Research Track but were not adopted because they did not improve assessment performance and American plaice are predominantly distributed offshore (outside the area covered by the state surveys). The discussion also considered possible changes in stock distribution, including observations of fish occurring in colder and deeper water, but available diagnostics did not indicate a substantial long-term spatial shift.

Survey coverage in fall 2025 was reduced by weather and gear-related disruptions, with approximately half as many stations sampled as in 2024. This reduced information available for the terminal year and increased uncertainty, although the assessment concluded that spatial coverage remained sufficient to characterize seasonal movements and that the interruption had limited influence on model results. Survey CVs are incorporated in WHAM, and survey selectivity remains an important source of uncertainty, particularly for some ages and for estimating recent recruitment. The Panel, after consideration, concluded that the change to fixing the selectivity at 1.0 for the highest selected age in the survey was appropriate, though it noted it did decrease

selectivity at older ages, relative to the 2024 Management Track. After questions to the assessment team, it was indicated that the selectivity at older ages was likely uncertain due to their relative rarity in the survey catch.

After deliberation, the Panel concluded that this TOR was met, but noted that survey selectivity was an important source of uncertainty and should be reexamined during subsequent assessments.

TOR 3. Model

Estimate annual fishing mortality, recruitment and stock biomass (both total and spawning stock) as possible (depending on the assessment method) for the time series using the approved assessment method and estimate their uncertainty. Include retrospective analyses if possible (both historical and within-model) to allow a comparison with previous assessment results and projections, and to examine model fit.

a. Include bridge runs to sequentially document each change from the previously accepted model to the updated model proposed for this peer review.

b. Prepare a backup assessment approach that would serve as an alternative for providing scientific advice to management if the analytical assessment were to not pass review

This TOR was met.

The assessment model considered American plaice ages 1-11+ via an age-structured state-space assessment model conducted on the WHAM platform. The model estimated annual fishing mortality for a single commercial fleet. Recruitment was estimated via the numbers-at-age (NAA) random effects for age 1 via an independent and identically distributed (iid) process—i.e. annual recruitment estimates were independent of each other, and were not based on an assumed stock-recruit relationship. Stock biomass was estimated following standard WHAM approaches. Uncertainty was estimated for each of fishing mortality, recruitment, and spawning stock biomass.

The assessment team conducted a series of bridge and management track runs to understand the effects of additional data and any model changes on the model outcomes.

The bridge run 1 applied the updated version of WHAM to the data previously used in the 2024 MT assessment, with no notable differences in diagnostics or results. Bridge run 2 used the data from the 2024 MT assessment (i.e. through 2023) with slight data adjustments following updates to data in CAMS and the commercial age composition and weight-at-age (WAA) for 2018-2023. This updated WAA was lower in older ages

(4+) than what was used in the previous assessment, and did not produce notable changes in the results, though there was a slight rescaling of spawning stock biomass (SSB) related to the lower WAA in older ages. Management Track Model 1 (MT1) carried these changes from Bridge runs 1 & 2 forward and updated the data through 2025. This model fit the age composition reasonably well, and did not overfit to the lower 2025 index data. Management Track Model 2 (MT2) carried the changes in MT1 forward and further revised the survey selectivity. The selectivity patterns (domed shaped through age 9 with slight increase for ages 10 and 11+) was similar for the 2024 MT and the MT2, but MT2 preliminarily estimated survey selectivities freely and then fixed the maximum selectivity as fully selected. This resulted in a slight decrease in the selectivity of the older ages (especially 10, 11+) in MT2. The selectivity changes in MT2 appeared to fit the age composition data better, and had only slight effects on the model estimated outputs (e.g., served to decrease pre-2000 estimates of fishing mortality (F) and did not appear to cause any diagnostic issues). The changes in MT2 were carried forward to the candidate model.

The candidate model used for the assessment reviewed, MT3, included a change in the lognormal adjustment following recently published research (Li et al., 2026). This work describes how lognormal adjustments are commonly made in state-space assessment models when the errors (residuals between predicted and observed) associated with numbers at age or recruitment estimates are modeled as normally distributed in log-space (making them log-normally distributed), and then will be back-transformed to natural space. This process can introduce bias in the form of increased values of the population process being modeled, with the extent of increase related to the variance of the log-normal distribution, and has often been corrected for via a lognormal adjustment. However, Li et al., (2026) found that these log-normal adjustments could themselves produce bias when bias correction was assumed in the assessment model, and so recommended avoiding making such bias correction.

The result of dropping the bias correction in MT3 was little change in model diagnostics (and nothing troubling), and a slight decrease in re-scaling of the recruitment (i.e., recruitment was in MT3 estimated slightly lower for most of the time series relative to previous model runs) and, to a lesser extent, the SSB. The Panel found the justification for dropping the lognormal adjustment appropriate. There was no substantial retrospective pattern and thus no adjustment for one was required.

Overall, the Panel found the candidate model appropriate, and believed the decisions made by the assessment team were well-justified, carefully explored via bridge and incremental model runs, and appeared to perform well.

TOR 4. Biological Reference Points

Re-estimate or update the biological reference points (BRP)s as defined by the management track level and recommend stock status. Also, provide qualitative descriptions of stock status based on simple indicators/metrics (e.g., age- and size-structure, temporal trends in population size or recruitment indices, etc.).

This TOR was met.

All BRPs were based off of the candidate model MT3. The BRPs were calculated using the same methods that were approved for the Research Track. This included using F40% as a proxy for Fmsy, which was estimated as 0.43 (0.37-0.49) and translated to an SSBmsy proxy of 12,711 mt (10,267-15,737) and a maximum sustainable yield (MSY) proxy of 4,700 mt (3,792-5,826). These reference points were calculated using a 5-year terminal average WAA, maturity, and selectivity, and the time series mean recruitment. These decisions appeared well-justified. The WAA has changed dramatically over time in older (age 6+) fish between the early (1980-2010) and later (2010-2025) periods covered by the data, so it is reasonable to use the more recent WAA data. The overall recruitment does not appear to have varied dramatically in scale, and so using the long-term mean is also reasonable. The reference points and model estimates resulted in the stock being estimated to be not overfished (SSB was 135% of the SSB msy proxy) and not subject to overfishing (estimated F was 23% of the Fmsy proxy). This did not result in a change in the stock status.

Based on this Management Track Assessment, the recommended stock status is not overfished and not subject to overfishing.

TOR 5. Projections

Conduct short-term stock projections when appropriate.

This TOR was met.

Short-term stock projections through 2031 were conducted to provide estimated yield and stock biomass. The projection was based on the 2026 catch provided by the Groundfish Plan Development Team (PDT) (1,442 mt) and assumed harvest at the FMSY level from 2027 through 2031. Standard WHAM methods were applied, incorporating a recent 5-year average of weight-at-age, maturity-at-age, and selectivity, as well as estimated mean recruitment over time with uncertainty modeled as an independent and identically distributed random effect. No retrospective adjustments were required or applied in the projections.

The resulting projected catches for 2027–2031 are 4,219, 3,638, 3,691, 3,830, and 3,916 mt, respectively (note that these catches are below the MSY level due to the influence of recent below-average recruitment). The assessment lead demonstrated that projections were most consistent with model estimates in the first year by comparing the 2024 MT model with 2024 and 2025 projected SSBs against the 2026 MT model estimated SSBs. Uncertainty increases over time, with the 2029–2031 projected population biomass and catch relying heavily on projected recruitments; as a result, these later estimates may not be suitable for management purposes, even though the projection represents the best available science.

TOR 6. Research Recommendations

Respond to any review panel comments or SSC concerns from the most recent prior research or management track assessment.

This TOR was met.

The assessment lead presented a review of recommendations from prior review panels and SSC concerns. One recommendation—to re-estimate commercial age composition for 2018 onward—was satisfactorily addressed. Four additional recommendations (concerning archived otoliths, comparing models with and without environmental covariates, evaluating alternative natural mortality estimates, and investigating seasonal movement patterns by age) were not addressed. The Panel and assessment lead discussed historical explorations of natural mortality assumptions. The unaddressed recommendations remain active priorities, and the Panel supports continuing to explore them in future assessments.

In addition, both the Panel and the assessment lead expressed concern regarding the reduced sample sizes in the early 2020s and recommended maintaining adequate sample sizes for port sampling of age composition and weight-at-age.

Gulf of Maine Haddock

Summary

The Panel concluded that the 2026 Management Track Assessment for Gulf of Maine haddock is technically sufficient to evaluate stock status and provide scientific catch advice, and that it successfully addresses all the assessment TORs. This assessment updated the 2024 management track WHAM model with additional years of data. In addition, the assessment addressed two SSC research recommendations. Age-dependent natural mortality was explored but did not improve model fit or diagnostics relative to the base assumption of constant (age-independent) natural mortality and was not retained in the model. An evaluation of projection performance based on retrospective forecasting indicated that longer-term projections are prone to high levels of uncertainty due to historical error and high reliance on projected recruitment. The use of projections to set management advice beyond four years should be avoided if possible. The Panel discussed the differential selectivity and varying catch contributions of the commercial and recreational fisheries for this stock and recommended exploring use of a two-fleet (with separate commercial and recreational fleets) model for future assessments. The Panel also recommended evaluating sensitivity of biological reference points and projections to recent changes in maturity-at-age. The Panel noted that commercial biological sampling for this stock had improved in level and representativeness over the past four years. The Panel further discussed spatial coverage of the Cooperative Bottom Longline Survey (BLLS) for this stock and overall found it adequate. Impacts of temporarily reduced bottom trawl survey (BTS) coverage in fall 2025 were discussed, concluding that coverage was sufficient and representative enough to retain the fall 2025 index in the assessment.

TOR 1. Catch

Estimate catch from all sources including landings and discards.

This TOR was met.

The 2026 Management Track assessment updated fishery catch information through 2025, with no changes other than the incorporation of additional years of data. Catch inputs include commercial landings and discards, recreational landings and dead discards, and foreign landings. Total catch declined from 2,734 mt in 2023 to 2,288 mt in 2024 and 1,741 mt in 2025. Commercial landings declined steadily since 2023, while recreational removals increased from 458 mt in 2023 to 879 mt in 2024 before declining

to 417 mt in 2025. Commercial discards remained a small component of total catch, and no foreign landings were reported in recent years.

Numbers-at-age and weight-at-age generally tracked the strong recent cohorts well. Commercial landings remain dominated by trawl gear, while the large market category has declined as haddock have become smaller. Biological sampling was relatively comprehensive in 2024 and 2025, with all commercial market categories sampled in all quarters. Recreational removals remain an important and variable component of total catch and are adjusted using season- and size-specific discard mortality rates.

Panel discussion focused on recent changes in catch and discards. Minimum size regulations were identified as the main reason for both commercial and recreational discards. The decline in recreational catch had no clear single explanation, although changes in effort, possible cod-avoidance behavior, and elevated fishing activity during the COVID period were discussed. The recreational-to-commercial catch ratio increased from about 0.20 in 2023 to 0.62 in 2024, then declined to about 0.32 in 2025. This variability was considered relevant to treatment of the two sectors within a single modeled fleet and to the most recent selectivity block, but does not indicate a consistent directional trend. Increased monitoring has improved confidence in recent commercial discard estimates, while the panel also noted that forthcoming recreational effort estimates could affect the recreational catch series.

Based on this discussion, the Panel concluded that this TOR was met. Further discussion and recommendation for examining the fleet structure in the model will be highlighted in TOR 3.

TOR 2. Indices

Evaluate indices used in the assessment (e.g., indices of relative or absolute abundance, recruitment, state surveys, age-length data, etc.).

This TOR was met.

The 2026 Management Track assessment retained the existing survey structure and updated indices through 2025, with no model changes other than the incorporation of additional years of data. Four indices are used: the NEFSC Bottom Trawl Survey (BTS) spring and fall series from 1977–2025 and the Cooperative Bottom Longline Survey (BLLS) spring and fall series from 2014–2025. Survey abundance has declined as the strong 2013 year class has aged out, while the BTS continues to identify the above-average 2020 and 2021 cohorts. The low fall 2025 BTS index was considered

representative because all strata were sampled, haddock occurred widely, and survey timing, bottom temperature, and distribution were within the historical range. The similarly low spring 2026 survey, although not included in the assessment, supported the recent decline.

Additional survey information indicated biological changes rather than changes in survey design. Growth of the 2020 and 2021 cohorts has slowed, and haddock appear to be maturing at smaller sizes. The BLLS was retained as a complementary index designed in part to sample rough-bottom habitat not well represented by the BTS and collects length, weight, age, and maturity data. The spatial center of the BTS distribution has remained relatively stable.

Panel discussion focused on treatment and representativeness of the survey indices. Missing survey years are excluded from the likelihood. The Panel considered whether the calibrated BTS should be separated into Albatross and Bigelow periods, but retaining a single series was preferred because the strong 2013 year class entered shortly after the 2009 vessel transition. State inshore surveys had been examined but generally catch too few haddock to provide useful indices. The Panel also noted the recent decline in size and age at maturity and suggested continued evaluation of whether the long-term mean maturity schedule remains appropriate. Finally, the spatial coverage of the BLLS was discussed, particularly its concentration in the central stock area. Although there was no immediate concern that the index was unrepresentative, the Panel discussed additional northern coverage and the implications (pros and cons) of potentially including peripheral areas with few haddock were identified.

TOR 3. Conduct Stock Assessment

Estimate annual fishing mortality, recruitment and stock biomass (both total and spawning stock) as possible (depending on the assessment method) for the time series using the approved assessment method and estimate their uncertainty. Include retrospective analyses if possible (both historical and within-model) to allow a comparison with previous assessment results and projections, and to examine model fit.

> *a. Include bridge runs to sequentially document each change from the previously accepted model to the updated model proposed for this peer review.*
> *b. Prepare a backup assessment approach that would serve as an alternative for providing scientific advice to management if the analytical assessment were to not pass review*

This TOR was met.

The candidate model was implemented in WHAM and incorporates four scientific index data (NEFSC spring & fall trawl from 1977 forward, and spring and fall longline from

2014 forward), and models a single fishing fleet of combined recreational and commercial fishing. The model estimated selectivity for each of the five data sources freely at age, and uses a Dirichlet distribution for the age composition data. The model assumed (fixed and age-invariant) natural mortality at 0.2, and used a maturity at age of the mean of the full time series. Recruitment was modeled as deviations from a time series mean value following an AR1 process. The NAA effects were modeled as a 2dar1 process where recruitment was decoupled from ages 2+.

The candidate model was compared to a Bridge run of the 2024 MT model, which suggested that the additional years of data used in the candidate model had small effects on model-predicted estimates of F, recruitment, and SSB. The rho-adjusted values of estimated terminal year SSB and F indicated that a retrospective adjustment was not necessary, and so this was not done.

The candidate model was also compared to an evaluation of a past research recommendation, which was to consider age-based natural mortality. An exploratory model considered ‘length-inverse’ M at age following the Brodziak et al., 2011 approach (and consistent with updated guidance in Lorenzen 2022), which redistributed the age-based M such that the average remained 0.2, but that older fish had lesser M and younger fish had greater M. This age-based M model was remarkably similar to the candidate model, with essentially no improvement in diagnostics, main predictions (F, recruitment, SSB), and other estimates, including selectivities and NAA.

The Panel recommended that a future assessment evaluate the efficacy and effect of considering the recreational and commercial fisheries as separate fleets. The Panel understood the reasoning behind combining these sectors for a single fleet in the current model—the time-blocks of selectivity corresponding to the increase in recreational landings and the lack of concerning model diagnostics of combining the fleets—and believes there are no clear statistical issues recognizable in the model diagnostics resulting from the combination of commercial and recreational sectors in a single fleet. The Panel believed exploring the separation of the sectors into two fleets might increase model parsimony and potentially affect the need for setting time blocks for selectivities, and is generally a good, first-principles practice given how differently the fleets are likely to operate. An intermediate step might be visual and/or quantitative comparison of the age compositions between the two sectors. These exist individually currently, but it is not easy to visually recognize the degree of overlap, and the partial justification for the post-2005 selectivity block being related to the recreational sector seems indicative that these selectivities do in fact differ.

TOR 4. Biological Reference Points

Re-estimate or update the BRP's as defined by the management track level and recommend stock status. Also, provide qualitative descriptions of stock status based on simple indicators/metrics (e.g., age- and size-structure, temporal trends in population size or recruitment indices, etc.).

This TOR was met.

The biological reference points were calculated using a F40% proxy for Fmsy, and calculating SSBmsy using an SPR approach internal to WHAM. The reference points were calculated using mean estimated recruitment for the full time series, a natural mortality value of 0.2, the weight at age of the last 5 years, a time-invariant maturity ogive, and the terminal selectivity block. This resulted in an estimated SSBmsy of 7,809mt, SSB2025 of 11,339mt, Fmsy of 0.35, and F2025 of 0.22. These estimates result in a stock status that is neither overfished nor undergoing overfishing.

The Panel thought the approach used for the reference points was justifiable. There was some discussion about whether the mean recruitment was appropriate given the apparent log-normal structure of recruits, but the discussion noted that (1) with the log-normal adjustment turned off in the model, the "mean" of recruitment is actually the mean of the median, since recruits are estimated in log-space, and (2) switching to an alternative specification of the recruits for the BRP (e.g., the median of the point estimates rather than the mean) would cause some inconsistency with the projection methodology, which in WHAM would be using the mean as the point towards which the projected recruits would trend towards following at AR1 process according to the model-estimated inter-annual correlation. The panel concludes the approach used is sufficient and likely the best available now.

The Panel discussed that the additional analyses and visualizations regarding the empirical check on the reference points were especially useful. This analysis appeared to confirm that the reference points estimated were compatible with the empirical data (model-estimated SSB and recruits).

Based on this Management Track Assessment, the recommended stock status is not overfished and not subject to overfishing.

TOR 5. Projections

Conduct short-term stock projections when appropriate.

This TOR was met.

Short-term stock projections through 2031 were conducted to estimate yield and stock biomass. These projections were based on a 2026 catch of 1,944 mt provided by the Groundfish PDT and assumed harvesting at the FMSY level from 2027 through 2031. Standard WHAM methods were applied, incorporating a 5-year average for weight-at-age and selectivity, and average maturity-at-age. No retrospective adjustments were required.

The resulting projected catches for 2027–2031 are 2,099, 1,618, 1,481, 1,524, and 1,599 mt, respectively. The assessment lead demonstrated that projections were most consistent with model estimates in the first two years by comparing projected 2024 and 2025 SSBs from the 2024 MT model against estimated SSBs from the 2026 MT model. This consistency was further validated by a 1–6 year-ahead rolling forecast error analysis. However, projection uncertainty increases over time as projections become increasingly dependent on projected recruitment. While the projections represent the best available science, the Panel and the assessment lead noted particular uncertainty in the 2030-2031 projections, and the Panel recommended that a future update assessment be used to inform catch recommendations for those years.

TOR 6. Research Recommendations

Respond to any review panel comments or SSC concerns from the most recent prior research or management track assessment.

This TOR was met.

The assessment lead presented a review of recommendations from prior review panels and SSC concerns. Three recommendations were satisfactorily addressed: continuing the development of retrospective forecasting to characterize projection error, developing and testing retrospective forecasting as a diagnostic tool, and incorporating age-dependent natural mortality into the assessment.

Three other recommendations were not addressed: exploring spatio-temporal models to integrate data across multiple surveys (e.g., NEFSC's bottom trawl and bottom longline surveys), evaluating geospatial models (such as VAST or a bespoke model) to combine these survey streams, and conducting research to better understand environmental impacts on the recruitment and growth dynamics of Gulf of Maine haddock.

The unaddressed recommendations remain active priorities, and the Panel supports exploring them in future assessments. Additionally, the Panel and the assessment lead discussed past evaluations of natural mortality assumptions and potential avenues for future investigation.

The Panel also offered the following new research recommendations:
1. Explore a two-fleet model structure that separates commercial and recreational fleets.
2. Perform a sensitivity analysis evaluating the use of the most recent maturity-at-age data in biological reference point (BRP) and projection calculations.

References

Li, C., Deroba, J. J., Miller, T. J., Legault, C. M. & Perretti, C. T. (2026). Evaluating the impact of log-normal bias-correction on a state-space stock assessment model. *Canadian Journal of Fisheries and Aquatic Sciences: 83*, 1-11. https://doi.org/10.1139/cjfas-2025-0093

Lorenzen, K. (2022). Size- and age-dependent natural mortality in fish populations: Biology, models, implications, and a generalized length-inverse mortality paradigm. *Fisheries Research* 255: 106454. https://doi.org/10.1016/j.fishres.2022.106454

Brodziak, J., Ianelli, J., Lorenzen, K. & Methot, R (Editors). (2011) Estimating natural mortality in stock assessment applications. NOAA Tech. Memo. NMFS-F/SPO-119. https://spo.nmfs.noaa.gov/sites/default/files/tm119.pdf

Appendix A. Management Track Assessment Terms of Reference

1. Estimate catch from all sources including landings and discards.

2. Evaluate indices used in the assessment (e.g., indices of relative or absolute abundance, recruitment, state surveys, age-length data, etc.).

3. Estimate annual fishing mortality, recruitment, and stock biomass (both total and spawning stock) as possible (depending on the assessment method) for the time series using the approved assessment method and estimate their uncertainty. Include retrospective analyses if possible (both historical and within-model) to allow a comparison with previous assessment results and projections, and to examine model fit.

    a. Include bridge runs to sequentially document each change from the previously accepted model to the updated model proposed for this peer review.

    b. Prepare a backup assessment approach that would serve as an alternative for providing scientific advice to management if the analytical assessment were to not pass review.

4. Re-estimate or update the BRP's as defined by the management track level and recommend stock status. Also, provide qualitative descriptions of stock status based on simple indicators/metrics (e.g., age- and size-structure, temporal trends in population size or recruitment indices, etc.).

5. Conduct short-term stock projections when appropriate.

6. Respond to any review panel comments or SSC concerns from the most recent prior research or management track assessment.

Appendix B. September 2026 Management Track Peer Review meeting participants (names only, no call-in numbers)

ASMFC - Atlantic States Marine Fisheries Commission
GARFO - Greater Atlantic Regional Fisheries Office
MAFMC - Mid-Atlantic Fisheries Management Council
NEFMC - New England Fisheries Management Council
NEFSC - Northeast Fisheries Science Center
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Kai Lorenzen, NEFMC SSC
Edward Camp. NEFMC SSC
Matt Cieri, ASMFC Designee
Yan Jiao, MAFMC SSC

Larry Alade, NEFSC
Kristan Blackhart, NEFSC
Jessica Blaylock, NEFSC
Jason Boucher, NEFSC
Steve Cadrin, University of Massachusetts
Jamie Cournane, NEFMC
Kiersten Curti, NEFSC
Jonathan Deroba, NEFSC
Tara Dolan, Massachusetts Division of Marine Fisheries
Robin Frede, NEFMC
Mark Grant, NEFMC
Melanie Griffin, Massachusetts Division of Marine Fisheries
Alex Hansell, NEFSC
Amanda Hart, NEFSC
Daniel Hennen, NEFSC
Cameron Hodgdon, NEFSC
Brian Hooper, NEFSC
Chris Legault, NEFSC
Emily Liljestrand, NEFSC
Brian Linton, NEFSC
Sean McNally, NEFSC
Timothy Miller, NEFSC
Julie Nieland, NEFSC
Paul Nitschke, NEFSC
Nicholas O'Connor, University of Massachusetts
Cate O'Keefe, NEFMC
Jackie Odell, Northeast Seafood Coalition
Jonathon Peros, NEFMC
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Charles Perretti, NEFSC
Liz Sullivan, GARFO
Samuel Truesdell, NEFSC
Megan Ware, Maine Department of Marine Resources
Kelly Whitmore, Massachusetts Division of Marine Fisheries
Anthony Wood, NEFSC
Joshua Zahner, NEFSC

Appendix C. September 2026 Management Track Peer Review Agenda

AGENDA (v. 8/27/2026)

**All times are approximate, and may be changed at the discretion of the Peer Review Panel Chair. The meeting is open to the public.*

Tuesday, September 22, 2026

Time	Stock	Subject	Presenter
9:00 a.m.		Welcome/Logistics Conduct of Meeting	Brian Hooper Kristan Blackhart Kai Lorenzen, Chair
9:15 a.m.	American Plaice	Terms of Reference (TOR) Review & Panel Questions	Amanda Hart Panel
10:30 a.m.		***Break***	
10:45 a.m.	American Plaice	TOR Review & Panel Questions, continued	Amanda Hart Panel
11:45 a.m.	American Plaice	Public Comment	Public
12:00 p.m.		***Lunch***	
1:00 p.m.	American Plaice	Panel Deliberations	Panel
2:15 p.m.	American Plaice	Panel Conclusions / Recommendations and Final Stock Wrap Up	Panel
3:00 p.m.		Closed Panel Writing Session	
5:00 p.m.		***Adjourn***	

Wednesday, September 23, 2026

Time	Stock	Subject	Presenter
9:00 a.m.		Welcome/Logistics Conduct of Meeting	Brian Hooper Kristan Blackhart Kai Lorenzen, Chair
9:05 a.m.	Gulf of Maine Haddock	TOR Review & Panel Questions	Charles Perretti Panel
10:30 a.m.		***Break***	
10:45 a.m.	Gulf of Maine Haddock	TOR Review & Panel Questions, continued	Charles Perretti Panel
11:45 a.m.	Gulf of Maine Haddock	Public Comment	Public
12:00 p.m.		***Lunch***	
1:00 p.m.	Gulf of Maine Haddock	Panel Deliberations	Panel
2:15 p.m.	Gulf of Maine Haddock	Panel Conclusions / Recommendations and Final Stock Wrap Up	Panel
3:00 p.m.		Closed Panel Writing Session	
5:00 p.m.		***Adjourn***	