

MSAB Meeting Report, June 2013

MANAGEMENT STRATEGY ADVISORY BOARD MEETING REPORT

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Meeting Date: June 13-14, 2013

Location: International Pacific Halibut Commission Office, Seattle WA.

Summary

The first meeting of the Management Strategy Advisory Board was held on June 13-14, 2013 at the IPHC offices in Seattle Washington. A total of 11 of 16 board members (in person, or via conference line), 8 ex officio members, and 4 IPHC staff were present for both days of the meeting. The over-arching objectives for the meeting were to introduce the process of management strategy evaluation (MSE), how it would be developed at the IPHC, the role of the MSAB members and staff, and to initially define fisheries objectives and performance measures. These would aid in the development of a suitable operating model for evaluating current and alternative management procedures for the Pacific halibut fishery. During the course of the two-day meeting the issue of defining a process for specifying fisheries objectives came up several times. This is an evolving process but for this report, I use the term 'working objectives' to proceed with the development of an operating model for the MSE, recognizing that they may change through ongoing discussion. Working objectives for the halibut fishery are based on conserving spawning biomass conservation, maintaining fishing opportunity, maximizing yield, and limiting variation in annual catch by regulatory area.

This report first defines working objectives and working performance metrics based on the discussions held during the June meeting. These initial objectives are subject to my interpretation of the meeting discussion points – feedback on these working objectives and performance metrics is welcome. Following is a meeting narrative highlighting some of the important points from presentations and trying to capture the salient points from the perspectives given by the Commissioners, representatives from the processors, and representatives from the commercial, sport, and tribal–First Nations fisheries.

Two appendixes are attached with (1) list of participants, and (2) meeting objectives and agenda.

Draft fisheries objectives

The following list is a set of draft working objectives based on MSAB discussions in the June 2013 meeting. They are preliminary and not considered to be exclusive. Rather they will assist the staff in developing the features of the operating model that will be required to evaluate the management procedures against the current objectives. The draft list is ordered from a suggested highest priority (rank) to lowest priority. Each of the objectives should have a specified goal, the time horizon in which to achieve that goal, and the desired probability of achieving the goal. For example, the first objective has a desired goal of maintaining the spawning biomass above the 20% of the unfished biomass. We wish to achieve this goal each year, and the desired probability of achieving this goal is 0.95. These objectives are draft objectives, and have not been approved by the Management Strategy Advisory Board at this time.

Working fisheries objectives:

- 1) Maintain a minimum of number of mature female halibut coast-wide (e.g., one million) in each year with a probability of 0.99.
- 2) Maintain a minimum spawning stock biomass of 20% of the unfished biomass in each year with a probability of 0.95 (spawning biomass limit).
- 3) Maintain the spawning stock biomass above 30% of the unfished biomass in each year with a probability of 0.75 (spawning biomass threshold).
- 4) Maintain directed fishing opportunity each year, conditional on satisfying objectives 1 and 2, with a probability of 0.95 (i.e., cannot afford to close the directed fishery for a single year).
- 5) Maximize yield in each regulatory area each year without exceeding the target harvest rate in a given area 50% of the time.
- 6) Limit annual changes in TAC, coastwide and/or by Regulatory Area, to less than 15% per year, conditional on satisfying objectives 1 and 2.
- 7) Maintain median catch within $\pm 10\%$ of 1993-2012 average within five years of implementing the procedure.
- 8) Maintain average catch at $>70\%$ of historical 1993-2012 average, 90% of the time.
- 9) Reduce bycatch mortality to within 5% of total catch limits/minimize bycatch to the extent practicable.

Again, the above working objectives will serve (at least temporarily) as guide for developing the operating model and defining performance measures for evaluating alternative management procedures in this process. It will almost certainly be necessary to revisit and refine these objectives as work proceeds on developing the MSE process here at the IPHC.

Draft Performance Metrics

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The various performance metrics used in evaluating alternative management procedures must be related to the fisheries objectives. The following working performance metrics should be sufficient to capture the nine previously defined fisheries objectives.

Working performance metrics:

- 1) Absolute number of sexually mature female halibut coast-wide in each simulation year. Related to objective 1.
- 2) Ratio of current spawning stock biomass relative to unfished spawning biomass (where unfished spawning biomass is based on the current size-at-age). Related to objectives 2 and 3.
- 3) Total catch and directed catch from each regulatory area in each year. Related to objectives 4, 5, 6, 7, and 8.
- 4) Legal biomass in each regulatory area each year. Related to objective 5.
- 5) Bycatch from each regulatory area in each year. Related to objective 9.

These performance metrics may also evolve over time during the model development process, or with changes in the fisheries objectives. What is important to note here is that these metrics evaluate management procedures, not environmental variables that are beyond the control of management. For example, the spawning biomass depletion could change due to changes in halibut size-at-age, or due to changes in fishing intensity. Therefore, it is important that the performance metrics capture aspects associated with the management procedures, not random variables associated with measurement or process errors.

Meeting Narrative:

Thursday, June 13, 2013

The meeting started at roughly 8:00 am with a round of introductions from each of the MSAB members. Each member was asked to provide their expectations for this meeting and this process. Expectations ranged from specific details about structural processes in the assessment model, to general concepts like understanding the natural evolution of stock assessment models, incorporating risk and developing a process and clarifying objectives.

Steve Martell gave the opening remarks of the meeting, specifically stating that Management Strategy Evaluation (MSE) is a process, not a product. The emphasis for this meeting is to learn more about what is involved in this process, how this fishery is unique from other fisheries that have engaged an MSE process (e.g., Canadian sablefish fishery). The Scientific Review Board (SRB) will be part of this process, conducting a scientific peer review of the products produced. The timeline for this

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project will be somewhat dictated by the process itself (i.e., the level of detail in the operating model needed to calculate the performance metrics will dictate the spatial and temporal resolution of the model). However, the goal is to have a well defined operating model conditioned on the historical halibut data that can be used to evaluate alternative procedures here at the IPHC within two years. Part of this goal is to educate and get feedback from the MSAB membership during development to ensure the project satisfies and maintains its objectives. The opening remarks concluded with a primer on MSE and a few prepared examples of how MSE can be used to evaluate alternative harvest control rules.

Bruce Leaman then gave a presentation on the previously proposed Conditional Constant Catch (CCC) harvest control rule that was evaluated by IPHC staff using a simulation modeling approach. The purpose of this presentation was to demonstrate how proposed changes to the harvest policy (or any part of the management procedure) can be evaluated; however, this is also an example of an incomplete MSE process in that clearly defined objectives were lacking and the simulation was limited by the lack of a feedback loop, which allowed assessment errors to potentially degrade the performance of the harvest policy in comparison to the status quo that was used at the time.

Following the CCC presentation, there was considerable discussion on how the tools at the IPHC have evolved over time and how the variation in the annual catch advice has increased. It was also noted, that now that the stock is at a low point, that the CCC harvest policy actually looks good. Dr. Low pointed out that because we are using output controls (i.e., TACs) to manage this fishery, there is considerable reliance on having good estimates of absolute biomass and trends in biomass. So what elements are important to consider when developing new tools to manage this fishery?

Mr. Rob Kronlund, from the Department of Fisheries and Oceans (DFO, PBS, Nanaimo) then gave a detailed presentation on the MSE experience for the Canadian sablefish fishery. Some of the highlights from this presentation include:

- The process of going through an MSE is as important as the outcome of the MSE.
- Goals and aspirations for the fishery need to be translated into measurable objectives.
- MSE is a way of doing business, a process, not a product.
- Communication and stakeholder buy-in is key to making the process work effectively.

Some of the questions that arose during the presentation/discussion were related to how the observed changes in quotas would have differed had there been no MSE? Or what is the cost of doing the MSE and is it cost-efficient? How does that cost compare to the cost of conflict?

Key lessons learned from the Canadian sablefish experience include:

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- Proceed slowly in the MSE process –trying to go too fast is counter-productive.
- Tackle the easy problems first –it makes the learning process easier and complexity can build from there.
- Clearly define all objectives –this is a necessary step so that appropriate performance metrics can be developed.
- Set deadlines –table the results thus far at each deadline (otherwise analysts tinker forever).
- Agree on how often MSE is reviewed and changed.

Following the sablefish presentation, there was a brief discussion and questions on the need for specifying objectives specifically for this fishery. Some of the questions ranged from improving information for stock assessment and gathering better data, to how the IPHC is interconnected with the Pacific and North Pacific Fisheries Management Councils and Department of Fisheries and Oceans. Some components of management procedures (e.g., sector allocation) are beyond the control of this group and will have to be considered at the Council level. One suggestion (Robyn Forrest) was to start with the objectives of the current management procedure. There was also some discussion surrounding the recent distrust of the assessment models, retrospective bias, continued tinkering of the assessment with little to no warnings about the potential implications of the changes to the outcome, and the new decision table in place of a catch recommendation from the IPHC staff.

Michele Culver recommended a presentation summarizing speaking points for MSAB members to use to report back to their constituents.

There was also discussion on the process for defining objectives and how this should proceed. (Note in the summary of this report, I've used the term working objectives for the purposes of developing an operating model). Specific discussions on objectives focused on two major axes: 1) conservation of spawning biomass, and 2) fisheries yields and whether we should be using MSY-based reference points, or economic-based reference points.

In short, many of the discussion points focused on current issues with the halibut stock and the halibut fishery (e.g., size at age, size limits, apportionment, etc.), generating numerous ideas that could be addressed in the MSE process.

Chris Sporer suggested some potential yield objectives that the fishery in area 2B would like to see. These were:

1. Attain a median catch (commercial and recreational) within 10% of the recent historical average (1993-2012) within 5 years of applying the new management procedure.

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2. Attain an average catch of greater than 70% of the recent historical average (1993-2012), 90% of the time.
3. Maintain a 10-year average annual variability in catch of less than 15%.

Other suggested objectives focused primarily on stock conservation (i.e., what should the limit and threshold reference points be, and what level of certainty would we like to achieve to ensure the stock does not fall below these reference points). Tom Marking also suggested bycatch limits be part of the objectives (e.g., reduce bycatch to less than 5% of the total catch). It was noted that bycatch limits are a Fisheries Management Council issue (Dr. Balsiger did not bring this issue up, but did comment that he believed this was an allocation issue and progress could be made through dialog with the Council). Dan Hull also commented on the idea of legitimizing bycatch allocation by the IPHC.

Friday June 14, 2013

Bruce Leaman gave a short presentation on the evolution of the current harvest policy that is in place. We currently harvest at 21.5% for eastern regulatory Areas (2A-3A) and 16.125% for Areas (3B-4CDE), based on historical closed-area assessments that have been integrated across low and high recruitment regimes based on positive and negative phases of the PDO, and assumptions about continued low size at age.

Following this presentation there was a brief discussion on what three things we should focus on (Sporer) with regards to objectives, metrics, and goals. Items that fell on this list included finding out if the current harvest policy is commensurate with conservation objectives (as they are presently defined), how should the TAC be allocated among regulatory areas and is this commensurate with conservation objectives, and lastly the economics – does it make economic sense to harvest at this rate given the current size at age and minimum size limits.

Jay Walker gave a short demo of using the Microsoft Office 365 SharePoint service for hosting a secure collaborative working site and posting material on public sites. (The presentations and other materials used for this meeting are posted on the MSAB SharePoint working site in Office 365.) Mike Larsen went over the use of Concur for travel reimbursement.

Commissioners Perspectives:

Paul Ryall: Three major themes for consideration: long-term sustainability, economic prosperity, and improved governance. Some of the working constraints are the precautionary principles and ecosystem considerations that Canada has subscribed to. The phase plot (stock status versus fishing mortality status) gives a historical

perspective of where we have been and where we are headed with respect to the decisions that have been made over time. There is a gap between traditional fisheries management and statute-based policy requirements. How do we translate the current objective into a measurable objective? Perhaps start with the objectives/approaches we already have and do an initial assessment (MSE) and evaluate the status quo procedures to a world with perfect information. Recognize that objectives will change during the process and articulate a timeline for development to make sure the objectives are achievable. Strong communication (timely and wide-reaching) will be very important in this process.

Jim Balsiger: Initially thought that the MSE process would focus on specific issues, but generally agrees with the broader objectives outlined and highlighted during the discussions. Halibut management is not broken per se, it has actually been very proactive and successful given the large changes in biology and retrospective bias issues with the stock assessment. From a performance metric, should we start using fish numbers, rather than biomass, as the currency for conservation thresholds and limits? Other factors to consider in the management procedures include size limits, targeted male fishery, or total retention in all sectors. A new paradigm on halibut bycatch is needed; there are strong social and economic implications at play.

Substantial discussions took place after Paul Ryall's and Jim Balsiger's presentations. Much of the discussion focused on technical questions, bycatch, and specific issues that could be tested in a MSE process (e.g., size limits with changing size at age, , whether removing one 100-lb female or 10 10-lb females has a bigger impact on reproductive potential). Changes in size limits or retention of trawl bycatch could have strong market implications for the price per pound; input from economists on this issue is critical in defining fisheries objectives and performance measures. Jim Lane noted that it would be important to calculate how big the potential "prize" is if we reduce bycatch.

Processors' perspectives:

Brad Mirau: Strongly noted that it is highly undesirable to close the directed fishery for even one year (potential to lose market share and could take years to re-enter the market). Would lowering size limits help with conservation via reduced wastage? Smaller fish could be sold, but at what cost with respect to current marketplace; does selling 3-pound fish impact the market prices for larger halibut? There may be no economic value to reducing the size limit but is there conservation value?

John Woodruff: A predictable range of harvest would be desirable for the processors. The notion here is to specify a floor (minimum catch) and ceiling (maximum catch) in the harvest control rule. Large inter-annual changes in the TAC are difficult to deal with. Supports the notion of developing a harvest policy that attempts to limit or reduce the inter-annual variation in TACs. There is a lot of distrust in the process right now, and this group needs to proceed in incremental steps so that everyone is included in the

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communication. The coast-wide assessment and area-based management still has many concerns.

Peggy Parker: Uncertainty has created less confidence and folks are apprehensive about going too fast and making too large a step (change in TAC). Need to proceed slowly and carefully. There are some major problems that need to be addressed: many males never reaching the minimum size limit, females producing fewer eggs (due to reduced size at age), uncertainty in population trends, crisis in confidence of the science from IPHC staff, decisions by Commissioners that include politics (also influence from the CB and PAG) about getting what is best for the stock versus your regulatory area. The use of caps for the TCEY, or FCEY, to specify a ceiling. People want more confidence in the process, and it might be worthwhile proceeding slowly. Targeting a stable range of yields.

Substantial discussion followed the presentations from the processors group. Many recurring issues were revisited based on these presentations (size at age, maternal effects). Maternal effects (older experienced females produce more recruits per unit biomass than younger inexperienced females) have been studied considerably in the literature, and perhaps this may make a good initial case study for MSE. The ideas put forward include an upper size limit to protect older experienced females. Scenarios comparing the current size limits with an upper size limit is a nice simple example of how alternative management procedures can be evaluated using MSE; the results are somewhat predictable, but may have some counterintuitive outcomes that will need explaining.

Sport & First Nations perspectives:

Tom Marking: Top priority for sport fisheries is access to opportunity to catch halibut. For the charter fishery what is important is time on the water is critical and this opportunity can be sustained by relatively few fish (e.g., 300 fish can maintain the northern California charter fleet). Research and expansion of the survey in CA is desirable.

Jim Lane: First Nations access to Pacific halibut is tied to the TAC (get a fixed % of the 2B apportionment). They don't necessarily want to follow market factors; a catch ceiling may not be desirable for non-commercial uses.

Scott Mazzone: Would like to have a better understanding of the population dynamics of Pacific halibut in Area 2A. Could a higher exploitation rate be realized in Area 2A without compromising the coast-wide stock? Coastal communities desire catch levels above 1 million pounds in Area 2A, anything less than 1 million pounds is damaging. Not concerned about large increases of greater than 15%, but a catch floor of 1 million pounds is desirable.

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Scott Meyer: The sport fishery in the US consists of two sectors, unguided anglers and charter/guided/outfitter operations. Each sector has different objectives: unguided anglers (who don't normally get involved in the management process) have a strong interest in preserving the 2-fish bag limit and historical May–Sept season length. There is a preference for size limit on only 1 of the two retained fish. Among the guided anglers, client days is the perceived currency not necessarily yield in pounds. The guided anglers' objectives are more directed towards regulation that affects access opportunity (bag limits, catch per angler day, cost of fishing). Is it difficult to include such regulatory changes in MSE?

Dan Hull and Rachel Baker both commented that the recreational guided sector prefer minimal changes to regulation from year to year, and that the North Pacific Fisheries Management Council did make explicit decisions to try and maintain historical season lengths for the guided sectors (key is to maintain access opportunity). Steve Martell also commented that the economic and social yields from sport and First Nations fisheries may be an explicit performance measure to take into consideration in the MSE process.

Following the presentations by Industry, Sport and First Nations, Paul Ryall suggested some desired probabilities of ensuring spawning biomass thresholds and limits were achieved. The suggestion was to maintain the current spawning biomass at or greater than B_{msy} with a high probability over two generations. Maintain the spawning biomass above the limit with 90-95% probability. Adam Keizer suggested that "targets" are different from thresholds in that a threshold is to be avoided, while a target is targeted. If B_{msy} is a "target" the probability of maintaining the stock above B_{msy} should be on the order of 50%, which suggest that the stock has equal probabilities of being above and below the target. Semantics are important here in defining these probabilities, and for these purposes we defined the 'working objective' as maintaining the spawning stock biomass above the threshold every year with a defined probability, not integrated over a specified time period.

Following discussions then shifted slightly to tactical implementations; for example, John Woodruff asked if there was an incremental advantage of having slot limits in the directed fishery; the answer depends on the post-release survival rate in the directed fisheries. This was also suggested earlier as a case study, or Management Procedure, that could be implemented immediately in the MSE framework. Apportionment was another tactical issue that was brought up. The current apportionment scheme is imbedded in the current harvest control rule and could be compared to a scenario with perfect information (i.e., the proportion of the total biomass in each regulatory area is known perfectly). This issue also adds a spatial component to the operating model for the MSE, increasing the dimensionality and complexity of understanding the problems of measurement error in the survey and how these are confounded with uncertainty in migration. Alternatives to survey-based apportionment could also include fixed regulatory allocations and the interplay of downstream effects could be fully vetted. Again this adds a great deal of complexity and it may be too early in the process to

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proceed down this avenue this early. Rob Kronlund said the process should proceed first at large spatial scales (coast-wide) to smaller spatial scales (regulatory area and sector allocation). Some simulation work in the area of migration and its interplay on achieving harvest rate objectives has already been done and was presented at earlier apportionment workshops. This last discussion highlighted the importance of having clearly specified objectives. For example, maximizing yield in the fishery can be done from a coast-wide perspective with varying harvest rates in each area, or from an area-based perspective with a common harvest rate in each area. The group indicated that interest was in maximizing yield from an area-based perspective.

Where to from here:

Paul Ryall asked if there would be a summary of this meeting in a few weeks. This summary will be important for discussion with constituents. The MSAB will likely meet again in October 2013 to follow up on the discussions of fisheries objectives and to learn more about the development in the operation model. It was agreed that in-person meetings are important. Initial feedback on this document is welcome, and some work can also be done in the interim via communication with constituents and via teleconference in response to this meeting report. MSAB members are encouraged to keep brainstorming with their constituents and keep perspective on things that can be managed within this group (e.g., bycatch is certainly a big issue but it extends to the council level and would involve a much more complicated process and operating model).

Progress is being made on the development of the operation model for the Pacific halibut fishery. Both Ian Stewart and Steve Martell are in the process of extending the coast-wide data sets back in time and spatially resolving to the regulatory area. A prototype MSE Operating model is up and running and some of the suggested Management Procedures could be discussed at the upcoming October meeting.

The meeting adjourned at roughly 3:30pm on Friday.