

NORTH PACIFIC FISHERY MANAGEMENT COUNCIL



DRAFT Halibut Management Framework



November 2015
(For Review in December 2015)

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Halibut Management Framework – November 16, 2015 DRAFT

1 Introduction

In conjunction with its June 2015 action to reduce halibut PSC limits in the BSAI groundfish fisheries, the Council discussed several aspects of halibut management, and committed to developing a more explicit ‘framework’ for consideration of halibut management overall, including enhanced coordination with the IPHC process. Citing from the Council’s June 2015 newsletter:

“The Chair and the Executive Director will evaluate ways to integrate the variety of halibut management and research activities currently underway, and develop a framework for improving coordination between the Council and IPHC. Council and agency staff, including the IPHC, and State representatives on the Council, will be consulted. Both Council members and the public highlighted a need for better alignment of the two management bodies when dealing with halibut needs among the various directed fishery and bycatch user groups. The intention is to outline a process to ensure progress continues on issues both that were raised at this meeting, and were outcomes of the joint Council-IPHC meeting in February. These include, among others, a discussion of the Council’s management objectives with respect to the tension between the needs of the directed halibut fishery and halibut bycatch needs in the groundfish fishery; the role of stakeholder working groups to develop a more surgical resolution to halibut use conflicts; and a common understanding of available data and the science of various halibut stock and life history issues, such as growth and migration. The Chair and Executive Director will bring back recommendations for the Council in October, which may be followed by a public scoping session, and the consideration of specific actions by the Council in December.”

Halibut management, whether bycatch in the groundfish fisheries, or harvest in the directed longline, recreational, charter and subsistence fisheries, is one of the most significant issues of interest among stakeholders, and the Council continues to recognize its responsibility to balance the objectives of all resource users. The Council also acknowledges that while the MSA, National Standard Guidelines, the Halibut Convention between the U.S. and Canada, and the Halibut Act, outline those responsibilities, they may not clearly or thoroughly articulate how best to balance these competing uses of halibut.

The overall goal of this Framework is to identify, define, and track the most important issues/topics/questions necessary to guide the Council’s decisions about halibut management, and to inform Council interactions with the IPHC. It also serves as a record or catalog of ongoing Council activities and stakeholder involvement, research and management projects, and the interaction among Council, NFMS management and AFSC, Plan teams, the IPHC, and stakeholders. It would describe what we are doing collectively and how these efforts interact; it would identify areas of uncertainty, misunderstanding and disagreement; it would identify areas where further analysis and research may be warranted; and it would suggest actions and timelines for addressing various aspects of halibut management. With this framework, the Council would become more proactive and directly engaged in its management authority and responsibility for halibut for the benefit of all users. A key aspect of this Framework is to articulate how a particular issue/topic/question relates to decision-making (process-wise and time-wise) by either the Council or the IPHC.

Key assumptions for this Framework include:

- The Council and the IPHC will continue to operate under their respective authorities. There is no intent to create a joint decision making process with the IPHC. However, the Framework process may inform development of recommendations from one body to the other.

- The IPHC is in the process of developing new understanding and capabilities (stock assessment, SPR, total mortality accounting, MSE process, etc) which will affect how both the Council and the IPHC understand and develop halibut management.
- The Framework is intended to be comprehensive, include consideration of all user groups, and be applicable to the BSAI and the GOA.

The main purpose of this Framework is:

- To catalog current work/research/activities that are underway, or that have been identified but not started, so that priorities and timelines can be set (or recommended, for activities under the purview of the IPHC) for the Council and NMFS.
- To identify gaps in our understanding of halibut, and deficiencies/shortcomings in the way halibut research and management has been addressed. These are potentially new areas of work for the Council to pursue, possibly in coordination with the IPHC and NMFS.
- To identify ways to improve research and management coordination and communication between the Council, NMFS, and the IPHC, and stakeholders.

2 Public Review of Halibut Management Framework

Based upon initial review of this draft framework in October 2015, the Council passed a motion requesting refinement of the draft, and scheduled this as a specific agenda item for the December 2015 Council meeting (rather than a separate scoping session in November). This approach provides the public with a more fully developed Framework for review and the same opportunity for comment that a public scoping session would provide, prior to the Council adopting the Framework, recognizing the Framework is an evolving work in progress. The intent and expectations for stakeholder review and input should be clearly articulated and understood in advance. For example, the following tenets should guide public review in December:

- Public review provides an opportunity for stakeholders to ask questions and request clarifications, recommend other issues for consideration, and suggest priorities for issues and elements described in the halibut management framework.
- Recognizing that the Council has a responsibility to manage halibut for all users, public review of the halibut management framework is not intended to focus only on bycatch, or to recommend initiation of specific management actions to allocate halibut among user groups.
- Public review is intended to get input on how to better coordinate information and decision-making processes, rather than to suggest specific outcomes of the decision-making processes.

In December the Council would particularly benefit from public input regarding specific objectives for the halibut Framework (further discussion below).

3 Defining Objectives

Beginning with its inception in June 2015, much of the discussion around the Framework has been in the context of “the Council’s management objectives” with regard to halibut. While the immediate genesis of the Framework was in the context of halibut bycatch, the Council has articulated an intent for this document to serve a broader purpose regarding overall halibut management. Several aspects of this Framework will depend upon more specific identification of objectives in order to be meaningful. For example, see discussion in section 6.0 regarding potential formation of “broad stakeholder working groups”. In order to determine appropriate composition of such a working group(s), or to specify a terms of reference for such working group(s), it will be necessary to first identify a specific objective (or be

addressing some specific proposed management measure) or the working group will be operating in a vacuum. The Council's October motion included a request to describe existing halibut **bycatch** management objectives from the GOA and BSAI FMPs and our programmatic SEIS. Attachment 1 provides a summary of the 46 objectives, some of which are directly, or indirectly, related to halibut (bycatch) management. However, those objectives are in the context of our groundfish FMPs, and many are at a very broad management level, perhaps too broad to be useful in the context of this halibut Framework.

For example, objective #7 is "promote management measures that, while meeting conservation objectives, are also designed to avoid significant disruption of existing social and economic structures. Objective #32 states "provide economic and community stability to harvesting and processing sectors through fair allocation of fishery resources". While this specific objective was developed in the context of allocations of groundfish under our FMPs, it could well be argued that this objective lies at the heart of the issue of setting halibut PSC limits (i.e., an allocation between directed and bycatch users). In that sense, the Council made a decision at its June 2015 meeting regarding such allocation, though they indicated this was only a first step in a larger consideration of halibut (bycatch) management.

Under the category of "Manage Incidental Catch and Reduce Bycatch and Waste", there are 9 specific objectives which could be characterized as 'directly' relevant to halibut (bycatch) management, including #20 which states "Control the bycatch of prohibited species through PSC limits or other appropriate measures".

Useful application of this halibut Framework would benefit from further definition of objectives, either a focus on a subset of existing objectives, or identification of more specific objectives. For example, based upon public testimony at previous Council meetings, a very specific objective could be inferred as "provide a minimum directed halibut harvest for certain areas in the Bering Sea (Area 4CDE for example)". This type of quite specific objective would provide a context for Council, or Stakeholder group, discussion. Conversely, a very broad objective such as "minimize bycatch to the extent practicable, while optimizing groundfish harvest", would provide little marginal direction for further discussion by a Stakeholder group or the Council.

The Council's October motion, in the context of a potential Stakeholder Workgroup(s), referred to a need for "a common understanding of why we are in the current situation". For this Framework to be effective, we will need a common understanding of **what** situation we are in, as well as **why** we are in it. Following on this logic, **identification of objectives (both general and specific) is an area of the Framework for which stakeholder input and Council discussion will be imperative.**

4 Cataloging current work: NPFMC/NMFS/IPHC research and management issues

The Council and the IPHC identified a variety of research, management and data collection issues of interest at the joint meeting held in February of this year. Attachment 2 provides a summary of these issues and their current status. The Council may wish to organize them in the Framework as management, research, catch accounting, etc.; several of them, however, may no longer apply. To further coordinate and collaborate halibut research and management with the IPHC, the Council could take the next step of reviewing and refining these issues as needed to determine prioritization of specific staff tasking or requesting analysis from other bodies such as the NMFS, AFSC and IPHC as necessary, and drafting a projected timeline for their completion or resolution. In essence the Council would develop a more explicit workplan in collaboration with NMFS and the IPHC for various halibut research and

management issues that would inform the public and guide Council actions or recommendations (recognizing that many of these issues are directly, or indirectly, within the purview of the IPHC).

It's important to note that the Council may have close agreement with the IPHC on the pursuit and prioritization of some, but not all of the issues in Attachment 2, given the differences in overarching management objectives and responsibilities of the two bodies. For example, there may be close agreement on the need for developing an abundance based approach to halibut management (item #3), and perhaps how best to achieve it. On the other hand, the Council may choose to retain authority and responsibility for monitoring standards and programs for its fisheries, and determine how best to meet the IPHC's data needs within those programs through discussion, rather than jointly agreeing to all fisheries monitoring standards with the IPHC (item #15).

4.1 Gap analysis for Council decision-making: Research and Assessment Priorities

As part of this Framework, it may be useful to explicitly separate the biological/scientific issues from those related more to management and policy, and identify those most important for the Council (and IPHC) decision-making process. Although there are many interesting scientific questions to ask about the life history and biology of halibut and how these features might respond to environmental change, as stated earlier a key element of this Framework is to identify those activities which are most critical for management decisions by the Council. A list of candidate issues for which there appear to be varying degrees of uncertainty, disagreement and/or misunderstanding is shown below. **This list has been revised to include items from the October 2015 Council motion. As noted below, some of these additional priorities appear much more policy and management decisions than representing a biological/scientific research issue. The Council should consider how these management/policy issues fit within the overall framework plan, relative to specific research issues.**

- Migration of halibut between areas, and associated implications. Although there have been extensive tagging studies conducted by the IPHC, the only information on movement of young halibut to/from the Bering Sea is based on a small number of tags, and did not produce quantitative movement rates. The IPHC is developing explicitly spatial models, but these rates are an important source of uncertainty. Tagging of halibut on the NMFS Bering Sea trawl survey was begun in 2015 to establish whether migratory pathways observed in historical studies still indicate transfer from the Bering Sea to all other areas, however the sample sizes, and anticipated returns are unlikely to be large enough to produce quantitative movement rates. **Movement rates (along with stock recruitment connectivity) are the primary drivers of how the management within each regulatory affects other areas. Additional information on movement patterns could help with the refinement of assessment models, and with the development of operating models for MSE, as the MSE is likely to be the primary tool for changes to the harvest policy.**
- Discard mortality rates in all fisheries, as well as overall bycatch estimation in all fisheries (and associated observer sampling validity). There are two rate issues: 1) The weighted average and how the viability analysis is done; 2) The actual rates (e.g., 3.5% discard mortality rate that is applied to the excellent category in H&L) need to be updated. Over a million individual halibut are assumed to die due to bycatch mortality, and the discard mortality rates in H&L fisheries are all based on experiments conducted in 1958 and 1960 (Peltonen, 1969), where the base rate is 3.5%. The Council is evaluating modifying how halibut DMRs are established and will review a discussion paper in April 2016. There are concerns with the uncertainty of bycatch magnitude estimates (particularly in the GOA) given observer coverage rates. Any changes in the estimation of halibut bycatch (mortality rates or magnitude) would have implications on the estimated mortality of halibut from the groundfish fisheries and thus the resulting amount available to the

directed fishery. **This work is already ongoing and depends heavily on observer coverage rates. It seems to represent an ongoing management priority if not a research priority.**

- Reconciliation of NMFS trawl survey abundance estimates with IPHC survey estimates: The IPHC uses the geographically extensive Bering Sea trawl survey data to supplement their setline survey data. This is of particular importance in the EBS where the setline survey covers only a portion of Area 4CDE on the shelf. A survey calibration experiment was conducted in 2006 and has been used as the link between the setline survey and the time series from the NMFS trawl survey data. This NMFS survey covers 68% of the total Area 4CDE bottom area and any change in the inter-calibration of the indices could affect the Area 4CDE index series. This would in turn affect the area's apportioned share of the coastwide biomass. This survey was repeated in 2015 using similar methods as used in 2006. The apportionment estimates produced in 2015 will reflect the updated calibration experiment as well as the newest data from both surveys. Survey results will be released to the public at the IPHC interim meeting on December 1-2, 2015. There is some interest in using the EBS survey as the abundance index for setting annual PSC limits. There is no relationship between this index and estimates of recruitment from the IPHC stock assessment model (lagged over any number of years). In fact the relationship is negative. **The Council could consider the status of this priority in light of revised survey estimates in December and what if any additional research to address this would be forthcoming.**
- Effect of BSAI bycatch on downstream direct harvests, in light of uncertainty about abundance and movement and treatment of different sized halibut: This issue addresses resolving the estimation and implications of bycatch impacts on directed harvests in both the BSAI/GOA as well as between Canadian and U.S. harvests. The default assumption is that all BSAI PSC mortality, had it not occurred, would have become available to the halibut fishery (after accounting for growth and mortality). However, there is considerable uncertainty and apparent variability in processes related to the EBS halibut including movement, natural mortality, and survey catchability. Environmental conditions likely play a role in both the survival of young-of-year halibut as well as their distribution and propensity for directed movement. Projects addressing these types of questions are underway at IPHC and remain priorities for research.
- Impacts of short term, medium term, and long term changes in the environment relative to key aspects of halibut life history: As with uncertainty in environmental conditions listed above, this priority relates to environmental conditions that could impact changes in halibut size-at-age specifically and the extent harvest policy might best change. The IPHC's current harvest policy is based on analyses that includes both environmentally driven changes in recruitment as well as changes in size-at-age, but needs revisiting. The current Management Strategy Evaluation process is exploring the effects of such environmentally driven factors, and uncertainty, on harvest policy. The use of SPR-based reference points, could be used to adequately reflect the current size-at-age but still requires plausible hypotheses about how it may change in the future. **Note that the Council should consider clarifying if this is a specific research priority to better examine environmental impacts on size at age, or if this is intended to more generally frame a management/policy change in the actual harvest policy employed by the IPHC?**
- Natural mortality variability with age/size/sex/density, to understand the effects of bycatch, wastage, and discards on the spawning biomass and harvestable biomass. Differential natural mortality would have implications for estimating the impact of bycatch on overall population and spawning biomass. For example, if natural mortality rates are very high for young halibut and bycatch by the trawl industry is primarily on young halibut, then the implications for the impact to the directed fishery is lower than under the currently assumed (relatively low) natural mortality rate. However, if the rates are lower than currently assumed for those age classes then the overall impact of trawl bycatch on the directed fishery would be higher. Estimating natural mortality rates is challenging in general, extending to estimate age or size-dependent rates would be even more difficult. In lieu of these issues, evaluating the sensitivity of impacts over plausible ranges

of M values by size could help assess the relative risks. **Obtaining reliable estimates of variability in natural mortality with age/size/sex/density will likely be difficult, even if given a high priority for research. Nonetheless, these estimates could inform the effects of trawl bycatch on the directed fishery and consequently influence management decisions by the Council assuming the risks (and associated probabilities) could be well characterized. The Council could clarify its intent in including this as a research priority, perhaps focusing on characterizing the relative probabilities of future conditions (affecting young halibut survival) so that risks of alternative actions can be evaluated.**

- An integrated decision-making framework that addresses biological, economic, and social issues as identified by the June 2015 SSC minutes. **Note that explicit language of an ‘integrated decision-making framework’ is not in the SSC’s minutes from June 2015. The SSC did, however, recommend a ‘horizon-based programmatic evaluation for action performance’ and that scientific work to support such a review be initiated to identify critical data gaps. However, this comment appears to be specifically in the context of the Council’s June 2015 BSAI halibut PSC reduction action.** The SSC also indicated that issues of declining size- and weight-at-age on halibut exploitable biomass in the BSAI are not well understood but ‘critical for identifying a long-term solution to the halibut PSC reduction effort’. In discussions with individual SSC members and inferring from SSC minutes, it appears that some sort of framework is envisioned which would be developed to provide a holistic approach to bycatch reduction considering the direct effects on the stock, the industry, communities and other stakeholders and that such an integrated framework could be used to help design appropriate management measures for consideration by the Council. It is our understanding that a proposal along these lines has been submitted to the Saltonstall-Kennedy Grant Program. **The Council should clarify how an “integrated decision-making framework that addresses biological, economic, and social issues” as referenced here is different from the Halibut Management Framework being considered overall in this discussion paper. The Council should also consider (and perhaps provide its own definition) of what the SSC intended by a ‘long-term solution to the Halibut PSC reduction effort’ as referenced in the SSC minutes. An “integrated decision-making framework” seems more explicitly policy-level to inform management decisions than a specific research priority.**
- Development of abundance based approaches to management, in particular Dr. Martell’s MPR approach, and implications for Council and IPHC decision making: Such an approach may propose some form of catch share decision framework in allocation between bycatch and directed removals which would involve decision making by both the Council and IPHC. A discussion paper is being prepared for the December 2015 Council meeting on this topic. Approaches to be outlined in the paper include: 1) tradeoffs and how they are affected by fixed PSC limits versus abundance based limits; 2) Alternative harvest control rules for setting abundance based PSC limits; 3) What should be used for an abundance index in the BSAI PSC limit calculations; 4) How the incentive landscape differs under allocations based on yield versus spawning capital; 5) Yield equivalence, bycatch compared with yield in the directed fisheries and how this relationship changes with changes in harvest policy **It is unclear where this item belongs in the overall packaging of the broader halibut framework considered in this paper as this is a management initiative and policy-level decision not a research issue per se. Stakeholder input and Council clarification would be beneficial on the appropriate placement of this item within the larger halibut management framework.**

This list of issues is based on the views expressed by many stakeholders, managers, Council members and others during numerous Council meetings, as well as the February 2015 Joint meeting with the IPHC. The intent is to highlight areas of scientific uncertainty and disagreement that affect Council decision making.

Public review of these issues may inform the Council about relative priorities, plans for further work by NMFS, ADF&G, and the IPHC, and whether there are other issues to add. For those issues over which there is extensive disagreement or uncertainty, but which have significant implications for halibut management by the Council, the peer review process may at some point in time provide an avenue for resolution. The Council may also wish to assess these issues in the context of fisheries management objectives and annual research priorities for the groundfish and halibut fisheries, in consultation with NMFS/AFSC, ADF&G and the IPHC.

The Council would benefit greatly from further input from the public, as well as the IPHC, regarding the status and priority of these research/management issues. Which are the most important relative to future decision-making? Are there other critical research issues that should be identified and included in this Framework?

4.2 Other Research Projects

In addition to identifying the key scientific questions that affect Council and IPHC decision making, currently there are ongoing halibut related research projects conducted by the AFSC, some of them in conjunction with the IPHC, described in Attachment 3. These should be included or cataloged with other research/science issues within the Framework to inform stakeholders of the extent of halibut related research, even if they are not addressing the most immediately critical management or science questions.

The Groundfish Plan Teams provide another forum for assessment of halibut science and management issues, and the annual SAFE report, including the economic and ecosystem chapters, provide another source for reporting on halibut related information of interest to stakeholders. As reflected in Attachment 2, the Plan Teams are expected to review initial discard mortality rate (DMR) information at the Plan Team meetings in Fall 2015, and provide an initial analysis for possible adjustments in April 2015.

4.3 SSC Recommendations and Comments

Based on their review of the BSAI halibut PSC reduction analysis in 2015, the Council's SSC also had numerous recommendations and comments, including some related to longer-term aspects of halibut management. These comments are within Attachment 4. To some extent, the SSC's comments represent potential areas of new research and analysis for the Council to undertake when considering changes in PSC limits, as well as monitoring or reviewing the outcomes of those changes. In particular, the SSC recommended the Council initiate a program review to evaluate the performance or outcomes of the Council's BSAI halibut PSC reduction. The Council may wish to explore some of these recommendations as specific actions within the halibut management framework, however further explanation and assessment of what they actually entail would be appropriate.

5 Coordination and Communication with the IPHC

The Council could also review the manner and the schedule by which it currently communicates with the IPHC, to determine if there is additional information or times during the year or types of communications that would foster improved coordination and collaboration. This relates to the question of whether a more formal and regular joint meeting process or protocol with the IPHC should be considered. Currently, the main instrument for communicating to the IPHC is through a management report (which includes recommendations for charter halibut management measures), prior to the IPHC's annual meeting. It should be noted that documents for the annual IPHC meeting that occurs in January are typically not available for review and comment by the Council in December. However, the Council could still consider providing additional information about halibut management activities, make recommendations to

the IPHC regarding management proposals or other aspects of the IPHC's stock assessment review and catch limit setting process when appropriate. For example, the Council could provide comments on such issues as improving abundance estimates of halibut in the BSAI, or the effect of lowering the 32" size limit on stock biomass. The extent to which the Council provides additional information and comment to the IPHC should be governed by the goal of improving coordination and collaboration for the purpose of achieving management objectives of the respective bodies.

The Council could also consider providing recommendations and comments directly to the US Commissioners to the IPHC, which focus more specifically on issues that are relevant to broader US domestic fishery management objectives. The Council's October 2015 motion to expand this Framework document included the following request:

Describe the processes that the Council and IPHC use to receive public input and review scientific information. Identify opportunities within our processes that can be used to provide more formal and regular communications between the bodies, to be more substantive, direct, and informative to each body's decision making process.

- *Explore methods by which the Council can more formally and regularly communicate with US Commissioners.*
- *Explore the potential for a joint NPFMC-IPHC committee, similar to the NPFMC-BOF Joint Protocol Committee, through which regular communication on issues of mutual interest could be discussed. Draft TOR for such a committee.*

5.1 Process to Receive Public Input and Review Scientific Information

In many ways, the Council and the Commission have a very similar decision making process. Both the NPFMC and IPHC base decisions on scientific analyses prepared by professional staff, receive scientific and management advice from advisory bodies, and take public input through oral and written public testimony. Additionally, the management authority and responsibility for both the IPHC and NPFMC is set forth in statute, and both bodies provide recommendations to the Federal government for approval and implementation. The Council makes recommendations to the Secretary of Commerce, and the Commission to the US Government through the Secretary of Commerce and Secretary of State and to the Canadian Government through Department of Fisheries and Oceans and the Department of Foreign Affairs and Trade Development.

Public Input at Meetings

Council: The Council receives public input through both written and oral comments at every stage in the process. Written comments are received via mail and email (npfmc.comments@noaa.gov), and those received by the published deadline are included in the meeting briefing materials. The comments must identify the submitter by legal name, affiliation, and date, and must also identify the specific agenda item by number (C1 for example). Persons may also provide written comment if and when they provide oral testimony. Public testimony is taken on each separate agenda item, following staff report and SSC and AP reports, before the Council begins its deliberations on that agenda item. Sign-up sheets are available at the registration table for those wishing to provide public comments on a specific agenda item. Groups and associations are given six minutes and individuals and businesses are allowed three minutes for their testimony. These meetings in their entirety (with the exception of executive sessions) are also webcast. The Council's statement of organization, practices, and procedures is here: <http://www.npfmc.org/wp-content/PDFdocuments/membership/SOPPs412.pdf>

Public testimony is taken in a similar fashion at the SSC and AP meetings. Members of the public wishing to testify before the AP or SSC are called for after staff reports on a given agenda item. Sign-up sheets are provided in a special notebook located at the back of the room. The time available for individual and group testimony will be based on the number registered and determined by the SSC or AP Chairman.

At Plan Team meetings, the public is generally allowed to interact in a more informal manner throughout the discussions. Public comment is also normally allowed at all meetings of the Councils standing and ad hoc committee meetings and limited at the discretion of the committee chair.

Commission: The Commission moved to a more public meeting format in 2014. All of the staff presentations and discussion are open to public attendance, and public sessions are also webcast for those unable to attend in person. The executive sessions and finance and administration sessions are not open to the public. The webcast recordings and the meeting presentations are posted on the website following the meeting. The Commission takes public comments and questions from the audience as directed by the Chair. The Commission rules of procedure are here:

http://www.iphc.int/documents/admin/IPHC_Rules_of_Procedure_Sept_2014.pdf

Meetings of the Conference Board and Processor Advisory Group (PAG) are open to the public, and oral public comment can also be taken at the discretion of the Chairs. Written statements also may be submitted prior to the meeting. There is no public participation or comment period at meetings of the Management Strategy Advisory Board (MSAB) or Scientific Review Board (SRB).

Management Advisory Groups

Both the Council and Commission have industry advisory groups that provide an opportunity for fishermen and other industry participants to give advice on matters to the decision-makers. A summary of these groups is provided in this section.

5.1.1 Council Management Advisory Bodies

The **Advisory Panel** (AP/FIAC) is appointed by the Council and is composed of 20 or so recognized experts from the fishing industry and several related fields, and which represents a variety of gear types, industry and related interests as well as a spread of geographic regions of Alaska and the Pacific Northwest having major interest in the fisheries off Alaska. The Council relies on the AP for comprehensive advice on how various fishery management alternatives will affect the industry and local economies, as well as ways to address potential conflicts between user groups of a given fishery resource or area. Halibut stakeholders are well represented on the Advisory Panel (including 9 halibut IFQ fishermen/representatives, 2 CDQ halibut fishermen/representatives, 1 charter halibut representative, and 5 representatives from the different groundfish harvesting and processing sectors that are directly limited by halibut bycatch caps).

The Council also has several **Standing Committees** and **Ad Hoc Committees** that may include voting or non-voting Council members and knowledgeable members of the public. The Council Chair may also appoint standing or ad hoc Committees that include only industry representatives or other participants to address specific management issues or programs. Relative to management of halibut fisheries, current committees include the **Electronic Monitoring Workgroup** and **Observer Advisory Committee** that provide advice to the Council on comprehensive fishery monitoring, including the halibut fishery. The **Charter Management Implementation Committee** and the **IFQ Committee** provides advice on management changes for the charter halibut and directed halibut fisheries, respectively. A **Sablefish Gear**

Committee provides advice on the development of a sablefish pot fishery, particularly with respect to interactions with a directed halibut longline fishery and retention of halibut in sablefish pots. A **Recreational Quota Entity Committee** has been appointed to provide recommendations on development of a new GAF quota pool/bank for halibut funded by charter fishermen. The **Enforcement Committee** provides advice to the Council on developing proposals and programs relative to enforcement of regulations.

5.1.2 Commission Management Advisory Bodies

The **Conference Board** is an IPHC advisory panel created by the Commission in 1931 to obtain advice and recommendations from halibut harvesters on conservation measures and halibut management. The Board also reviews staff reports and recommendations and provides its advice concerning these items to the Commission at its Annual Meeting, or on other occasions as requested. The Board is self-regulating in terms of membership and in 2013 there were 64 voting members. Its members are designated by unions, vessel owner organizations, and associations of harvesters throughout the halibut range and include commercial, sport, and tribal interests. The Conference Board rules of procedure are here: http://www.iphc.info/Public%20Docs/CB_ROP_January2015.pdf

The **Processor Advisory Group** is an IPHC advisory panel representing the Canadian and United States processing industry to advise the Commission on issues related to the management of halibut resources. Since 1995 the PAG has provided comprehensive industry advice on potential conflicts within a given fishery resource or area, as well as potential resolutions related to current or future issues. The Halibut Association of North America (HANA) continues to serve as the PAG's organizational, administrative, communications, and recruitment facilitator, and is also responsible for creating and distributing the PAG's annual report. Any company or association, including sole-proprietorships, corporation, or partnerships whose direct business is purchasing, processing and selling Pacific Halibut caught in Alaska, British Columbia, Washington, Oregon, or California is eligible for PAG membership. There were 20 members present at the 2015 meeting. The PAG rules of procedure are here: http://www.iphc.info/PAG%20Documents/PAG_ROP_Sept2014.pdf

In 2013, the Commission formed a **Management Strategy Advisory Board (MSAB)** to oversee the development of a Management Strategy Evaluation (MSE) process and to advise the Commission and Staff on the development and evaluation of candidate objectives and strategies for managing the fishery. The MSE process will help the Commission develop and thoroughly test alternative management procedures, prior to actually implementing any management changes for the fishery. The Commission selected a Board of 15 official and 8 ex-officio members representing viewpoints from commercial, sport, processing, Tribal/First Nations, and Fisheries Councils and managers. The MSAB has met several times since 2013, and the information is available here: <http://www.iphc.info/Pages/msab.aspx>

Lastly, the IPHC also has a **Research Advisory Board** to provide the Commission with insight on research issues of concern to the halibut industry. It is composed of any harvester or processor interested in contributing. The RAB normally reports to the Commission at its annual meeting.

5.2 Scientific Review

5.2.1 Council

Plan Teams are appointed by the Council for each of the major fishery management plans (FMPs). Members of each team are selected from those agencies and organizations and universities having a role in the research and/or management of fisheries. Appointments to the team are made by the Council with

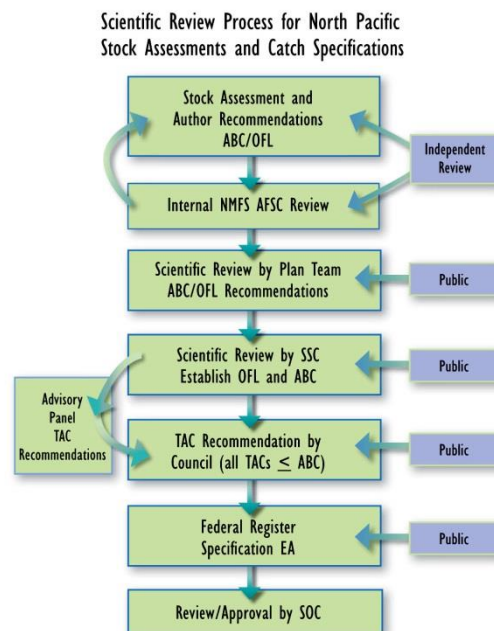
recommendations from the SSC. The Plan Teams review stock assessment information and assist in the preparation of the annual Stock Assessment and Fishery Evaluation (SAFE) documents including formulation of recommendations on annual Acceptable Biological Catch (ABC) levels for groundfish, crab, and scallop species under jurisdiction of the Council. The Teams may also assist in preparation and/or review of analytical documents for the Council, SSC and AP, evaluate the effectiveness of management measures in achieving the plan's objectives, and make recommendations to the Council.

The Council's **Scientific and Statistical Committee (SSC)** provides peer review of scientific analyses that form the foundation of decision making by the Council, as well as establishes the annual catch limits for FMP fisheries. The structure of the SSC and its peer review procedures are established in the NPFMC Statement of Organization, Practices, and Procedures. The SSC currently consists of 16 members from a variety of disciplines: fisheries ecology and population dynamics, fisheries economics, marine affairs and social anthropology, and seabirds and marine mammal specialists. The SSC normally meets five times per year and where possible, in the same hotel as the Council and its Advisory Panel. The SSC convenes for 3 days (typically Monday through Wednesday), fully concurrent with the Advisory Panel meeting and overlapping with the Council meeting on the third day.

The primary functions of the SSC are: 1) to provide peer review of biological and economic analyses prepared for Council decision making, and 2) to establish annual catch limits for groundfish stocks. Additionally, the SSC provides guidance to the Council on data collection programs and provides other ongoing scientific advice, prepares comments on national standard guidelines and biological opinions, and develops 5-year research priorities. Lastly, the SSC serves as the peer review body for influential scientific information pursuant to the Information Quality Act.

Approximately three weeks before the meeting, SSC members receive notice from the Council office that analyses are ready for review and posted on the Council's website. At this point, the SSC Chair assigns 2-3 members to be leads for each particular agenda item. The leads are responsible for understanding the details of the analysis, leading the SSC discussion and deliberation of the issue, and preparing the first draft of the written summary of the deliberations and SSC recommendations. At the meeting, the process begins with a presentation of the issue by staff, and clarification questions are asked by SSC members. Public testimony is taken, followed by SSC deliberation. The Chair summarizes the SSC comments, and a written summary is prepared and reviewed by the full SSC the first thing in the morning the following day (or later in the day for agenda items on the last day of the meeting).

The SSC reviews all technical analyses for proposed plan or regulatory amendments to ensure that the best available scientific information is provided for public comment and final decision-making. In reviewing any analysis, the SSC focuses on appropriateness of the input data, methodology applied, and conclusions drawn. The SSC provides comments and recommendations to the analyst to improve the analysis. The SSC also makes a recommendation to the Council as to its adequacy; i.e., whether or not the analysis is ready to be released for public review. When an analysis is deemed deficient and major revisions are required, the SSC will recommend that the analysis not be released, with the



Flow chart depicting the scientific review process for stock assessments and establishment of catch specifications in the North Pacific region. Catch specifications include the overfishing level (OFL), the acceptable biological catch level (ABC), and total allowable catch limits (TAC), where $TAC < ABC < OFL$.

expectation that a revised analysis will be reviewed by the SSC for adequacy at a subsequent meeting.

Scientific review of stock assessments begins with a review by the Plan Teams, who consist of biologists, economists, and fishery managers from the federal and state fisheries agencies as well as university academics. The SSC provides the final level of peer review for stock assessments, and sets the annual overfishing level (OFL) and Acceptable Biological Catch levels.

The SSC provides both oral and written reports to the Council. The written report reflects the general consensus of the SSC. The draft minutes are finalized at the conclusion of the SSC meeting, and are copied and distributed to the Council and public when completed, and posted on the website: <http://www.npfmc.org/meeting-minutes/>. The oral report to the Council is given by the SSC Chair (or designee) for each individual agenda item, following the staff summary of the analysis, and prior to public testimony. Usually, there are questions from the Council regarding the SSC deliberations or recommendations. Due to lengthy Council meetings, and in consideration of the SSC Chair, the Council may take the remainder of the oral SSC report well before the Council addresses all of its agenda items.

5.2.2 Commission

At the 2013 Annual Meeting, the International Pacific Halibut Commission approved the formation of a **Scientific Review Board (SRB)** to provide an independent scientific review of Commission science products and programs, and to support and strengthen the stock assessment process. In the near term, this standing peer review process is expected to focus on a review of the annual stock assessment model and harvest policy prepared by the IPHC staff. Over time, this emphasis will shift to a broader review of scientific programs, including outputs from the Research Advisory Board and the Management Strategy Advisory Board, in addition to the annual stock assessment results and advice. The SRB will also conduct other key reviews as directed by the Commission, on topics such as research plans, updates and changes to survey methodology, and white papers on selected critical issues.

The SRB currently consists of three independent fisheries science experts approved by the Commission, listed below. Two more members will be added over the next two years to bring the Board up to a full complement of five. The SRB members' terms will be staggered in order to facilitate continuity while regularly bringing in fresh scientific viewpoints.

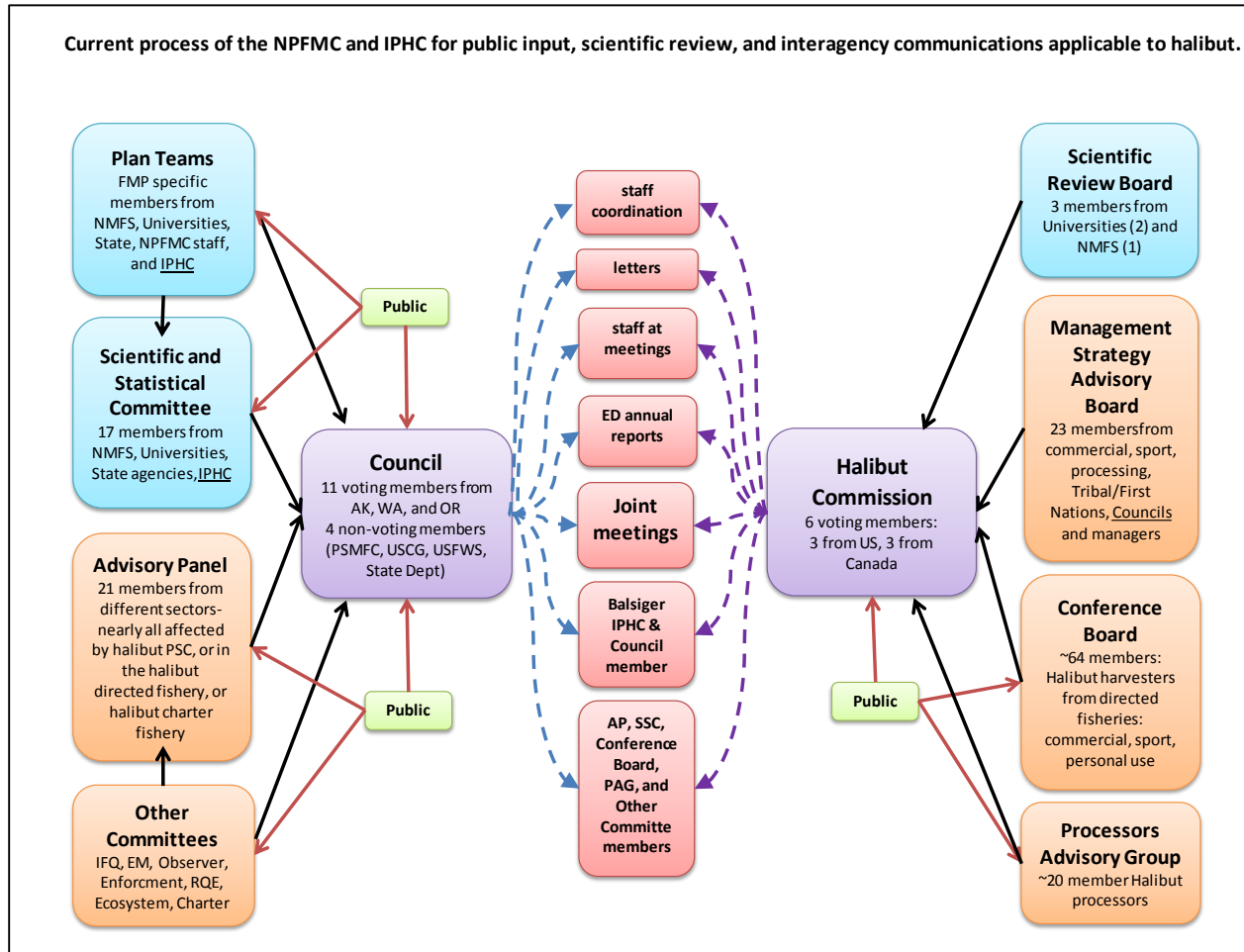
The three current SRB members are: Dr. Sean Cox is Associate Professor of Fisheries Science and Management at Simon Fraser University, and is a fisheries scientist focusing on aquatic conservation and management of human impacts on aquatic ecosystems. Dr. James Ianelli is a senior assessment scientist at the NOAA Fisheries Alaska Fishery Science Center, where he is an active member of the Center's stock assessment team and has authored numerous analytical documents applied to the management of important groundfish species in the North Pacific. Dr. Marc Mangel is Distinguished Research Professor of Mathematical Biology at the University of California Santa Cruz and Director of the Center for Stock Assessment Research, which is a joint training program between UCSC and the NOAA Fisheries Laboratory in Santa Cruz where students and post-doctoral colleagues learn the quantitative methods needed for ecosystem-based fishery management.

The SRB has been meeting three times per year (June, October, and December), and provides an oral report to the Commission at its annual meeting. Summaries of the most recent meetings, results, and announcements, along with notices of upcoming meetings are posted on its webpage: <http://www.iphc.info/Pages/Previous-SRB-Meetings.aspx>

5.3 Opportunities to Improve Communication

5.3.1 Overview of current process

The figure below illustrates the existing process for public input and advisory body recommendations to the Council and IPHC, as well as the current ways the Council and Commission exchange information and advice.



The existing means to formally exchange information include:

Staff Coordination: Staff from both the IPHC and Council work together on analytical issues. For example, Council staff contributed to the the IPHCs Halibut Byatch Working Group. Similarly, IPHC staff has contributed data and anlysis of proposed management actions (e.g., BSAI halibut bycatch amendment, analysis of DMRs).

Agency Letters: Formal recommendations and information from either body are communicated in writing via official letters. For example, the Council prepares an annual letter to the Commission on annual management changes for the IFQ and charter halibut fishery regulations, as well as any initiatives related to halibut bycatch in groundfish fisheries.

Meeting Attendance by members and staff: The IPHC Executive Director and/or another IPHC staff person normally attends Council meetings when halibut issues are discussed, and are frequently brought

to the table to provide clarifications regarding halibut assessments or management issues. Additionally, other members of the Commission frequently attend Council meetings. Similarly, the Council Executive Director and other Council staff normally attends the IPHC meetings, also to present Council viewpoints and address questions to assist the Commission with its decision-making. Several Council members, including the Chair, have also started to attend IPHC meetings. And lastly, the NMFS staff also provide a nexus for interagency communications by the IPHC and NPFMC by attending meetings of both groups.

Annual Reports to Council and Commission: The IPHC Executive Director provides an official agency report to the Council at each February Council meeting. This report usually covers the status of the stock, reviews the Commission decisions for annual catch limits, and provides a summary of ongoing research and management concerns. Similarly, the Council Executive Director presents the annual management letter issues to the Commission at its interim and annual meetings.

Joint Meetings of the IPHC and NPFMC: The Council has met formally with the IPHC only infrequently (i.e., October 1998, October 1999, and February 2015). In February 2015, the Council and Commission met for a day-long meeting in Seattle, in conjunction with the Council meeting that week. The objectives of the meeting were to gain a better understanding of the respective authorities and responsibilities of the respective management bodies, to facilitate improved communications, and to facilitate a more collaborative approach to overall management of the halibut resources, including objectives relative to management of both the directed fisheries and Council managed fisheries which take halibut as bycatch. The meeting was well attended and public comment was received from nearly 40 persons. The discussions between the Council and the IPHC Commissioners resulted in the identification of a number of common themes, as well as identification of several items for future analysis and consideration. While a formal schedule for future joint meetings was not identified, it was agreed that future collaboration on these issues will be beneficial to both management bodies.

NPFMC Member and IPHC Commissioner: The Northern Pacific Halibut Act¹ specifies that one of the IPHC Commissioners must be a voting member of the Council.² Dr Jim Balsiger is a member of both the Council and a U.S. Commissioner on the IPHC. As such, he is able to represent the interests of each body during meetings, is knowledgeable about the process and current management issues being addressed, and thus provides a primary mechanism for communication across the two management bodies.

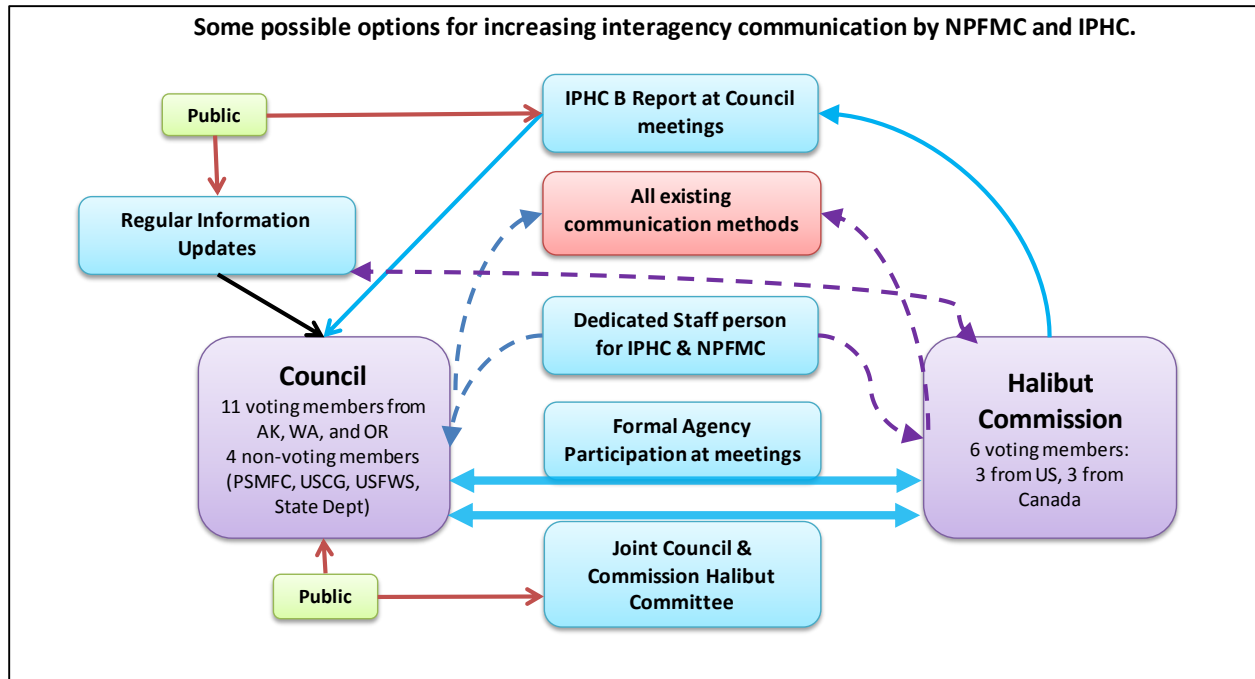
Shared membership and participation on many committees: Many people are involved in both the Council and Commission process. For example, there is an IPHC staff person on the SSC and Groundfish Plan Teams. Some AP and other Council committee members (or their companies or associations) also sit on the PAG or Conference Board. Two IPHC commissioners are members of the Councils IFQ committee and IPHC staff assist the EM Workgroup. And the Council chair is a member of the IPHCs MSAB. These are just a few examples of overlapping membership.

¹ <http://legcounsel.house.gov/Comps/Northern%20Pacific%20Halibut%20Act%20Of%201982.pdf>

² Of the Commissioners— (1) one shall be an official of the National Oceanic and Atmospheric Administration; and (2) two shall be knowledgeable or experienced concerning the Northern Pacific halibut fishery; of these, one shall be a resident of Alaska and the other shall be a nonresident of Alaska. Of the three commissioners described in paragraphs (1) and (2), one shall be a voting member of the North Pacific Fishery Management Council. Also, the Secretary of State, in consultation with the Secretary, may designate from time to time alternate United States Commissioners to the Commission. An Alternate United States Commissioner may exercise, at any meeting of the Commission, all powers and duties of a United States Commissioner in the absence of a duly designated Commissioner for whatever reason.

5.3.2 Potential New Opportunities for Improved Communication

There may be additional opportunities within the Council process that can be used to provide more formal and regular communications between the bodies, to be more substantive, direct, and informative to each body’s decision making process. If the current process for information exchange and advice is deemed inadequate, a few potential options to expand communication between the Council and Commission are shown (in blue) in the figure below.



Regular Information Updates: At every Council meeting, staff presents a report on protected species that provides an update and summary of management and regulatory changes, new trend data, and recent research with respect to marine mammals, seabirds, and other protected species. Staff could prepare a similar report for halibut (and other PSC if requested). As suggested in the October draft, a ‘Framework Update’ could be presented at every meeting or at specific times of the year (for example, at April and December Council meetings every year). Various aspect could be discussed as they relate to ongoing research and management, new research or actions, and updated information on stock status, in-season estimates of halibut removals including bycatch mortality estimates relative to PSC limits, and other related information. This information summary could also be forwarded to IPHC Commissioners as well.

IPHC Report at Council meetings: The IPHC Executive Director normally provides an agency report at each February Council meeting, and upon request when issues warrant. More frequent formal reports could potentially improve communications. For reference, the NOAA Enforcement Reports and Habitat Reports are twice per year, and the other agency reports are scheduled for every meeting.

Formal participation at meetings: Currently, and for many years, the NMFS Regional Administrator sits as a voting member of the Council, and also serves as a voting Commissioner of the IPHC. This dual participation serves as an obvious nexus of communication between the two management bodies. Additional, direct participation by a Council member or Commissioner at each other’s meetings is not authorized by statutes implementing either process, though other, informal mechanisms could be considered. The Council’s October motion included the phrase “explore methods by which the Council can more formally and regularly communicate with U.S. Commissioners”. While there are no existing

formal mechanisms for such communication, there may be informal approaches to enhancing such communications. Recently, U.S. Commissioners have been in attendance at most Council meetings where halibut related issues have been on the agenda. Conversely, Council members have increasingly attended IPHC annual meetings. More formal communication between the Council and U.S. Commissioners could be considered within the context of potential Stakeholder Workgroup(s).

Joint or dedicated staff member: Both the Council and IPHC had designated staff contacts for joint matters concerning halibut. Jane DiCosimo was the Council staff person and Gregg Williams was the IPHC staffer; both have moved on in the last two years and staff persons specifically dedicated to halibut issues of mutual concern have not been filled or tasked by the Council (or by either body?). Currently, halibut issues at the Council level are addressed by a wide variety of staff depending on the topic (e.g., Sarah Marrinan-CDQ, RQE, IFQ review; Sam Cunningham-IFQ Committee; Steve Maclean-charter issues; Diana Evans-bycatch, Jim Armstrong-DMRs, etc.), and/or the Executive Director, and there is no one Council staffer who can serve as a knowledgeable expert on all aspects of halibut and halibut bycatch. One person assigned to track progress (particularly if regular information updates are requested) and be the main point of contact for other agency staff may have merit, although other staff expertise will be required for analysis of proposed regulatory changes.

5.4 Joint Council and Commission Committee:

The Council motion from October specifically mentioned the possibility of establishing a joint committee. This option is discussed in detail in the section below.

Explore the potential for a joint NPFMC-IPHC committee, similar to the NPFMC-BOF Joint Protocol Committee, through which regular communication on issues of mutual interest could be discussed. Draft TOR for such a committee.

In 1996, the Council and the Alaska Board of Fisheries were seeking ways to keep each other informed on cross-jurisdictional issues that impact fisheries in State and Federal waters, following an action taken by the Board to initiate a State waters fishery for Pacific cod in the GOA. January 1997, the Council and Alaska Board of Fisheries established a joint committee to develop a protocol for future interactions, and in February 1997, this protocol was approved by both bodies. An addendum to the protocol was approved in October 1999 to expand the purview of the State/Federal Policy Group and describe a process for categorizing crab proposals and addressing important off-cycle issues. The protocol was fully updated in December 2009: <http://www.npfmc.org/wp-content/PDFdocuments/meetings/JointProtocol1209.pdf>

For the most part, the Council/BOF joint protocol committee is an opportunity to exchange information on current management issues, rather than to make progress in coming to a resolution of a particular issue. Typically, the joint protocol committee has met approximately every other year, or more frequently when some issue has come to the forefront. Meeting agendas typically involve ADF&G staff briefing the committee on BOF proposals, and Council staff briefing the committee on recent and upcoming Council issues. No actual decisions are made by the Committee, as all decision making is left to the full bodies. Nevertheless, committee members are more informed about jurisdictional issues and potential impacts of their decision-making with respect to fisheries under the authority of the other body.

A similar committee structure could be developed to allow more regular communication among Council and the Halibut Commission. However, unlike the Board/Council committee, a Council/IPHC committee would have a more limited nature of the overlap in interests. As the Council considers whether or not to propose a joint committee, it should consider the effectiveness of such a subcommittee versus a meeting of the whole. **Would a small protocol committee provide more effective communication than a**

meeting of the full Commission and Council? If there is no decision-making authority within such a committee, does it serve a purpose which could be better served by the occasional full meeting of both bodies when issues warrant? Given the relatively small size of the Commission, and the likely need to have representation from both the U.S. and Canada, would it not make more sense to simply hold a full joint meeting of both bodies when deemed appropriate?

A draft Terms of Reference is provided below for discussion purposes:

DRAFT Terms of Reference Joint Council and Commission Halibut Committee

Establishment. The North Pacific Fishery Management Council (Council) and the International Pacific Halibut Commission (Commission) shall establish a Joint Council and Commission Halibut Committee to communicate and discuss issues of mutual interest, provide a forum for information exchange, discuss research priorities, and report back to their respective bodies.

Membership. Committee members will be appointed by the Chairman of each management body to serve as a representative on the Joint Halibut Committee. The Committee will consist of 4 members; 2 from each management body. **Is this sufficient representation from both bodies?**

Organization. The Committee meetings will be directed by co-chairs, one chosen from each management body.

(a) Rules of order. In general, rules of order will be informal and no votes will be taken. No decisions will be made that commits the Council or IPHC to take any action. In representing the Committee publicly, the Chair or designated spokesperson will take care to relate the different management body opinions accurately, noting points of concern when they exist.

(b) Meetings. Meetings will be held... **How frequently would the meetings be held? Where and When?** Agencies will be responsible for hosting the committee meetings, with the responsibility alternating between NPFMC and IPHC staff. A draft agenda will be prepared in advance of each meeting by the host staff (NPFMC or IPHC) in consultation with the Chairs, and may be revised during the meeting. Each agenda will include an opportunity for comments from the public. Minutes of each meeting will be prepared by the host staff, a draft distributed to members for review, and will be made publically available once finalized.

(c) Administration: Meeting costs will be borne by each management body, with the Council paying for its members, and the IPHC paying for its members. Meeting room and associated costs will be borne by the host agency.

Functions. The committee's primary function is to... **What is the function of this body? To foster improved understanding and communication across the bodies? To advise respective bodies of the other bodies position or concerns as part of the decision making process? To provide a forum for communication on specific proposed management measures (by either body)?**

6 Ongoing Activities by the Council, Committees, Stakeholder Groups

As discussed in section 5, there are a number of other ongoing activities and initiatives in the Council (and the IPHC) process that are related to halibut management. Most of them will likely be informed by the critical scientific and management questions in the framework. For example, the Council depends on

stakeholder committees for detailed review and recommendation regarding management programs and activities as well as research priorities related to the management of groundfish and shellfish.

6.1 Committees and Stakeholder Groups

The Council has a number of halibut related stakeholder committees and initiatives, organized to provide recommendations or reports to the Council on management programs and issues, that are likely to be informed by the work described in this outline of the Framework. The Council depends on these stakeholder groups for detailed review and recommendation on regulatory and FMP amendments, as well as problem solving. In some cases, the Council's approach has been to delegate some responsibility for achieving management objectives to sectors, particularly those operating within cooperatives, with specific guidance and direction. The halibut management Framework intends to describe or identify these groups and their roles, and the Council may consider how best to task them in addressing various halibut management issues as they arise. They include:

- The BSAI AM80 Cooperatives. As part of its June action, the Council requested AM80 cooperatives to provide halibut bycatch management plans to Council for 2016 (these will be reviewed in December 2015, and include specific requests for cooperatives to include various measures to minimize bycatch).
- IFQ Committee. The committee would be informed by, and could comment and review, or develop IFQ program changes generated by other actions within the halibut management framework. (For example, DMRs, 32" size limits)The committee could also have a role in the upcoming IFQ Programmatic Review and any possible IFQ program changes that may develop from that review.
- Charter Halibut Management Committee. While the task of this group is to recommend annual management measures for the charter sector, they would also be informed by other actions within the halibut management framework
- CATCH Committee. As it reviews and comments on the proposed CATCH program, this Committee will also be informed by actions in the framework.
- Council's Rural Outreach Committee. This committee could have relevance in context of community and subsistence related concerns.
- Voluntary reporting of halibut bycatch avoidance by different groundfish sectors, as requested by the Council. Future requests for reporting are likely to depend on progress or outcomes of different parts of the framework.

6.2 Other issues and activities within the Council process

- Council initiation of discussion paper to allow CDQ entities to lease halibut IFQ in Areas 4B and 4CDE in years with low directed harvest quotas.
- Halibut/sablefish IFQ program review (as mandated by the MSA) – Council is scheduled to review the outline/workplan for this review at its December 2015 meeting.
- Halibut deck sorting EFPs intended to facilitate timely release and reduce bycatch mortality – could result in regulatory action to allow deck sorting.
- Development and implementation of EM for the small boat longline fleet to meet fishery monitoring objectives.
- Review of pending information on 2015 groundfish fisheries halibut bycatch performance.

6.3 Potential for Additional Stakeholder Workgroup(s)

The Council's October motion also requested exploration of the potential for a broad stakeholder workgroup, region-specific or coastwide, composed of U.S. stakeholders that would explore solutions to problems identified by the Council that are consistent with short-term and/or long-term management objectives, including voluntary or regulatory measures.

In the Statement of Organization, Practices, and Procedures (SOPP), the Council has established two permanent advisory groups to provide the Council with scientific review or public advice on fishery management decisions (§2.3). The Scientific and Statistical Committee (SSC) is tasked with assisting the Council the development, collection, and peer review of such statistical, biological, economic, social, and other scientific information as is relevant to the Council's development and amendment of any of its fishery management plans. The Advisory Panel (AP) is tasked with providing advice on how various fishery management alternatives will affect the industry and local economies, on potential conflicts between user groups of a given fishery resource or area, and on the extent to which the United States will utilize resources managed by the Council's fishery management plans. The Council also appoints standing and ad hoc committees necessary to advise the Council on particular conservation and management issues.

The Council already has a number of committees that provide recommendations or reports to the Council on a wide range of specific halibut related management issues that may have relevance to the Halibut Management Framework. These include: the IFQ committee, Charter Halibut Implementation Committee, Recreational Quota Entity committee, and the Ecosystem Committee. How any new Halibut Management Framework committee engages with the existing committees would need to be addressed by the Council.

The stated overall goal of the Halibut Management Framework is to "identify and define the most important issue/topics/questions necessary to guide the Council's decisions about halibut management, and to inform Council interactions with the IPHC". To address such a broad, inclusive goal would require a commensurate broad, inclusive committee, with representatives from each user group and each region. Such an advisory body already exists in the AP. The AP members represent major segments of the fishing industry: catching and processing; subsistence, commercial, and recreational; and environmental/conservation. The AP is already well suited to provide guidance to the Council on both broad issues or specific management proposals, or on issues where specific questions have not yet been identified. As identified in section 5, a diverse range of halibut interests are well represented on the AP.

In order to most effectively use the expertise and multiple perspectives that a committee can provide, it is necessary to identify specific issues or problems that need to be addressed. Further, specific objectives from the Council will help to ensure that the Council is receiving the feedback or review that is expected. Should the Council clearly define management measures, issues, or objectives specific to particular regions or user groups, a small, regional or issue specific committee would likely be better able to address those concerns than the AP. In this context, regional committees may be the most effective way to address particular management concerns identified under the Halibut Management Framework. Committees could be established along the IPHC regulatory areas, or other regional description. Not all committees would need to be active for each issue identified by the Council, but could be convened as necessary to address Council concerns. Recommendations from a regional committee would continue to be evaluated by the SSC and AP for scientific review and potential impacts to other sectors or stakeholders, providing the broad review established in the Framework overall goal.

In order for committees established under a Halibut Framework to be successful, the Council would need to take several steps. Initially, the Council needs to clearly define the situation, issue, or problem that the committees are expected to address: e.g., is the issue related to bycatch in commercial fisheries, or establishing a commercial allocation for a specific region (for example)? Is there a specific (proposed) management measure the Council is seeking Workgroup input on? Second, the Council needs to determine what expertise and representation is necessary: e.g., is the question biological (migration, reproduction, etc.) or economic? Third, the Council needs to identify and clearly articulate the questions that the committees are convened to address. These questions would be articulated in the Terms of Reference (TOR) for each committee. The TOR would be drafted by the Council for the committee(s), but could follow the structure of existing terms of reference for Plan Teams.

1. **Establishment.** Consider how many committees would be established, and whether they are regional or coast-wide, issue-specific or standing.
2. **Membership.** Consider the appropriate number, and affiliation of stakeholders that would be represented on each committee
3. **Organization.** Each regional committee would follow the typical committee organization, with a chairman appointed by the Council chairman.
4. **Functions.** The committees would provide recommendations or reports to the Council on management programs and issues identified by the Council.

In summary, establishment of such a Stakeholder Workgroup(s) could represent a large investment in Council time and resources, but could be very informative to the Council IF such groups have a clear purpose and explicit direction from the Council. Establishment of such a Workgroup(s) without clear direction and purpose will not only subsume considerable resources, but could unnecessarily complicate existing issues.

7 Appropriate Form and Packaging for Framework Document

Following public input and Council discussion at the December 2015 meeting, considerable work will need to be done to ‘package’ this Framework into an effective planning tool. Some have characterized this as a ‘strategic planning document’, and some have commented on its resemblance to the Fishery Ecosystem Plan (FEP) being considered through the Council’s Ecosystem Committee. Both of these considerations could lead to a more logical and effective structure for this document.

Among the primary similarities to the FEP, this document recognizes that the Council must consider projects or issues against the full range of potential halibut management issues (bycatch and otherwise), and prioritize among them. It also establishes, as one of its main purposes, a more proactive and informed approach to halibut management overall. And, while primarily viewed as an action-informing document (rather than an action-forcing document), the FEP provides a potential model for prioritizing and facilitating future actions through the identification of ‘action modules’ (examples of action modules within the Framework could include further specification of DMRs, or even longer-range initiatives such as the abundance-based PSC management approach). It also is intended to be flexible to changing conditions (environmental, fishing, and socio-economic conditions) similar to the Bering Sea FEP approach.

An important aspect of the Framework is to drive a more deliberative and proactive approach to all halibut management issues (which will, again, require identification of short and long term objectives), and in a sense ‘force’ a stronger collaboration among the Council, stakeholders, and other management

agencies including the IPHC. In order to further develop the Framework in this context, public input and Council discussion could identify appropriate ‘action modules’ for prioritization. These could include ongoing scientific projects (and filling the most critical gaps), as well as policy and management goals and objectives. The following section contains an excerpt from the recent FEP discussion paper, provided for illustrative purposes.

7.1 Excerpt from Bering Sea FEP Discussion Paper

Proposed outline for the core FEP

- 1) Introduction
- 2) Purpose of the FEP
- 3) Background/EBFM theory
- 4) Scope of FEP – geographic, jurisdictional, fisheries
- 5) Brief synthesis of Bering Sea ecosystem (i.e., the Eastern Bering Sea Ecosystem Assessment), and current data sources, surveys, models
- 6) Bering Sea ecosystem goals
- 7) Bering Sea FEP strategic objectives
- 8) Framework of FEP action modules
 - a. Process for identifying action modules, prioritizing, tasking, periodic reevaluation
 - b. List of initial action modules
- 9) Outreach plan and public involvement
- 10) Recurrence/feedback mechanism

At the request of the Council to be more specific in demonstrating how an FEP might function, the Committee has included a strawman FEP example in Attachment 4 to this discussion paper. The attachment lays out the FEP outline, and includes some example text for various sections, as well as four example action modules supported by the Committee, which might be developed for the FEP. Final decisions on the FEP components will wait until the Council has formally initiated the Bering Sea FEP as a Council project.

Action modules

Action modules are specific analyses or research efforts that can be initiated within the framework of the FEP, but are projects with their own scope, tasking, and timeline. The action modules are linked directly to the FEP’s strategic objectives, and the purpose and scope of each task, as well as a description of how the outcome will be used in management (e.g., whether it will lead to an FMP amendment analysis), is defined in the core FEP. In this way, the action modules will be responsive to the Council’s management needs, and their outcomes will have a direct effect on the Council’s decision-making process. The Council also has the flexibility to prioritize action modules, and initiate them concurrently or sequentially depending on Council needs and resource constraints. As they are completed, modules should be synthesized and evaluated in aggregate; modules should leverage other modules where possible.

The core FEP would include the Council’s approved list of action modules, and a description of each one, along with its priority. In the description of each module in the core FEP, a series of specific questions must be addressed:

1. Synopsis of the task, including how it will be accomplished
2. Purpose it will achieve (relationship to the FEP’s objectives)
3. How it will inform and be integrated in the Council’s decision making and management process

4. Estimate of time and staff resources required to achieve it
5. Plan for public involvement

Additionally, the core FEP would also prioritize modules, assess progress that has been made in each active action module, and review findings of previous modules. An effective method to track action modules and their linkages to the core FEP would be to design an interactive website.

One of the advantages of the strategic FEP/action module process is that it requires the Council to consider the utility of a project's outcome for Council decision making and management, its staffing requirements, and how it will be applied, before it is initiated. By requiring the Council to specify at the outset how the work product will be used in Council decision making, the Council ensures that there is a constant connection between the FEP and direct management action.

Identifying the staffing resources required for completing each module will also help with staff tasking. Some modules will be largely synthetic exercises, with Council and NMFS staff pulling together information from disparate sources to create an evaluation for the Council (e.g., a compilation of information available about climate change impacts or ecosystem information to inform Council NEPA analyses). Others will require specific data, knowledge, and tools and thus may be projects of longer duration requiring more than Council and agency staff in their development. For example, an action module that proposes to develop ecosystem decision tools to address a specific problem would require AFSC expertise. In fact, each action module might engage a diverse set of stakeholders and agency personnel and it is envisioned that there would likely be different module teams for each FEP module, although with some common participants to ensure consistency. This has the advantage of providing an opportunity for broader participation in the FEP process, and involving diverse stakeholders that are impacted by the issue, including local communities or fishermen, in the FEP process.

In order to accommodate the appropriate range of public participation in the development of an action module, a public involvement plan would clearly delineate how the public participation process would be facilitated. To ensure the FEP achieves the Committee's intent for it to be a transparent, inclusive communication tool, the plan would clearly identify stakeholders potentially impacted by or interested in the action module, and opportunities for them to interact in its development. This would include the Council's existing public process, which provides the opportunity for public involvement throughout the multiple stages of the decision making process, but may also identify other opportunities. The plan should also explicitly address how both TK and LTK will be considered. TK and LTK are especially useful to supplement or validate local, small-scale ecosystem observations, in combination with large scale scientific efforts.

Application of action module results to inform the Council process will vary depending on the nature of the action module. Depending on the nature of the action module, its findings may be relevant to monitoring/research priorities, vulnerability assessments, stock assessments, annual harvest limits, spatial management actions, international agreements, and emerging fisheries. First, and in all cases, the action module will likely result in a report or presentation to the Council. Second, for some modules, the analysis or research may suggest the Council consider some immediate fishery response. In this instance, the Council would use the action module outcome to initiate an FMP analysis to consider how to implement change based on the module's findings. Third, the action module may provide tangible information that affects future Council decision making, for example identifying an indicator threshold that will be a pivot point for Council action once it is reached. Finally, the outcome of an action module may require iterative Council feedback, and may also lead the Council to re-evaluate the FEP or re-prioritize other action modules.

The Committee envisions that the modules would be an evolving part of the FEP that change over time to meet novel management challenges and ecosystem pressures. The FEP would specify the process for how action modules would be proposed, considered, and adopted by the Council into the FEP. Presumably the Council would also work with NMFS and the AFSC to identify management needs and how action modules could be designed to address them. This process could be an opportunity for researchers conducting fisheries-relevant research to bring their science forward into management, by proposing a module for Council consideration. As with other aspects of the FEP development, we anticipate that there would be public involvement in scoping possible action modules, and opportunities for input on how they are prioritized. Once the FEP strategic document is prepared, the Council may wish to initiate a periodic review process to consider whether action modules should be revised, new modules added, priorities changes, or actions initiated. Results of action modules will also be presented publically and made accessible through a public website.

8 Summary

In summary, this draft Framework attempts to identify the major research activities underway relative to halibut science and management, highlight the most critical information gaps, outline the primary management (or related) activities affecting halibut decision-making, and identify the need to improve coordination and communication with the IPHC. One benefit of this Framework process may be to more explicitly, and proactively, guide the various research elements underway, and thereby promote more timely resolution for management consideration. The Framework process may also be an integral part of funding requests through NMFS or ADF&G for priority research that might otherwise never be undertaken. Finally, a more explicit Framework process would serve as a general catalyst for improved coordination among the various management bodies, as well as the various user groups dependent upon the halibut resource.

This Framework is not intended as a ‘final product’, but is expected to be refined by further Council discussion, and informed by stakeholder input. One result could be to incorporate a ‘Framework Update’ at specific times during the year (for example, every April and December Council meeting), where the various aspects can be discussed as they relate to ongoing research and management, or even as they may relate to specific management actions being considered by the Council or IPHC. For example, in addition to the Council’s annual management letter that is transmitted to the IPHC each year prior to their January annual meeting (which traditionally summarizes relevant Council actions which have occurred, or which or pending), a December ‘Framework discussion’ could likely raise additional issues for which the Council might develop specific recommendations to the IPHC for their consideration.

In summary, because the Framework in essence forces our process to more explicitly (and proactively) address the various science and management issues surrounding the halibut resource, it will likely provide the Council and the IPHC, as well as other management agencies, a more informed platform for improved coordination in general, and help both bodies identify the timing and nature for more direct interactions (such as our Joint meeting, or other vehicles for coordination). This version of the Framework should be considered as a starting point for further development, based on stakeholder input in December and further Council direction. Based on the Council’s October motion, it is also the intent to have the SSC review the next iteration of this framework at the February 2016 meeting, with a focus on identifying primary research issues and data needs from a halibut management perspective.

ATTACHMENT 1 BSAI/GOA/PSEIS Management Objectives Related to Halibut (bycatch)

The information below is provided in response to item (1) of the Council's seven part motion on the halibut framework initiative from the October 2015 meeting.

1. Describe existing halibut bycatch management objectives from the BSAI and GOA Fishery Management Plans and the Programmatic SEIS for the groundfish fisheries.

BSAI and GOA Groundfish Management Objectives

The Groundfish Programmatic SEIS establishes a suite of 45 management objectives (46 for BSAI) for both groundfish FMPs within the context of 10 broad management goals. There are no "halibut bycatch management objectives", per se, in the FMPs, however, many of the objectives connect directly or indirectly to the Council's current concerns related to halibut bycatch. By identifying management objectives, the Council recognizes and communicates specific avenues of action that it may explore in the fulfillment of the goals. For example, Objective 14, "Continue and improve current incidental catch and bycatch management program" indicates a commitment to existing bycatch reduction efforts as well as the potential to enhance and improve those efforts as necessary should the Council identify a need for additional bycatch reductions above what is currently being accomplished. Other management objectives are less directly connected to bycatch concerns, but indirectly reflect the larger context which the Council will consider when taking actions. For example, Objective 7: "Promote management measures that, while meeting conservation objectives, are also designed to avoid significant disruption of existing social and economic structures." recognizes both the primacy of conservation obligations and the need for balance with regard to potential social and economic outcomes of conservation efforts. Still other management objectives address issues separated by multiple linkages from the issue of halibut bycatch, for example "safety at sea" and are, therefore minimally connected to halibut bycatch. The table below contains the complete list of BSAI and GOA management objectives with comments added as to whether the objectives may directly, indirectly or minimally connect to the issue of halibut bycatch.

Beyond the umbrella of the groundfish FMPs' management objectives, several specific management measures are identified in the FMPs that do name halibut and address mechanisms by which halibut bycatch reduction in particular can be strengthened:

Prohibited Species. Pacific halibut is identified among the FMPs' "ecosystem components" and within that category as "prohibited species". Prohibited Species are those species and species groups the catch of which must be avoided while fishing for groundfish, and which must be returned to sea with a minimum of injury except when their retention is required or authorized by other applicable law (see also Prohibited Species Donation Program described in Section 3.6.1.1).

Prohibited Species Catch Limits. When a target fishery, as specified in regulations implementing the FMP, attains a prohibited species catch (PSC) limit apportionment or seasonal allocation as described in the FMP (Section 3.6.2) and specified in regulation implementing the FMP, the bycatch zone(s) or management area(s) to which the PSC limit apportionment or seasonal allocation applies (described in Section 3.6.2.2) will be closed to that target fishery (or components thereof) for the remainder of the year or season, whichever is applicable.

Halibut PSC Limits. Annual BSAI-wide Pacific halibut bycatch mortality limits for trawl and non-trawl gear fisheries will be established in regulations and may be amended by regulatory amendment. When

initiating a regulatory amendment to change a halibut bycatch mortality limit, the Secretary, after consultation with the Council, will consider information that includes:

1. estimated change in halibut biomass and stock condition;
2. potential impacts on halibut stocks and fisheries;
3. potential impacts on groundfish fisheries;
4. estimated bycatch mortality during prior years;
5. expected halibut bycatch mortality;
6. methods available to reduce halibut bycatch mortality;
7. the cost of reducing halibut bycatch mortality; and
8. other biological and socioeconomic factors that affect the appropriateness of a specific bycatch mortality limit in terms of FMP objectives.

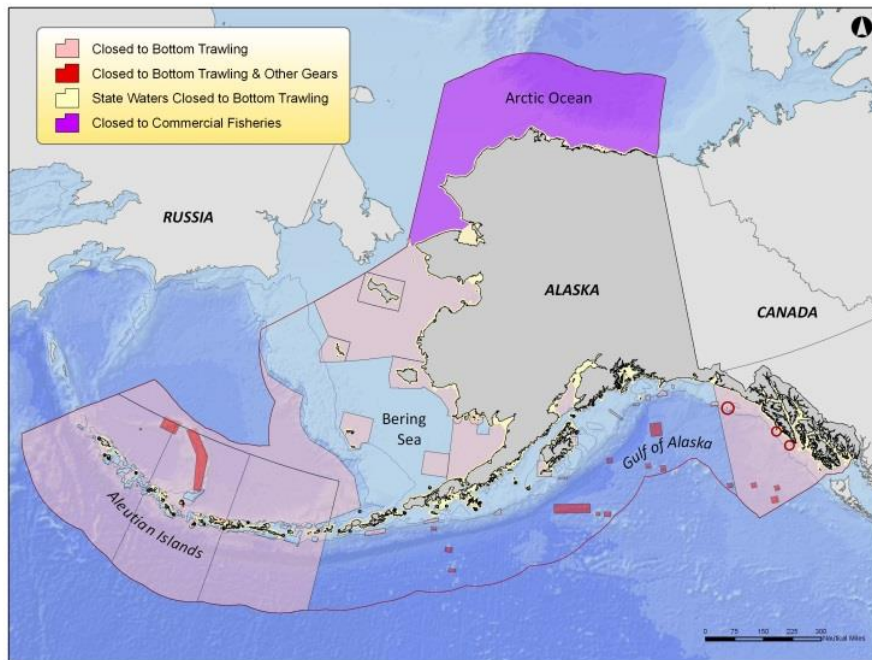
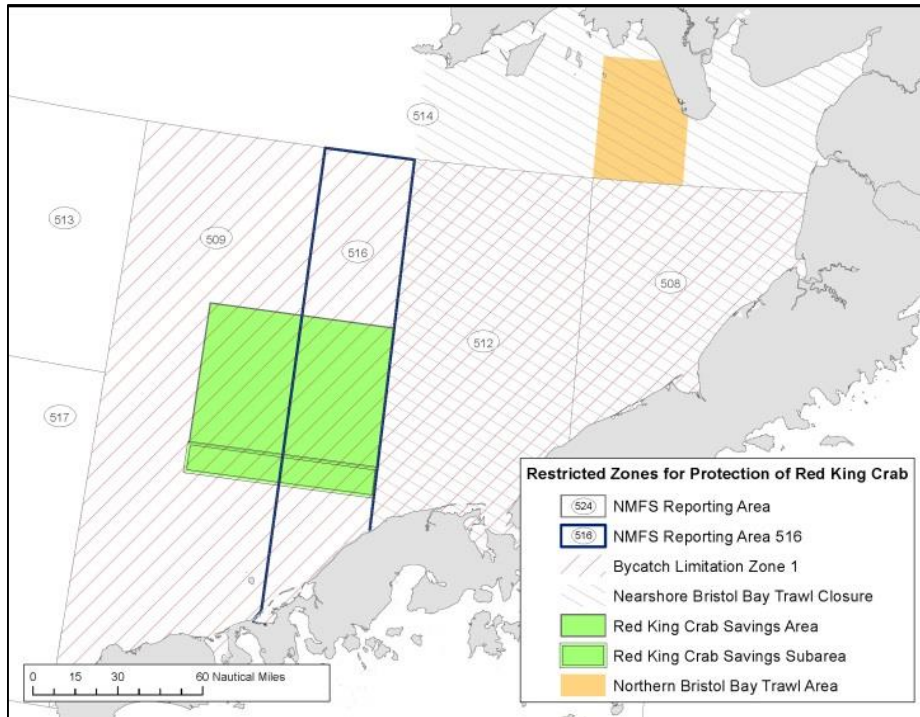
Prohibited Species Donation Program. The Prohibited Species Donation Program authorizes the distribution of specified prohibited species, taken as bycatch in the groundfish trawl fisheries off Alaska, to economically disadvantaged individuals through a NMFS-authorized distributor selected by the Regional Administrator in accordance with regulations that implement the FMP. The program is limited to Pacific salmon and Pacific halibut.

Bycatch Reduction Incentive Programs. The Secretary of Commerce, after consultation with the Council, may implement by regulation measures that provide incentives to individual vessels to reduce bycatch rates of prohibited species for which PSC limits are established under Section 3.6.2. The intended effect of such measures is to increase the opportunity to harvest groundfish TACs before established PSC limits are reached.

Time and Area Restrictions. A number of area closures are in place either year-round or seasonally to minimize the effects of directed fishing on habitat, protected resources, or PSC species (halibut and non-halibut).

Protections are provided in part by seasonal closures. In particular, the former “Crab and Halibut Protection Zone” established in the BSAI FMP includes restriction areas in the subsequent RKC Bycatch Limitation Zone 1 and additional area included in the Nearshore Bristol Bay Trawl Closure.

Areas closed to the use of trawl gear year-round in the Alaska Region.



Annual Process for Apportionment and Seasonal Allocation of [Halibut] PSC. Apportionments of PSC limits to target fishery categories established in Section 3.6.2.3.1 and seasonal allocations of those apportionments may be determined annually by the Secretary of Commerce, after consultation with the Council, using the following procedure:

1. Prior to the October Council meeting. The Plan Team will provide the Council the best available information on estimated prohibited species bycatch and mortality rates in the target groundfish fisheries, and estimates of seasonal and annual bycatch rates and amounts.
2. October Council meeting. While recommending proposed groundfish harvest levels under Section 3.2.2, the Council will also review the need to control the bycatch of prohibited species and will recommend appropriate apportionments of PSC limits to fishery categories as bycatch allowances. Fishery bycatch allowances are intended to optimize total groundfish harvest under established PSC limits, taking into consideration the anticipated amounts of incidental catch of prohibited species in each fishery category. The Council may recommend exempting specified non-trawl fishery categories from the non-trawl halibut bycatch mortality limit restrictions after considering the same factors (1) through (8) set forth under Section 3.6.2.1.4. The Council will also review the need for seasonal apportionments of fishery bycatch allowances.

The Council will consider the best available information when recommending fishery apportionments of PSC limits and seasonal allocation of those apportionments. Types of information that the Council will consider relevant to seasonal allocation of fishery bycatch quotas include:

- a. seasonal distribution of prohibited species;
 - b. seasonal distribution of target groundfish species relative to prohibited species distribution;
 - c. expected prohibited species bycatch needs on a seasonal basis relevant to changes in prohibited species biomass and expected catches of target groundfish species;
 - d. expected bycatch rates on a seasonal basis;
 - e. expected changes in directed groundfish fishing seasons;
 - f. expected start of fishing effort; and
 - g. economic effects of establishing seasonal halibut allocations on segments of the target groundfish industry.
3. As soon as practicable after the Council's October meeting, the Secretary will publish the Council's recommendations as a notice in the *Federal Register*. Information on which the recommendations are based will also be published in the *Federal Register* or otherwise made available by the Council. Public comments will be invited by means specified in regulations implementing the FMP.
 4. Prior to the December Council meeting. The Plan Team will prepare for the Council a final SAFE report under Section 3.2.3.1.2 which provides the best available information on estimated prohibited species bycatch rates in the target groundfish fisheries, recommendations for halibut PSC limits and apportionments thereof among the target fisheries and gear types, and also may include an economic analysis of effects of the apportionments.
 5. December Council meeting. While recommending final groundfish harvest levels, the Council reviews public comments, takes public testimony, and makes final decisions on apportionments of PSC limits among fisheries and seasons, using the factors (a) through (g) set forth under (2) above. The Council also makes final decisions on the exemption of any non-trawl fishery category from halibut bycatch mortality restrictions using the factors (1) through (8) set forth under Section 3.6.2.1.4.
 6. As soon as practicable after the Council's December meeting, the Secretary will publish the Council's final decisions as a notice in the *Federal Register*. Information on which the final recommendations are based will also be published in the *Federal Register* or otherwise made available by the Council.

Management Objectives for the BSAI and GOA Groundfish FMPS as established through the Programmatic SEIS.

	Prevent Overfishing	Effect on halibut bycatch	Comments
1	Adopt conservative harvest levels for multi-species and single species fisheries and specify optimum yield.	Minimal	All of these objectives reference actions that may be taken to prevent overfishing of species “in the fishery” as defined in the FMPS. Halibut and other PSC species are defined in the FMPS as “ecosystem components” and, thus, are not the focus of these objectives.
2	Continue to use the existing optimum yield cap for the [BSAI and GOA] groundfish fisheries.	Minimal	
3	Provide for adaptive management by continuing to specify optimum yield as a range.	Minimal	
4	Provide for periodic reviews of the adequacy of F_{40} and adopt improvements, as appropriate.	Minimal	
5	Continue to improve the management of species through species categories.	Minimal	
	Promote Sustainable Fisheries and Communities	Effect on halibut bycatch	Comments
6	Promote conservation while providing for optimum yield in terms of the greatest overall benefit to the nation with particular reference to food production, and sustainable opportunities for recreational, subsistence, and commercial fishing participants and fishing communities.	Minimal	
7	Promote management measures that, while meeting conservation objectives, are also designed to avoid significant disruption of existing social and economic structures.	Indirect	Objective 7 connects indirectly to halibut bycatch inasmuch as they highlight that the Council desires to take action through the groundfish FMPS in consideration of the needs and concerns of communities. Consideration of the range of community needs is part of the rationale for developing a halibut framework (See objective 32 below).

8	Promote fair and equitable allocation of identified available resources in a manner such that no particular sector, group or entity acquires an excessive share of the privileges.	Minimal	
9	Promote increased safety at sea.	Minimal	
	Preserve Food Web	Effect on halibut bycatch	Comments
10	Develop indices of ecosystem health as targets for management.	Indirect	Objectives 10 and 13 can be thought of as connecting indirectly to halibut bycatch in the sense that the condition of the halibut resource as well as that of other ecosystem components contributes to ecosystem health.
11	Improve the procedure to adjust acceptable biological catch levels as necessary to account for uncertainty and ecosystem factors.	Minimal	
12	Continue to protect the integrity of the food web through limits on harvest of forage species.	Minimal	
13	Incorporate ecosystem-based considerations into fishery management decisions, as appropriate.	Indirect	
	Manage Incidental Catch and Reduce Bycatch and Waste	Effect on halibut bycatch	Comments
14	Continue and improve current incidental catch and bycatch management program.	Direct	Objective 14 identifies the existence of a bycatch management program for the BSAI and GOA. Operationally, this consists of the suite of tools and measures in place to reduce and minimize bycatch in the regions. The objective also indicates a commitment to continual improvement of that suite of tools and measures.

15	Develop incentive programs for bycatch reduction including the development of mechanisms to facilitate the formation of bycatch pools, vessel bycatch allowances, or other bycatch incentive systems.	Direct	Objective 15 indicates that a primary tool in achieving objective 14 is the use of programs that incentivize fishery operations to reduce halibut bycatch and therefore harvest groundfish TACs before PSC limits are reached.
16	Encourage research programs to evaluate current population estimates for non-target species with a view to setting appropriate bycatch limits, as information becomes available.	Direct	Objective 16 reflects the need to continually improve the quality of information regarding the status of non-target stocks such as halibut in order to more appropriately define bycatch limits in the context of population status.
17	Continue program to reduce discards by developing management measures that encourage the use of gear and fishing techniques that reduce bycatch which includes economic discards.	Direct	Objective 17 is similar to, but more general than objective 15 in that it reflects intent to identify and implement through the groundfish FMPs practical measures that would reduce halibut bycatch.
18	Continue to manage incidental catch and bycatch through seasonal distribution of total allowable catch and geographical gear restrictions.	Direct	Objective 18 allows for time and area restrictions to reduce halibut bycatch.
19	Continue to account for bycatch mortality in total allowable catch accounting and improve the accuracy of mortality assessments for target, prohibited species catch, and non-commercial species.	Direct	Objective 19 prioritizes accurate halibut bycatch estimation and continual improvement of methods for generating bycatch estimates.
20	Control the bycatch of prohibited species through prohibited species catch limits or other appropriate measures.	Direct	Objective 20 identifies PSC limits as a tool for achieving halibut bycatch reduction.
21	Reduce waste to biologically and socially acceptable levels.	Direct	Objective 21 addresses the biological and social tolerances associated with discard mortality. Reduction of regulatory discards might be seen as fitting into this objective.

22	Continue to improve the retention of groundfish where practicable, through establishment of minimum groundfish retention standards (<i>Not in GOA FMP</i>)	Minimal	This prioritizes gear efficiency for target species, not halibut
	Avoid Impacts to Seabirds and Marine Mammals	Effect on halibut bycatch	Comments
23	Continue to cooperate with the U.S. Fish and Wildlife Service (USFWS) to protect ESA-listed species, and if appropriate and practicable, other seabird species.	Minimal	
24	Maintain or adjust current protection measures as appropriate to avoid jeopardy of extinction or adverse modification of critical habitat for ESA-listed Steller sea lions.	Minimal	
25	Encourage programs to review status of endangered or threatened marine mammal stocks and fishing interactions and develop fishery management measures as appropriate.	Minimal	
26	Continue to cooperate with NMFS and USFWS to protect ESA-listed marine mammal species,	Minimal	
	Reduce and Avoid Impacts to Habitat	Effect on halibut bycatch	
27	Review and evaluate efficacy of existing habitat protection measures for managed species.	Minimal	
28	Identify and designate essential fish habitat and habitat areas of particular concern pursuant to Magnuson-Stevens Act rules, and mitigate fishery impacts as necessary and practicable to continue the sustainability of managed species.	Minimal	

29	Develop a Marine Protected Area policy in coordination with national and state policies.	Minimal	
30	Encourage development of a research program to identify regional baseline habitat information and mapping, subject to funding and staff availability.	Minimal	
31	Develop goals, objectives and criteria to evaluate the efficacy and suitable design of marine protected areas and no-take marine reserves as tools to maintain abundance, diversity, and productivity. Implement marine protected areas if and where appropriate.	Minimal	
	Promote Equitable and Efficient Use of Fishery Resources	Effect on halibut bycatch	Comments
32	Provide economic and community stability to harvesting and processing sectors through fair allocation of fishery resources.	Direct	Relative to bycatch, there is allocation of halibut PSC among sectors. Overall, the Council specifies a total halibut PSC that is functionally an allocation between the halibut directed fishery and the halibut bycatch fisheries.
33	Maintain the license limitation program, modified as necessary, and further decrease excess fishing capacity and overcapitalization by eliminating latent licensees and extending programs such as community or rights-based management to some or all groundfish fisheries.	Minimal	
34	Provide for adaptive management by periodically evaluating the effectiveness of rationalization programs and the allocation of access rights based on performance.	Indirect	Objective 33 connects indirectly to halibut bycatch in that the effectiveness of rationalization programs can be measured in terms of the success of the program in achieving bycatch reduction goals.

35	Develop management measures that, when practicable, consider the efficient use of fishery resources taking into account the interest of harvesters, processors, and communities.	Minimal	
	Increase Alaska Native Consultation	Effect on halibut bycatch	Comments
36	Continue to incorporate local and traditional knowledge in fishery management.	Minimal	
37	Consider ways to enhance collection of local and traditional knowledge from communities, and incorporate such knowledge in fishery management where appropriate.	Minimal	
38	Increase Alaska Native participation and consultation in fishery management.	Minimal	
	Improve Data Quality, Monitoring and Enforcement	Effect on halibut bycatch	
39	Increase the utility of groundfish fishery observer data for the conservation and management of living marine resources.	Direct	Provides for the central data source on overall fleet catches of halibut for the purpose of in-season management as well as data for estimating halibut DMRs.
40	Develop funding mechanisms that achieve equitable costs to the industry for implementation of the North Pacific Groundfish Observer Program.	Minimal	
41	Improve community and regional economic impact costs and benefits through increased data reporting requirements.	Minimal	

42	Increase the quality of monitoring and enforcement data through improved technology.	Direct	Provides for improvement of data quality associated with monitoring and enforcing halibut bycatch incidence
43	Encourage a coordinated, long-term ecosystem monitoring program to collect baseline information and compile existing information from a variety of ongoing research initiatives, subject to funding and staff availability.	Minimal	
44	Cooperate with research institutions such as the North Pacific Research Board in identifying research needs to address pressing fishery issues.	Direct	Provides opportunity for highlighting research needs with regard to halibut bycatch
45	Promote enhanced enforceability.	Direct	Regulations and prohibitions regarding halibut retention are enforceable management measures
	Improve Data Quality, Monitoring and Enforcement	Effect on halibut bycatch	Comments
46	Continue to cooperate and coordinate management and enforcement programs with the Alaska Board of Fish, Alaska Department of Fish and Game, and Alaska Fish and Wildlife Protection, the U.S. Coast Guard, NMFS Enforcement, International Pacific Halibut Commission, Federal agencies, and other organizations to meet conservation requirements; promote economically healthy and sustainable fisheries and fishing communities; and maximize efficiencies in management and enforcement programs through continued consultation, coordination, and cooperation.	Direct	IPHC is specifically named. Flow of information between Council and other agencies appears to be an intended component of framework.

ATTACHMENT 2 Issues from February 2015 Joint Council/IPHC Meeting

Status report on 2/5/15 NPFMC/IPHC meeting issues for further consideration: Updated November 2015

Issue for further consideration	Action/Timelines	Primary Responsibility	Relative Priority
<p>1. The need to review and update DMRs for all fisheries, including development of a table which summarizes current DMRs, how the rates were derived for each fishery, and the level of ‘certainty’ (if possible) associated with each DMR.</p>	<p>Underway - IPHC staff/Gregg Williams under contract currently developing table per request. Will need to coordinate with Observer Program to promulgate potential changes.</p>	<p>IPHC (Council and NMFS follow up) – Plan Teams to review in Fall 2015</p>	
<p>2. Recognizing that the Commission has its own scientific review process, the Council expressed a desire for the Council’s SSC to review ongoing research by the IPHC under an NPRB grant, and for the SSC to review (when appropriate) the ongoing development of the Commission’s total mortality accounting approach (including the application of Spawning Potential Ratio (SPR) and associated management implications).</p>	<p>Ongoing – SSC (and Council) will have opportunity for review as updated documents become available.</p>	<p>IPHC – timelines are uncertain depending upon progress on specific aspects</p>	
<p>3. Both bodies recognize that there are potential benefits to abundance-based management of all removals from the halibut stock and supported continued investigation of this approach.</p>	<p>Council requested discussion paper on abundance-based limits – IPHC already working on updating their February 2015 paper, which is now scheduled for review at Council’s December 2015 meeting. This will serve as discussion paper and Council can provide direction and next steps in December.</p>	<p>IPHC (at least until December 2015 Council meeting)</p>	

Issue for further consideration	Action/Timelines	Primary Responsibility	Relative Priority
4. The need to further reconcile bycatch and wastage accounting and calculation between the IPHC and NMFS, and identify any implications for setting TCEY.	Ongoing - NMFS/IPHC staff met again in July 2015 to further define appropriate procedures for using NMFS data in IPHC process. Spatial resolution needed. IPHC annual data needs from Observer Program will first occur between Observer Program, NMFS AK Region, and IPHC staff.	IPHC/ NMFS/AkFin	
5. Further information on the IPHC ‘closed area’, including implications with regard to potential changes in that closed area (i.e., area allocations, access to the area, and associated changes to existing catch share plans).	If the closed area were to be eliminated or modified, there will be implications for Council management of IFQ fisheries and the Area 4CDE CSP, which would require Council examination. The IPHC has discussed but not moved forward with changing the closed area for directed halibut fishing. The Council has not initiated any action to consider closing this area to other gear groups.	N/A (unless IPHC decides to pursue elimination or modifications for directed halibut fishing).	
6. The need to address the ‘tendering’ issue in the GOA as it relates to application of observer coverage.	Council has initiated an amendment to address this issue, with initial review scheduled for February 2016. The Council has also initiated a discussion paper on 100% observer coverage in the GOA (for October 2015).	Council	
7. The need to further refine a common understanding of science and process, as well as a common vocabulary (for example, Blue Line vs ABC vs OFL?).	Ongoing – IPHC developing an expanded ‘glossary’; some information/clarification was included in the BSAI Halibut PSC analysis.	IPHC took lead, draft under internal review, will submit for December 2015 Council meeting	

Issue for further consideration	Action/Timelines	Primary Responsibility	Relative Priority
8. Recognition that, subject to stock conservation, it is a domestic choice of how to allocate available halibut in each country's waters.	No action required. However, see #11 which refers to determining the point at which allocation becomes conservation issue.	N/A	
9. A coordinated prioritization of research in areas of mutual concern.	Initial determination of priorities of mutual interest should be discussion between NMFS, IPHC, and Council staffs.	IPHC/NMFS And Council	
10. A recognition of the potential benefits of IBQ type management programs for effecting bycatch reductions.	No specific action required. Council to discuss various options for Gulf of Alaska management in October 2015.	Council	
11. A lack of understanding of migration of halibut makes it difficult to determine the extent to which bycatch is an allocation vs conservation issue, and determine the relative impacts across all management areas (and the desire to prioritize migration research).	Ongoing research by IPHC, spatial modelling, etc. relates to item #9. Key issue is recognition that halibut movement out of BSAI areas creates extended impacts of management actions in BSAI in those other areas.	IPHC	
12. The importance of the Council's BSAI bycatch decision (this year) relative to the Commission's decisions in 2016.	Council took actions in June 2015 to reduce halibut PSC caps in BSAI.	Council	
13. Potential Council review of its management objectives relative to the directed halibut fisheries.	Ongoing, Council can review indirectly through its annual programmatic review of goals and objectives, or possibly consider specific review (in conjunction with MSA mandated review of IFQ program?)	Council	

Issue for further consideration	Action/Timelines	Primary Responsibility	Relative Priority
14. Reconciliation of survey information for Area 4B relative to observations from fishermen.	Ongoing, through IPHC research, discussions with Area 4B fishermen, and targeted survey of Area 4B in 2016	IPHC	
15. Potential development of monitoring standards for all fisheries, including directed halibut fisheries.	Ongoing - Council/NMFS working on monitoring standards through groundfish/halibut observer program and EM. No specific plan to jointly develop such standards with IPHC.	Council/NMFS	
16. Recognition of the potential disparities between the fishery and management contexts when making comparisons to bycatch reductions in Area 2B and U.S. west coast fisheries (apples and oranges) relative to managing expectations.	No action required, but short discussion paper may provide useful context. Council received informative written testimony at its June 2015 meeting on this issue. Need to determine need/priority for additional analysis.	NMFS/Council	
17. Development of a more formal meeting schedule, or possible Joint Protocol, between the Council and the Commission.	Part of ongoing dialogue. Should be issue driven, rather than routine. Will assess in fall 2015 to determine need for next joint meeting.	shared	
18. Potential direction to staff and/or Plan Teams to effect the issues listed above.	See above.	N/A	

ATTACHMENT 3 List of Ongoing and Future AFSC/IPHC Research Related to Halibut

Ongoing AFSC Research related to Pacific Halibut

- *International Pacific Halibut Commission Data Exchange*: The AFSC contracts with the IPHC to collect and edit sablefish logbook data, use IPHC survey data in some AFSC stock assessments, provide the IPHC with data from the AFSC's annual longline survey, and regularly communicate with IPHC assessment scientists on methodology based on the similarity of the sablefish and halibut fisheries. The AFSC has worked with the IPHC to collect halibut food habits data since 1990; the IPHC has provided the AFSC with a research permit to collect 500-1000 stomachs annually during groundfish surveys, and the resulting data are used by both agencies. **Collaboration with IPHC**
- *Scientific Review and Support to the IPHC from AFSC Scientists*: The AFSC provides the Science Advisor to the Halibut Commission. The Advisor provides science research oversight and reviews all the documents submitted for publication by the Commission. The AFSC provides other scientific expertise to the Halibut Commission on a as need basis. Examples are observer sampling issues, surveys issues, advisor on the ad-hoc Scientific Review Board, and serving as an external member of the hiring committee to hire a new lead scientist for the IPHC. **Collaboration with IPHC**
- *Fish Ageing*: The AFSC is working with IPHC staff on developing a new bomb-radiocarbon reference chronology in the Bering Sea and evaluating halibut age determination bias. Historically collected otoliths from early IPHC longline surveys are being used, as well as and using bomb-radiocarbon assays to evaluate ageing bias of other species. **Collaboration with IPHC**
- *Halibut Discard Mortality Rates*: The AFSC is working with the trawl Industry to develop an EFP to test the efficacy of on-deck sorting and discard of halibut in real time to decrease time out-of-water reduce discard mortality rates. A camera chute system and flow scale will be used to image, count, length and/or weigh each individual fish prior to discard with information transmitted in real time.
- *Improving Halibut Estimates*: The AFSC is conducting electronic monitoring (EM) with the NPFMC EM work group and the IPHC to evaluate the efficacy of EM systems to deliver scientific data that can be used to estimate halibut and groundfish discard in the small-vessel fixed gear IFQ fleet. **Collaboration with IPHC**
- *Halibut visual impairment*: The AFSC is currently using electro-physiological and behavioral techniques to study recovery from light-induced visual impairment of Pacific halibut.
- *Socioeconomics of quota leasing market*: Under the Halibut Catch Sharing Plan (CSP) that formalizes the process of allocating catch between the commercial and charter sectors, there is now an allowance for leasing commercial halibut quota by eligible charter businesses to relax harvest restrictions for their angler clients. A survey developed by the AFSC will be fielded in 2015, collecting data from the eligible participants in this market to determine their attitudes towards, and behavior in, the lease market and attitudes and preferences towards alternative programs.
- *Socioeconomics of charter boat fisheries*: The AFSC is conducting an ongoing survey of anglers who utilize the for-hire charter boat recreational fishing sector in Alaska that is being subjected to new bag/possession and halibut size limits. The goal is to provide insights into how economic values for charter boat fishing trips are affected by these regulations.
- *Impacts of active participation measures*: The AFSC is assessing the impacts of active participation measures in the Alaskan halibut and sablefish individual fishing quota (IFQ) program, including a prohibition on IFQ leasing, limitations on the acquisition of quota shares by non-individual entities (corporations, partnerships, etc.), and restrictions on the use of hired skippers.
- *Targeting behavior*: A study is underway to examine how vessels in the Amendment 80 (A80) fishery develop different targeting strategies to attempt to maximize revenue from target species while not exceeding halibut prohibited species catch (PSC) limits. This modeling work is a pilot project that will contribute to the spatial economics toolbox for fisheries (FishSET).

- *Efficacy of Halibut Excluders*: The AFSC is currently working with the pollock fleet in the Bering Sea to examine the efficacy of a new halibut excluder design made by Greenline Fishing Gear.
- *Flatfish Settlement Success*: An NPRB project predicting settlement success of two slope-spawning flatfish (halibut and Greenland turbot) in the eastern Bering Sea is underway. Collaboration with Oregon State University.
- *Bioenergetics and Ecosystem Modeling*: An NPRB project is underway to study fishery, climate, and ecological effects on halibut Size-at-age. Including diet analyses and bioenergetics modeling. ***IPHC collaboration.***
- *Fishery Technical Interactions*: The AFSC is developing a management strategy evaluation with a multispecies groundfish fishery technical interactions model for the Bering Sea that includes halibut bycatch as a constraint in determining Annual Catch Limits for groundfish.
- *Spatial Connectivity*: The AFSC is studying the connectivity between spawning and nursery areas of halibut over the EBS slope and shelf.
- *Larval Transport*: The AFSC is investigating climate-mediated oceanographic variability of currents modulating transport of halibut larvae/juveniles over the Bering Sea shelf. ***IPHC collaboration.***
- *Settlement and Recruitment*: The AFSC is studying factors influencing settling and age-0 recruitment success of halibut in the Bering Sea.

Previous AFSC Research Related to Pacific Halibut

- *Halibut excluder development*: The AFSC, IPHC, and industry developed video systems to observe fish (particularly halibut) behavior in trawls, starting in 1990. The AFSC documented behavior of halibut and target species encountering conventional and modified trawls, demonstrating differences both ahead of and within the net. Halibut excluders were developed through industry collaboration and are routinely used and improved in many trawl fisheries. ***IPHC collaboration.***
- *On-deck measurements*: The AFSC cooperated with the Amendment 80 fleet to evaluate the efficacy of length-ing and imaging halibut on the deck of a factory trawler using a camera chute system.
- *Visual impairment of halibut*: The AFSC conducted a laboratory study of halibut recovery time after light-induced visual impairment, showing that bright light (such as on the deck of a boat on a sunny day) can impair halibut vision, potentially influencing survival of discards.
- *Sport Fishing Economics*: AFSC surveyed Alaska saltwater anglers in 2007 and 2012 and estimated (1) demand for and economic value of saltwater sport fishing trips for halibut, salmon, and other primary sport fish species, (2) the value of charter boat fishing trips targeting halibut under alternative harvest restrictions for halibut (e.g., bag/possession and size limits). Economic impacts associated with changes to angler harvest restrictions were estimated.
- *Economic Impacts of IFQs*: The AFSC and UC Davis researched the economic efficiency impacts resulting from features of the Alaskan halibut and sablefish individual fishing quota (IFQ) program, such as blocking and vessel class restrictions on quota share.
- *Charter Boat Economics*: AFSC conducted surveys of Alaska charter boat businesses to study the economics of the guided sport sector. Collected costs, earnings, and employment information were collected for the 2011-2013 fishing seasons. Population-level estimates for total costs, revenues, and employment were generated to provide information about the sector; firm-level modeling is expected to provide insights into how behavior may change under alternative management actions.
- *Catch share evaluation*: An extensive set of economic data tables on halibut was reported in the 2013 Economic SAFE. (Section 4, Tables 51-63); economic performance metrics for the halibut IFQ program were calculated and reported in the 2013 Economic SAFE (Section 7.2).

Future AFSC Research Related to Pacific Halibut (planned and/or pending funding availability):
Additional IPHC Collaboration Opportunities

- *The AFSC plans to maintain data exchange collaborations with the IPHC in future years.*
- *Survey Improvements:* Collaborative work with the IPHC comprised of an extended IPHC survey in the Bering Sea connected to the AFSC trawl survey with the goal of improved density of IPHC survey stations and improved estimates of halibut catchability by size/age classes in our trawl survey.
- *Efficacy of Halibut Excluders:* The AFSC plans to work cooperatively with the pollock fleet to study the efficacy of currently used halibut excluder devices by using underwater video cameras to monitor the escape hole in the excluder device and to count the fish escaping in the video. This work is expected to occur in late January to March 2015, during A season for pollock. (Submitted to AFSC Cooperative Research RFP)
- *Scientific Review and Support to the IPHC from AFSC Scientists:* The AFSC provides the Science Advisor to the Halibut Commission. The Advisor provides science research oversight and reviews all the documents submitted for publication by the Commission. The AFSC provides other scientific expertise to the Halibut Commission on a as need basis. Examples are observer sampling issues, surveys issues, stock assessments, impacts of halibut interactions with groundfish resources and the environment.
- *Fishery Technical Interactions and Spatial Modeling:* Multi-species, spatial, technical interaction management strategy evaluation (MSE) to study potential impacts of alternative halibut management strategies on groundfish fisheries in the GOA and BSAI. (Funding source not identified).
- *Spatio-Temporal Overlap of halibut and other groundfish:* Conduct a study using generalized additive models (GAMs) to evaluate spatio-temporal overlap of halibut and other groundfish species in the GOA and BSAI. This information could be used to evaluate whether “rolling hot-spot closures” may have the potential to reduce halibut bycatch in groundfish trawl fisheries. (This work can be accomplished by the AFSC through internal prioritization of tasking.)
- *Bioenergetics and Multispecies/Ecosystem Modeling:* Add halibut to an existing multispecies statistical model for the Bering Sea, to examine the effects of halibut (including bycatch specifically) in a multispecies fishery. (Funding source not identified).
- *Local Environmental Conditions and Halibut Bycatch Rates:* Evaluate relationships between environmental conditions and rates of halibut bycatch in the groundfish fisheries. Purchase and initiate the use of miniature data loggers to measure temperature and salinity at depth on longline and trawl groundfish fishing vessels operating in the Gulf of Alaska and Bering Sea and Aleutian Islands areas. (Submitted to AFSC Cooperative Research RFP).
- *Sport Fishery Socioeconomic Survey:* The AFSC plans to regularly conduct the survey of Alaska saltwater anglers to collect updated information on saltwater angler demand and economic values of fishing trips under current harvest restrictions. Funds have been requested to enable the survey to be conducted during 2016-2017. (Submitted to NMFS S/T)
- *Charter Sector Socioeconomic Survey:* The AFSC has received funding from the NMFS Office of Science and Technology to continue collecting costs, earnings, and employment information from the saltwater guided (charter) sector. The survey is expected to be fielded during 2016 and 2017 to

collect data for the 2015 and 2016 fishing seasons. These data will be used to evaluate the economic effects of the implementation of the CSP on the charter sector. (Funded by NMFS S/T)

- *Halibut Growth Hot-Spots in Alaska:* The AFSC will apply a recently developed bioenergetics model for Pacific Halibut (Holsman and Aydin in prep) to identify Pacific halibut growth hot-spots in AK. Survey-based diet and temperature data for the GOA, AI, and EBS ecosystems will be used. (Funding source not identified).
- *Modeling Alaska Flatfish Recruitment-Environment Linkages:* A two-year modeling effort with IPHC, UW, and UMass Dartmouth collaboration that has been submitted to the Fisheries and the Environment (FATE) program is the use of simulation testing to explore methods for incorporating recruitment-environment linkages into flatfish assessment models to evaluate methods of selecting among models, and to use the models developed to conduct forecasts of flatfish populations under future climate scenarios. (Submitted to FATE). ***IPHC Collaboration***
- *Ecopath Food Web Models:* The AFSC plans to conduct an impact analysis of changes in the multispecies groundfish fishery (using Ecopath food web models currently containing bycatch by fleet and gear). (Funding source not identified).
- *Genetic Population Structure of Halibut:* The AFSC proposes using a next-generation sequencing technique, Restriction site Associated DNA (RAD tags), to provide a genomic assessment of population structure of halibut. (submitted to FATE).
- *Halibut Stomach Analysis:* The AFSC plans to collect and analyze halibut stomachs (there is no set funding for this, as these stomachs have generally been a lower priority compared to our other key groundfish). (Funding source not identified).
- *Diet Analysis to Inform Trophic Models:* The AFSC would like to examine diets of larval Pacific halibut and other fish in the Bering Sea and Gulf of Alaska that can be used to refine trophic models of energy transfer in the most vulnerable stages of the population.
- *Economic Metrics for Halibut:* An extensive set of economic data tables and economic performance metrics for the halibut IFQ program will be reported in future Economic SAFEs.

ATTACHMENT 4 June 2015 SSC Minutes related to BSAI halibut PSC reduction

SSC Report June 2015

C-2 Bering Sea Halibut PSC

The SSC received a presentation of the revised draft EA/RIR/IRFA document for the proposed halibut PSC reduction action under consideration by the Council. Presentations were given by Diana Evans (NPFMC), Marcus Hartley (Northern Economics, Inc.), Mike Downs (AECOM), and Josh Keaton (NMFS AKR).

Public testimony was offered by Gerri Merrigan and Chad See (FLC), Arne Fuglvog (Iquique), John Gauvin (Alaska Seafood Cooperative), Jon Warrenchuk (Oceana), Mateo Paz-Soldan and Simion Swetzof (City of St. Paul), Bob Alverson (FVOA), Linda Behnken (ALFA), Paul Olson (The Boat Company), Peggy Parker (HANA), Heather McCarty (CBSFA), Jim Johnson (Glacier Fish), Karl Halflinger (Sea State), Mike Hyde (American Seafoods), Mark Fina (Alaska Seafood Co-op), Joel Hanson (self), Heather Brandon (World Wildlife Fund).

The SSC reviewed the initial draft of this analysis at its February 2015 meeting. While acknowledging the impressive compilation of empirical information describing the commercial activity of a diverse suite of participants in the BSAI groundfish and halibut fisheries, and the thorough characterization of the development of the BSAI halibut PSC management process, the SSC was concerned about several specific deficiencies. In this revised draft, the analysts have made a clear and (by in large) successful effort to address each of these specific concerns. Indeed, what the analysts have accomplished between the February and June meetings is very impressive.

The IMS simulation model at the heart of the RIR has been extended and enhanced in several respects. The SSC was concerned that the original model was not well documented, and it would benefit from a clearer description of the inherent assumptions underpinning the simulation. This has been largely achieved in the revised draft.

The revised simulation model has been less successful in meeting the challenge of identifying “behavioral” responses to proposed PSC reductions. The IMS model results have been usefully supplemented with an imaginative alternative examination of PSC encounter rates and spatio-temporal groundfish fishing activity (Appendix B), and consideration of the distribution across fishery-dependent communities, considering both groundfish dependence and commercial halibut dependence (Appendix C). We commend the analysts and authors.

The revised analysis, while vastly improved, continues to suffer from several shortcomings that limit its utility as a decision-making tool for the Council. The SSC noted that many of these shortcomings can be appropriately attributed to sources beyond the control of the analysts.

Several important elements required for a thorough analysis of the halibut PSC reduction issue (listed below) lack sufficient information and/or have a poor scientific understanding and are based on a few tenuous assumptions. **The SSC, therefore, recommends that the Council approach all portions of the analysis (the primary analysis and the associated appendices) with caution. At best, the analyses can indicate general trends and possibilities, but they cannot provide definitive estimates of likely**

impacts or responses. The SSC identified the following critical deficiencies in the analysis that are important to consider for interpretation of the conclusions:

- The founding assumption of the simulation model is that halibut PSC mortality cannot be reduced without sacrificing groundfish harvest. Indeed, the only behavior change “available” for fishermen to reduce halibut PSC is to stop fishing in a particular directed fishery for a particular month. SSC discussion and public comment identified that this does not represent a realistic characterization of change in fishing behavior, and this assumption should be more clearly stated in the analysis. Moreover, Appendix B highlights many other behaviors that fishermen are currently using to reduce PSC rates. Thus, the results from the simulation model likely do not reflect realistic behavioral changes by the industry in response to the contemplated halibut PSC rate reductions.
- Halibut biomass is assumed to stay constant over the 10-year period considered in the simulation model, while PSC mortality is assumed to be the same as those incurred between 2008 and 2014. However, the IPHC reports that halibut size- and weight-at-age have been declining since the late 1970s, and this is likely to affect the size- and age-composition of PSC and directed fishing mortality in future years. This has alternative-specific impacts on: 1) total and exploitable biomass; 2) the time required for small halibut “conserved” in the simulation to reach legal size; and 3) the size- and age-specific characteristics of the halibut stock (e.g., sexual maturity at size and migratory behavior). These dynamics are not accommodated in the simulation model, and as such, the estimated “PSC savings” are likely not reflective of current or future conditions as reported.
- Another critical assumption in the IMS model is that one pound of U26 PSC mortality results in a one pound loss in the directed fisheries yield. The analysis conducted by the IPHC that identified the size at which there is a 1:1 correspondence between PSC and lost yield to the directed fishery is conditional on a number of dynamic variables, including: natural mortality, all sources of fishing mortality, fisheries selectivity, size-at-age, spatial distribution, *inter alia*. For example, if size-at-age continues to decline, then losses to the directed fishery for each pound of PSC mortality would decrease. Therefore, further reductions in PSC caps would be required in order to accommodate the 1.285 million pound FCEY in area 4CDE. Conversely, if size-at-age were to increase, or PSC selectivity shifted towards larger halibut, reductions in the PSC caps may not be necessary to achieve the same 1.285 million directed fishery.
- Economic performance measures available to Council analysts are strictly limited to “gross” measures, which may not provide meaningful information about “net” performance. This becomes extremely critical when hypothetical “behavioral” changes are ascribed to PSC rate reductions. Gross performance estimates of operational responses to reduced PSC threshold changes, as presented in both the simulation and Appendix B models, and as reflected in the SSC’s questions during public testimony, may be naïve and, thus, misleading. A profit maximizing operator will use informed expectations of the “net” result of their response to an operational change (e.g., achieving reduced halibut PSC). We recognize that the cost data and information about

the strategic proprietary decisions fishermen may make are not readily available or amenable to staff analysis. However, they are crucial to anticipating realistic post-implementation effects.

- Species-specific wholesale and ex-vessel prices are critical elements for explaining industry behavior. Unfortunately, the price data that are compiled by NMFS and made available to the analysts are compressed and smoothed over time and species, effectively eliminating the usefulness of much of this crucial economic signal when modeling fishing behavior under the range of PSC threshold reductions in the simulation model.
- The analysis limits its evaluation of serious impact to directed halibut fisheries (principally in the BSAI) and groundfish fisheries. Some treatment of subsistence use of halibut has been added in this draft (Appendix C), but it remains insufficient and likely underestimates the potential impacts.
- The analysis uses the AFSC fishery involvement indices to do a quantitative assessment of halibut community dependence and engagement. This method only assesses the current level of direct involvement in halibut and other BSAI fisheries, based upon existing information. The analysis should also consider direct or indirect community impacts that may have already occurred due to changes in the status of the halibut resource. It likely underestimates the number of communities dependent on halibut and their levels of dependency because it neglects the unique histories and recent challenges of each. Further, the analysis assesses a level of vulnerability for each community; but again, these are likely underestimates because the indices do not consider the cultural and historical contexts of multi-generational fishing communities or their investments.
- Subsistence halibut harvest data are provided only through SHARCs. The author notes that “caution” should be used in their interpretation, because they show a bare minimum of subsistence halibut harvest for each community, but a more developed description of the low utility of the data are warranted. The analysis should frame these data in terms of SHARC permit return rates, which are drastically low, and explore the ADF&G Subsistence Division’s Community Subsistence Information System for current information from household surveys to show these deficiencies.
- The uneven treatment between sectors (e.g., income plurality only for halibut permit holders and demographics of employment only for trawl CPs) further confounds the ability to evaluate impacts. With respect to employment data, the analysis uses jobs as a measure of fishery engagement only for one Seattle-based sector, and projects a greater level of engagement based upon these numbers. The analysis should consider jobs provided by the directed fisheries, by CDQs, and by processors, and consider the types of jobs provided between sectors. Attributable fishing-based employment numbers as a measure of community engagement could be expressed on per capita basis for the community of interest, which could produce a different conclusion.

Based on the deficiencies outlined above, the SSC can discern scientific support for only the following general statements, around which the Council can frame a policy decision:

- Halibut is worth several times its nominal gross ex-vessel value in the directed fishery in foregone revenues to the groundfish fleet. The specific range reported is a factor of 7 to 15, but this is based on the aforementioned assumption that halibut PSC can only be reduced by not fishing during times when high PSC encounter rate fisheries were pursued historically. Thus, the reported range of foregone gross revenues likely provides an upper bound as harvesters can mitigate their foregone revenue by fishing in other fisheries, in cleaner areas, or changing gear deployment or fishing practices.
- The economic and cultural footprint of the directed halibut fishery is larger than that of the groundfish fishery in many small communities; the economic footprint of the groundfish fishery is larger in Seattle. However, the relative degree of dependence and involvement varies by community, and many small communities are heavily involved with fisheries that are impacted by halibut PSC. The current analysis does not allow a systematic quantification or detailed characterization of likely impacts on a community or regional level.

The SSC acknowledges that the underlying issue being addressed by this measure is pressing. However, within a highly dynamic environment, such as BSAI, any policy resolution will likely require adjustment and refinement over time. Moreover, the implications of declining size- and weight-at-age on the halibut total and exploitable biomass in the BSAI are not well understood, but are critical for identifying a long-term solution to the halibut PSC reduction effort. Since the present analysis uses a static set of data, employed in a static modeling framework, its probative value is short-term. Further, many of the questions posed during the SSC discussion may be far better addressed with existing methods on existing data; others require additional data or new methods. **Therefore, the SSC recommends the Council adopt a continuous or horizon-based programmatic evaluation for action performance** (e.g., a planned five-year review). The SSC recommends that the scientific work to support a review be initiated immediately, to identify critical data gaps. The review should better quantify the avoidance impacts to the groundfish fishery along the many margins of behavior actually observed to be used (a question about which any current reduction will allow far more insight) and a quantitative and narrative understanding of how the engagement, dependence, and vulnerability of communities are impacted by changes in these fisheries.

The SSC also makes the following important points for consideration for both present and future analyses for PSC reduction:

- The Council's objectives are not specified in well-defined, measurable/quantifiable thresholds (e.g., "reduce halibut PSC by X%" or "reduce halibut PSC until it costs \$Y in foregone gross revenue", rather than "reduce PSC... to the extent practicable.").
- There is phrasing in the main analysis (p. 28, p. 381) that "the analyst asserts" that a behavioral change has occurred. This is misleading as the analyst has simply adopted a procedure for removing records from a historical database and then recalculated groundfish and PSC totals from the remaining records. In other words, the supposed "behavioral change" is solely due to the assumptions of the model, as opposed to actual behavioral changes observed in the groundfish fisheries.

- Discussion in the 2015 Observer Report (included under the C-4 agenda item at this meeting) of observer intimidation and fouling of halibut PSC data has potentially important implications for the entire analysis of the halibut PSC agenda item. The SSC did not receive a report on Chapter 5 of the Observer Report and cannot fully assess the scope of the issues discussed there. The SSC merely notes that data integrity is essential and requests a presentation of Chapter 5 in the Observer Annual Report at a future meeting.
- Specific to Appendix C, limited time available, resource constraints, and no budgeted fieldwork severely restricted the ability of the analyst to explore potential impacts and benefits to BSAI communities. Within these limitations, the analysis attempts to cover a lot of ground using large, mostly publicly available datasets and, thus, aptly frames the appendix with a number of cautionary statements on the utility of the data. The SSC notes that the potential effects of this action warranted the initiation of a more in-depth analysis from the start.
- Appendix C makes generic references to the intangible elements of fishery engagement and attendant cultural considerations in coastal communities. These intangibles are too comprehensive to cover in this report, but it would benefit from a few examples that illustrate these in greater depth.