

Comment Index

Section 1: Trawl Surveys

Page

Group 1 1

Payne Summary Point 1, page 3

The NEFSC should continue to use the trawl survey data for New England groundfish stock assessment unadjusted, because such use is scientifically justifiable.

There appears to be no systematic change in trawl survey performance in the period covered by the offset trawl warps.

Bell, page 2

Payne Summary Point 5, page 4

Conversion coefficients, for use in assessments, should be determined for stocks for which the catch results from optimal and suboptimal gear settings differed most.

However, given that there is no consistent differences between the “optimal” and “worst case” trawls (i.e. some positive, some negative), there are no grounds for modifying the survey results except for those where significant changes were detected. In these instances, conversion coefficients should be determined.

Bell, page 6

Group 2 1

Payne, Summary Point 1, page 3

The sensitivity tests carried out to evaluate the implications of the trawl warp offsets for the evaluation of stock status and rebuilding plans adequately bounded the range of potential introduced biases.

Yes, the 10, 25 and 100% were reasonable magnitudes. Although, the magnitudes were all in the same direction, I acted under the assumption that the mis-configured gear had lower efficiency. In light of the number of instances where this assumption was not true, -10% and -25% perturbations would have been of interest.

Mohn, page 3

Yes, the sensitivity tests carried out in the VPA analyses and projections using the 10%, 25% and 100% decreases in catching power adequately characterized the uncertainties in estimated stock sizes and rebuilding mortality rates arising from unequal warp offsets. The only minor improvement would have been to also consider scenarios in which increases in catchability resulted from the unequal warp offsets, because this outcome also appeared to be a possibility for perhaps a few of the stocks from some of the analyses (e.g., as for yellowtail with an estimated 50% increase, Fig. 3.11.1) and from the more recent trawl warp offset experiment.

McAllister, page 13

The sensitivity analyses performed did cover an adequate range of reduced catchability for the species examined. The subsequent trawl experiment has demonstrated that reductions in catchability in the region of 100% are highly unlikely, while changes in catchability of 10-25% are in the region of survey variability.

Bell, page 5

Group 3 2

Payne, Summary Point 2, page 3

If the various survey gear protocol issues remain controversial, then an experiment specifically designed to detect these effects should be undertaken.

If the various survey gear protocol issues remain controversial, then an experiment specifically designed to detect these effects will need to be undertaken.

Cook, page 5

Future experiments of the same nature, which would be valuable, need clear objectives and sufficient time to evaluate objectives individually, not to be undermined by more and more perturbations being added to the initial experimental objective (in this case the effect of warp offset).

Payne, page 11

Group 4 3

Payne, Summary Point 3, page 3

Survey gear should perform as consistently as possible. Further, the commercial gear in the experiment yielded less sampling variability, and the reasons for this should be investigated.

However, it is desirable for any survey gear to perform as consistently as possible, and if there are lessons to be learned from the performance of the commercial gear in reducing sampling variability they should be investigated.

Cook, page 6

Consistency in catchability through time is the most important factor in a survey. Low catchability is not necessarily a problem.

Bell, page 2

The power of the gear will be most influential in those species or size of species that are rarely caught in the traditional gear but are well sampled by a different (perhaps commercial) net.

Mohn, page 5

While the current skipper will have learned techniques for gear deployment over time, it would be preferable if, when a replacement is required, someone with commercial fishing experience could be utilized.

Bell, page 7

Group 5 4

Payne, Summary Point 4, page 4

An evaluation of the ability of the survey to detect population signal above the inherent noise should be conducted for those assessments most dependent on survey indices of abundance.

It would be useful for an analysis to be conducted that evaluated the ability of the survey to detect population signal, above the inherent noise in the survey, for those assessments most dependent on survey indices of abundance.

Cook, page 6

I recommend that detailed simulation modeling be undertaken to address the point, at which the trawl survey no longer serves as a reliable index of abundance for low catchability species.

McAllister, page 18

Group 6 4

Payne, Summary Point 7, page 4

Consideration should be given to using estimates of survey CV to supplement current attempts to minimize the influence of survey variability, in survey-data-only stock assessments, through the use of running averages, thus producing a more risk-averse strategy.

Attempts to minimize the influence of survey variability in survey-only assessments have been made through the use of three-year running averages... A precautionary approach to management might look to use estimates of survey CV to produce a more risk-averse strategy.

Bell, page 6

Payne, Summary Point 8, page 4

Because estimation error can trigger a stock rebuilding response even when there is no need to do so, consideration should be given as to how assessment error should be handled within the management process.

It does appear that estimation error can trigger a stock rebuilding response even when there is no need to do so. Given the potential economic impact of this, some thought should be given to how assessment error should be handled within the management process.

Cook, page 7

Group 7 6

Moreover, the need to communicate what constitutes an accurate and precise survey to stakeholders, and the difficulty in doing so, requires more attention.

Mohn, page 1

Group 8 6

Payne, Summary Point 6, page 4

If the NEFSC surveys are subjected to redesign with the involvement of stakeholders (all reviewers consider this measure to be unnecessary), independent scientists with a knowledge of survey design must be included to ensure that scientific standards and data-series continuity are not compromised.

The long time series of fishery-independent relative abundance indices, that the survey provides, are fundamental to the stock assessments that are carried out for the New England groundfish fisheries and the same sampling protocol should be maintained in order to enable reliable stock assessments to be continued to be carried out.

McAllister, page 19

Therefore, if survey design needs to be reviewed in light of recent experience, and the panel concluded that there was not conclusive evidence to do so, it must be done with the involvement of stakeholders. Further, independent scientists with a knowledge of survey design should be included at an early stage if redesign is being countenanced, to ensure that scientific standards are not compromised and that the results of any research survey conducted with amended design are comparable with those of the current design.

Payne, page 12

If there is a move to redesign the NMFS surveys with the involvement of stakeholders, I strongly recommend that independent scientists with knowledge of survey design are included to ensure that scientific standards are not compromised.

Cook, page 6

No gear will sample all species, so compromises must be made in their selection (general groundfish trawl or flat fish trawl or shrimp or scallops...). Once the choice is made, it should be used as long as possible, with routine mensuration to assure consistency.

Mohn, page 1

For a trawl survey to be a useful index of abundance, it must be comparable over a period of time. Its power is of less importance as long as the species of interest are adequately sampled.

Mohn, page 3

Section 2: Biological Reference Points

Group 9	7
Payne, Summary Point 11, page 4	
Most methodologies used by the NEFSC to compute F_{MSY} and B_{MSY} are adequate, but the protocol used to evaluate the goodness of fit of alternative stock/recruit functions to the data, and to select alternative models to determine F_{MSY} and B_{MSY} for the purposes of fisheries management, needs to be revised.	
Group 10	8
AIC (or BIC) should not be used as model selection criterion for the Bayesian statistical models used. Instead, Bayes' factor or Bayes' posterior is method of choice for evaluating the goodness of fit of Bayesian statistical models to the available data.	
<i>McAllister, page 4</i>	
The AIC value was incorrectly applied to compute the marginal posterior and Bayes' factor for each alternative model. Instead, the marginal probability of the data, given each stock-recruit function ($P(\text{data given model (i)})$), should be used to compute Bayes' factors.	
<i>McAllister, page 4</i>	
Group 11	9
Payne, Summary Point 15, page 4	
If NEFSC adopts a Bayesian statistical approach to select a stock-recruit model for reference point determination, the center should first decide (Beverton-Holt or Ricker) the baseline set of priors deemed the most appropriate reflection of existing knowledge of model parameters for each stock-recruit model form, and then evaluate the alternative functional forms using Bayes' factor.	
If the Bayesian statistical approach is to be adopted ...the NEFSC should first decide for each stock-recruit model form (Beverton-Holt or Ricker), on the baseline set of priors, that it deems to be the most appropriate reflection of existing knowledge about the model parameters. Then only the alternative functional forms should be evaluated using Bayes' factor, not the same functional forms but with different priors.	
<i>McAllister, page 4</i>	

Group 12	10
<p>The hierarchical criteria for comparing parametric stock-recruitment model fits listed on the lower half of p. 23 in Anon. (2002) and top of p. 24 Anon. (2002) up to point #6 appear to be perfectly sensible criteria to apply to evaluate whether the estimation results obtained are plausible for a given fit of a stock-recruit model alternative to the stock-recruit data. From my review of the various results presented, it appears that these criteria were applied in a consistent and appropriate manner.</p> <p>McAllister, page 24</p>	
Group 13	12
<p>Payne, Summary Point 16, page 5</p> <p>More than one diagnostic tool should be applied to evaluate convergence on posterior distributions, rather than simply relying on the MCMC software for statistical estimation.</p> <p>Furthermore, although it is claimed that the algorithm was run for 500,000 iterations, and this seems like many, the methods, if any, that were used to test or diagnose for convergence were not reported as they should have (Gelman et al. 1995)...This is a serious omission, and results cannot be taken to be reliable unless such diagnostics have been applied and found to consistently indicate convergence.</p> <p>McAllister, page 27</p>	
Group 14	13
<p>Payne, Summary Point 14, page 4</p> <p>If the issue of model selection (Beverton-Holt vs. Ricker) remains on the table, then model validation needs to be addressed more fully, and more divergent models ought to be tested (e.g. non-parametric deterministic and probabilistic).</p>	
Group 15	13
<p>There may be <i>a priori</i> biological reasons for assuming an over-compensatory stock-recruit function (cannibalism, spatial interference between adults and progeny, etc.), and this is acknowledged in the report although this is not taken through to implementation. Cod are known to be cannibalistic for a number of stocks, and it is a reasonable assumption that the same occurs in the Gulf of Maine and Georges Bank stocks. The acceptance of the Beverton-Holt type relationships for these stocks therefore appears to be choosing the wrong model albeit for the right statistical reasons.</p> <p>Bell, page 10</p>	
Group 16	14
<p>Payne, summary point 12, page 4</p> <p>A simulation study, using age-structured operating models, should be undertaken to validate the survey index method in a management context, to investigate its sensitivity to <i>ad hoc</i> assumptions and to evaluate the potential biases and imprecision in the results.</p> <p>I recommend that a simulation study be undertaken to validate the survey index method in a management context and to investigate its sensitivity to <i>ad hoc</i> assumptions.</p> <p>Cook, page 10</p> <p>The index-based approach to stock assessment and projections has some appealing conceptual merit. However, to ensure that it provides an adequate scientific basis for fisheries management advice, it should be simulation tested using age structured operating models to evaluate the potential biases and imprecision in the results obtained.</p> <p>McAllister, page 6</p>	

Group 17 15

Payne, Summary Point 19, page 5

An adaptive approach to using harvest management to control biomass is eminently sensible in the light of uncertainty, and should be pursued.

In the above circumstance, the proposal by the working group in the Report (page ix) to adopt an adaptive approach to biomass management seems eminently sensible, and I would recommend that it is followed.

Cook, page 11

An adaptive strategy which intermittently reassesses F targets without reference to B_{MSY} would be more estimable (for example a variation on the F strategies proposed in Shepherd 1981), and a definition of rebuilt that is not dependent on theoretical levels of biomass.

Mohn, page 5

Group 18 16

Payne, Summary Point 20, page 5

Can all 19 stocks be moved simultaneously towards B_{MSY} through single-species management? Given current knowledge of the complexity of biological interactions and the ecosystem in which the stocks exist, the reviewers doubted whether the question could be answered satisfactorily. Single-species MSYs are not good indicators of multispecies MSY, so caution will be needed in the choice of B_{MSY} target. There could well be value in assessing interactions in multispecies fisheries, using spatially heterogeneous models such as Iceland's BORMICON.

As well as biological interactions, models are needed to assess technical interactions in multispecies fisheries.

Mohn, page 10

Payne, Summary Point 24, page 5

An evaluation of technical interactions in the mixed fishery should be undertaken to investigate the consistency of multiple MSY targets.

I would recommend that an evaluation of technical interactions in the mixed fishery be undertaken to investigate the consistency of multiple MSY targets.

Cook, page 13

Group 19 18

Payne, Summary Point 21, page 5

The stock/recruit models used in projections should be validated against historical observations of stock dynamics

I would recommend that the s-r models used in projections are validated against historical observations of stock dynamics.

Cook, page 12

Payne, Summary Point 13, page 4

The methods used to derive non-parametric stock/recruit functions to approximate B_{MSY} should be simulation tested with a variety of underlying operating models for stock/recruit processes, to test the robustness and accuracy of the methodology.

Group 20 19

Payne, Summary Point 17, page 5

There may be other objective criteria that are more appropriate for deciding when to include autocorrelation in models to determine F_{MSY} and B_{MSY} , and in stock projection models. Such criteria should be investigated.

It is recommended that consideration be given to the issue of determining other objective criteria that might be appropriate for determining when to include autocorrelation in models to determine F_{msy} , B_{msy} and in stock projection models.

McAllister, page 5

Group 21 19

Payne, Summary Point 9, page 4

If the current B_{MSY} reference points are adopted, the potential costs of adopting an erroneous value need to be evaluated

If the current B_{MSY} reference points are to be adopted, I would recommend that an analysis is done to evaluate the potential costs of adopting an erroneous value.

Cook, page 8

Group 22 20

Payne, Summary Point 23, page 5

From a purely scientific perspective, the setting of an intermediate biomass target could be defended. In such a case, once a rebuilding F and trajectories were in place, this intermediate target could be used as a signpost to see if stock rebuilding was on track. If the rebuilding target were not on track, an assessment would be needed to determine what the causes are (e.g., were the original projections in error, was recruitment atypical, or was recruitment as expected but F not achieved).

From a scientific point of view, an intermediate biomass target could be defended. For example, once rebuilding F and trajectories were found, the biomass target could be used as a signpost to see if the stock were on track.

Mohn, page 11

Among other management scenarios that may be considered include the limiting of maximum interannual change in total catch. This would enable a more structured transition within the industry

Bell, page 12

Group 23 21

Most stock-recruit functions use SSB as a proxy for stock reproductive potential. There is increasing evidence that use of this proxy can overestimate a stock's resilience to fishing pressure

Bell, page 8

Section 3: Stock Rebuilding and Related Projections

Group 24 21

Payne, Summary Point 10, page 4

Alternative means of modelling groundfish stock dynamics should be evaluated, and their results compared with present procedures, although the currently used ADAPT model is deemed by the reviewers to be scientifically sound. Reasons for differences in the outputs of the different models need to be sought.

Most of the stock assessment and projection methodologies currently applied by the NEFSC provide an adequate scientific basis for fisheries management. The ADAPT VPA and AGEPRO methodologies provide a rigorous and adequate basis for assessing stock biomass and fishing mortality rate, making projections, evaluating the differences in potential consequences of alternative possible fisheries management policies, and for taking into account parameter and important model structure uncertainties.

Payne, page 16

Group 25 22

The AGEPRO software used to forecast rebuilding strategies... is well documented and rigorously constructed, and it interfaces well with the ADAPT VPA stock assessment model and the bootstrapping output produced by ADAPT VPA to take into account parameter uncertainty. It certainly allows for uncertainty in the estimates of initial population size, natural mortality and future recruitment, and has additional potential for examining autocorrelation in recruitment. While this covers some of the uncertainty likely in projections, there could well be uncertainty associated with variations in weight, maturity and fishing mortality that widen the confidence limits further.

Payne, page 19

Group 26 23

Of more concern is the inability for the software to cope with trends in parameters. Systematic changes in parameters such as weight- and maturity- at age can cause significant bias in stock projections.

Bell, page 12

Group 27 23

I would recommend that an evaluation of technical interactions in the mixed fishery be undertaken to investigate the consistency of multiple MSY targets.

Cook, page 12

Section 4: Stock Assessments

Group 28 23

Payne, Summary Point 10, page 4

Alternative means of modelling groundfish stock dynamics should be evaluated, and their results compared with present procedures, although the currently used ADAPT model is deemed by the reviewers to be scientifically sound. Reasons for differences in the outputs of the different models need to be sought.

It appears that if a new model is proposed an evaluation takes place (at a SARC or GARM) and the selected model becomes the one upon which the assessment, BRPs and projections are made...Another approach would be to maintain the non-selected model, using it as an estimate of model uncertainty to more fully capture uncertainty in risk in projections...In the present context, VPA models are used, and the criteria for replacement or joint resource description need to be investigated and codified.

Mohn, page 2

Alternative non-equilibrium production models should be investigated, and other types of models as well.

Mohn, page 9

There was not the available time within this review process to perform an in-depth analysis of why the model should appear so flexible and I would therefore recommend that investigations are made into the ADAPT and ASPM model differences.

Bell, page 11

Group 29 Categorized in Summary Table, no text comments x

Payne, Summary Point 18, page 5

Use of a probabilistic methodology for estimating the intrinsic rate of increase of r , using demographic data or meta-analysis and a projection methodology that probabilistically accounts for uncertainty in r , should be considered since the ASPIC surplus production estimation and projection methodology has serious methodological limitations.

The use of a probabilistic methodology for estimating r using demographic data or meta-analysis (Meyers et al. 1997, 1999), and a projection methodology that probabilistically accounted for uncertainty in r , should therefore be considered as a potential improvement to the current ASPIC methodology.

McAllister, page 6

[Authors' note: Only one of the stock assessments provided for northeast groundfish populations utilizes the ASPIC assessment method (for Georges Bank winter flounder), and, based on this assessment, the stock is determined to be fully rebuilt and overfishing is not occurring.]

Payne, Summary Point 22, page 5

Consideration should be given to implementing a phased reduction of fishing mortality, with consideration given to the possibly greater risk to the stock if this reduction is implemented.

[Authors' note: This is a management-related comment.]

Summary of recommendations and related comments from the groundfish peer review reports, by subject area (trawl surveys, etc) and category (short-term, etc.). Group numbers designate several comments concerning the same or similar subjects (see text).

Short Term or Completed	Long-Term Basic Science	For Research Managers & Fishery Managers
Trawl Surveys		
Group 2	Group 1 Group 3 Group 4 Group 5 Group 6 (first 2)	Group 6 (second 2) Group 7 Group 8
Biological Reference Points		
Group 9 Group 10 Group 11 Group 13 Group 14 Group 15	Group 16 Group 18 Group 19 Group 20 Group 23	Group 12 Group 17 Group 21 Group 22
Stock Rebuilding and Related Projections		
	Group 24 Group 25 Group 26 Group 27	Group 29 (last one)
Stock Assessments		
	Group 28 Group 29 (first two)	