Ad-hoc Working Group ideas to Refine Goals, Objectives, and Performance Metrics for the IPHC Management Strategy Evaluation (MSE)

PREPARED BY: IPHC SECRETARIAT (A. HICKS & P. CARPI) AND THE MSAB AD HOC WORKING GROUP, 20 SEPTEMBER 2019

SUMMARY

An ad hoc working group meeting of a subset of Management Strategy Advisory Board (MSAB) members took place on 16 July 2019 from 10:00 – 15:00. In attendance at the IPHC offices were Dan Falvey, Jim Johnson, Chris Sporer, Peggy Parker, Allan Hicks, and Piera Carpi. Adam Keizer, Carey McGilliard, Jim Hasbrouck, Jim Lane, Michele Culver, and Steve Berukoff were present on the webinar.

The purpose of the ad hoc working meeting is given in paragraph 47 of IPHC-2019-MSAB013-R.

> *The MSAB AGREED that an ad-hoc working group meet prior to the MSAB014 to review and suggest revisions to the draft objectives and performance metrics related to distributing the TCEY provided in Appendix V. The ad-hoc working group will also refine objectives related to catch limit variability on a coastwide scale. The ad-hoc working group will consist of James Hasbrouck, Michele Culver, Scott Mazzone, Matt Damiano, Dan Falvey, Chris Sporer, Adam Keizer, Carey McGilliard, Peggy Parker, Jim Lane, and Glenn Merrill.*

Noting paragraph 46.

> *The MSAB AGREED to develop an additional performance metric related to catch stability to capture the non-averaged magnitude of change from the previous year. For example, the proportion of time that the inter-annual change is greater than 10%, 15%, and 30%.*

AGREEMENTS

The Working Group **AGREED** that minimizing bycatch mortality may be specified as a general objective under the goal to optimise directed fishing opportunities.

The Working Group **AGREED** to keep the primary objectives to a small number for simplicity.

The working group **AGREED** that MSAB members undertake the following tasks before MSAB014 in October 2019 and report their findings at MSAB014.

1. Discuss with stakeholders any specific fishery objectives they have for specific IPHC Regulatory Areas. For example (and purely hypothetical), this task may find that the recreational sector in IPHC Regulatory Area 3A desires a minimum catch limit of 2 Mlbs and are willing to accept 1 out of 10 years where the catch limit is less than that. Other objectives may also be defined for other sectors or other concepts (such as stability or size/age of fish). Note that these objectives do not have to be specifically stated as has been done at MSAB meetings, but will hopefully lead to defining measurable objectives to use as part of the MSE process.

The Working Group **AGREED** that the biological sustainability objectives are informed by science, hence IPHC Secretariat will provide possible options for biomass distribution tolerance, reviewed by the SRB, to be presented and discussed during MSAB014

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Some additional useful paragraphs from IPHC-2019-MSAB013-R are paragraphs 24, 25, 26, 41, 42, and 44.

The MSAB has currently defined four goals under which conservation and fishery objectives are defined. These are:

- biological sustainability,
- optimise directed fishing opportunities,
- minimise discard mortality, and
- minimise bycatch and bycatch mortality.

The discard mortality and bycatch mortality goals will not be addressed at this meeting, although the Working Group **AGREED** that minimizing bycatch mortality may be specified as a general objective under the goal to optimise directed fishing opportunities. Many objectives can be defined for each goal, but the Working Group **AGREED** to keep the primary objectives to a small number for simplicity.

The elements of defining objectives were reviewed. A general objective is a high-level statement reflecting a desired outcome, often referred to as a means objective (i.e., what one is ultimately trying to achieve), and is not defined specifically enough to evaluate alternatives. An example of a general objective is "conserve population structure." A measurable objective is an objective defined more specifically (often referred to as an ends objective) and contains three elements: a measurable outcome (a threshold or quantity that is desired), a time-frame (a period of years and how far into the future to evaluate), and a tolerance (the level of risk). If all three of these elements are defined, a performance metric can be calculated, which is a probability that uses the three elements to determine if the objective is met or not met. A statistic of interest can be calculated from the measurable outcome and the time-frame, and examined on its own across management procedures or with other statistics of interest to highlight trade-offs between objectives. Note that a performance metric can be reported as a statistic of interest by simply reporting the probability without determining if it is less than or greater than the tolerance. A general objective may have many measurable objectives defined within it.

A few concepts were pointed out during the meeting. First, the MSAB is defining objectives that will likely have trade-offs with other objectives, and may or may not be met by a management procedure. This means that there is no action in the management feedback loop when an objective is not met and defining objectives is not the same as defining management procedures. Defining a tolerance captures the level of risk that the MSAB is willing to accept of not meeting that objective. Second, it is useful for the coastwide and area objectives to be complementary and not redundant or in opposition. In some cases, defining area-specific objectives may make the coastwide objective redundant. For example, defining a minimum TCEY in each IPHC Regulatory Area likely makes a coastwide minimum TCEY redundant. Lastly, the directed fishery catch limit in an IPHC Regulatory Area may be zero for two reasons: 1) the management procedure sets a catch limit of zero (e.g., SB less than limit) and 2) there is no TCEY remaining after distribution to other fisheries.

PAST GUIDANCE ON OBJECTIVES RELATED TO DISTRIBUTING THE TCEY

The US Commissioner objectives related to distributing the TCEY proposed at IM093 are shown in Table 1 and were briefly discussed by the Working Group. These objectives were considered in the development and refinement of the current draft MSAB objectives. Three levels of hierarchy in objectives were defined from the objectives listed in Table 1.

1. Objectives reflecting biological sustainability and stability in catch limits (e.g., a result of natural variability and assessment uncertainty). Occurs at the coastwide or Region level.
2. Interaction objectives (the effect of one area on another). Occurs at the Biological Region, management zone, or IPHC Regulatory Area level.
3. Objectives within IPHC Regulatory Areas.

TIME-FRAMES

The time-frames defined by the MSAB were recalled:

- Short-term: 4-13 years
- Medium-term: 14-23 years
- Long-term: equilibrium (population stabilizes with consistent application)

PRIORITIZING OBJECTIVES

Prioritizing objectives was briefly discussed by the working group and four points were highlighted. First, objectives can be classified as primary objectives or additional objectives, where primary objectives are the main objectives used to evaluate the management procedures and report to the Commission. Additional objectives are secondary to the primary objectives and are used to supplement the evaluation of management procedures. Primary and additional objectives may have performance metrics associated with them or simply be reported as statistics of interest. Second, a few area-specific objectives should be chosen to complement the primary coastwide objectives. Third, conservation objectives should be prioritized over fishery objectives. Lastly, fishery objectives do not need to be prioritized against each other because it is often useful to examine trade-offs between them.

The working group discussed general (high-level) distribution objectives keeping in mind the currently defined general coastwide objectives. The discussion is captured in the sections below. Following this discussion, the working group **AGREED** that MSAB members undertake the following tasks before MSAB014 in October 2019 and report their findings at MSAB014.

Discuss with stakeholders any specific fishery objectives they have for specific IPHC Regulatory Areas. For example (and purely hypothetical), this task may find that the recreational sector in IPHC Regulatory Area 3A desires a minimum catch limit of 2 Mlbs and are willing to accept 1 out of 10 years where the catch limit is less than that. Other objectives may also be defined for other sectors or other concepts (such as stability or size/age of fish). Note that these objectives do not have to be specifically stated as has been done at MSAB meetings, but will hopefully lead to defining measurable objectives to use as part of the MSE process.

The Working Group meeting adjourned at 3:00 PM PDT on 17 July 2019 and this information paper was finalized on 21 August 2019.

Table 1. Pacific halibut TCEY distribution goals and objectives presented by U.S.A. Commissioners at IM093. Table reproduced from IPHC-2017-IM093-R. The column labelled MSAB011 shows the response of the MSAB at MSAB011 to each objective.

Goal	Objective	MSAB011
Biological sustainability: Preserving bio-complexity	1. Maintaining diversity in the population across IPHC Regulatory Areas.	Covered in objective 1.1A
	2. Prevent local depletion at IPHC Regulatory Area scale.	Covered in 2.1A
Fisheries Sustainability: Maintain access and serve consumer needs.	1. Maintain commercial, recreational and subsistence fishing opportunities in each IPHC Regulatory Area.	Covered
	2. Maintain processing opportunities in each IPHC Regulatory Area.	Dropped
Fisheries Sustainability: Maximize yield by regulatory area	1. Distribution is responsive to IPHC Regulatory Area abundance trends and stock characteristics (ex. Fishery WPUE, age structure, size at age etc.).	Guide development of management procedures
	2. Distribution is responsive to management precision in each IPHC Regulatory Area.	Covered in development of objective 2.2A
	3. Minimize impact on downstream migration areas.	Discussed as "interaction objectives"
	4. Minimize discard mortality and bycatch.	Covered by Goals
Fisheries Sustainability: Minimize variability,	1. Limit annual TCEY variability due to stock distribution in both time and scale.	Covered
	2. Avoid zero sum distribution policy.	Guide development of management procedures

APPENDIX I: Discussion and tables of general objectives

1.1. BIOLOGICAL SUSTAINABILITY

There is one coastwide objective and one region-specific (Biological Regions) objective for biological sustainability. The region-specific objective is to conserve spatial population structure, which means to maintain some level of spawning biomass across the entire stock area. It is not certain how important the spawning biomass in each Biological Region is to the overall sustainability of the stock, especially as environmental conditions change, therefore some level of spawning biomass should be maintained in all Biological Regions. Section 3.3.1 of IPHC-2018-MSAB012-08 discusses the concept of conserving spatial population structure in more detail.

The coastwide and Region objectives are complementary because the coastwide objective is related to an absolute amount of biomass and the region-specific objective defines a minimum proportion of spawning biomass in each Biological Region. It may be possible to specify ratios of spawning biomass between Biological Regions instead of proportions, but more thought is needed on that concept. The sum of the minimum proportions across the four Biological Regions should sum to a value less than one to allow flexibility to exceed the minimum. The tolerance can be region-specific as well, which allows for some prioritization between regions (i.e., a smaller tolerance relative to other Biological Regions gives it higher priority).

The Working Group **AGREED** that the biological sustainability objectives are informed by science, hence IPHC Secretariat will provide possible options for biomass distribution tolerance, reviewed by the SRB, to be presented and discussed during MSAB014.

Coastwide

GENERAL OBJECTIVE	MEASURABLE OBJECTIVE	MEASURABLE OUTCOME	TIME-FRAME	TOLERANCE	PERFORMANCE METRIC
1.1. KEEP SPAWNING BIOMASS ABOVE A LIMIT TO AVOID CRITICAL STOCK SIZES ~~Biomass Limit~~	Maintain a ~~minimum~~ female spawning stock biomass above a biomass limit reference point at least 95% of the time	SB < Spawning Biomass Limit (SB_{Lim}) SB_{Lim}=20% unfished spawning biomass	Long-term	0.05	$P(SB < SB_{Lim})$

Specific to Biological Region

GENERAL OBJECTIVE	MEASURABLE OBJECTIVE	MEASURABLE OUTCOME	TIME-FRAME	TOLERANCE	PERFORMANCE METRIC
1.1A CONSERVE SPATIAL POPULATION STRUCTURE	Maintain a defined minimum proportion of spawning biomass in each Biological Region	$p_{SB,R} < p_{SB,R,min}$	~~Med-term~~ Long-term		$P(p_{SB,R} < p_{SB,R,min})$
	Proportion of Pacific halibut spawning biomass in each Biological Region	Proportion of ~~O26~~ Pacific halibut spawning biomass in each Biological Region	Short-term Med-term Long-term	STATISTIC OF INTEREST	$\frac{SB_A}{SB}$

2.2 LIMIT CATCH VARIABILITY

The working group discussed two potential quantities to use for the measurable objective stated as "limit annual changes in the TCEY" (coastwide or by IPHC Regulatory Area). One quantity is the Average Annual Variability (AAV) which has been used in past IPHC MSE results. A different quantity is to simply use the percent annual change in TCEY from one year to the next (AC). The AAV is calculated by determining the average change in the TCEY over a ten-year period and the measurable outcome has been defined with a threshold of 15%. However, this implies that the change in TCEY from any given year to the next may be much higher or much lower than 15%. On the other hand, the AC is calculated as the change from one year to the next, and will naturally be more restrictive than the AAV with a same threshold. The working group determined that the objective is better defined using AC because stakeholders are likely interested in actual annual changes rather than an average of the annual percent change over time. The AAV will still be reported as an additional objective.

The coastwide objective was defined recognizing that a large portion of the annual variability is a result of assessment error (e.g., estimation error in incoming recruitment and absolute abundance). Given that the assessment is carried out yearly, the working group **PROPOSED** to maintain the coastwide AC at a level of 15% or less as a primary objective with a tolerance level of 0.25. Coastwide MSE results have shown that incorporating a constraint in the management procedure may be necessary to meet this objective, and that this constraint does not necessarily need to be defined as limiting the annual change in the TCEY to 15% (e.g., a slow-up, fast-down approach), which is why the coastwide objective is retained.

The working group **PROPOSED** that the same objective be defined for IPHC Regulatory Areas as well. This objective would capture the objective for stability in stakeholder's area of interest as well as recognize that there is uncertainty in the distribution procedure that will likely result in variability in IPHC Regulatory Area catch limits. The working group discussed the potential for redundancy when having the same objectives at a coastwide and IPHC regulatory area and it was noted that, even though this could be the case, the two will address the two different issues described above. For this reason, the working group decided to carry both forward for the time being, and to evaluate redundancy when results are available.

These objectives may also guide the development of management procedures, as was done when implementing constraints in the recent coastwide MSE. Constraints, or something similar to reduce the variability in catch, can be applied on a coastwide scale and/or an IPHC Regulatory Area scale. The working group noted that the scale at which this portion of the management procedure is applied may change the results, which will be a part of the evaluation.

This objective does not necessarily need to be prioritized ahead of yield, and it will be useful to examine trade-offs between variability and yield.

Coastwide

GENERAL OBJECTIVE	MEASURABLE OBJECTIVE	MEASURABLE OUTCOME	TIME-FRAME	TOLERANCE	PERFORMANCE METRIC
2.2. LIMIT CATCH VARIABILITY	Limit annual changes in the coastwide TCEY	AC > 15% in any year ~~Average Annual Variability (*AAV*) > 15%~~	Short-term	0.25	$P\left(\frac{TCEY_{y+1} - TCEY_y}{TCEY_y} > 15\%\right)$
		AAV[1]	Long-term Short-term	STATISTIC OF INTEREST	
		Maximum AC[2]	Long-term Short-term	STATISTIC OF INTEREST	

Specific to IPHC Regulatory Area

GENERAL OBJECTIVE	MEASURABLE OBJECTIVE	MEASURABLE OUTCOME	TIME-FRAME	TOLERANCE	PERFORMANCE METRIC
2.2A LIMIT CATCH VARIABILITY	Limit annual changes in the TCEY for each Regulatory Area	Average Annual Variability by Regulatory Area (AAV_A) ~~> 15%~~	Long-term Short-term	STATISTIC OF INTEREST~~0.25~~	~~*P*(*AAV* > 15%)~~
		Maximum AC by Regulatory Area (AC_A) ~~AAVA~~	Long-term Short-term	STATISTIC OF INTEREST	Maximum AC ~~AAV and variability~~
		AC_A > 15% in any year	Long-term Short-term	~~STATISTIC OF INTEREST~~0.25	$P\left(\frac{TCEY_{y+1,A} - TCEY_{y.A}}{TCEY_{y,A}} > 15\%\right)$

[1] AAV (Average Annual Variability) is the average percent change in the mortality limit over a ten-year period. In some years the annual change in the mortality limit will be greater than the average.

[2] AC (Annual Change) is the percent change in the mortality limit for each year of the ten-year period and can be used to calculate the maximum annual change in the mortality limit, the number of years that the AC exceeds a threshold, or many other statistics.

2.3 MAXIMIZE FISHERY YIELD

The current coastwide primary objective is to maximize the coastwide TCEY subject to meeting the primary coastwide conservation objective and the primary coastwide stability objective. Maximizing the coastwide TCEY would provide a maximum amount to distribute to the IPHC Regulatory Areas. However, the original fishery yield objective was to maintain the coastwide TCEY above a minimum level with some level of tolerance, but because a minimum level and tolerance were not defined, the maximum yield objective was used. The working group discussed the definition of yield and whether or not TCEY was appropriate for these objectives. They **NOTED** that yield is a general term and may be defined as needed, and that TCEY was appropriate at this time. They also **NOTED** that the TCEY is all mortality other than U26 bycatch, although this may change in the future to include U26 mortalities as recommended by the Commission (AM095–Rec.04 (para. 66)).

> *The Commission RECOMMENDED evaluating and redefining TCEY to include the U26 component of discard mortalities, including bycatch, as steps towards more comprehensive and responsible management of the resource, in coordination with the IPHC Secretariat and Contracting Parties. The intent is that each Contracting Party to the Treaty would be responsible for counting its U26 mortalities against its collective TCEY. This change would be intended to take effect for TCEYs established at the 2020 Annual Meeting.*

It may be more pertinent to define a minimum TCEY or a minimum percentage of the coastwide TCEY for each IPHC Regulatory Area since these are the management areas of interest to stakeholders. The working group **NOTED** that two IPHC Regulatory Areas have defined minimum TCEY levels for the next three years: IPHC Regulatory Area 2A appears to desire a TCEY of 1.65 Mlbs, and IPHC Regulatory Area 2B appears to desire a specific percentage of the coastwide TCEY (17.7% was calculated for 2019 catch limits based on a 70% weight given to the recent historical share of 20% and a 30% weight given to the proportion calculated in the current interim harvest strategy). The working group discussed the pros and cons of defining a minimum absolute amount vs a minimum percentage (Table 2), and whether these two concepts can be defined within the same measurable objective. It wasn't clear if one method was better than the other, and some stakeholders may prefer one over the other.

Table 2: Pros and cons of specifying fishery yield objectives for IPHC Regulatory Areas as a minimum absolute catch limit or a minimum percentage.

Absolute minimum		**Minimum percentage of coastwide TCEY**	
Pro	**Con**	**Pro**	**Con**
Easily defined	May not be achievable at low biomass	Scales with changing biomass	Catch limit not defined and may be small
Objective met when all areas meet minimum.	Only rational when minimum can be achieved in all areas	Implies rational sharing between IPHC Regulatory Areas	Objective may be met at unacceptable catch limits
	Summation across areas may be greater than what is achievable		Summation across areas may be greater than 100%.

The objective of defining a minimum absolute catch limit or percentage of the TCEY for each IPHC Regulatory Area addresses both purposes of an objective to satisfy within IPHC Regulatory Area objectives as well as the interaction between objectives. Examining trade-offs in meeting these objectives between areas will be as important as evaluating the within areas objectives.

A potential method to evaluate area-specific fishery yields and alleviate the difficulties of defining area-specific objectives is to define an objective to maximize the yield in each IPHC Regulatory Area. However, maximizing the yield in each IPHC Regulatory Area may not be an optimal solution that satisfies the individual objectives of each area, would not account for exogenous reasons to shift the distribution of fishing mortality (e.g., data uncertainty and differences in productivity), and may shift fishing mortality to areas that do not have the capacity to utilize that amount.

The working group **NOTED** that additional discussion is necessary at MSAB014 in October 2019 and that MSAB members should be prepared for that discussion (e.g., see tasks for MSAB members under agreements). Being aware of stakeholder views on yield objectives in their areas of interest would be helpful for that discussion. One method may be to consider the catch sharing plan in their area and work from yield objectives for individual sectors up to the TCEY for the area.

Yield objectives do not necessarily need to be prioritized over stability. It will be useful to examine trade-offs between variability and yield.

Coastwide

GENERAL OBJECTIVE	MEASURABLE OBJECTIVE	MEASURABLE OUTCOME	TIME-FRAME	TOLERANCE	PERFORMANCE METRIC
2.3. MAXIMIZE DIRECTED FISHING YIELD	*Maximize average TCEY coastwide*	*Median coastwide TCEY*	Short-term	*STATISTIC OF INTEREST*	*Median* $\overline{TCEY}$

Specific to IPHC Regulatory Area

GENERAL OBJECTIVE	MEASURABLE OBJECTIVE	MEASURABLE OUTCOME	TIME-FRAME	TOLERANCE	PERFORMANCE METRIC
2.3. MAXIMIZE DIRECTED FISHING YIELD	Maximize average TCEY by Regulatory Area	Median Reg Area TCEY	Long-term Short-term	STATISTIC OF INTEREST	Median $\overline{TCEY}$
	Maintain TCEY above a minimum level (absolute or percentage) by Regulatory Area OR Meet Reg Area reference level (absolute or percentage)	$TCEY_A < TCEY_{A,min}$ OR $\%TCEY_A < \%TCEY_{A,min}$	Long-term Short-term	?? ??	$P(TCEY < TCEY_{A,min})$ OR $P(\%TCEY < \%TCEY_{A,min})$
	Maximize high yield (TCEY) opportunities by Regulatory Area	$TCEY_A >$?? Mlbs	Long-term Short-term	STATISTIC OF INTEREST	$P(TCEY <?? \ Mlbs)$
	Present the range of TCEY by Regulatory Area that would be expected	Range of TCEY by Regulatory Area	Long-term Short-term	STATISTIC OF INTEREST	5th and 75th percentiles of TCEY
	Management Zones	To be discussed further at MSAB014			

2.4 MINIMIZE POTENTIAL OF A CATCH LIMIT EQUAL TO ZERO FOR THE DIRECTED FISHERY

General objective 2.4 was raised during the meeting but was not discussed by the working group. However, the SRB commented that the phrase "no catch limit" could be phrased better. Therefore, the IPHC Secretariat has phrased it as above.

Coastwide

GENERAL OBJECTIVE	MEASURABLE OBJECTIVE	MEASURABLE OUTCOME	TIME-FRAME	TOLERANCE	PERFORMANCE METRIC

Specific to IPHC Regulatory Area

GENERAL OBJECTIVE	MEASURABLE OBJECTIVE	MEASURABLE OUTCOME	TIME-FRAME	TOLERANCE	PERFORMANCE METRIC
2.4A MINIMIZE POTENTIAL OF ~~NO~~ A CATCH LIMIT EQUAL TO ZERO FOR DIRECTED FISHERY	Maintain catch limit above zero for the directed fishery in each Regulatory Area	$\text{DirectedYield}_A = 0$	Long-term Short-term	?? ??	$P(DirY_A = 0)$

2.1 MAINTAIN SPAWNING BIOMASS AROUND A LEVEL THAT OPTIMISES FISHING ACTIVITIES

General objective 2.1 was not discussed by the working group, except that an objective to consider may be one related to the amount of biomass that the fishery encounters (i.e., O26). The SRB noted in IPHC-2019-SRB014-R (paragraph 36) that objective 2.1A conflates the objective and the management procedure. These two concepts should be kept separate for evaluation, although a secondary objective that may be of interest is how often the management procedure keep the biomass on "the ramp." However, this should be reflected in the variability objective. It is reasonable to define an objective that is relative to a specific biomass (e.g., $B_{30\%}$) rather than an element of the management procedure. That biomass level may be informed by the range of possible biomasses associated with maximum sustainable yield (MSY).

Coastwide

GENERAL OBJECTIVE	MEASURABLE OBJECTIVE	MEASURABLE OUTCOME	TIME-FRAME	TOLERANCE	PERFORMANCE METRIC
*2.1 MAINTAIN SPAWNING BIOMASS AROUND A LEVEL THAT OPTIMISES FISHING ACTIVITIES	2.1A SPAWNING BIOMASS ~~TRIGGER~~THRESHOLD Maintain the female spawning biomass above a ~~trigger~~threshold reference point at least 80% of the time	SB< Spawning Biomass Threshold~~rigger~~ (SB_{Thres}) $SB_{Thres}=SB_{30\%}$ unfished spawning biomass	Long-term	0.20	$P(SB < SB_{Thres})$
	*2.1B SPAWNING BIOMASS TARGET Maintain the female spawning biomass above a biomass target reference point at least 50% of the time	SB<Spawning Biomass Target (SB_{Targ}) $SB_{Targ}=SB_{36\text{-}45\%}$ unfished spawning biomass	Long-term	0.50	$P(SB < SB_{Targ})$

* Still to be discussed and refined at MSAB014

Specific to IPHC Regulatory Area

GENERAL OBJECTIVE	MEASURABLE OBJECTIVE	MEASURABLE OUTCOME	TIME-FRAME	TOLERANCE	PERFORMANCE METRIC
2.1A MAINTAIN BIOMASS AROUND A TARGET THAT OPTIMISES FISHING ACTIVITIES	Maintain a proportion of O26 Pacific halibut in each area, ~~within the range observed by~~ estimated from the IPHC fishery-independent setline survey (FISS) data, greater than a threshold	$p_{B_{O26},A} > p_{B_{O26},A,min}$	Long-term Short-term		$P(\dots)$
	Proportion of O26 Pacific halibut biomass in each area	Proportion of O26 Pacific halibut biomass in each area	Long-term Short-term	STATISTIC OF INTEREST	$\frac{B_{O26,\,A}}{BO26}$