



Options for FISS mortality accounting in projections

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PURPOSE

To provide the Commission with a set of options and a discussion of those options in response to:

AM095–Rec.07 ([para. 72](#)) “*The Commission **RECOMMENDED** that the IPHC Secretariat develop options for accounting for Pacific halibut mortalities associated with the FISS and their other research projects in the definition of the coastwide TCEY.*”

BACKGROUND

Prior to 2014, the IPHC’s Report of Assessment and Research Activities did not routinely include a clear summary of all sources of mortality estimated to have occurred during the year. Similarly, the annual mortality tables (‘catch’ or ‘removals’ tables at the time) contained only the O26 mortality estimates used in the harvest strategy calculations (e.g. Webster and Stewart 2014). Beginning in 2015, mortality tables included all sizes and sources of Pacific halibut mortality (Stewart 2015; Stewart et al. 2015). Beginning with this change, the mortality associated with annual sampling by the IPHC’s Fishery Independent Setline Survey (FISS) was explicitly included in mortality summaries and projections as part of the commercial landings (i.e., see footnote to Table 3 in Stewart 2015).

Pacific halibut over 32 inches in length (O32) captured on the FISS are landed to offset the costs of conducting the FISS, accounted for via fish tickets in the same manner as commercial landings, and ultimately enter the market just as commercial Pacific halibut fishery landings do. Actual landings from the FISS may differ from summarized catch rates used for stock and assessment and other analyses (<https://www.iphc.int/data/iphc-secretariat-data>) due to Pacific halibut landed from ineffective stations, damaged Pacific halibut included in catch rates but not landed, and other factors. The size-and age- sex-structure of the FISS landings are similar to those from the commercial fishery; however, the FISS takes place only during the summer months (late-May through early September; [IPHC-2019-AM095-06](#)).

Despite the previous five years of reporting and including FISS mortality in all mortality and projection tables, it is not currently clear how FISS mortality is being used by managers when setting specific fishery limits and applying Catch Sharing Plans/Agreements (CSPs). To address this need for greater transparency, at the 95th Session of the IPHC Annual Meeting ([AM095](#)) in 2019, the Commission directed the Secretariat to provide more information on this topic:

AM095–Rec.07 ([para. 72](#)) “*The Commission **RECOMMENDED** that the IPHC Secretariat develop options for accounting for Pacific halibut mortalities associated with the FISS and their other research projects in the definition of the coastwide TCEY.*”

This document provides several options to clarify and improve accounting of FISS mortality for Commission consideration.

SIMILAR CASES

There are other landings (in addition to the FISS mortality) each year that are implicitly included in the projected annual mortality tables but may not be explicitly accounted for in the calculation of specific fishery limits and in the application of Catch Sharing Plans/Agreements (CSPs).

These include the Metlakatla fishery conducted in the Annette Islands reserve in Southeast Alaska, as well as overages and underages¹ from the previous year's commercial fishing in IPHC Regulatory Areas 2B-4CDE (<https://www.iphc.int/uploads/pdf/am/2019am/iphc-2019-am095-05.pdf>).

DESCRIPTION OF OPTIONS

Given that the FISS mortality is already included in mortality and projection tables, the options below represent avenues for more transparent accounting and no change to the treatment of all sources of mortality in the annual stock assessment and harvest strategy calculations.

For this initial discussion paper, three options are provided:

Option 1. The *status quo* (no change to current accounting):

Predicted commercial landings in the IPHC's current mortality projection tool include FISS mortality (<https://www.iphc.int/data/projection-tool>). This leaves the accounting for the mortality associated with the FISS to the managers implementing the applicable quota programs and CSPs. FISS landings have been relatively small in recent years ([Table 1](#)), and have represented an average of only 3% of the total fish ticket landings (FISS and commercial combined ([Table 2](#))). It does not appear that in recent year's managers have opted to set aside quota to offset FISS mortality, and the IPHC has not provided explicit projections of FISS landings. However, the magnitude of the actual mortality accruing to the TCEY compared to the adopted TCEY in recent years does not appear to be related to years of higher or lower FISS activity ([Table 3](#)). This may suggest that the current approach is not causing actual mortality (FISS and commercial combined) to exceed the adopted mortality limits, although in concept if all other sources were fully harvested this would be the case. The *status quo* approach does not require use of uncertain projections of FISS landings, but as this paper outlines, does not provide for transparent accounting.

TABLE 1. Recent FISS Pacific halibut landings (million net pounds). Note that FISS expansions began in 2014, so all rows in this table represent different FISS designs and numbers of stations.

Year	2A	2B	2C	3A	3B	4A	4B	4CDE	Total
2013	0.02	0.09	0.12	0.23	0.08	0.03	0.03	0.01	0.60
2014	0.02	0.11	0.15	0.28	0.10	0.07	0.03	0.01	0.77
2015	0.02	0.11	0.17	0.25	0.12	0.04	0.03	0.01	0.75
2016	0.02	0.09	0.12	0.27	0.11	0.03	0.03	0.02	0.68
2017	0.02	0.07	0.12	0.20	0.07	0.03	0.04	0.02	0.57
2018	0.02	0.14	0.20	0.30	0.07	0.03	0.03	0.02	0.83
6-year average	0.02	0.10	0.15	0.25	0.09	0.04	0.03	0.02	0.70

¹ The stock assessment is conducted using the best estimates of actual and not predicted mortality each year. Therefore, any overages or underages from the previous year are already included in the results of the annual assessment. Therefore, while overages and underages may be useful to track and distribute quota among participants, they should not change the total mortality relative to that projected.

TABLE 2. Recent directed commercial Pacific halibut landings (million net pounds).

Year	2A	2B	2C	3A	3B	4A	4B	4CDE	Total
2013	0.54	6.04	3.03	11.08	4.09	1.23	1.25	1.77	29.04
2014	0.53	5.88	3.42	7.66	2.92	0.91	1.12	1.26	23.70
2015	0.57	5.99	3.77	7.97	2.70	1.37	1.11	1.19	24.67
2016	0.65	6.14	4.00	7.57	2.72	1.38	1.11	1.48	25.05
2017	0.76	6.24	4.22	7.82	3.10	1.29	1.10	1.65	26.17
2018	0.71	5.47	3.61	7.49	2.50	1.25	1.07	1.41	23.50
6-year average	0.63	5.96	3.68	8.26	3.00	1.24	1.13	1.46	25.36

TABLE 3. Recent actual mortality accruing to the TCEY, not including U26 discard mortality in non-directed fisheries (bycatch), relative to adopted TCEYs (values greater than 100% indicate mortality in excess of the adopted TCEY).

Year	2A	2B	2C	3A	3B	4A	4B	4CDE	Total
2013	105%	99%	115%	100%	87%	75%	73%	117%	99%
2014	105%	101%	111%	110%	106%	98%	86%	127%	108%
2015	110%	101%	105%	107%	91%	94%	89%	80%	100%
2016	105%	98%	103%	102%	100%	96%	96%	96%	100%
2017	99%	99%	99%	101%	101%	90%	99%	90%	99%
2018	103%	101%	100%	103%	94%	87%	102%	93%	99%
6-year average	104%	100%	105%	104%	97%	90%	91%	101%	101%

Option 2. Enhanced accounting, no change to mortality projections:

This option would retain the current format of the mortality projection tool (i.e. combining commercial and FISS landings) but would add an additional reporting step associated with planned FISS sampling in the upcoming year. Specifically, projected FISS mortality based on design and station counts (which may be variable year-to-year as the FISS is optimized to best meet scientific objectives while addressing logistical, operational and financial needs; [IPHC-2019-SRB014-05](#)) would be provided as part of the annual meeting documentation and could be used by managers in setting quotas for the upcoming year and/or the application of CSPs as they see fit. This option would allow for greater flexibility, but less transparency in how each step of the quota program accounting is performed.

Option 3. Adding FISS to mortality projections:

This option would add an explicit row to the mortality projection tool that would include projected FISS landings for the upcoming year (as would be reported in Option 2). In order for this option to be implemented, each IPHC Regulatory Area with a CSP would need to specify whether the FISS mortality should be included in the FCEY (or not) such that all calculations can be updated accordingly. Option 3 would add some complexity to the current mortality table, and increase the differences in interpretation of each row among IPHC Regulatory Areas.

SUMMARY

This working paper should provide improved clarity regarding the treatment of FISS mortality in annual projections. Given the relatively small magnitude of FISS mortality in recent years (and likely in the near future), no change to the current approach is required. However, both Options

2 and 3 could provide more explicit information for predicting and accounting for mortality associated with the annual FISS sampling.

ADDENDUM

During 2019, initial discussion of these alternatives occurred among the IPHC Secretariat, Commissioners, and Contracting Party agencies. The Secretariat plans to proceed with Option 2 'Enhanced accounting' for 2020 projections as directed by the Commission informally at its Work Meeting 2019 (WM2019). This approach can be revisited, as needed, for future projections.

RECOMMENDATION/S

That the Commission:

- a) **NOTE** paper IPHC-2019-IM095-INF03 which provides a summary of options for FISS mortality accounting.
- b) ***If Option 2 is not sufficient, REQUEST*** a specific alternative that the Secretariat should use as the basis for reporting and the default mortality projection tool for the upcoming 96th Session of the IPHC Annual Meeting (AM096), or future meetings.

REFERENCES

- Stewart, I.J. 2015. Regulatory area harvest policy calculations and catch tables. IPHC Report of Assessment and Research Activities 2014. p. 195-212.
- Stewart, I.J., Leaman, B.M., and Martell, S.J.D. 2015. Accounting for and managing all Pacific halibut removals. IPHC Report of Assessment and Research Activities 2014. p. 221-266.
- Webster, R.A., and Stewart, I.J. 2014. Apportionment and regulatory area harvest calculations. IPHC Report of Assessment and Research Activities 2013. p. 197-216.