

IV. Appendices

Appendix 1. Description of New Assessment Process

[NOTE TO READERS: This following text is an excerpt from of a white paper delivered to the Northeast Regional Coordinating Committee on April 6, 2011. The paper was written by a subcommittee of the NRCC known as the ACL Working Group. At the time the paper was delivered, the ACL WG was chaired by Dr. Richard Merrick, NEFSC. Among other things, the NRCC asked the ACL WG to “Define a system for delivering operational assessments (Task 3)”, “Define a system for a Research Track (Task 4)” and “Develop a transition plan (Task 5)”. Those three sections of the report are included here. The report represents a plan and vision for the future. At the time the report was written, the process had not been tested or put into practice.]

NOAA Fisheries Response to NRCC Tasking to Develop a New Process for Assessment of Managed Fishery Resources off the Northeastern United States

Task 3: Define system for delivering operational assessments - Establish general framework for how system will function, outlining:

a. Roles and responsibilities of participant groups: NEFSC; Council and Commission PDTs, working groups, and technical committees; SSCs ; external scientific expertise; public participation -

The NRCC will remain responsible for final scheduling of assessments, and for oversight on the general a Terms of Reference for assessments. Operational assessments themselves will be prepared by NEFSC or Council/Commission staff. A senior NEFSC assessment scientist and the chairs of the Mid-Atlantic and New England SSCs will constitute the Assessment Oversight Panel and will be advised by staff of the NERO, NEFMC, MAFMC, and ASMFC. The public may participate in the deliberations of the AOP. Finally, peer review of operational assessments will be conducted by an Integrated Peer Review team including at least the lead assessor(s), the SSC member responsible for the stock, and an assessment scientist either from outside of NMFS or if from within NMFS, from outside of the lead assessor’s working group. Results from the peer review will then be forwarded to the PDT/TC/SSC for the Councils’ use in the ABC setting process.

b. Terms of reference - The baseline model, developed as part of a previous benchmark assessment or through the research track, will be used to produce operational assessments. Typically, this will be the model used at the last operational assessment and the process for application of the model will follow Figure 1:

- i. Step 1 - In the year prior to an operational assessment year, the NRCC will meet to determine the final operational assessment schedule for the next year. This schedule will build off of the 2-5 year assessment intervals for stocks that reflect the NEFMC /MAFMC/ASMFC specification setting cycles and stock biology.
- ii. Step 2 - After the NRCC has set the schedule but prior to initiating the operational assessments, each lead assessor will determine how the baseline

model will be applied in his/her upcoming operational assessment. Little, if any, change is expected or encouraged in the application of the baseline model in the operational assessments. However, it is incumbent upon the lead assessor to consider all relevant results from the research track, and to explore applying them in the operational track. Each assessment will be guided by the following generic Terms of Reference prepared to guide all operational assessments, with some tailoring to meet the characteristics of individual stocks:

1. Update all fishery-dependent data (landings, discards, catch-at-age, etc.) and all fishery-independent data (research survey information) used as inputs in the baseline model or in the last operational assessment.
 2. Estimate fishing mortality and stock size for the current year, and update estimates of these parameters in previous years, if these have been revised.
 3. Identify and quantify data and model uncertainty that can be considered for setting Acceptable Biological Catch limits.
 4. If appropriate, update the values of biological reference points (BRPs).
 5. Evaluate stock status with respect to updated status determination criteria.
 6. Perform short-term projections; compare results to rebuilding schedules.
 7. Comment on whether assessment diagnostics—or the availability of new types of assessment input data—indicate that a new assessment approach is warranted (i.e., referral to the research track).
 8. Should the baseline model fail when applied in the operational assessment, provide guidance on how stock status might be evaluated. Should an alternative assessment approach not be readily available, provide guidance on the type of scientific and management advice that can be.
- iii. Step 3 - The Assessment Oversight Panel (AOP) will meet with all of the lead stock assessors to review each stock's proposed operational assessment. All stocks proposed for the assessment year will be reviewed by the Assessment Oversight Panel at this meeting(s).
1. The Assessment Oversight Panel will be composed, at a minimum, of a senior NEFSC assessment scientist, and the chairs of the Mid-Atlantic and New England SSCs, and will be advised by staff of the NERO, NEFMC, MAFMC, and ASMFC. Should an SSC Chair be a NEFSC scientist or not have the appropriate skills to technically review assessments, the SSC will appoint an alternative member scientist to the Assessment Oversight Panel.
 2. The Assessment Oversight Panel meeting will be open to the public.
 3. The purpose of the AOC's review is to finalize the Terms of Reference for each assessment and review the assessor's proposed approach for every assessment.
 4. Each assessor is also expected to provide an alternative approach to the assessment should the baseline model fail.
 5. The Assessment Oversight Panel review will focus on any proposed changes in the baseline model proposed by the lead assessor, recognizing that the

proposed modeling approach should follow the baseline model as closely as possible (Terms of Reference need development for this review). Other possible approaches to the assessment can be discussed, and proposals from other potential assessors can also be tabled. However, any approaches significantly different from the baseline model will be referred to be research track for study, development, and peer review.

6. The Assessment Oversight Panel may determine that, based on advice from the lead assessor, that the baseline model will not work; if so, the alternative approach will be implemented in the operational assessment, and the stock will be referred to the research track.

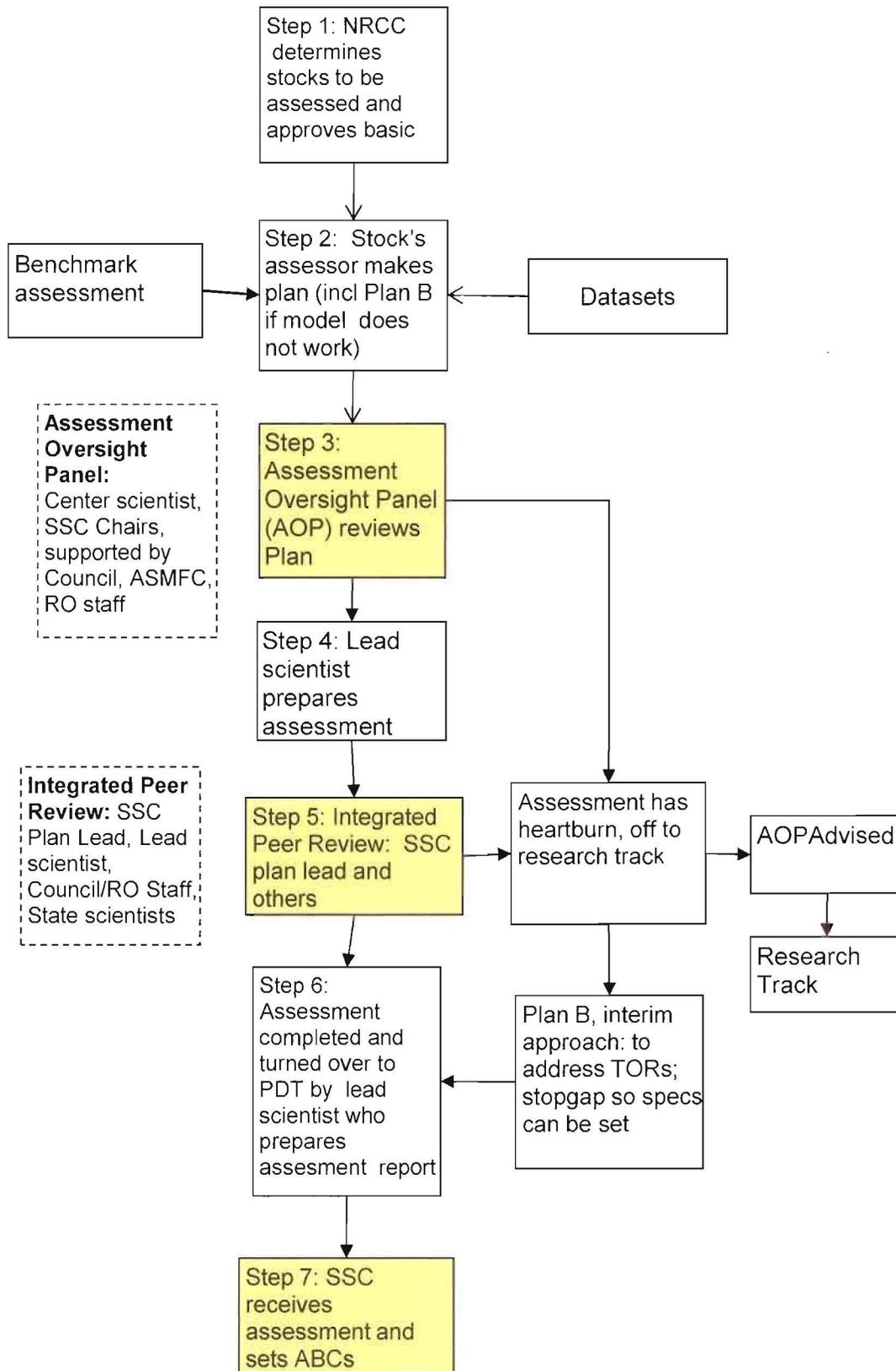


Figure 1. New Stock Assessment Framework

- iv. Step 4 - The operational assessment will then be developed by the lead assessment scientist.
- v. Step 5 – The operational assessment will be subjected to an Integrated Peer.
- vi. Step 6 – PDT/TC review of assessment with conclusions forwarded to SSC.
- vii. Step 7 – SSC review of assessment with ABC recommendations forwarded to Council.

c. Operational assessment development completion process and finalization -

Following the Integrated Peer Review of an operational assessment, two reports will be provided to the appropriate PDT/TC. One report will summarize the results of the Integrated Peer Review (and authored by the Chair of the Integrated Peer Review). The second report will be the assessment document, which will be an NEFSC Reference Document, and will serve as the basis for the stock status determination (and will be authored by the stock's assessment scientist). A standardized template will be used in preparing this report (see attached Appendix Figure 1). The SSC will then review the two reports, and the PDT/TC recommendations. The SSC will also review situations where the Integrated Peer Review determined the baseline model was inappropriate and where the Integrated Peer Review subsequently provided scientific and management guidance based on an alternative approach.

d. Process for identifying interim year stock evaluation metrics through operational

assessment - In years between operational assessments, the PDT/TC will provide assessment data and information to the SSC. Such information could include: a) Recent survey indices, and recent landings and discard estimates, b) projections based on the last operational assessment, and c) resource status and/or fishery performance metrics. The PDT/TC (as supported by the NEFSC) will be responsible for obtaining the above data, updating projections, and providing the relevant information to the SSC.

e. Peer review of operational assessment outputs (uncertainties, interim year stock evaluation metrics, etc.), Process to be applied (integrated/internal, handoff/external) -

The operational assessment will be subjected to an Integrated Peer Review by a team including at least the lead assessor(s), the SSC member responsible for the stock, and an assessment scientist either from outside of NMFS or if from within NMFS, from outside of the lead assessor's working group. Terms of Reference remain to be developed for the Integrated Peer Review. The Integrated Peer Review will make the determination whether the completed operational assessment is technically sufficient to (a) evaluate stock status and (b) provide scientific advice; (c) successfully address the Terms of Reference. The Integrated Peer Review may determine that application of the baseline model in the operational assessment has not worked; if so, the alternative approach to the assessment will be implemented, and the stock will be referred to the research track.

f. Define amount of latitude/modification of methods is permissible from established

assessment baseline - A stock assessment will be a candidate for development of a new (or substantially revised) assessment approach via the research track if one or more of the following criteria apply, as determined during the peer review of the operational assessment:

- i. A change in stock definition is contemplated.
- ii. Diagnostics from the operational assessment indicate the assessment model is inadequate to continue to serve as a scientific basis for management.
- iii. New types of input data are available which, if incorporated into the assessment, might significantly change the assessment results. A significant change is one in which the estimates of stock size and OFL might differ by a stock specific amount (e.g., 20-30% for groundfish) from the assessment estimates without incorporating such new types of data.
- iv. A significant retrospective pattern has become evident in the assessment estimates of stock size, fishing mortality, or recruitment.
- v. A significantly different value of natural mortality (e.g., derived from analysis of trophic interactions) is considered appropriate in characterizing non-fishing stock dynamics.
- vi. Significant changes in management practices have occurred that have markedly reduced the accuracy and utility of the existing assessment data inputs, or significantly diminished the reliability or validity of the assessment model itself.
- vii. If any of the above criteria are met, the issue will be referred (through the Center Director/appropriate SSC Chair) to the research track for development of a new baseline model. However, until the issue is resolved for use in an operational assessment, either the existing baseline model or the alternative assessment approach will be followed. Note that not all topics referred to the research track will indicate that the baseline model is an inappropriate analytic tool.
- viii. If the assessment is considered acceptable by the Integrated Peer Review but involves significant deviations from the approach outlined from in the Assessment Oversight Panel review, then the assessment may be referred back to the Assessment Oversight Panel with a brief description of changes that were made from what was agreed to during the Assessment Oversight Panel review. The Assessment Oversight Panel can then review as necessary (and likely by correspondence) the assessment, and determine the course of action for the assessment.
 - a. Protocols for incorporation of results into fishery management plans (as needed, i.e., regulatory changes or specifications process) – See Task 5, but an example of how the process would work (compared to the prior years) is shown in the Figure 2.

Task 4: Define system for research track - Establish general framework for how system will function, outlining:

- a. Roles and responsibilities of participant groups: NEFSC; Council and Commission PDTs, working groups, and technical committees; SSCs; external scientific expertise, and public participation - SSC Chairs, and the NEFSC Science and Research Director will refer stocks to the NEFSC for development of new approaches to the assessment through the research track. The NRCC will be responsible, as appropriate, with prioritizing the research projects. External experts will participate in the development and peer review of the research, and the public will be invited to sit in on the peer review.
- b. Protocols for remand, re-examination, addressing errors or new information (as needed) - The research track will be used to develop improved stock assessment models and approaches, and will not provide stock status determinations. Three general types of research projects will be referred to the research track: (1) stocks where the analytic method works but some biological issue requires investigation (e.g., stock structure), (2) stocks where application of the baseline model has not worked, or where a competing model has been suggested as a better analytic approach, and (3) stocks where an acceptable assessment has not yet been developed. The research track is not, however, meant as the repository for a host of research items. A stock assessment will be a candidate for development of a new (or substantially revised) assessment approach via the research track if one or more of the following criteria apply, as determined during the peer review of the operational assessment:
 - i. A change in stock definition is contemplated.
 - ii. Diagnostics from the operational assessment indicate the assessment model is inadequate to continue to serve as a scientific basis for management.
 - iii. New types of input data are available which, if incorporated into the assessment, might significantly change the assessment results. A significant change is one in which the estimates of stock size and OFL might differ by a stock specific amount (e.g., 20-30% for groundfish) from the assessment estimates without incorporating such new types of data.
 - iv. A significant retrospective pattern has become evident in the assessment estimates of stock size, fishing mortality, or recruitment.
 - v. A significantly different value of natural mortality (e.g., derived from analysis of trophic interactions) is considered appropriate in characterizing non-fishing stock dynamics.
 - vi. Significant changes in management practices have occurred that have markedly reduced the accuracy and utility of the existing assessment data

inputs, or significantly diminished the reliability or validity of the assessment model itself.

- c. Terms of Reference – TORs for research track activities will vary depending on the reason for forwarding a project to the research track. Research track TORs for new baseline assessment models would include:
 - i. Develop scientifically valid methodologies and models to serve as the baseline model in future operational assessments. All new assessment models/approaches will be tested on datasets from the last operational assessment.
 - ii. Identify a framework /protocol for using available data to monitor the fishery and stock, and for setting specifications during the interval between operational assessments.
 - iii. Identify the metrics most useful to monitor in evaluating whether a management change may be needed
 - iv. Develop BRPs that are consistent with any newly-developed assessment model or methodologies
 - v. Suggest alternative approaches to assessing the stock should the baseline model fail when applied in a future operational assessment
- d. Peer review of transitional assessment results - Work products developed in the research track will undergo an independent peer review process, which may be similar to that used in the Stock Assessment Review Committee/SARC (e.g., a sequential peer review involving the Center for Independent Experts and chaired by an SSC member).
- e. Process for transitioning a research assessment to an operational assessment baseline - The timing of research within the research track should be such that all work is completed and peer reviewed before the next scheduled operational assessment. At end of research track:
 - i. A decision will be made by the peer reviewers as to whether (a) the work products are adequate to replace the existing baseline model; (b) the new model or methods can be run either from the assessment model toolbox or through other available software; and (c) the revised/new BRPs are technically appropriate.
 - ii. Once accepted by the peer review panel, the new assessment model/approach will become the new baseline model.
 - iii. To facilitate timely incorporation of new, peer-reviewed baseline research into the operational track, the NRCC will review the operational assessment schedule in response to research track output and may amend the operational assessment schedule, subject to the availability of resources.

Task 5: Develop transition plan - Establish general framework for how system will function, outlining:

- a. Identify FMPs that would require regulatory changes to be more responsive to scientific advice. To better match available resources to management needs, because the current assessment process cannot meet the increased management needs of an annual catch limit (ACL)-based management program for every fishery. If the current practices are significantly changed, FMPs and implementing regulations will need to be amended accordingly.

There are currently 50 managed stocks in the Northeast Region, in 13 Fishery Management Plans (FMPs), managed under Magnuson-Stevens Act (MSA) authority. Each FMP and its implementing regulations describe a process for setting specifications or making framework adjustments to the fishery on a periodic basis.

Although the MSA requires ACLs to be set for each stock in a fishery, ACLs can be set for more than 1 year at a time (e.g., a 3-year specification action could set ACLs for each of the 3 years; the ACLs could be the same for each year in the cycle, or different). With the exception of Atlantic salmon, for which there is no fishery, the authority currently exists, or will likely soon exist through the MAFMC's Omnibus ACL/AM Amendment, in every FMP, for setting multi-year specifications (see Table 5). The currently authorized specification periods are from 2 to 5 years, but generally are 2 or 3 years. In the Mid-Atlantic, the ACLs and related specifications are established through specification actions, which are implemented through proposed and final rulemaking. In New England, fishery specifications are established through Framework Adjustments, which are also implemented through proposed and final rulemaking.

While the authority for multi-year specification setting has existed in most fisheries for several years, it has been used only to a limited extent. In the Mid-Atlantic, only the surfclam and ocean quahog fisheries have routinely been managed through multi-year specifications, though tilefish has been operating under a constant-catch scenario, pending the next stock assessment. Two-year specifications were set for the summer flounder fishery once, but the specifications were subsequently changed in the second year in response to new information; multi-year specifications in this fishery have not been used again. In New England, the scallop, groundfish, skate, and monkfish fisheries are managed through biennial Framework Adjustments; the herring fishery is currently under a 3-year specification cycle, and it is anticipated that the small-mesh groundfish species will be managed through 3-year specifications, beginning in FY 2012. In some cases (e.g., groundfish and scallops), "biennial" adjustments in New England have established specifications for 3 years, as a default in case the next biennial adjustment specifications are delayed.

If use of multi-year specifications is to be expanded, the ACL Working Group has recommended that there be objective criteria identified that would be used to determine a rational schedule for operational assessments; biologically-based criteria are being developed by the Task 2 Working Group (“Develop prioritization and scheduling system for operational assessments”). These criteria are based on the properties of each stock, including such factors as life history, stock condition, recruitment patterns, stock resilience, etc. It is envisioned that these criteria would be used, at least in part, to determine the optimal frequency of operational assessments for each stock or group of stocks, and that the operational assessments would be coupled with specification/adjustment processes to convert the results of the assessments into management action. In addition to the biological criteria, there are other aspects of management that should be considered by the NRCC in determining the frequency of assessments and specification setting; these other factors are discussed under item 5.b. below.

If, based on the criteria developed by the Task 2 Working Group and consideration of the information described under item b. below, the NRCC concludes that the optimal frequency of assessment and specification setting for a stock is not consistent with the authority in the FMP (e.g., if the NRCC determines that assessments and specifications for surfclams be done every 7 years, but the Surfclam Ocean Quahog FMP only allows specifications to be set for up to 3 years), then that FMP will need to be amended to provide that authority. This could be done through either an FMP amendment or framework action, as appropriate, either as part of another action (i.e., combined with changes to other management measures in the FMP), or as a stand-alone action. Such a change should be relatively straightforward, from a technical standpoint. If the optimal frequency of assessment and specification setting is within the existing authority in an FMP, no change to the FMP or implementing regulations would be required.

Each FMP and its implementing regulations define the fishing year for each stock or groups of stocks (see Table 6). Fishing years can be changed, if doing so would spread workloads or make it easier to use the most recent scientific and/or fishery information for the operational assessment and associated specification setting. The issues associated with changing fishing years are discussed in item c. below. If the NRCC determines that the timing of assessments and/or the resultant specifications is such that it is desirable and/or necessary to change the starting date of any fishing year, this could be accomplished through either an FMP amendment or framework action, as appropriate to the FMP, with an associated proposed and final rule to change the implementing regulations. This would require analysis of the environmental, economic, and social impacts of such a change.

Each FMP and its implementing regulations also describe a process for specification setting or framework adjustments, including the parties involved (e.g., Plan

Development Teams (PDTs), Fishery Management Action Teams (FMATs), Technical Committees, Monitoring Committees, Councils, Scientific and Statistical Committees (SSCs), etc.) and their respective roles; the timing of the process; and the range of specifications and/or adjustments that can be made through that process. If the new assessment/specification process approved by the NRCC requires changes to the existing process in a given FMP, there would need to be a change to that FMP and to its implementing regulations to define the new process for setting specifications and/or adjustments.

If multi-year specifications are used more extensively, which is recommended by the ACL Working Group, it is likely that the Councils will want some way to ensure that the specifications for out-years (e.g., years 2 and 3 in a 3-year specification cycle) are still appropriate. The approaches to doing this are discussed in item d. below. If the Councils choose to provide for out-year adjustments or responses to new information, establishing the process and criteria to be used to do that may require changes to the FMP and its implementing regulations. This could be done through an FMP amendment or framework, as appropriate to the FMP, and implemented through proposed and final rulemaking, which would likely be relatively straightforward. If the existing process in an FMP is sufficient to accommodate the adjustment approach (e.g., if the Council chooses to use the current specification process to make the out-year adjustment), no changes to the FMP or regulations would be necessary.

Summary/Recommendations: Changes in multi-year authorities, fishing years, specification processes, and/or out-year adjustment procedures that result from the NRCC's decisions on the new assessment process will need to be made through FMP amendments or frameworks, as appropriate to the FMP, with accompanying changes to the implementing regulations, and the expected impacts of those changes will need to be analyzed as part of that process. If multiple FMPs need to be amended, an omnibus amendment could be an efficient way to accomplish this. The regulatory sections of 50 CFR that would potentially need to be amended are listed in Tables 6 and 7 (these could be different if/when the MAFMC's Omnibus ACL/AM amendment is implemented). The administrative/regulatory changes would take several months for the Councils to develop, and 5 -7 months for NMFS to review, approve, and implement.

- b. Define optimal duration of specifications by stock (connected to Task 2) - To match assessment advice to the management cycle, provide greater stability and predictability to the process and for the industry, and streamline the process to better balance workloads of Council and NMFS staff. Staggering the assessment and specification processes for different fisheries and/or stocks would spread out the assessment and specification setting workloads.

As discussed above under item 5.a., authority already exists to use multi-year specifications, and any additional authorities could be obtained through FMP amendments and/or frameworks, if necessary. To rationalize the frequency of operational assessments and the setting of multi-year specifications, the ACL Working Group has recommended that criteria should be established to determine the most appropriate duration of specifications for each stock and/or fishery. The Task 2 Working Group is developing biologically-based criteria for this purpose, to consider such things as life histories, generation times, stock status, stock resiliency, etc. However, there are other issues that are also relevant to these decisions, such as the importance of the fishery (value, number of participants, etc.), the stability of the fishery and the resources, whether the stock is overfished or experiencing overfishing, where the stock is relative to the end of a rebuilding plan, past performance of the management program, etc. Table 8 summarizes information for each managed stock that could be relevant for determining optimal assessment and specification cycles, but does not include the results of the Task 2 workgroup, which are not yet available. A first cut at estimating what appropriate assessment and specification frequencies might look like is also provided, as a straw man for further discussion. The frequencies vary from 3 to 7 years. The largest challenge will be the 20 multispecies stocks; it would be very difficult to assess all 20 stocks in the same year. It is possible, however, that the multispecies stocks could be grouped in such a way that the most important stocks (e.g., cod, haddock, yellowtail flounder, etc.) are assessed more often than the minor stocks (e.g., ocean pout, wolffish, cusk, halibut, etc.), and/or that groups of stocks could be assessed at staggered times (e.g., the roundfish in the same year, and the flatfish in a different year).

Summary/Recommendations: For the proposed process of operational assessments to make meaningful and necessary changes to better match assessment resources to management needs, the use of multi-year specifications will need to be expanded. To rationalize the decision process, it is recommended that there be science-based criteria developed (by Task 2 Working Group), and that other factors such as those in Table 8 also be considered by the NRCC, such that the assessment/specification process can be optimized consistent with available assessment resources. The implications of doing this are explored further under item c. below. One hurdle to be overcome is the timing of the start-up of a new process, because the benefits of a staggered assessment/specification process will not be realized immediately.

- c. Examine modifications to fishing years, specifications cycles to optimize available resources (i.e., offset FMPs by years, change seasons to better synchronize with survey data and analytical availability) - Establish a schedule that ensures that operational assessment results are available at the right times to feed into the Councils' specification/adjustment processes; stagger the process such that the assessment workloads are manageable with existing resources.; and make best use of scientific and fishery-dependent data in the operational assessment and specification setting process.

Table 6 shows the current fishing years for Northeast MSA-managed stocks. Most fishing years are based on calendar years, and begin on January 1. Four fishing years (groundfish, spiny dogfish, skates, and monkfish) start May 1. Two fishing years (scallops and red crab) begin on March 1. Only one fishing year (tilefish) begins November 1. The current staggered fishing years provide some administrative benefits, in that they spread out the specification processes such that not all specifications are being developed, submitted, reviewed, published, and implemented at the same time. On the other hand, having different fishing years for different fisheries could be more confusing to the public and the industry than a standard fishing year across all fisheries. Also, having fishing years not aligned with calendar years causes some complications in data reporting and use in assessments (assessments are generally based on calendar year data and specifications for some fisheries are not). A downside of having all fishing years begin January 1 is that the specification packages and implementing rules must be processed late in the year, when holidays and weather can cause delays, and when many Federal agencies, including other regions of NMFS, are trying to get year-end actions in place and published in the Federal Register.

Making changes to fishing years to facilitate availability of assessment and/or data (surveys, landings data, recreational data, etc.) is administratively straightforward, but may be complicated by resistance from the fishing industry, since there are practical aspects of the timing of the fishing year such as fish availability (inshore/offshore, north/south, among different states or regions, etc.), fish prices, fish quality, weather, etc. For example, recent attempts to change the Atlantic sea scallop fishing year were vigorously opposed by industry. Nevertheless, this remains an available mechanism to better align scientific advice and the management process, as well as to stagger assessments and specification setting within the same year.

The ability to change fishing years is not explicitly frameworked in any FMP, though the frameworkable measure descriptions for many fisheries are broad (see Table 7). FMP amendments would likely be needed to change the fishing years in most, if not all, FMPs, given recent litigation that found that frameworking options may be narrower than previously assumed. The impacts of any changes to a fishing year would need to be analyzed along with the amendment.

Changes to the specification/adjustment processes are listed as frameworkable measures in several FMPs (Atlantic Mackerel, Squid, Butterfish; NE Multispecies; Summer Flounder, Scup, and Black Seabass; Tilefish), and may be possible under the broad interpretation of frameworkable measures in others (Table 7). Depending on the FMP and the magnitude and impacts of such changes, they could be accomplished through FMP amendments or frameworks.

The staggering of specification/adjustment cycles will be necessary to accomplish meaningful resource-smoothing, i.e., to ensure that assessment resources are deployed to provide the necessary scientific advice on a schedule that is appropriate to each fishery. The frequency of assessments and specifications will depend on the results of the Working Group for Task 2 regarding biological criteria for assessment frequency, and on the other factors discussed above in item b., and in Table 8. Regardless of the final decisions on assessment/specification frequency made by the NRCC, it will be necessary to schedule assessments such that they meet the timelines of the Council and ASMFC processes (i.e., that the final operational assessment results feed into the management process in a way to allow them to be used quickly), and that they are sufficiently spaced to allow the assessment process to be completed with existing resources. In addition, to allow flexibility in making out-year changes to multi-year specifications, changes to the analyses accompanying the specification/adjustment actions will be necessary (see item 5.e. below).

The current status of specification and adjustment schedules is shown in Table 9, and the frequency and timing of specifications and adjustments based on the straw man assumptions in Table 8 are shown in Table 10. There would be a significant start-up workload, because the new process would necessitate a large number of specifications/adjustments to be performed in the first year as the new processes and schedules are phased in. The information in Table 10 is for illustrative purposes, and is subject to change based on decisions by the NRCC. Table 11 illustrates an example comparing the status quo process with the proposed operational/research track process.

Summary/Recommendations: Changing fishing years is possible, but may be opposed by the industry, if there are significant practical implications of the changes.

Nevertheless, it is a tool available to stagger the starts of fishing years and/or to align assessments and specification setting with the availability of input data. It will be necessary to stagger the operational assessments and specification setting for different fisheries, consistent with biological and management factors discussed under item b. above. The start-up of the new process will require a large investment of resources to transition to the new process, since most fisheries will need initial specifications set in the first year or two, before the staggered schedules are effective at spreading out the assessments and specification setting.

- d. Discuss issues/policy for interim year modifications to established multiple year specifications. - If multi-year specifications are used more extensively, and there are limited resources available to provide assessment advice to the Councils and/or ASMFC outside of the operational assessment process, there needs to be a way to ensure that the specifications remain appropriate throughout the specification cycle, through an out-year examination process, with at least some ability to make changes, if deemed necessary (not through MSA emergency or interim rules).

Under multi-year specifications, there needs to be some assurance that the original specifications remain adequate to protect the stocks from overfishing, to rebuild overfished stocks in the specified time frame, and to prevent ACLs from being exceeded. There also will be industry/public interest in determining whether the stock status has improved more than anticipated, such that the catch levels could be increased in the out-years. However, there will be no operational assessment possible while the multi-year specifications are in place. This will require a disciplined approach to avoid reacting to “noise” in the information; without this, the process will revert to the existing process whereby specifications are set or adjusted every year or two. It also would undermine the objective of a more stable and predictable assessment and management program.

At a minimum, there needs to be an annual examination of the performance of the fishery relative to the ACL(s), including the discard mortality associated with each stock. If an ACL is exceeded, associated accountability measures will be triggered, as specified in each FMP. Regardless of the number of years that specifications are set for, ACLs need to be established for each year in the time series (through the initial specification setting), and the performance of the fishery will need to be examined every year, relative to the ACL. This process is to ensure that ACLs are not exceeded, and to take appropriate measures to correct the overages and to prevent them from occurring again, but it does not examine whether the ACLs are still appropriate for the out years. This is a requirement of the MSA, and is not reflective of the new proposed process.

To address the issue of whether the ACLs as set for the out-years are still appropriate, the Councils have at least two alternatives. One approach is to set the multi-year specifications and to agree to leave them in place, without change, unless something unexpected and significant were to occur, and to not undertake any formal examination in the out-years. A second approach is, in years between operational assessments and the associated specification/adjustment process, to have the Council’s PDT and/or Technical Committee (TC) provide assessment data and information to the Council’s SSC (but note there would be no new assessment). Such information could include: Recent survey indices and recent landings and discard estimates; projections based on the last operational assessment; and resource status and/or fishery performance metrics. The PDT/TC (as supported by the NEFSC) would be responsible for obtaining these data, updating projections, and providing the relevant information to the Council’s SSC. This could include a staff recommendation from the Council, or not. Based on the SSC’s review of the out-year information, the SSC would recommend to the Council whether there should be a change to the out-year specifications, and what that change should be. If the SSC recommends, and the Council agrees, that a change should be made, a regulatory response would be required.

The regulatory response to the SSC's recommendation and Council's determination to make an out-year change could take at least two forms. In the first, the Council could recommend a new set of specifications that would be sent to NMFS for consideration, and proposed and final rules would be used to implement the changes, much the way the existing processes work. This would take 5-7 months to implement any change. Alternatively, it may be possible/advantageous to identify very specific criteria that the SSC and the Council would use to determine whether any adjustments are necessary, and to specify what the regulatory response to a triggering of the criteria would be. For example, the Council could pre-determine that, if Criterion X is exceeded by Amount Y, the ACL for the stock would be increased/decreased by Amount Z. The better defined the linkages (i.e., the less discretionary the decision), the faster the response could likely be. It is possible that, if the response is sufficiently non-discretionary, and the impacts of the change have been anticipated and analyzed in advance (see also the discussion under item e. below), the change could be made directly through a final rule.

Whichever out-year process is chosen (and a Council could choose to apply one process to some FMPs, and the other to other FMPs), to achieve stability in the fishery and the management process, it is recommended that any out-year changes should be made only in response to significant deviations from the established specifications; it would not be productive to require changes to the specifications in out-years if only small deviations have occurred. Further, any such changes should be triggered whether the stock condition is improving or worsening (i.e., whether the news is good or bad).

Another consideration of out-year adjustments is timing of the availability of the information needed, when the decision can be made as to whether a criterion is triggered, and whether an adjustment can be made part way through the fishing year. Because data on the performance of a fishery is typically not available until a few months after the fishing year ends, determinations on ACLs typically cannot be made until the next fishing year has begun. The same would be true for adjustment criteria that are based on fishery-dependent information. It would likely be necessary to wait to make any adjustment until the beginning of the following fishing year (e.g., if information from fishing year 2012, examined in fishing year 2013, indicated an adjustment to the specifications would be necessary, that adjustment would be made in fishing year 2014. Fishery-independent data, such as survey results, could potentially be obtained and examined prior to the start of, or very early in a fishing year. In this case, it is possible that an out-year adjustment could be made in that same fishing year.

Summary/Recommendations: To be effective and consistent with the overall goals of the ACL Working Group recommendations, the out-year examination process needs to be simple, structured, have well-defined criteria, and strive for stability. Non-discretionary adjustments could likely be accomplished most quickly. Adjustments

should be responsive to either improving or declining stock conditions. MSA emergency rules and interim rules should be avoided.

- e. Discuss ways to streamline and improve required analyses (e.g., NEPA, RIR) in multiple year specification packages; provide recommendations for NERO and Council consideration. - To facilitate the use of multi-year specifications, including out-year adjustments, by anticipating and satisfying analytical requirements at the beginning of the process.

It appears that it would be relatively easy to address analytical issues associated with multi-year specifications, including any necessary out-year adjustments. The key to making this work is to appropriately determine the range of possible outcomes that could reasonably be expected, including the out-year adjustments. For example, assume the preferred alternative for the ACLs for the fishery over a 3-year specification cycle is 10,000 mt in year 1; 12,000 mt in year 2; and 14,000 mt in year 3, and that there is an adjustment criterion that could change the ACLs by up to 2,000 mt, up or down. The analyses of the initial specification package would then include, at a minimum, the no action alternative, the preferred alternative, and alternatives that would include a year-2 ACL of between 10,000 and 14,000 mt (if an adjustment can be made in year 2), and a year-3 ACL of between 12,000 and 16,000 mt. So long as any adjustments stay within the range of those alternatives, the analyses under the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA section 7), the Regulatory Flexibility Act (RFA), E.O. 12866, and essential fish habitat (EFH) should be adequate to cover any out-year adjustment(s). This would make adjustments easier and faster.

Summary/Recommendations: In most circumstances, analytical requirements should not be an impediment to using multi-year specifications, or to making out-year adjustments. Planning for a reasonable range of anticipated outcomes will be necessary, but should make any out-year adjustments easier and quicker to do.

- f. Recommend consolidation of species/stocks into FMPs; discuss logical species/stocks groupings. - To determine whether combining stocks into fewer FMPs would make the assessment/specification process more efficient.

It is possible that some efficiencies in assessments and specification setting could be obtained from changing the way species are grouped into FMPs. Any such changes in stocks in the fisheries would need to be done through FMP amendments. However, it is not clear that any such changes would necessarily result in changes to how often the stocks would be assessed.

Several of the fisheries appear unique enough that they would likely not be easily combined with others. These are:

- Atlantic Salmon (no fishery),
- Tilefish,
- Surfclams/Ocean Quahogs,
- Sea Scallops,
- Deep-sea Red Crab, and
- Spiny Dogfish.

Other fisheries have at least some characteristics sufficiently in common that it might be possible to combine them into a single FMP. These are:

- Northeast Multispecies; Monkfish; Skates
- Atlantic Herring; Atlantic Mackerel, Squid, and Butterfish
- Summer Flounder, Scup, Black Sea Bass; Atlantic Bluefish

The first group of species (multispecies, monkfish, skates) are caught by many of the same fishermen, using similar gear (bottom trawls, gillnets, hook gear). The fisheries for multispecies and monkfish are already somewhat linked through days-at-sea provisions in both FMPs. One potential complication of this grouping is that the Monkfish FMP is a joint FMP, with the NEFMC the lead; the other FMPs are solely the responsibility of the NEFMC. Another consideration is the Limited Access Privilege (LAPP) referendum requirements for NEFMC-managed fisheries. If these FMPs were combined into one, it is unclear how the referendum requirements would apply. For example, to approve a monkfish IFQ program, would it require a referendum approval by everyone with a multispecies, skates, and/or monkfish permit? Or only those with monkfish permits?

The second potential grouping (Atlantic herring; Atlantic mackerel, squid, and butterfish) consists of species caught with much the same gear (trawls and/or purse seines), in large volumes (with the exception of butterfish in recent years), with relatively short life spans, and with similar roles in the ecosystem (e.g., as important prey species for other fish, marine mammals, and seabirds, as well as being predators themselves). Many of the industry participants in these fisheries are the same. A complication in this grouping, however, is that herring are currently managed by the NEFMC and the ASMFC; whereas mackerel, squid, and butterfish are managed by the MAFMC.

The third grouping (summer flounder, scup, black sea bass; Atlantic bluefish) contains fisheries with significant recreational components, as well as commercial components. The management processes for these two FMPs are already similar, and all of these species are managed by the MAFMC and the ASMFC.

Summary/Recommendations: Combining species/stocks into fewer FMPs is possible, and would be done through FMP amendments. However, there are potentially significant jurisdictional and statutory (i.e., LAPP referendum) issues that would need to be addressed. This is likely not something that could be accomplished quickly or

easily, and it is not clear that making such changes would result in meaningful improvements to stock assessment or management workloads or efficiencies.

Appendix 2. List of reviewers at the integrated peer review of assessments:

Steven Cadrin	UMass Dartmouth, SMAST
Alexei Sharov	Maryland Dept. Natural Resources
Steven Correia	Massachusetts Div. Marine Fisheries
Sandra Lowe	NMFS Alaska Fisheries Sci. Center
Paul Rago (co-chair)	NMFS Northeast Fisheries Sci. Center
James Weinberg (co-chair)	NMFS Northeast Fisheries Sci. Center

Appendix 3. List of meeting attendees at the integrated peer review of assessments, Feb. 2012:

Name	Affiliation	Email
James Weinberg	NEFSC	James.weinberg@noaa.gov
Paul Rago	NEFSC	Paul.Rago@noaa.gov
Tom Nies	NEFMC	tnies@nefmc.org
Sandra Lowe	AFSC	Sandra.lowe@noaa.gov
Vitali Sheremet	NEFSC	vsheremet@whoi.edu
Greg Power	NER	Greg.power@noaa.gov
John Witzig	NERO	John.witzig@noaa.gov
Julie Nieland	NEFSC	Julie.nieland@noaa.gov
Jessica Blaylock	NEFSC	Jessica.blaylock@noaa.gov
Paul Nitschke	NEFSC	paul.nitschke@noaa.gov
Katherine Sosebee	NEFSC	katherine.osebee@noaa.gov
Kiersten Curti	NEFSC	Kiersten.curti@noaa.gov
Sandy Sutherland	NEFSC	Sandy.sutherland@noaa.gov
Anne Hawkins	NEFMC	ahawkins@nefmc.org
Steve Cadrin	SMAST/SSC	scadrin@umassd.edu
Steve Correia	MADMF	Steve.correia@state.ma.us
Susan Wigley	NEFSC	Susan.wigley@noaa.gov
Katie Almeida	RFMSA	Katie.almeida@noaa.gov
Lisa Hendrickson	NEFSC	Lisa.hendrickson@noaa.gov
Chris McGuire	TNC	cmcguire@tnc.org
Michele Traver	NEFSC	Michele.traver@noaa.gov
Maggie Raymond	AFM	maggieraymond@comcast.net
Jackie Odell	Northeast Seafood Coalition	Jackie_odell@yahoo.com
Laurel Col	NEFSC	Laurel.col@noaa.gov
Mark Wuenschel	NEFSC	Mark.wuenschel@noaa.gov
Doug Butterworth	UCT	Doug.butterworth@uct.ac.za
Jeremy King	MADMF	Jeremy.king@state.ma.us
Dave McElroy	NEFSC	Dave.mcelroy@noaa.gov
Chris Legault	NEFSC	chris.legault@noaa.gov
Tony Wood	NEFSC	Anthony.wood@noaa.gov
Chad Keith	NEFSC	charles.keith@noaa.gov
Loretta O'Brien	NEFSC	loretta.o'brien@noaa.gov
Anne Richards	NEFSC	Anne.richards@noaa.gov
Vito Giacalone	NSC	vito@earthlink.net
Fred Serchuk	NEFSC	Fred.Serchuck@noaa.gov
Dvora Hart	NEFSC	Deborah.hart@noaa.gov

Appendix 4. Meeting agenda for the Integrated Peer Review of assessments.

Groundfish Updates Integrated Peer Review Meeting, February 13 – 17, 2012
 Stephen H. Clark Conference Room – Northeast Fisheries Science Center
 Woods Hole, Massachusetts
 DRAFT AGENDA* (version: 02-10-2012)

TIME	TOPIC/ PRESENTER	LEAD PANEL REVIEWER
<u>Monday, 13 Feb</u>		
9:00 AM – 10:00 AM		
Opening	B. Karp	
Welcome	P. Rago	
Introduction		
Agenda		
Conduct of Meeting	J. Weinberg	
10:00 AM – 12:00 PM	GB cod,	L. O'Brien
12:00 PM – 1:00 PM	Lunch	S. Correia
1:00 PM – 3:00 PM	GB haddock,	L. Brooks
3:00 PM – 5:00 PM	GOM haddock,	M. Palmer
		S. Correia
<u>Tuesday, 14 Feb</u>		
9:00 AM – 10:30 AM	American plaice,	L. O'Brien
10:30 AM – 10:45 AM	Break	A. Sharov
10:45 AM – 12:15 PM	Witch flounder,	S. Wigley
12:15 PM – 1:15 PM	Lunch	A. Sharov
1:15 PM – 2:30 PM	Atlantic wolffish,	C. Keith
2:30 PM – 2:45 PM	Break	A. Sharov
2:45 PM – 3:45 PM	Atlantic halibut,	J. Blaylock
		A. Sharov
<u>Wednesday, 15 Feb</u>		
9:00 AM – 10:30 AM	GOM/Cape Cod yellowtail flounder	
	C. Legault	S.Cadrin
10:30 AM – 10:45 AM	Break	
10:45 AM – 12:15 PM	Acadian redfish,	
	T. Miller	S.Cadrin
12:15 PM – 1:15 PM	Lunch	
1:15 PM – 2:00 PM	GOM-GB windowpane flounder,	
	L. Hendrickson	S.Cadrin
2:00 PM – 2:45 PM	SNE-MA windowpane flounder,	
	L. Hendrickson	S.Cadrin
2:45 PM – 3:00 PM	Break	
3:00 PM – 3:45 PM	Ocean pout,	S. Wigley
3:45 PM – 4:30 PM	White hake,	K. Sosebee
		S. Cadrin
		S. Correia
<u>Thursday, 16 Feb</u>		
9:00 – 5:00 PM	TBD - Time allocated to revisit topics as needed	
<u>Friday, 17 Feb</u>		
9:00 – 5:00 PM	Final Report writing Conclusions	

*Times are approximate, and may be changed at the discretion of the meeting chair. The meeting is open to the public.

Appendix 5.

Performance of GARM III Projections By Tom Nies February 22, 2012

The 2012 assessment updates provide an opportunity to evaluate the performance of projections based on the GARM III assessments for seven analytic assessments. There are relatively minor differences between the model formulations used at GARM III and those used in the assessment updates. This minimizes the complications caused by changes in the assessment model. In addition, in most cases the actual catches are close to the assumed or projected catches; this makes it easier to evaluate the projections as opposed to the failure of the management system to limit catches. Evaluating projection performance may provide insights for setting future catch levels.

Catch advice for the 2010 -2012 period was based on projections that were performed in 2009 based on the GARM III assessments that had a terminal year of 2007. All recruitment, weights-at-age, selectivity, etc. assumptions were those approved at GARM III. By the time the projections were performed, the 2008 catch was estimated by NEFSC lead assessment scientists and provided to the PDT. This catch was input into the projection as a harvest quota. For 2009, an estimated fishing mortality was calculated based on the expected impacts of measures adopted by an interim rule. The 2010 catch advice was calculated based on the desired fishing mortality: usually either 75 percent of FMSY or and $F_{rebuild}$, whichever was lower. For these analyses the projections were then re-run with this catch as an input in order to get a distribution of fishing mortality. The median catch was used as the ABC for 2010 (and 2011-2012, but these years are not examined in these analyses).

GARM III attempted to address assessment retrospective patterns in one of two ways: either by splitting the survey time series or by making an adjustment in the numbers at age based on the retrospective pattern.

The projections are evaluated based on (a) did stock size change as projected, and (b) was the realized fishing mortality consistent with the mortality expected from the actual catches. The primary way the information is presented here is through a series of charts that compare the 90 percent confidence interval of the projected SSB to assessment update point estimates of the SSB, and GARM III and the 90 percent confidence interval of the projected fishing mortality to the assessment update point estimate of fishing mortality. For stocks that used a retrospective adjustment in the terminal year of either GARM III or the assessment update, both unadjusted and adjusted values are plotted but the written comparison is based on the adjusted value.

Generally, actual catches for 2008 and 2009 were similar to the projection inputs. In 2010, catches were substantially lower than projected for GB haddock, CC/GOM yellowtail flounder, plaice, and redfish.

The results of these comparisons can be summarized as follows:

- Projections over-estimated 2010 stock size for six of seven stocks:
 - GB cod
 - GB haddock
 - CC/GOM yellowtail flounder
 - Plaice
 - Witch Flounder
 - GOM haddock

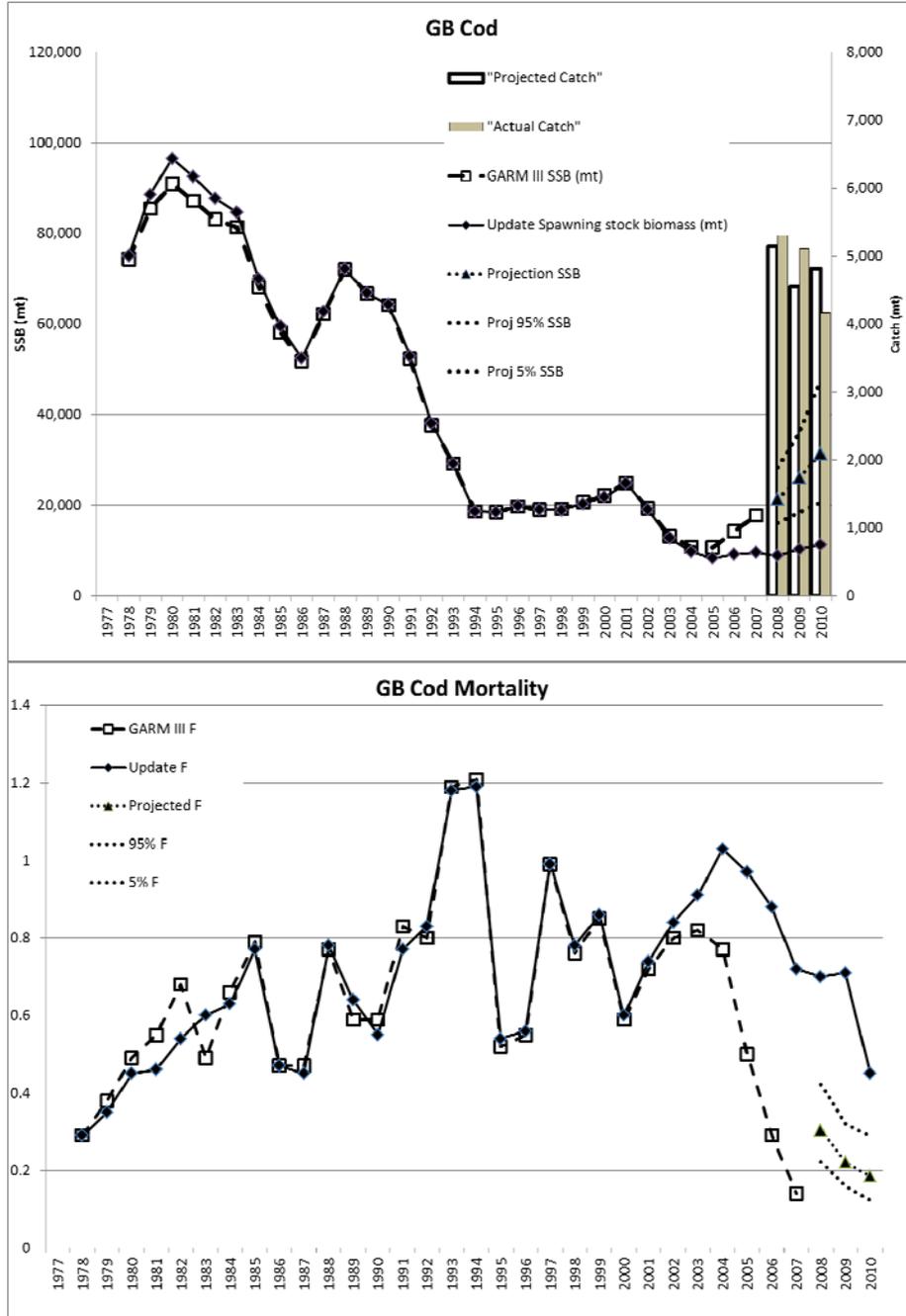
- Projections under-estimated 2010 stock size for one of seven stocks:
 - Redfish

- Projections under-estimated 2010 fishing mortality for four of seven stocks:
 - GB cod
 - CC/GOM yellowtail flounder
 - Witch flounder
 - GOM haddock

- Projections accurately estimated 2010 fishing mortality (note that for these three stocks, 2010 catches were substantially lower than projected catches):
 - GB haddock
 - Plaice
 - Redfish

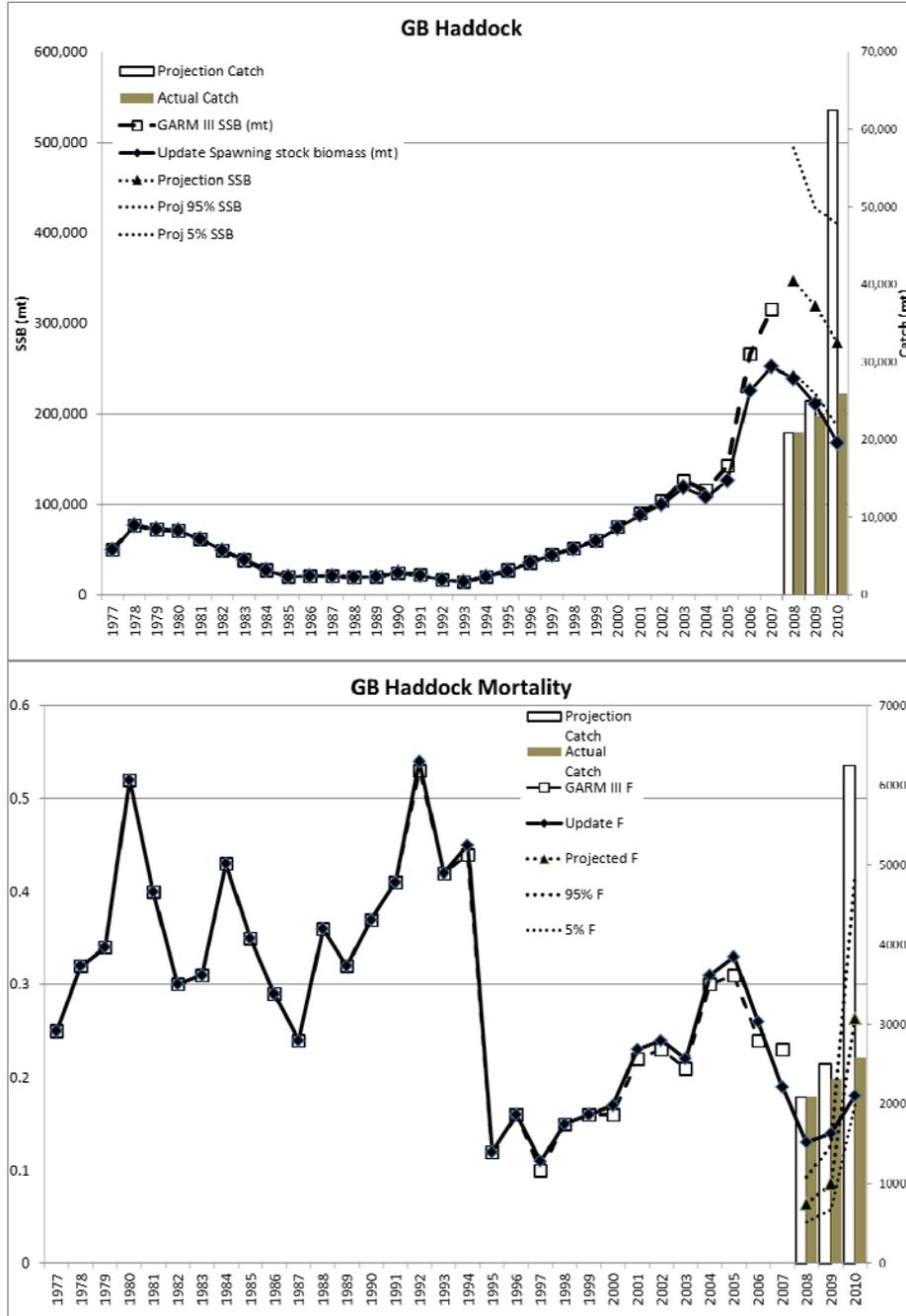
GB Cod

GARM III used a split-survey time series to correct for a retrospective pattern. Catches in 2008 and 2009 exceeded the projection values, but 2010 catch was less. Current stock size is less than the 98 pct CI of the projection, and mortality is roughly twice the projection input and is outside the 98 pct CI



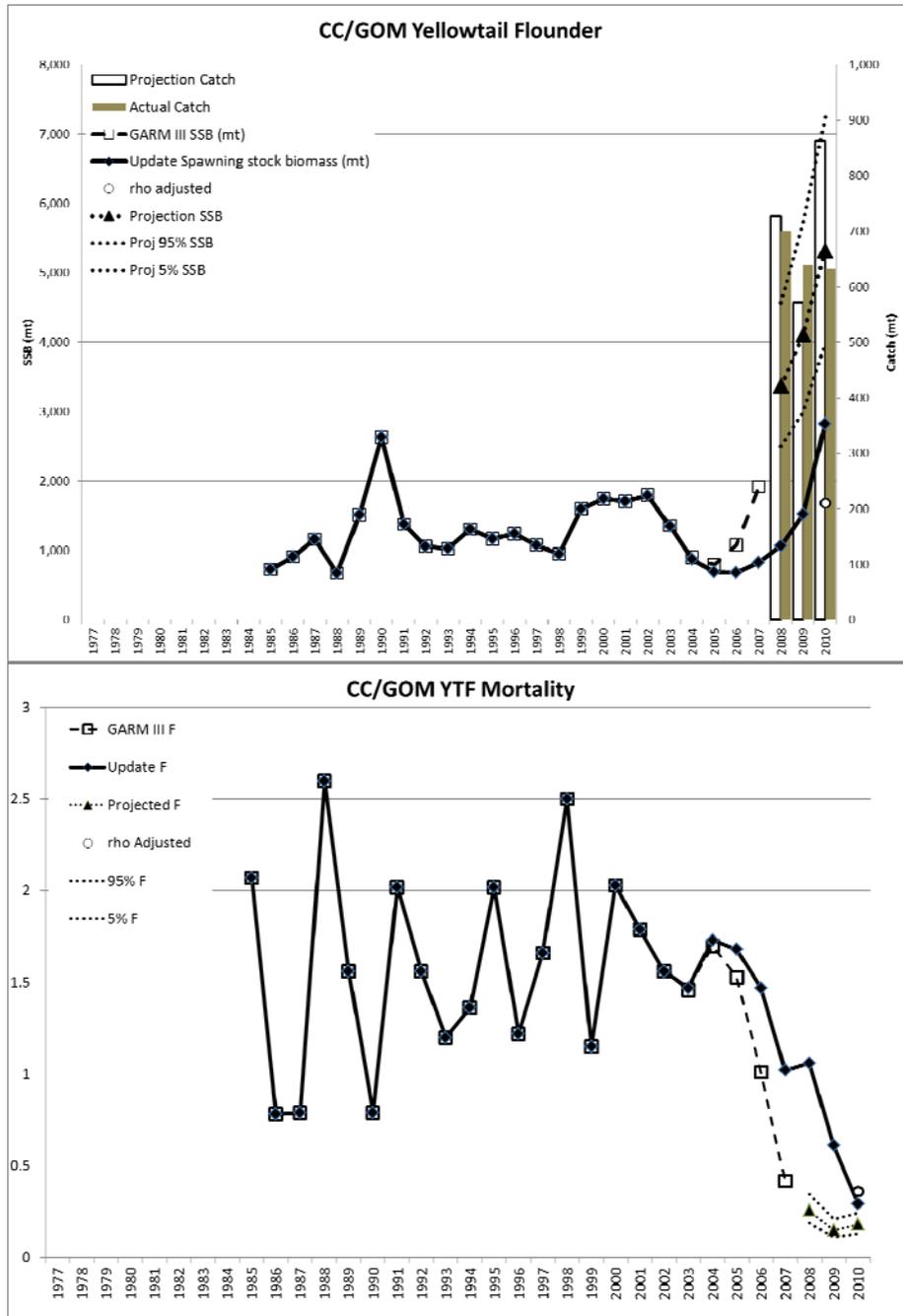
GB Haddock

This assessment did not have a retrospective pattern at GARM III or in the assessment update. Catches in 2008 and 2009 were similar to the projection values, but in 2010 were lower. SSB was outside the 90 pct CI of the projection in all three years. Fishing mortality was outside the 90 pct CI, but was within the interval in 2010.



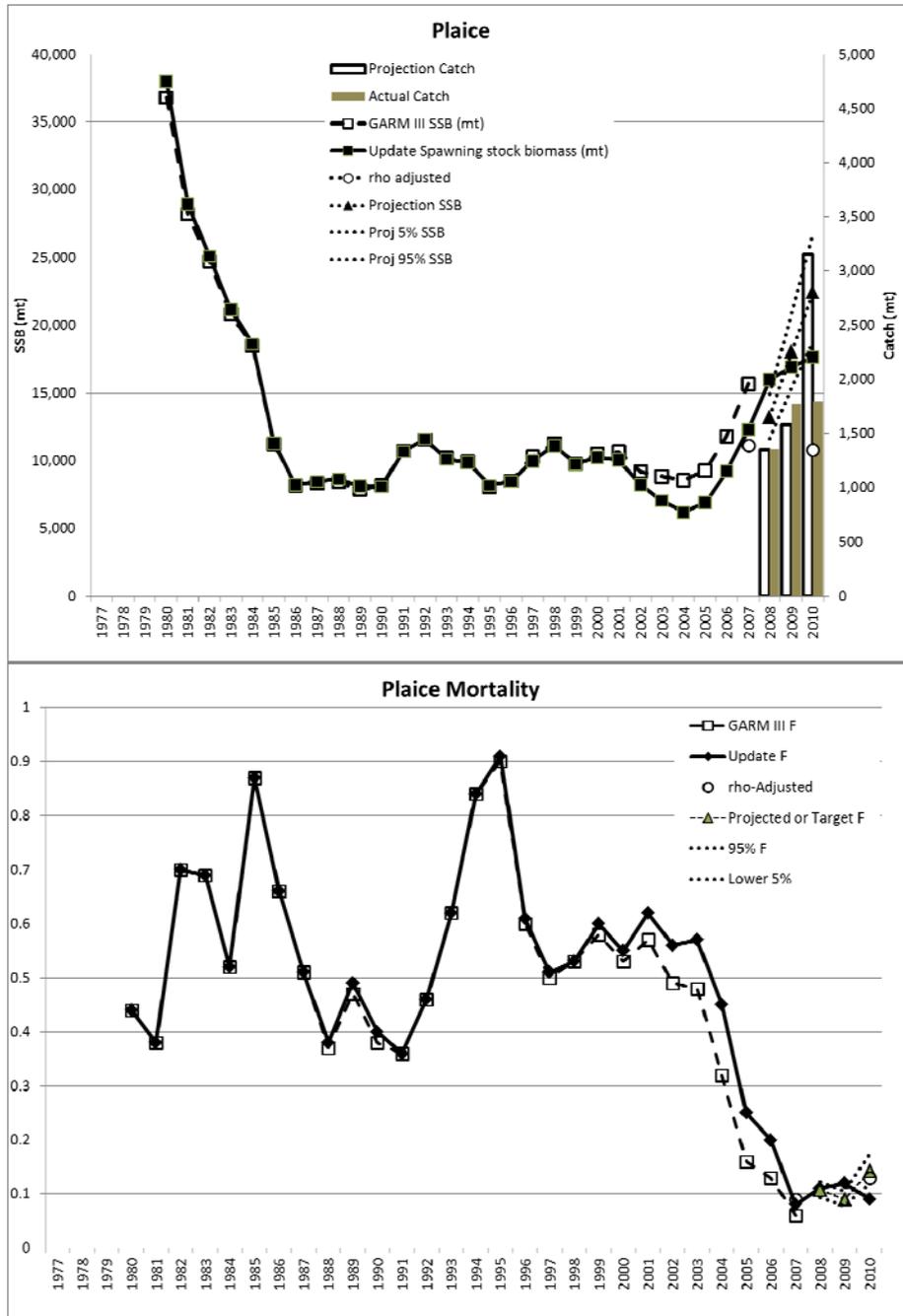
CC/GOM Yellowtail Flounder

This assessment did not have a retrospective pattern at GARM III but a pattern exists in the update and 2010 estimates of SSB and mortality are rho-adjusted. Catches in 2008 and 2009 were similar to the projection, and in 2010 were lower. Current stock size is less than the 98 pct CI of the projection. Fishing mortality in 2008 was four times the projected value and in 2010 is outside the 90 pct CI.



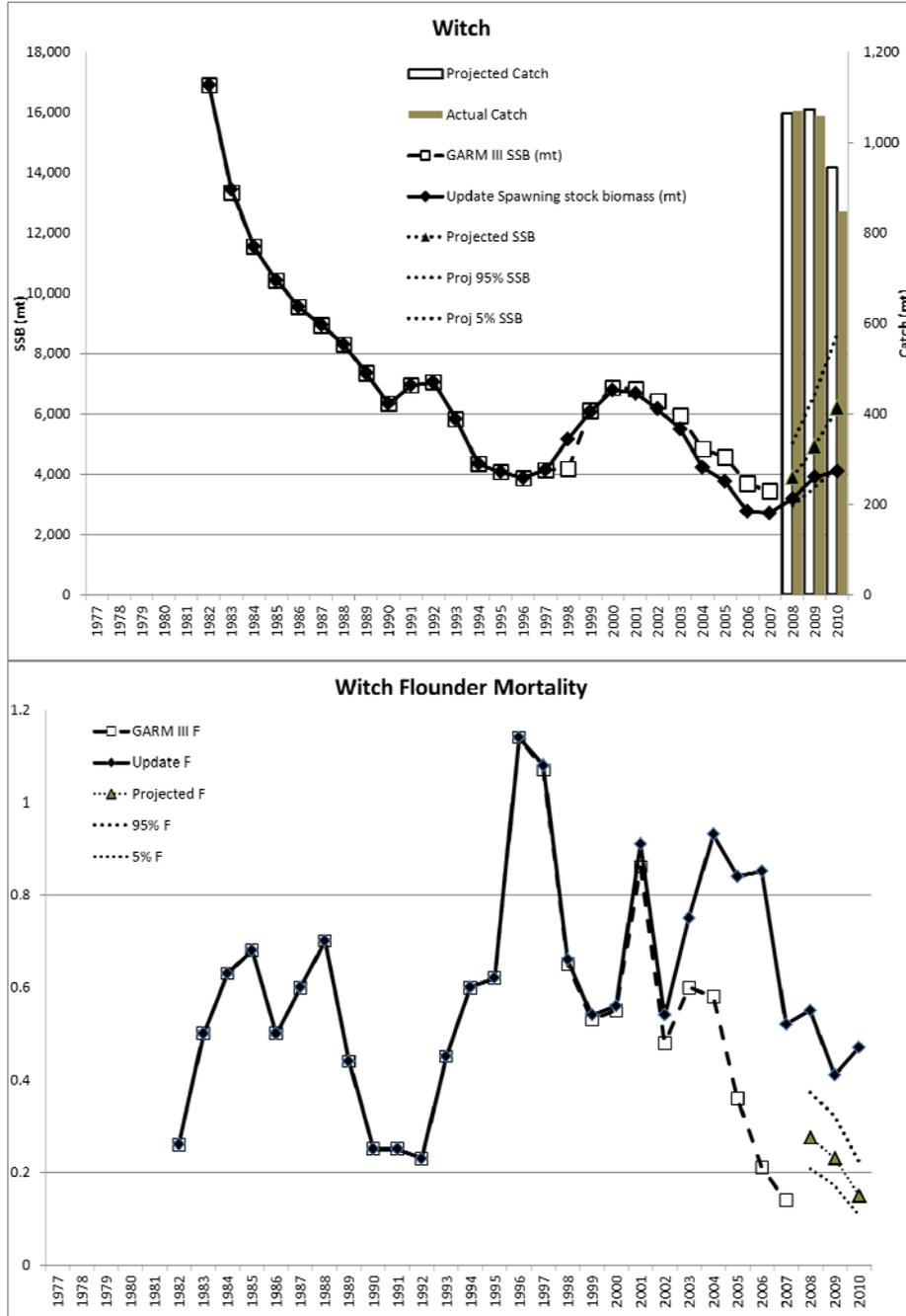
American Plaice

GARM III used a rho-adjustment to numbers at age to correct for a retrospective pattern in 2008, and the assessment update does so for 2010. Catches were below projected catches in 2009 and 2010. 2010 SSB is less than the 90 pct CI of the projected stock size. Fishing mortality in 2010 is similar to the projection input, but note that 2010 catches were about 55 percent of the projected catch.



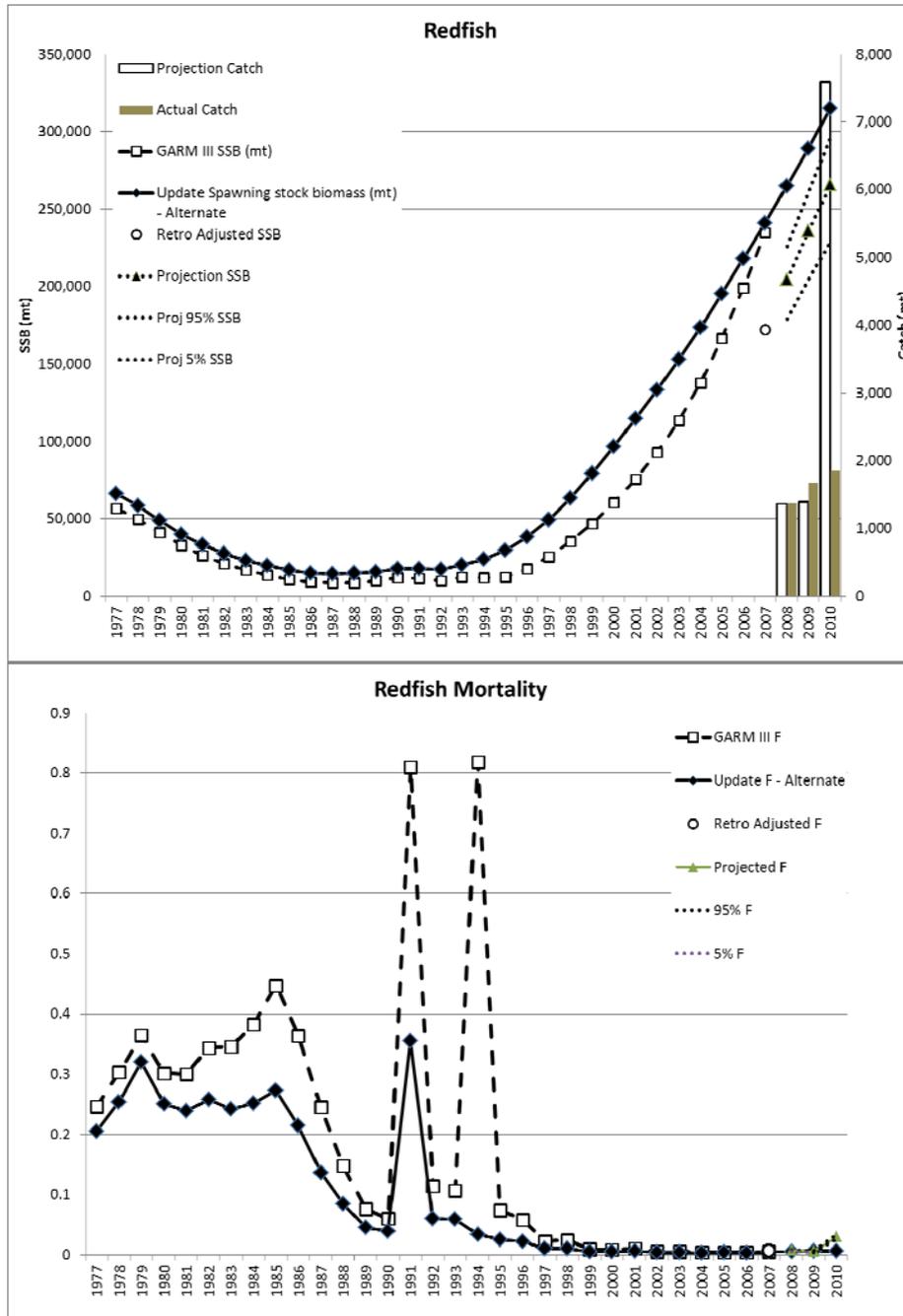
Witch Flounder

GARM III used a split-survey time series to correct for a retrospective pattern. Catches from 2008 to 2010 were similar to projected catches. 2010 stock size is outside the 90 pct CI of the projection. Fishing mortality is about twice as high projected and is outside the 90 pct CI.



Redfish

GARM III adjusted 2007 estimates of SSB and mortality for a retrospective pattern but the updated assessment did not. Catches in 2008 and 2009 were similar to projection values but in 2010 were far lower. Stock size is higher than forecast and is outside the 90 pct CI; fishing mortality is very low. In 2009 mortality was within the 90 pct CI of the projected value and in 2010 was well below the 90 pct CI.



GOM Haddock

This assessment did not have a retrospective pattern at GARM III. Catches were similar to projected catches from 2008 - 2010. Stock size in 2010 is less than the 98 pct CI from the projection. Fishing mortality is more than twice the projection input and is outside the 98 pct CI.

