Haddock Terms of Reference
(v. 7/8/2020)

1. Review existing research efforts, data, and habitat information in the Gulf of Maine and Georges Bank, identify any findings relevant to influences of ecosystem conditions on haddock, and consider those findings, as appropriate, in addressing other TORs. For processes that the working group deems important and promising that are not currently feasible to consider quantitatively, describe next steps for development, testing, and review of quantitative relationships and how they could best inform assessments.

2. Estimate catch from all sources including landings and discards. Describe the spatial and temporal distribution of landings, discards, and fishing effort. Characterize the uncertainty in these sources of data.

3. Present the survey data being used in the assessment (e.g., indices of relative or absolute abundance, recruitment, state surveys, age-length data, etc.). Characterize the uncertainty in these sources of data.

4. Estimate annual fishing mortality, recruitment and stock biomass (both total and spawning stock) for the time series, and estimate their uncertainty. Compare the time series of these estimates with those from the previously accepted assessment model, and evaluate the strength and direction of any retrospective pattern(s) in both the current and the previously accepted model. Enumerate possible sources of the retrospective patterns and characterize plausibility, if possible.

5. Update or redefine status determination criteria (SDC point estimates or proxies for B_{MSY}, $B_{THRESHOLD}$, F_{MSY} and MSY) and provide estimates of their uncertainty. If analytic model-based estimates are unavailable, consider recommending alternative measurable proxies for BRPs.

6. Define the methodology for performing short-term projections of catch and biomass under alternative harvest scenarios, including the assumptions of fishery selectivity, weights at age, maturity, and recruitment.

7. Review, evaluate and report on the status of the Stock Assessment Review Committee (SARC) and Working Group research recommendations listed in most recent SARC reviewed assessment and review panel reports. Identify new research recommendations.

8. Develop a "Plan B" for use if the accepted assessment model fails in the future.

9. Review and present any research related to recruitment processes (e.g., spawning and larval transport, and retention), and potential hypotheses for large recruitment events.

10. Review and present any research related to density-dependent growth.

Additional GB/EGB TOR

11. For Eastern Georges Bank, provide advice to TMGC on appropriate reference points.

12. Review data related to stock structure of haddock on Georges Bank (including Eastern Georges Bank management area) and implications for assessments conducted on the whole bank and on subareas of the bank.