



Revision of the IPHC length-weight relationship

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PURPOSE

To present updated length-weight relationships for Pacific halibut by IPHC Regulatory Area with the goal of improving the accuracy of estimates of catch weight from all sources.

BACKGROUND

To monitor the Pacific halibut fisheries and model the population dynamics, the IPHC must be able to accurately and precisely estimate the fishing mortality in terms of the weight of fish removed. For many fisheries, fish can be easily weighed prior to any dressing (e.g., removal of the entrails, gills) taking place. However, for Pacific halibut dressing often occurs at sea. Further, due to their large size, it is frequently easier to measure the length of Pacific halibut than the weight. For these reasons, prediction of weight from measured length and various conversions among weights collected at different times relative to capture (at sea or 'fresh', vs. at the time of landing, which can be up to several days later) and for fish in different states (e.g., round, head-on but entrails removed) have been historically used to determine fishing mortality. As the directed commercial Pacific halibut fishery relied solely on sampling at the time of landing and sale for many decades, the standard weight measurement used for all analyses has been net weight, or the weight of a fresh fish with head and entrails removed. Historically, the accuracy of net weights relied on consistency in how the heads were cut, but since 2017 the definition of net weight represents an arbitrary choice of $0.75 \times$ round weight as IPHC Regulations require weights to be collected prior to removal of the heads ([IPHC 2017](#), para. 48).

Historical length-weight curve

The IPHC's standard length to net weight relationship was used in all Commission work to convert length to net weight of halibut until 2015, when individual weights were added to standard sampling of commercial landings. More recently, the IPHC's Fishery Independent Setline Survey (FISS) began collecting individual weights in 2017 and made such collections comprehensive in 2019. The relationship continues to be used in estimation of catch weight from recreational, non-directed discard mortality (bycatch) and subsistence components of the fishery, and is also used in some agency survey estimation.

The parameters of this historical relationship were estimated in 1926 based on a sample of 454 Pacific halibut collected off Masset in IPHC Regulatory Area 2B. Using 1989 data, Clark (1992) re-estimated the relationship's parameters and found good agreement with the earlier curve, and therefore the IPHC relationship was not revised at the time. While it was recognized that such a calculated relationship will not be consistently accurate when computing total or mean weights from small numbers of Pacific halibut, it was assumed that predictions should be accurate when data come from larger samples of fish (Clark 1992). However, when Courcelles (2012) estimated the relationship from data collected in 2011, she found significant differences between her estimated curve and that derived from the 1989 data, while noting that inference was limited to a relatively small part of Area 3A and to the time of the FISS. Reports from staff working on the FISS, along with other anecdotal reports, suggested that the historical length-net

weight relationship has been overestimating the weight of Pacific halibut on average in recent years.

Adjustments and conversion factors

Various adjustment and conversion factors have been used to account for Pacific halibut measured at different stages of processing following capture ([Table 1](#)), in order to convert measured weights of one type into the desired weight measure. The conversion multipliers in [Table 1](#) are for converting measured to net weight, but other conversions can be calculated from these if required. Net weight remains the standard measure for the accounting of mortality of Pacific halibut, however, since 2017 it is no longer a legal weight for catch reporting due to the high variability of head cuts - all landed catch must be weighed head-on, and converted to net weight using a multiplier from [Table 1](#).

Table 1. Definitions of types of weight measures used by the IPHC and multipliers used to convert to net weight.

Weight	Definition	Multiplier to convert to net weight	Notes on multipliers
Round ("fresh")	Head-on, not gutted, no ice and slime ¹ , no shrinkage ²	0.75	
Gross (vessel weight)	Head-on, gutted, with ice and slime, no shrinkage	0.8624	Assumes 10% head weight and 2% shrinkage, or 12% head, each with 2% ice and slime
Dressed (vessel weight)	Head-on, gutted, no ice and slime, no shrinkage	0.88	Assumes 10% head weight and 2% shrinkage, or 12% head only
Gross (dock weight)	Head-on, gutted, with ice and slime	0.882 or 0.88	Assumes 10% head weight and 2% ice and slime; deductions either additive (10+2=12% in 2A and 2B) or multiplicative (1-0.9*0.98=0.118 or 11.8% in Alaska)
Dressed (dock weight)	Head-on, gutted, no ice and slime (washed)	0.9	Assumes 10% head weight
Net	Head-off, gutted, no ice and slime (washed)	1	

¹Ice and slime become attached to the outside of the fish while stored on ice. The 'poke ice', commonly inserted into the body cavity is not included in this conversion as it should always be removed prior to weighing.

²Shrinkage is defined as the loss of weight after the fish has died and while it is stored on ice.

The historical relationship between fork length and net weight includes adjustments for the weight of the head, and of ice and slime: gross landed weight (gutted, with head, ice and slime) was assumed to include a proportion of 12% head weight and 2% ice and slime, which combine to give a multiplier of 0.8624 to convert gross to net weight. Clark (1992) noted that subsequent studies showed the head weighed less than 12% of gross weight, but that the adjustment factor worked well anyway, possibly because of additional shrinkage of fish after being weighed at sea (as they were in the 1926 study in which the relationship was estimated). In practice, combined multipliers of 0.88 in IPHC Regulatory Areas 2A and 2B, and 0.882 in Alaska, were applied to

commercial landings to convert from gross to net weight. These both include the 2% deduction for ice and slime assumed in the IPHC length-net weight relationship and use 10% as the proportion for the head. This head deduction has been required as part of IPHC regulations since 2008 (Leaman and Gilroy 2008, Gilroy et al. 2008). The way the two deductions are combined differs among areas. In IPHC Regulatory Areas 2A and 2B, these deductions are added ($10+2=12\%$), while in Alaska, the corresponding multipliers (1 minus the deduction) are multiplied, leading to a multiplier of 0.882, or a deduction of 11.8%.

There is a lack of data to support many of the conversions in [Table 1](#), including conversions from round weight to dressed weight, and the assumed 2% deduction for ice and slime. Regarding shrinkage, a subsample of 550 Pacific halibut from FISS sampling was weighed both on the vessels and later at the dock during the 2016 and 2017 FISS seasons. At-sea weights were recorded as round weights, while dockside weights were of head-on and washed fish (i.e., dockside dressed, [Table 1](#)). To estimate shrinkage, round weights must first be converted into at-sea dressed weights, requiring multiplication of round weights by 0.85 (0.75/0.88 from [Table 1](#)). Given the assumed 0.85 multiplier, the average % shrinkage across all 550 fish with both weights is 1.9% (SE=0.2%) and is therefore consistent with a shrinkage multiplier of 2% as assumed in [Table 1](#).

[Webster \(2021\)](#) estimated a relationship between round and dressed weight for U32 Pacific halibut (those under 32" or 81.3 cm) from fish weighed twice onboard FISS vessels in 2019. There are currently no contemporary FISS data for estimating such a relationship for larger Pacific halibut.

Revising the length-net weight relationship

The current commercial sampling program and the FISS weight sampling provide us with two independent data sources to use in estimating contemporary length-net weight relationships. While the FISS data are typically collected in a spatially comprehensive manner within each IPHC Regulatory Area, they are temporally restricted to the May-September summer period. Conversely, commercial samples are collected throughout the fishing season, but may be more geographically limited due to the concentration of fishing effort in the most productive habitat.

As proposed at SRB019 ([Webster 2021](#)), our approach is to combine data from the commercial sampling with that from the FISS sampling in order to estimate length-net weight relationships that are as broadly applicable as possible. Data from the most recent three years (2019-21) were used in the modelling. [Webster \(2021\)](#) fitted models to commercial and FISS data by area and year, showing general temporal consistency in the estimated length-net weight relationships, but variability among relationships across IPHC Regulatory Areas. We have therefore estimated a revised relationship for each IPHC Regulatory Area using the combined data from 2019-21.

For estimating the relationship between fork length and net weight, only dressed, head-on fish (with the same standard head and ice and slime deductions assumed in the historical IPHC relationship, 10% and 2% respectively) were used due to the high spatial variability in the proportion of the weight removed when cutting heads (see [Webster 2021](#)). A 2% shrinkage deduction was also applied to fish weighed onboard.

Parameters were estimated by fitting linear models (on the log scale) using least squares. Let L be the fork length of a halibut in centimetres, and W be its net weight in kilograms. The historical IPHC length-net weight relationship is

$$W = 3.139 \times 10^{-6} L^{3.24} \quad (1)$$

For weights in pounds, the first parameter is 6.921×10^{-6} . More generally, the relationship between length and weight is assumed to have the following form

$$W = \alpha L^\beta$$

With N halibut in our sample, each is indexed by i , $i = 1, \dots, N$, we fit linear models on the log scale of the form

$$\log(W_i) = \log(\alpha) + \beta \log(L_i) + \varepsilon_i \quad (2)$$

where $\varepsilon_i \sim N(0, \sigma^2)$.

For both FISS and commercial data, several extreme outliers remained in the data even after careful review. To avoid these extreme observations (assumed to be errors in data collection or entry) influencing the estimated relationships, observations with measured weight more than twice or less than half the value predicted by the historical length-weight curve were excluded from the statistical analyses. These represented less than 0.05% of all observations.

Sample sizes often differed greatly between commercial and FISS data sources ([Appendix A](#)). This was due to the former having a fixed target of 1500 randomly sampled Pacific halibut per area, while the goal was to obtain a dressed weight for every fish of legal commercial size (O32, or over 32" or 81.3 cm in length) and a subsample of U32 fish (2019 only) on the FISS. To avoid one data source (commercial or FISS) dominating the estimation, we fitted a model that allowed parameters to vary with source, and then averaged the estimates across the two sources for each IPHC Regulatory Area.

Results

The parameter estimates for each IPHC Regulatory Area are given in [Table 2](#), for both net and round weight (using the conversion in [Table 1](#)) in kg and lb.

Table 2. Parameter estimates for length-net weight and length-round weight by IPHC Regulatory Area, in kg and lb.

Reg. Area	Parameter estimates: net weight			Parameter estimates: round weight		
	α (kg)	α (lb)	β	α (kg)	α (lb)	β
2A	2.438×10^{-6}	5.375×10^{-6}	3.287	3.251×10^{-6}	7.167×10^{-6}	3.287
2B	3.189×10^{-6}	7.031×10^{-6}	3.231	4.252×10^{-6}	9.375×10^{-6}	3.231
2C	3.719×10^{-6}	8.198×10^{-6}	3.196	4.958×10^{-6}	1.093×10^{-5}	3.196
3A	4.821×10^{-6}	1.063×10^{-5}	3.133	6.428×10^{-6}	1.417×10^{-5}	3.133
3B	2.662×10^{-6}	5.869×10^{-6}	3.271	3.549×10^{-6}	7.825×10^{-6}	3.271
4A	4.762×10^{-6}	1.050×10^{-5}	3.142	6.350×10^{-6}	1.400×10^{-5}	3.142
4B	4.260×10^{-6}	9.391×10^{-6}	3.157	5.680×10^{-6}	1.252×10^{-5}	3.157
4CDE	4.443×10^{-6}	7.796×10^{-6}	3.161	5.925×10^{-6}	1.306×10^{-5}	3.161

[Figures 1 to 8](#) compare the revised length-net weight relationships with the historical relationships by IPHC Regulatory Area. The left panels present the two relationships, while the right panels show the ratio of predicted weights from the revised relationship to those predicted by the historical relationship. With only a couple of exceptions, predicted net weights from revised relationships are consistently lower than historical predictions. For six out of eight IPHC Regulatory Areas, the relative difference between the two curves increases with increasing fork length ([Figures 2 to 4](#) and [6 to 8](#)). The magnitude of the relative difference between the two curves varies by area, with greatest differences for IPHC Regulatory Areas 3A and 4B ([Figures 4 and 7](#)) and least for IPHC Regulatory Areas 2B and 3B ([Figures 2 and 5](#)).

Tables of net weight for a wide range of Pacific halibut lengths are provided in Appendices [B](#) (metric units) and [C](#) (Imperial units).

Discussion

The revised length-weight relationships support the observations in the field that Pacific halibut have become lighter than predicted by the historical relationship in recent years. The degree of bias in the historical relationship's predictions of weight depends on fish length and IPHC Regulatory Area, but we expect that the revised relationships will provide improved estimates of Pacific halibut weights across the range of the stock. As new data become available each year, we will evaluate the need to update the length-weight relationships, and further revise as necessary to ensure any ongoing changes are accounted for.

There remain two components to the estimation of weight from length that are not directly estimable from recent FISS and commercial sample data: the conversion from round to dressed (dockside) weight, and the adjustment factors for ice and slime (conversion from unwashed to wash). The latter will be essential for reconciling the currently differing treatments of head weight, ice and slime and shrinkage in Alaska vs BC and the US West Coast. We have previously recommended ([Webster 2021](#)) that future FISS sampling include a random sample of O32 fish weighed twice, before and after dressing, and that greater effort should be made to weigh some sampled fish twice dockside, before and after washing.

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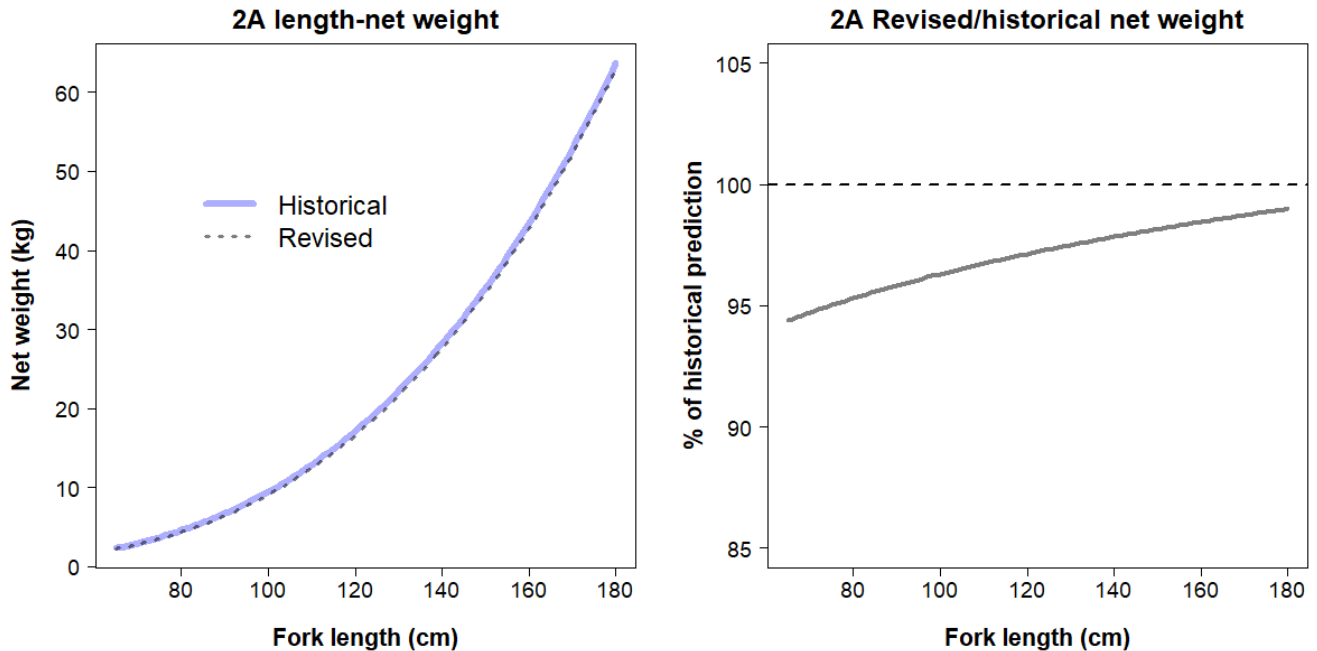


Figure 1. Length-net weight relationship estimated from 2019-21 commercial and FISS sampling data (dashed line) compared with the historical length-net weight relationship (solid blue line) for IPHC Regulatory Area 2A (left panel). The right panel shows the ratio of the predicted weights from the revised and historical relationships: values less than the dashed line at 100% mean the revised relationship predicts lighter Pacific halibut than the historical relationship.

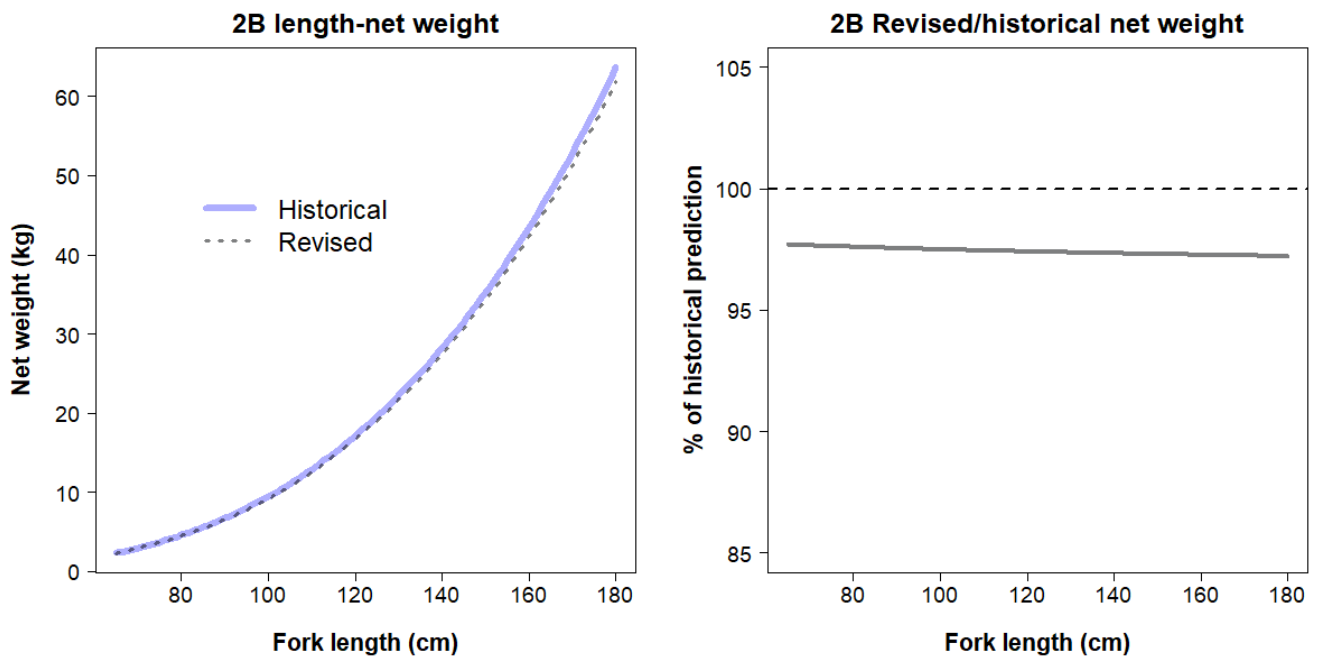


Figure 2. Length-net weight relationship estimated from 2019-21 commercial and FISS sampling data (dashed line) compared with the historical length-net weight relationship (solid blue line) for IPHC Regulatory Area 2B (left panel). The right panel shows the ratio of the predicted weights from the revised and historical relationships: values less than the dashed line at 100% mean the revised relationship predicts lighter Pacific halibut than the historical relationship.

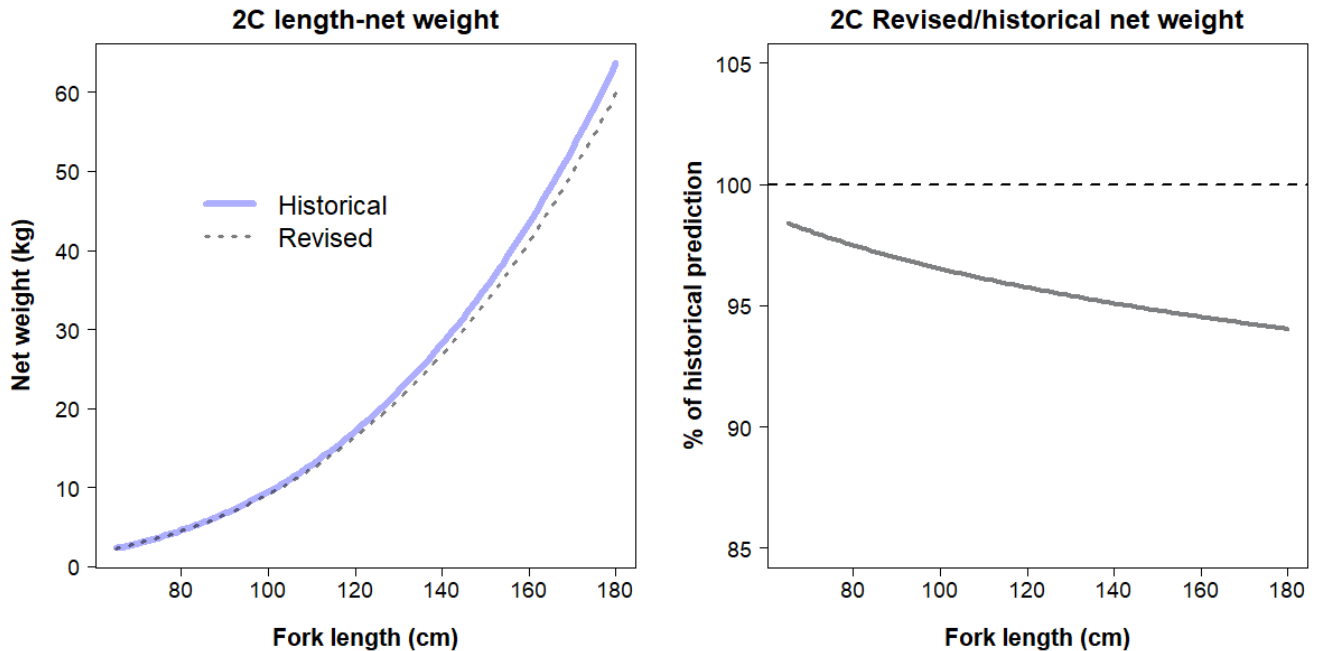


Figure 3. Length-net weight relationship estimated from 2019-21 commercial and FISS sampling data (dashed line) compared with the historical length-net weight relationship (solid blue line) for IPHC Regulatory Area 2C (left panel). The right panel shows the ratio of the predicted weights from the revised and historical relationships: values less than the dashed line at 100% mean the revised relationship predicts lighter Pacific halibut than the historical relationship.

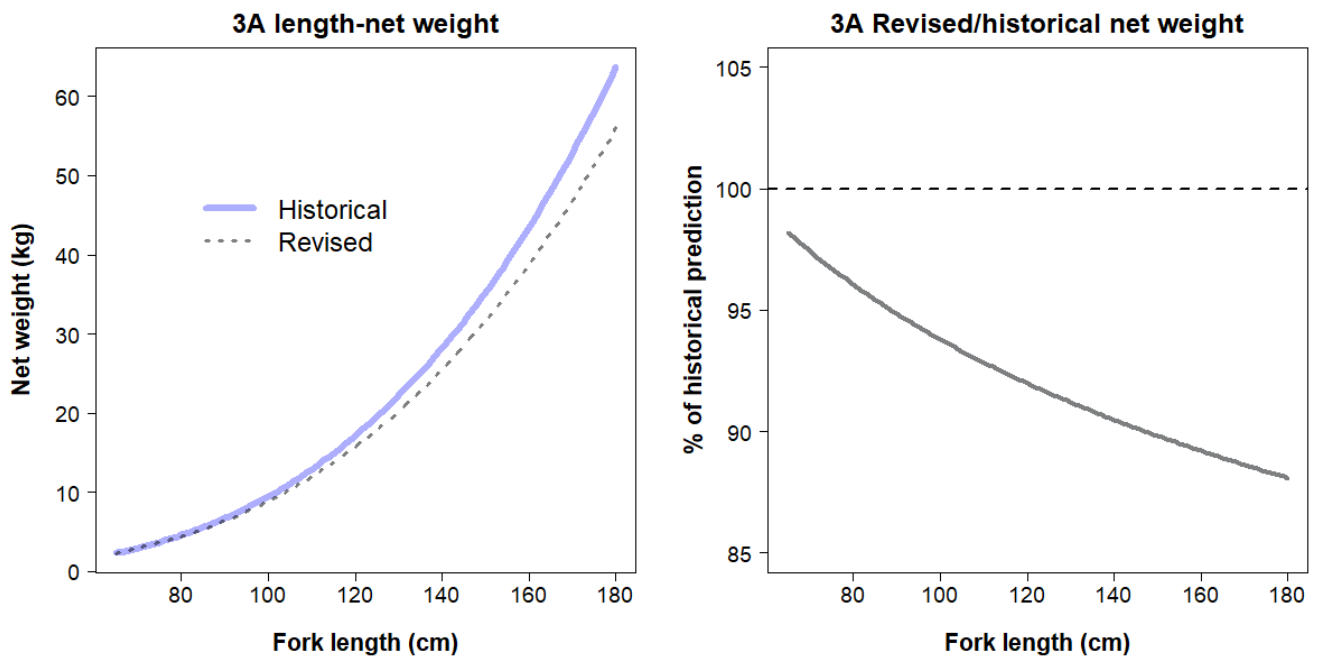


Figure 4. Length-net weight relationship estimated from 2019-21 commercial and FISS sampling data (dashed line) compared with the historical length-net weight relationship (solid blue line) for IPHC Regulatory Area 3A (left panel). The right panel shows the ratio of the predicted weights from the revised and historical relationships: values less than the dashed line at 100% mean the revised relationship predicts lighter Pacific halibut than the historical relationship.

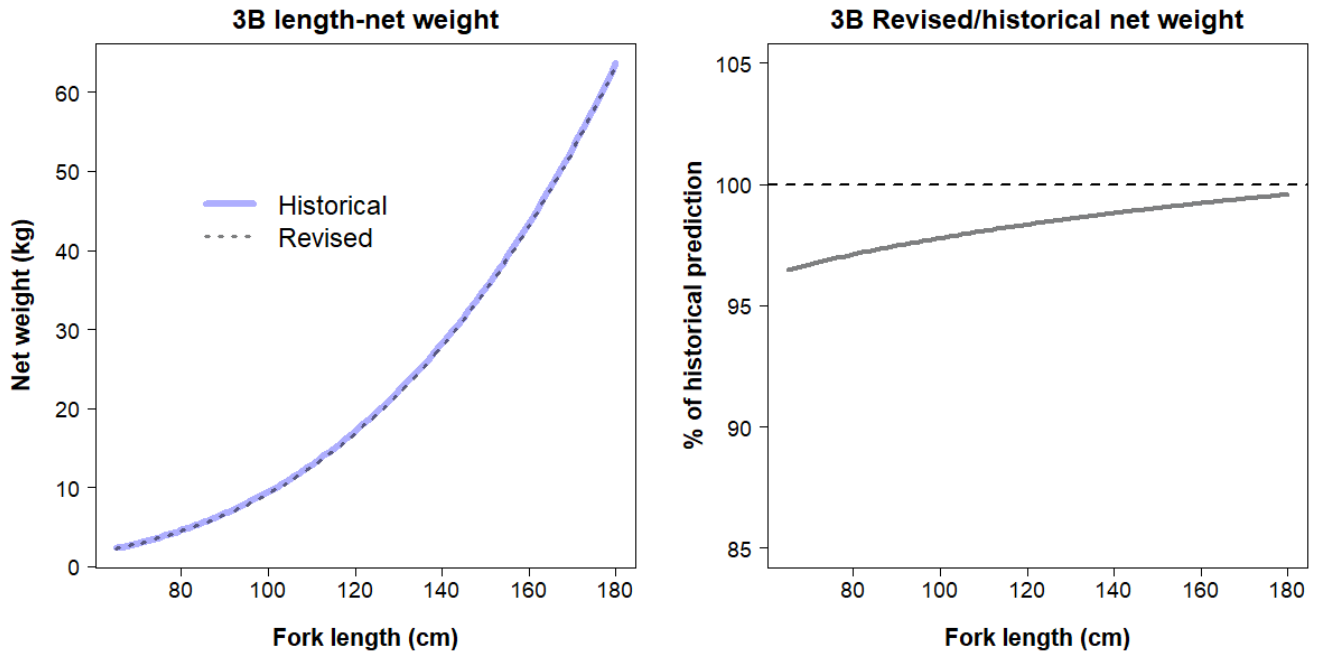


Figure 5. Length-net weight relationship estimated from 2019-21 commercial and FISS sampling data (dashed line) compared with the historical length-net weight relationship (solid blue line) for IPHC Regulatory Area 3B (left panel). The right panel shows the ratio of the predicted weights from the revised and historical relationships: values less than the dashed line at 100% mean the revised relationship predicts lighter Pacific halibut than the historical relationship.

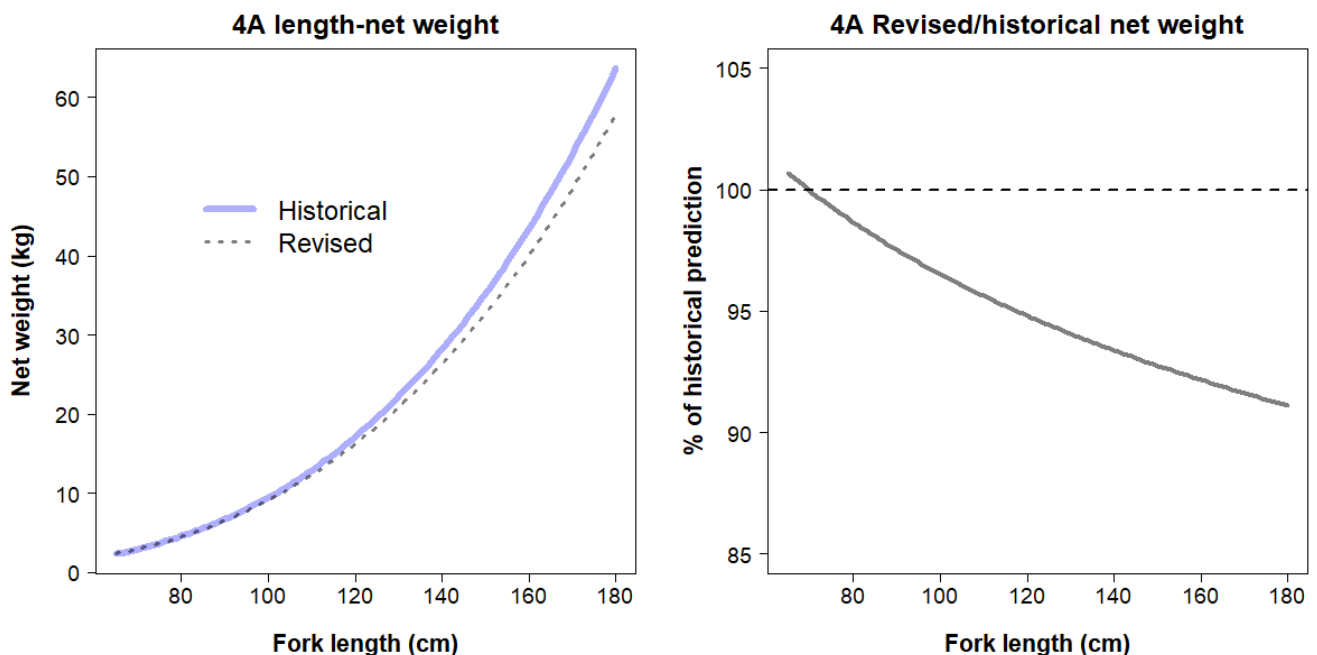


Figure 6. Length-net weight relationship estimated from 2019-21 commercial and FISS sampling data (dashed line) compared with the historical length-net weight relationship (solid blue line) for IPHC Regulatory Area 4A (left panel). The right panel shows the ratio of the predicted weights from the revised and historical relationships: values less than the dashed line at 100% mean the revised relationship predicts lighter Pacific halibut than the historical relationship.

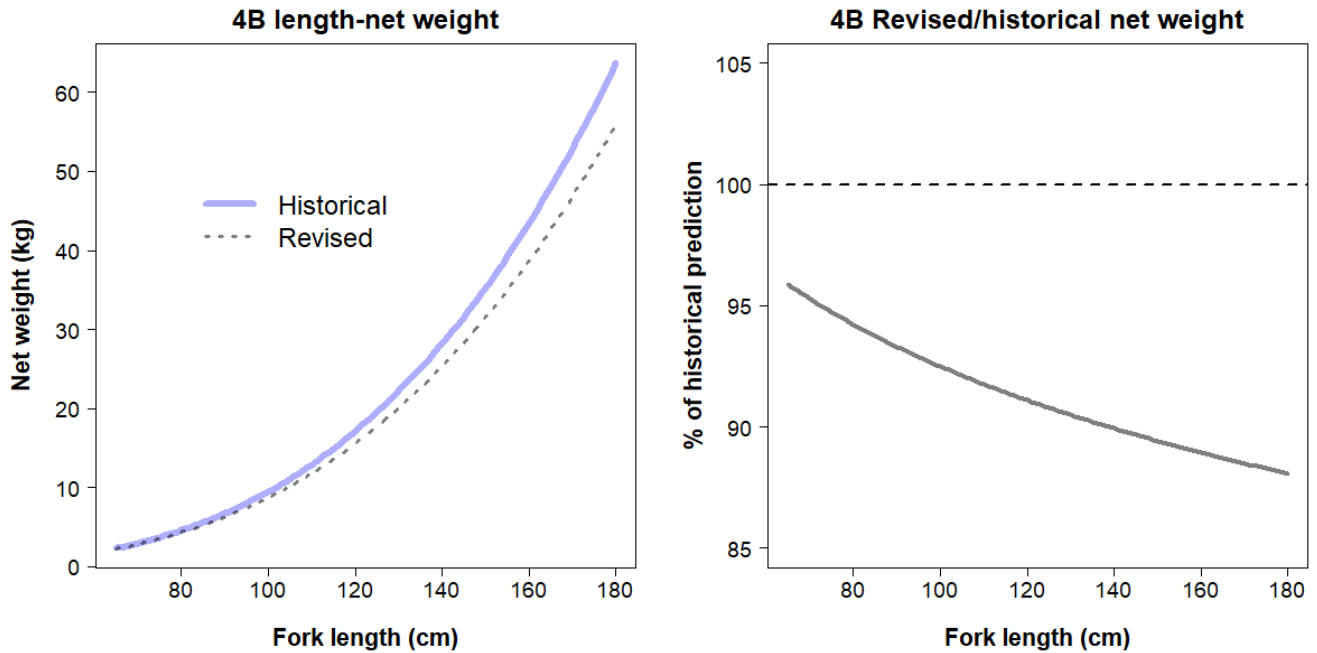


Figure 7. Length-net weight relationship estimated from 2019-21 commercial and FISS sampling data (dashed line) compared with the historical length-net weight relationship (solid blue line) for IPHC Regulatory Area 4B (left panel). The right panel shows the ratio of the predicted weights from the revised and historical relationships: values less than the dashed line at 100% mean the revised relationship predicts lighter Pacific halibut than the historical relationship.

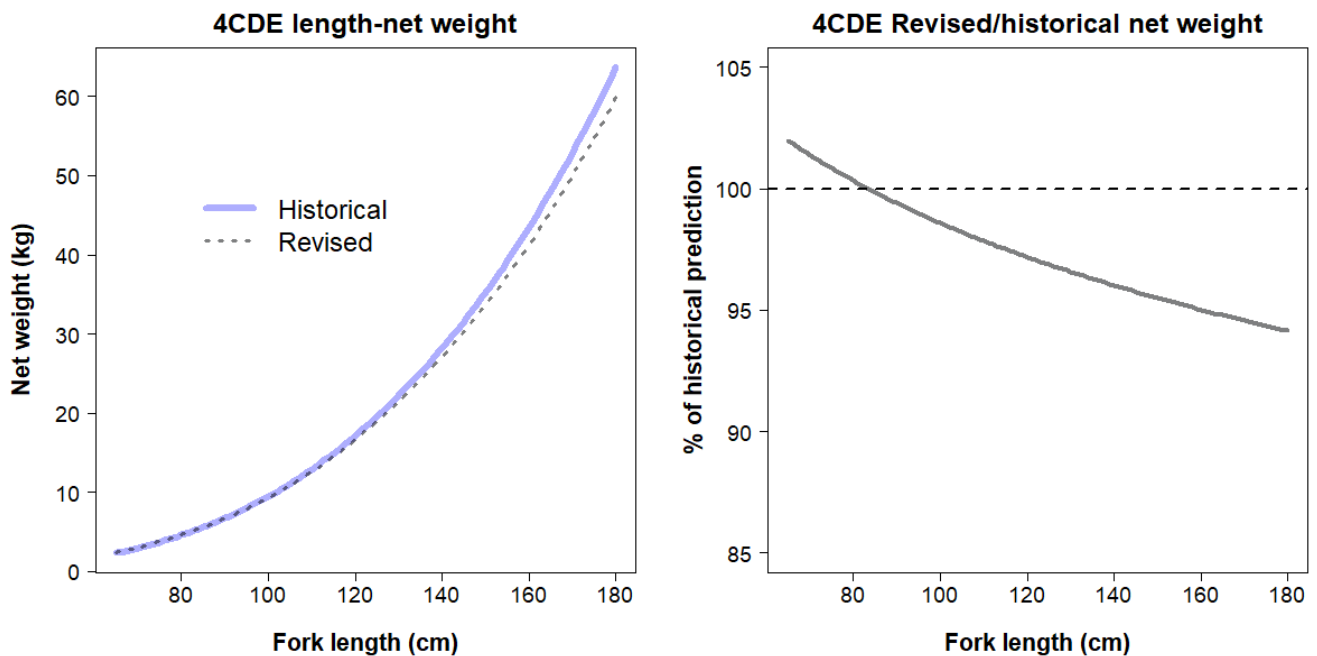


Figure 8. Length-net weight relationship estimated from 2019-21 commercial and FISS sampling data (dashed line) compared with the historical length-net weight relationship (solid blue line) for IPHC Regulatory Area 4CDE (left panel). The right panel shows the ratio of the predicted weights from the revised and historical relationships: values less than the dashed line at 100% mean the revised relationship predicts lighter Pacific halibut than the historical relationship.

Appendix A: Sample sizes of weighed Pacific halibut from commercial and FISS sampling.

Table A.1 Sample sizes of weighed commercial Pacific halibut by year and IPHC Regulatory Area.

Year	2A	2B	2C	3A	3B	4A	4B	4CDE
2015	32	801	1431	1538	1133	798	192	147
2016	303	1943	1673	1470	1492	1574	1466	1270
2017	1118	1376	1367	1453	1381	997	1816	1632
2018	2253	1421	1612	1676	808	925	1307	1494
2019	1731	1076	1573	1751	1751	1322	968	960
2020	1318	1694	1717	1608	1606	937	1264	905
2021	2803	1869	1481	1358	1027	1118	1207	162

Table A.2 Sample sizes of weighed FISS Pacific halibut by year and IPHC Regulatory Area.

Year	2A	2B	2C	3A	3B	4A	4B	4CDE
2019	786	3889	10898	15460	4530	3758	495	1545
2020	0	8101	6392	24813	2642	0	0	0
2021	785	6335	6200	20634	5862	2167	1579	329

Appendix B: Pacific halibut length-net weight tables (metric units)

Table B1. Length-net weight table for IPHC Regulatory Area 2A (metric, 71-230 cm).

Length (cm)	Weight (kg)	Length (cm)	Weight (kg)	Length (cm)	Weight (kg)	Length (cm)	Weight (kg)
71	3.0	111	12.9	151	35.4	191	76.6
72	3.1	112	13.3	152	36.2	192	77.9
73	3.2	113	13.6	153	36.9	193	79.3
74	3.4	114	14	154	37.7	194	80.6
75	3.5	115	14.5	155	38.6	195	82.0
76	3.7	116	14.9	156	39.4	196	83.4
77	3.9	117	15.3	157	40.2	197	84.8
78	4.0	118	15.7	158	41.1	198	86.2
79	4.2	119	16.2	159	41.9	199	87.7
80	4.4	120	16.6	160	42.8	200	89.1
81	4.6	121	17.1	161	43.7	201	90.6
82	4.8	122	17.6	162	44.6	202	92.1
83	4.9	123	18.0	163	45.5	203	93.6
84	5.1	124	18.5	164	46.4	204	95.1
85	5.4	125	19.0	165	47.4	205	96.6
86	5.6	126	19.5	166	48.3	206	98.2
87	5.8	127	20.0	167	49.3	207	99.8
88	6.0	128	20.6	168	50.2	208	101.4
89	6.2	129	21.1	169	51.2	209	103.0
90	6.5	130	21.6	170	52.2	210	104.6
91	6.7	131	22.2	171	53.2	211	106.3
92	6.9	132	22.7	172	54.3	212	107.9
93	7.2	133	23.3	173	55.3	213	109.6
94	7.5	134	23.9	174	56.4	214	111.3
95	7.7	135	24.5	175	57.5	215	113.0
96	8.0	136	25.1	176	58.5	216	114.8
97	8.3	137	25.7	177	59.6	217	116.5
98	8.5	138	26.3	178	60.8	218	118.3
99	8.8	139	27.0	179	61.9	219	120.1
100	9.1	140	27.6	180	63.0	220	121.9
101	9.4	141	28.2	181	64.2	221	123.7
102	9.7	142	28.9	182	65.4	222	125.6
103	10.1	143	29.6	183	66.5	223	127.4
104	10.4	144	30.3	184	67.7	224	129.3
105	10.7	145	31.0	185	69.0	225	131.2
106	11.1	146	31.7	186	70.2	226	133.2
107	11.4	147	32.4	187	71.4	227	135.1
108	11.8	148	33.1	188	72.7	228	137.1
109	12.1	149	33.9	189	74.0	229	139.1
110	12.5	150	34.6	190	75.3	230	141.1

Table B2. Length-net weight table for IPHC Regulatory Area 2B (metric, 71-230 cm).

Length (cm)	Weight (kg)	Length (cm)	Weight (kg)	Length (cm)	Weight (kg)	Length (cm)	Weight (kg)
71	3.1	111	13.0	151	35.0	191	74.8
72	3.2	112	13.3	152	35.8	192	76.1
73	3.3	113	13.7	153	36.5	193	77.4
74	3.5	114	14.1	154	37.3	194	78.7
75	3.7	115	14.5	155	38.1	195	80.0
76	3.8	116	14.9	156	38.9	196	81.4
77	4.0	117	15.4	157	39.7	197	82.7
78	4.1	118	15.8	158	40.5	198	84.1
79	4.3	119	16.2	159	41.4	199	85.4
80	4.5	120	16.7	160	42.2	200	86.8
81	4.7	121	17.1	161	43.1	201	88.3
82	4.9	122	17.6	162	44.0	202	89.7
83	5.1	123	18.1	163	44.8	203	91.1
84	5.3	124	18.5	164	45.7	204	92.6
85	5.5	125	19.0	165	46.6	205	94.1
86	5.7	126	19.5	166	47.6	206	95.5
87	5.9	127	20.0	167	48.5	207	97.1
88	6.1	128	20.5	168	49.4	208	98.6
89	6.3	129	21.1	169	50.4	209	100.1
90	6.6	130	21.6	170	51.4	210	101.7
91	6.8	131	22.1	171	52.3	211	103.2
92	7.1	132	22.7	172	53.3	212	104.8
93	7.3	133	23.2	173	54.4	213	106.4
94	7.6	134	23.8	174	55.4	214	108.1
95	7.8	135	24.4	175	56.4	215	109.7
96	8.1	136	25.0	176	57.5	216	111.4
97	8.4	137	25.6	177	58.5	217	113.0
98	8.7	138	26.2	178	59.6	218	114.7
99	9.0	139	26.8	179	60.7	219	116.4
100	9.2	140	27.4	180	61.8	220	118.2
101	9.6	141	28.1	181	62.9	221	119.9
102	9.9	142	28.7	182	64.0	222	121.7
103	10.2	143	29.4	183	65.2	223	123.4
104	10.5	144	30.0	184	66.3	224	125.2
105	10.8	145	30.7	185	67.5	225	127.1
106	11.2	146	31.4	186	68.7	226	128.9
107	11.5	147	32.1	187	69.9	227	130.7
108	11.9	148	32.8	188	71.1	228	132.6
109	12.2	149	33.5	189	72.3	229	134.5
110	12.6	150	34.3	190	73.6	230	136.4

Table B3. Length-net weight table for IPHC Regulatory Area 2C (metric, 71-230 cm).

Length (cm)	Weight (kg)	Length (cm)	Weight (kg)	Length (cm)	Weight (kg)	Length (cm)	Weight (kg)
71	3.1	111	12.8	151	34.2	191	72.4
72	3.2	112	13.1	152	34.9	192	73.6
73	3.3	113	13.5	153	35.6	193	74.8
74	3.5	114	13.9	154	36.4	194	76.1
75	3.6	115	14.3	155	37.1	195	77.3
76	3.8	116	14.7	156	37.9	196	78.6
77	4.0	117	15.1	157	38.7	197	79.9
78	4.1	118	15.5	158	39.5	198	81.2
79	4.3	119	16.0	159	40.3	199	82.5
80	4.5	120	16.4	160	41.1	200	83.8
81	4.7	121	16.8	161	41.9	201	85.2
82	4.9	122	17.3	162	42.8	202	86.5
83	5.0	123	17.7	163	43.6	203	87.9
84	5.2	124	18.2	164	44.5	204	89.3
85	5.4	125	18.7	165	45.3	205	90.7
86	5.7	126	19.2	166	46.2	206	92.1
87	5.9	127	19.6	167	47.1	207	93.6
88	6.1	128	20.1	168	48.0	208	95.0
89	6.3	129	20.6	169	48.9	209	96.5
90	6.5	130	21.2	170	49.9	210	98.0
91	6.8	131	21.7	171	50.8	211	99.5
92	7.0	132	22.2	172	51.8	212	101.0
93	7.3	133	22.8	173	52.7	213	102.5
94	7.5	134	23.3	174	53.7	214	104.1
95	7.8	135	23.9	175	54.7	215	105.6
96	8.0	136	24.4	176	55.7	216	107.2
97	8.3	137	25.0	177	56.7	217	108.8
98	8.6	138	25.6	178	57.8	218	110.4
99	8.9	139	26.2	179	58.8	219	112.0
100	9.2	140	26.8	180	59.9	220	113.7
101	9.4	141	27.4	181	60.9	221	115.3
102	9.7	142	28.1	182	62.0	222	117.0
103	10.1	143	28.7	183	63.1	223	118.7
104	10.4	144	29.3	184	64.2	224	120.4
105	10.7	145	30.0	185	65.3	225	122.1
106	11.0	146	30.7	186	66.5	226	123.9
107	11.4	147	31.3	187	67.6	227	125.6
108	11.7	148	32.0	188	68.8	228	127.4
109	12.1	149	32.7	189	70.0	229	129.2
110	12.4	150	33.4	190	71.2	230	131.0

Table B4. Length-net weight table for IPHC Regulatory Area 3A (metric, 71-230 cm).

Length (cm)	Weight (kg)	Length (cm)	Weight (kg)	Length (cm)	Weight (kg)	Length (cm)	Weight (kg)
71	3.0	111	12.3	151	32.3	191	67.5
72	3.2	112	12.7	152	33.0	192	68.6
73	3.3	113	13.0	153	33.7	193	69.8
74	3.5	114	13.4	154	34.4	194	70.9
75	3.6	115	13.8	155	35.1	195	72.1
76	3.8	116	14.2	156	35.8	196	73.2
77	3.9	117	14.5	157	36.5	197	74.4
78	4.1	118	14.9	158	37.3	198	75.6
79	4.2	119	15.3	159	38.0	199	76.8
80	4.4	120	15.7	160	38.8	200	78.0
81	4.6	121	16.2	161	39.5	201	79.2
82	4.8	122	16.6	162	40.3	202	80.5
83	5.0	123	17.0	163	41.1	203	81.7
84	5.2	124	17.4	164	41.9	204	83.0
85	5.3	125	17.9	165	42.7	205	84.3
86	5.5	126	18.3	166	43.5	206	85.6
87	5.7	127	18.8	167	44.3	207	86.9
88	6.0	128	19.3	168	45.2	208	88.2
89	6.2	129	19.7	169	46.0	209	89.5
90	6.4	130	20.2	170	46.9	210	90.9
91	6.6	131	20.7	171	47.8	211	92.3
92	6.8	132	21.2	172	48.6	212	93.6
93	7.1	133	21.7	173	49.5	213	95.0
94	7.3	134	22.2	174	50.4	214	96.4
95	7.6	135	22.8	175	51.3	215	97.8
96	7.8	136	23.3	176	52.3	216	99.3
97	8.1	137	23.8	177	53.2	217	100.7
98	8.3	138	24.4	178	54.2	218	102.2
99	8.6	139	25.0	179	55.1	219	103.7
100	8.9	140	25.5	180	56.1	220	105.2
101	9.2	141	26.1	181	57.1	221	106.7
102	9.5	142	26.7	182	58.1	222	108.2
103	9.8	143	27.3	183	59.1	223	109.7
104	10.1	144	27.9	184	60.1	224	111.3
105	10.4	145	28.5	185	61.1	225	112.8
106	10.7	146	29.1	186	62.1	226	114.4
107	11.0	147	29.7	187	63.2	227	116.0
108	11.3	148	30.4	188	64.3	228	117.6
109	11.6	149	31.0	189	65.3	229	119.2
110	12.0	150	31.7	190	66.4	230	120.9

Table B5. Length-net weight table for IPHC Regulatory Area 3B (metric, 71-230 cm).

Length (cm)	Weight (kg)	Length (cm)	Weight (kg)	Length (cm)	Weight (kg)	Length (cm)	Weight (kg)
71	3.0	111	13.0	151	35.7	191	77.0
72	3.2	112	13.4	152	36.5	192	78.3
73	3.3	113	13.8	153	37.3	193	79.6
74	3.5	114	14.2	154	38.1	194	81.0
75	3.6	115	14.6	155	38.9	195	82.4
76	3.8	116	15.1	156	39.7	196	83.8
77	3.9	117	15.5	157	40.5	197	85.2
78	4.1	118	15.9	158	41.4	198	86.6
79	4.3	119	16.4	159	42.3	199	88.0
80	4.5	120	16.8	160	43.1	200	89.5
81	4.7	121	17.3	161	44.0	201	91.0
82	4.8	122	17.8	162	44.9	202	92.5
83	5.0	123	18.2	163	45.8	203	94.0
84	5.2	124	18.7	164	46.8	204	95.5
85	5.4	125	19.2	165	47.7	205	97.0
86	5.7	126	19.7	166	48.7	206	98.6
87	5.9	127	20.3	167	49.6	207	100.2
88	6.1	128	20.8	168	50.6	208	101.7
89	6.3	129	21.3	169	51.6	209	103.4
90	6.6	130	21.9	170	52.6	210	105.0
91	6.8	131	22.4	171	53.6	211	106.6
92	7.1	132	23.0	172	54.6	212	108.3
93	7.3	133	23.6	173	55.7	213	110.0
94	7.6	134	24.1	174	56.7	214	111.7
95	7.8	135	24.7	175	57.8	215	113.4
96	8.1	136	25.3	176	58.9	216	115.1
97	8.4	137	26.0	177	60.0	217	116.9
98	8.7	138	26.6	178	61.1	218	118.6
99	9.0	139	27.2	179	62.3	219	120.4
100	9.3	140	27.9	180	63.4	220	122.2
101	9.6	141	28.5	181	64.6	221	124.1
102	9.9	142	29.2	182	65.7	222	125.9
103	10.2	143	29.9	183	66.9	223	127.8
104	10.5	144	30.6	184	68.1	224	129.7
105	10.9	145	31.3	185	69.3	225	131.6
106	11.2	146	32.0	186	70.6	226	133.5
107	11.6	147	32.7	187	71.8	227	135.4
108	11.9	148	33.4	188	73.1	228	137.4
109	12.3	149	34.2	189	74.4	229	139.4
110	12.7	150	34.9	190	75.7	230	141.4

Table B6. Length-net weight table for IPHC Regulatory Area 4A (metric, 71-230 cm).

Length (cm)	Weight (kg)	Length (cm)	Weight (kg)	Length (cm)	Weight (kg)	Length (cm)	Weight (kg)
71	3.1	111	12.7	151	33.4	191	69.9
72	3.3	112	13.1	152	34.1	192	71.0
73	3.4	113	13.4	153	34.8	193	72.2
74	3.6	114	13.8	154	35.5	194	73.4
75	3.7	115	14.2	155	36.3	195	74.6
76	3.9	116	14.6	156	37.0	196	75.8
77	4.0	117	15.0	157	37.8	197	77.0
78	4.2	118	15.4	158	38.5	198	78.3
79	4.4	119	15.8	159	39.3	199	79.5
80	4.5	120	16.2	160	40.1	200	80.8
81	4.7	121	16.7	161	40.9	201	82.0
82	4.9	122	17.1	162	41.7	202	83.3
83	5.1	123	17.5	163	42.5	203	84.6
84	5.3	124	18.0	164	43.3	204	86.0
85	5.5	125	18.4	165	44.1	205	87.3
86	5.7	126	18.9	166	45.0	206	88.6
87	5.9	127	19.4	167	45.8	207	90.0
88	6.1	128	19.9	168	46.7	208	91.4
89	6.3	129	20.4	169	47.6	209	92.7
90	6.6	130	20.9	170	48.5	210	94.1
91	6.8	131	21.4	171	49.4	211	95.6
92	7.0	132	21.9	172	50.3	212	97.0
93	7.3	133	22.4	173	51.2	213	98.4
94	7.5	134	23.0	174	52.1	214	99.9
95	7.8	135	23.5	175	53.1	215	101.4
96	8.0	136	24.0	176	54.1	216	102.9
97	8.3	137	24.6	177	55.0	217	104.4
98	8.6	138	25.2	178	56.0	218	105.9
99	8.9	139	25.8	179	57.0	219	107.4
100	9.2	140	26.3	180	58.0	220	109.0
101	9.4	141	26.9	181	59.0	221	110.5
102	9.7	142	27.5	182	60.1	222	112.1
103	10.0	143	28.2	183	61.1	223	113.7
104	10.4	144	28.8	184	62.2	224	115.3
105	10.7	145	29.4	185	63.2	225	116.9
106	11.0	146	30.0	186	64.3	226	118.6
107	11.3	147	30.7	187	65.4	227	120.2
108	11.7	148	31.4	188	66.5	228	121.9
109	12.0	149	32.0	189	67.6	229	123.6
110	12.3	150	32.7	190	68.7	230	125.3

Table B7. Length-net weight table for IPHC Regulatory Area 4B (metric, 71-230 cm).

Length (cm)	Weight (kg)	Length (cm)	Weight (kg)	Length (cm)	Weight (kg)	Length (cm)	Weight (kg)
71	3.0	111	12.2	151	32.2	191	67.6
72	3.1	112	12.5	152	32.9	192	68.7
73	3.2	113	12.9	153	33.6	193	69.9
74	3.4	114	13.3	154	34.3	194	71.0
75	3.5	115	13.6	155	35.0	195	72.2
76	3.7	116	14.0	156	35.7	196	73.4
77	3.8	117	14.4	157	36.4	197	74.6
78	4.0	118	14.8	158	37.2	198	75.8
79	4.2	119	15.2	159	37.9	199	77.0
80	4.3	120	15.6	160	38.7	200	78.2
81	4.5	121	16.0	161	39.4	201	79.4
82	4.7	122	16.4	162	40.2	202	80.7
83	4.9	123	16.9	163	41.0	203	82.0
84	5.1	124	17.3	164	41.8	204	83.2
85	5.2	125	17.7	165	42.6	205	84.5
86	5.4	126	18.2	166	43.4	206	85.9
87	5.6	127	18.6	167	44.3	207	87.2
88	5.9	128	19.1	168	45.1	208	88.5
89	6.1	129	19.6	169	46.0	209	89.9
90	6.3	130	20.1	170	46.8	210	91.2
91	6.5	131	20.6	171	47.7	211	92.6
92	6.7	132	21.1	172	48.6	212	94.0
93	7.0	133	21.6	173	49.5	213	95.4
94	7.2	134	22.1	174	50.4	214	96.8
95	7.5	135	22.6	175	51.3	215	98.3
96	7.7	136	23.1	176	52.2	216	99.7
97	8.0	137	23.7	177	53.2	217	101.2
98	8.2	138	24.2	178	54.1	218	102.7
99	8.5	139	24.8	179	55.1	219	104.1
100	8.8	140	25.4	180	56.1	220	105.7
101	9.0	141	25.9	181	57.1	221	107.2
102	9.3	142	26.5	182	58.1	222	108.7
103	9.6	143	27.1	183	59.1	223	110.3
104	9.9	144	27.7	184	60.1	224	111.8
105	10.2	145	28.3	185	61.1	225	113.4
106	10.5	146	29.0	186	62.2	226	115.0
107	10.9	147	29.6	187	63.3	227	116.6
108	11.2	148	30.2	188	64.3	228	118.3
109	11.5	149	30.9	189	65.4	229	119.9
110	11.8	150	31.5	190	66.5	230	121.6

Table B8. Length-net weight table for IPHC Regulatory Area 4CDE (metric, 71-230 cm).

Length (cm)	Weight (kg)	Length (cm)	Weight (kg)	Length (cm)	Weight (kg)	Length (cm)	Weight (kg)
71	3.2	111	13.0	151	34.4	191	72.3
72	3.3	112	13.4	152	35.1	192	73.5
73	3.5	113	13.8	153	35.9	193	74.7
74	3.6	114	14.1	154	36.6	194	76.0
75	3.8	115	14.5	155	37.4	195	77.2
76	3.9	116	14.9	156	38.1	196	78.5
77	4.1	117	15.4	157	38.9	197	79.7
78	4.3	118	15.8	158	39.7	198	81.0
79	4.4	119	16.2	159	40.5	199	82.3
80	4.6	120	16.6	160	41.3	200	83.6
81	4.8	121	17.1	161	42.1	201	85.0
82	5.0	122	17.5	162	43.0	202	86.3
83	5.2	123	18.0	163	43.8	203	87.7
84	5.4	124	18.5	164	44.7	204	89.0
85	5.6	125	18.9	165	45.5	205	90.4
86	5.8	126	19.4	166	46.4	206	91.8
87	6.0	127	19.9	167	47.3	207	93.2
88	6.2	128	20.4	168	48.2	208	94.7
89	6.5	129	20.9	169	49.1	209	96.1
90	6.7	130	21.4	170	50.0	210	97.6
91	6.9	131	21.9	171	51.0	211	99.1
92	7.2	132	22.5	172	51.9	212	100.5
93	7.4	133	23.0	173	52.9	213	102.1
94	7.7	134	23.6	174	53.8	214	103.6
95	7.9	135	24.1	175	54.8	215	105.1
96	8.2	136	24.7	176	55.8	216	106.7
97	8.5	137	25.3	177	56.8	217	108.2
98	8.8	138	25.9	178	57.9	218	109.8
99	9.1	139	26.5	179	58.9	219	111.4
100	9.3	140	27.1	180	59.9	220	113.0
101	9.6	141	27.7	181	61.0	221	114.7
102	10.0	142	28.3	182	62.1	222	116.3
103	10.3	143	29.0	183	63.2	223	118.0
104	10.6	144	29.6	184	64.3	224	119.7
105	10.9	145	30.3	185	65.4	225	121.4
106	11.2	146	30.9	186	66.5	226	123.1
107	11.6	147	31.6	187	67.6	227	124.8
108	11.9	148	32.3	188	68.8	228	126.6
109	12.3	149	33.0	189	69.9	229	128.3
110	12.6	150	33.7	190	71.1	230	130.1

Appendix C: Pacific halibut length-net weight tables (Imperial units)

Table C1. Length-net weight table for IPHC Regulatory Area 2A (Imperial, 22.5-92 inches).

Length (in)	Weight (lb)	Length (in)	Weight (lb)	Length (in)	Weight (lb)	Length (in)	Weight (lb)
22.5	3.2	40.0	21.2	57.5	69.9	75.0	167.4
23.0	3.4	40.5	22.1	58.0	71.9	75.5	171.1
23.5	3.7	41.0	23.0	58.5	74.0	76.0	174.9
24.0	4.0	41.5	23.9	59.0	76.1	76.5	178.7
24.5	4.2	42.0	24.9	59.5	78.2	77.0	182.5
25.0	4.5	42.5	25.9	60.0	80.4	77.5	186.5
25.5	4.8	43.0	26.9	60.5	82.6	78.0	190.4
26.0	5.1	43.5	27.9	61.0	84.9	78.5	194.5
26.5	5.5	44.0	29.0	61.5	87.2	79.0	198.6
27.0	5.8	44.5	30.1	62.0	89.6	79.5	202.7
27.5	6.2	45.0	31.2	62.5	91.9	80.0	207.0
28.0	6.6	45.5	32.4	63.0	94.4	80.5	211.3
28.5	7.0	46.0	33.6	63.5	96.9	81.0	215.6
29.0	7.4	46.5	34.8	64.0	99.4	81.5	220.0
29.5	7.8	47.0	36.0	64.5	102.0	82.0	224.5
30.0	8.2	47.5	37.3	65.0	104.6	82.5	229.0
30.5	8.7	48.0	38.6	65.5	107.3	83.0	233.6
31.0	9.2	48.5	40.0	66.0	110.0	83.5	238.2
31.5	9.7	49.0	41.3	66.5	112.7	84.0	243.0
32.0	10.2	49.5	42.7	67.0	115.6	84.5	247.8
32.5	10.7	50.0	44.2	67.5	118.4	85.0	252.6
33.0	11.3	50.5	45.6	68.0	121.3	85.5	257.5
33.5	11.8	51.0	47.1	68.5	124.3	86.0	262.5
34.0	12.4	51.5	48.7	69.0	127.3	86.5	267.6
34.5	13.0	52.0	50.2	69.5	130.3	87.0	272.7
35.0	13.7	52.5	51.8	70.0	133.4	87.5	277.9
35.5	14.3	53.0	53.5	70.5	136.6	88.0	283.1
36.0	15.0	53.5	55.2	71.0	139.8	88.5	288.4
36.5	15.7	54.0	56.9	71.5	143.1	89.0	293.8
37.0	16.4	54.5	58.6	72.0	146.4	89.5	299.3
37.5	17.2	55.0	60.4	72.5	149.8	90.0	304.8
38.0	17.9	55.5	62.2	73.0	153.2	90.5	310.4
38.5	18.7	56.0	64.1	73.5	156.7	91.0	316.1
39.0	19.5	56.5	66.0	74.0	160.2	91.5	321.8
39.5	20.3	57.0	67.9	74.5	163.8	92.0	327.6

Table C2. Length-net weight table for IPHC Regulatory Area 2B (Imperial, 22.5-92 inches).

Length (in)	Weight (lb)	Length (in)	Weight (lb)	Length (in)	Weight (lb)	Length (in)	Weight (lb)
22.5	3.3	40.0	21.5	57.5	69.3	75.0	163.6
23.0	3.6	40.5	22.3	58.0	71.3	75.5	167.1
23.5	3.8	41.0	23.2	58.5	73.3	76.0	170.8
24.0	4.1	41.5	24.2	59.0	75.3	76.5	174.4
24.5	4.4	42.0	25.1	59.5	77.4	77.0	178.1
25.0	4.7	42.5	26.1	60.0	79.6	77.5	181.9
25.5	5.0	43.0	27.1	60.5	81.7	78.0	185.7
26.0	5.3	43.5	28.1	61.0	83.9	78.5	189.6
26.5	5.7	44.0	29.2	61.5	86.2	79.0	193.5
27.0	6.0	44.5	30.3	62.0	88.4	79.5	197.5
27.5	6.4	45.0	31.4	62.5	90.8	80.0	201.5
28.0	6.8	45.5	32.5	63.0	93.1	80.5	205.6
28.5	7.2	46.0	33.7	63.5	95.5	81.0	209.8
29.0	7.6	46.5	34.9	64.0	98.0	81.5	214.0
29.5	8.0	47.0	36.1	64.5	100.5	82.0	218.3
30.0	8.5	47.5	37.4	65.0	103.0	82.5	222.6
30.5	8.9	48.0	38.7	65.5	105.6	83.0	227.0
31.0	9.4	48.5	40.0	66.0	108.2	83.5	231.4
31.5	9.9	49.0	41.3	66.5	110.9	84.0	235.9
32.0	10.4	49.5	42.7	67.0	113.6	84.5	240.5
32.5	11.0	50.0	44.1	67.5	116.4	85.0	245.1
33.0	11.5	50.5	45.6	68.0	119.2	85.5	249.8
33.5	12.1	51.0	47.1	68.5	122.1	86.0	254.6
34.0	12.7	51.5	48.6	69.0	125.0	86.5	259.4
34.5	13.3	52.0	50.1	69.5	127.9	87.0	264.3
35.0	13.9	52.5	51.7	70.0	130.9	87.5	269.2
35.5	14.6	53.0	53.3	70.5	134.0	88.0	274.2
36.0	15.3	53.5	54.9	71.0	137.0	88.5	279.3
36.5	16.0	54.0	56.6	71.5	140.2	89.0	284.4
37.0	16.7	54.5	58.3	72.0	143.4	89.5	289.6
37.5	17.4	55.0	60.1	72.5	146.6	90.0	294.9
38.0	18.2	55.5	61.8	73.0	149.9	90.5	300.2
38.5	19.0	56.0	63.7	73.5	153.3	91.0	305.6
39.0	19.8	56.5	65.5	74.0	156.7	91.5	311.0
39.5	20.6	57.0	67.4	74.5	160.1	92.0	316.6

Table C3. Length-net weight table for IPHC Regulatory Area 2C (Imperial, 22.5-92 inches).

Length (in)	Weight (lb)	Length (in)	Weight (lb)	Length (in)	Weight (lb)	Length (in)	Weight (lb)
22.5	3.4	40.0	21.2	57.5	67.7	75.0	158.2
23.0	3.6	40.5	22.1	58.0	69.6	75.5	161.6
23.5	3.9	41.0	23.0	58.5	71.5	76.0	165.0
24.0	4.1	41.5	23.9	59.0	73.5	76.5	168.5
24.5	4.4	42.0	24.8	59.5	75.5	77.0	172.1
25.0	4.7	42.5	25.8	60.0	77.5	77.5	175.7
25.5	5.0	43.0	26.7	60.5	79.6	78.0	179.3
26.0	5.4	43.5	27.7	61.0	81.7	78.5	183.0
26.5	5.7	44.0	28.8	61.5	83.9	79.0	186.8
27.0	6.0	44.5	29.8	62.0	86.1	79.5	190.6
27.5	6.4	45.0	30.9	62.5	88.3	80.0	194.4
28.0	6.8	45.5	32.0	63.0	90.6	80.5	198.3
28.5	7.2	46.0	33.2	63.5	92.9	81.0	202.3
29.0	7.6	46.5	34.3	64.0	95.3	81.5	206.3
29.5	8.0	47.0	35.5	64.5	97.7	82.0	210.4
30.0	8.5	47.5	36.8	65.0	100.1	82.5	214.5
30.5	8.9	48.0	38.0	65.5	102.6	83.0	218.7
31.0	9.4	48.5	39.3	66.0	105.1	83.5	222.9
31.5	9.9	49.0	40.6	66.5	107.7	84.0	227.2
32.0	10.4	49.5	41.9	67.0	110.3	84.5	231.6
32.5	10.9	50.0	43.3	67.5	113.0	85.0	236.0
33.0	11.5	50.5	44.7	68.0	115.7	85.5	240.5
33.5	12.0	51.0	46.1	68.5	118.4	86.0	245.0
34.0	12.6	51.5	47.6	69.0	121.2	86.5	249.6
34.5	13.2	52.0	49.1	69.5	124.0	87.0	254.2
35.0	13.9	52.5	50.6	70.0	126.9	87.5	258.9
35.5	14.5	53.0	52.2	70.5	129.8	88.0	263.7
36.0	15.2	53.5	53.8	71.0	132.8	88.5	268.5
36.5	15.8	54.0	55.4	71.5	135.8	89.0	273.4
37.0	16.5	54.5	57.0	72.0	138.9	89.5	278.3
37.5	17.3	55.0	58.7	72.5	142.0	90.0	283.3
38.0	18.0	55.5	60.4	73.0	145.1	90.5	288.4
38.5	18.8	56.0	62.2	73.5	148.3	91.0	293.5
39.0	19.6	56.5	64.0	74.0	151.6	91.5	298.7
39.5	20.4	57.0	65.8	74.5	154.9	92.0	303.9

Table C4. Length-net weight table for IPHC Regulatory Area 3A (Imperial, 22.5-92 inches).

Length (in)	Weight (lb)	Length (in)	Weight (lb)	Length (in)	Weight (lb)	Length (in)	Weight (lb)
22.5	3.4	40.0	20.6	57.5	64.2	75.0	147.7
23.0	3.6	40.5	21.4	58.0	66.0	75.5	150.8
23.5	3.9	41.0	22.3	58.5	67.8	76.0	153.9
24.0	4.2	41.5	23.1	59.0	69.6	76.5	157.1
24.5	4.4	42.0	24.0	59.5	71.5	77.0	160.4
25.0	4.7	42.5	24.9	60.0	73.4	77.5	163.6
25.5	5.0	43.0	25.8	60.5	75.3	78.0	167.0
26.0	5.3	43.5	26.8	61.0	77.3	78.5	170.3
26.5	5.7	44.0	27.8	61.5	79.3	79.0	173.8
27.0	6.0	44.5	28.8	62.0	81.3	79.5	177.2
27.5	6.4	45.0	29.8	62.5	83.4	80.0	180.8
28.0	6.7	45.5	30.9	63.0	85.5	80.5	184.3
28.5	7.1	46.0	31.9	63.5	87.7	81.0	187.9
29.0	7.5	46.5	33.0	64.0	89.8	81.5	191.6
29.5	7.9	47.0	34.2	64.5	92.1	82.0	195.3
30.0	8.4	47.5	35.3	65.0	94.3	82.5	199.0
30.5	8.8	48.0	36.5	65.5	96.6	83.0	202.9
31.0	9.3	48.5	37.7	66.0	98.9	83.5	206.7
31.5	9.7	49.0	38.9	66.5	101.3	84.0	210.6
32.0	10.2	49.5	40.2	67.0	103.7	84.5	214.6
32.5	10.8	50.0	41.5	67.5	106.2	85.0	218.6
33.0	11.3	50.5	42.8	68.0	108.6	85.5	222.6
33.5	11.8	51.0	44.1	68.5	111.2	86.0	226.7
34.0	12.4	51.5	45.5	69.0	113.7	86.5	230.9
34.5	13.0	52.0	46.9	69.5	116.3	87.0	235.1
35.0	13.6	52.5	48.3	70.0	119.0	87.5	239.3
35.5	14.2	53.0	49.8	70.5	121.6	88.0	243.7
36.0	14.8	53.5	51.2	71.0	124.4	88.5	248.0
36.5	15.5	54.0	52.8	71.5	127.1	89.0	252.4
37.0	16.1	54.5	54.3	72.0	129.9	89.5	256.9
37.5	16.8	55.0	55.9	72.5	132.8	90.0	261.4
38.0	17.5	55.5	57.5	73.0	135.7	90.5	266.0
38.5	18.3	56.0	59.1	73.5	138.6	91.0	270.6
39.0	19.0	56.5	60.8	74.0	141.6	91.5	275.3
39.5	19.8	57.0	62.5	74.5	144.6	92.0	280.1

Table C5. Length-net weight table for IPHC Regulatory Area 3B (Imperial, 22.5-92 inches).

Length (in)	Weight (lb)	Length (in)	Weight (lb)	Length (in)	Weight (lb)	Length (in)	Weight (lb)
22.5	3.3	40.0	21.5	57.5	70.6	75.0	168.3
23.0	3.5	40.5	22.4	58.0	72.6	75.5	172.0
23.5	3.8	41.0	23.3	58.5	74.7	76.0	175.7
24.0	4.0	41.5	24.3	59.0	76.8	76.5	179.5
24.5	4.3	42.0	25.3	59.5	78.9	77.0	183.4
25.0	4.6	42.5	26.3	60.0	81.1	77.5	187.3
25.5	4.9	43.0	27.3	60.5	83.3	78.0	191.3
26.0	5.3	43.5	28.3	61.0	85.6	78.5	195.3
26.5	5.6	44.0	29.4	61.5	87.9	79.0	199.4
27.0	6.0	44.5	30.5	62.0	90.3	79.5	203.6
27.5	6.3	45.0	31.6	62.5	92.7	80.0	207.8
28.0	6.7	45.5	32.8	63.0	95.1	80.5	212.1
28.5	7.1	46.0	34.0	63.5	97.6	81.0	216.4
29.0	7.5	46.5	35.2	64.0	100.2	81.5	220.8
29.5	8.0	47.0	36.5	64.5	102.7	82.0	225.3
30.0	8.4	47.5	37.8	65.0	105.4	82.5	229.8
30.5	8.9	48.0	39.1	65.5	108.0	83.0	234.4
31.0	9.4	48.5	40.4	66.0	110.8	83.5	239.1
31.5	9.9	49.0	41.8	66.5	113.5	84.0	243.8
32.0	10.4	49.5	43.2	67.0	116.3	84.5	248.5
32.5	10.9	50.0	44.7	67.5	119.2	85.0	253.4
33.0	11.5	50.5	46.1	68.0	122.1	85.5	258.3
33.5	12.1	51.0	47.7	68.5	125.1	86.0	263.3
34.0	12.7	51.5	49.2	69.0	128.1	86.5	268.3
34.5	13.3	52.0	50.8	69.5	131.2	87.0	273.4
35.0	13.9	52.5	52.4	70.0	134.3	87.5	278.6
35.5	14.6	53.0	54.0	70.5	137.4	88.0	283.8
36.0	15.3	53.5	55.7	71.0	140.6	88.5	289.1
36.5	16.0	54.0	57.5	71.5	143.9	89.0	294.5
37.0	16.7	54.5	59.2	72.0	147.2	89.5	300.0
37.5	17.4	55.0	61.0	72.5	150.6	90.0	305.5
38.0	18.2	55.5	62.8	73.0	154.0	90.5	311.1
38.5	19.0	56.0	64.7	73.5	157.5	91.0	316.7
39.0	19.8	56.5	66.6	74.0	161.0	91.5	322.5
39.5	20.7	57.0	68.6	74.5	164.6	92.0	328.3

Table C6. Length-net weight table for IPHC Regulatory Area 4A (Imperial, 22.5-92 inches).

Length (in)	Weight (lb)	Length (in)	Weight (lb)	Length (in)	Weight (lb)	Length (in)	Weight (lb)
22.5	3.5	40.0	21.2	57.5	66.3	75.0	152.8
23.0	3.7	40.5	22.0	58.0	68.1	75.5	156.0
23.5	4.0	41.0	22.9	58.5	70.0	76.0	159.3
24.0	4.3	41.5	23.8	59.0	71.9	76.5	162.6
24.5	4.5	42.0	24.7	59.5	73.8	77.0	166.0
25.0	4.8	42.5	25.7	60.0	75.8	77.5	169.4
25.5	5.2	43.0	26.6	60.5	77.8	78.0	172.9
26.0	5.5	43.5	27.6	61.0	79.8	78.5	176.4
26.5	5.8	44.0	28.6	61.5	81.9	79.0	179.9
27.0	6.2	44.5	29.6	62.0	84.0	79.5	183.5
27.5	6.5	45.0	30.7	62.5	86.2	80.0	187.2
28.0	6.9	45.5	31.8	63.0	88.4	80.5	190.9
28.5	7.3	46.0	32.9	63.5	90.6	81.0	194.6
29.0	7.7	46.5	34.0	64.0	92.8	81.5	198.4
29.5	8.1	47.0	35.2	64.5	95.1	82.0	202.3
30.0	8.6	47.5	36.4	65.0	97.5	82.5	206.2
30.5	9.0	48.0	37.6	65.5	99.9	83.0	210.1
31.0	9.5	48.5	38.8	66.0	102.3	83.5	214.1
31.5	10.0	49.0	40.1	66.5	104.7	84.0	218.2
32.0	10.5	49.5	41.4	67.0	107.2	84.5	222.3
32.5	11.0	50.0	42.7	67.5	109.8	85.0	226.4
33.0	11.6	50.5	44.1	68.0	112.3	85.5	230.7
33.5	12.1	51.0	45.5	68.5	114.9	86.0	234.9
34.0	12.7	51.5	46.9	69.0	117.6	86.5	239.2
34.5	13.3	52.0	48.4	69.5	120.3	87.0	243.6
35.0	13.9	52.5	49.8	70.0	123.0	87.5	248.0
35.5	14.6	53.0	51.3	70.5	125.8	88.0	252.5
36.0	15.2	53.5	52.9	71.0	128.6	88.5	257.0
36.5	15.9	54.0	54.4	71.5	131.5	89.0	261.6
37.0	16.6	54.5	56.0	72.0	134.4	89.5	266.3
37.5	17.3	55.0	57.7	72.5	137.4	90.0	271.0
38.0	18.0	55.5	59.3	73.0	140.4	90.5	275.7
38.5	18.8	56.0	61.0	73.5	143.4	91.0	280.6
39.0	19.6	56.5	62.8	74.0	146.5	91.5	285.4
39.5	20.4	57.0	64.5	74.5	149.6	92.0	290.4

Table C7. Length-net weight table for IPHC Regulatory Area 4B (Imperial, 22.5-92 inches).

Length (in)	Weight (lb)	Length (in)	Weight (lb)	Length (in)	Weight (lb)	Length (in)	Weight (lb)
22.5	3.3	40.0	20.3	57.5	63.9	75.0	147.9
23.0	3.5	40.5	21.1	58.0	65.7	75.5	151.0
23.5	3.8	41.0	22.0	58.5	67.5	76.0	154.2
24.0	4.1	41.5	22.8	59.0	69.3	76.5	157.4
24.5	4.3	42.0	23.7	59.5	71.2	77.0	160.7
25.0	4.6	42.5	24.6	60.0	73.1	77.5	164.0
25.5	4.9	43.0	25.5	60.5	75.0	78.0	167.3
26.0	5.2	43.5	26.5	61.0	77.0	78.5	170.8
26.5	5.5	44.0	27.5	61.5	79.0	79.0	174.2
27.0	5.9	44.5	28.5	62.0	81.1	79.5	177.7
27.5	6.2	45.0	29.5	62.5	83.2	80.0	181.3
28.0	6.6	45.5	30.5	63.0	85.3	80.5	184.9
28.5	7.0	46.0	31.6	63.5	87.4	81.0	188.5
29.0	7.4	46.5	32.7	64.0	89.6	81.5	192.2
29.5	7.8	47.0	33.8	64.5	91.8	82.0	196.0
30.0	8.2	47.5	35.0	65.0	94.1	82.5	199.8
30.5	8.6	48.0	36.1	65.5	96.4	83.0	203.6
31.0	9.1	48.5	37.3	66.0	98.8	83.5	207.5
31.5	9.6	49.0	38.6	66.5	101.1	84.0	211.4
32.0	10.0	49.5	39.8	67.0	103.6	84.5	215.4
32.5	10.6	50.0	41.1	67.5	106.0	85.0	219.5
33.0	11.1	50.5	42.4	68.0	108.5	85.5	223.6
33.5	11.6	51.0	43.8	68.5	111.1	86.0	227.8
34.0	12.2	51.5	45.1	69.0	113.6	86.5	232.0
34.5	12.7	52.0	46.5	69.5	116.3	87.0	236.2
35.0	13.3	52.5	48.0	70.0	118.9	87.5	240.5
35.5	13.9	53.0	49.4	70.5	121.6	88.0	244.9
36.0	14.6	53.5	50.9	71.0	124.4	88.5	249.3
36.5	15.2	54.0	52.4	71.5	127.2	89.0	253.8
37.0	15.9	54.5	54.0	72.0	130.0	89.5	258.3
37.5	16.6	55.0	55.5	72.5	132.8	90.0	262.9
38.0	17.3	55.5	57.2	73.0	135.8	90.5	267.5
38.5	18.0	56.0	58.8	73.5	138.7	91.0	272.2
39.0	18.8	56.5	60.5	74.0	141.7	91.5	277.0
39.5	19.5	57.0	62.2	74.5	144.8	92.0	281.8

Table C8. Length-net weight table for IPHC Regulatory Area 4CDE (Imperial, 22.5-92 inches).

Length (in)	Weight (lb)	Length (in)	Weight (lb)	Length (in)	Weight (lb)	Length (in)	Weight (lb)
22.5	3.5	40.0	21.7	57.5	68.2	75.0	158.1
23.0	3.8	40.5	22.5	58.0	70.1	75.5	161.4
23.5	4.0	41.0	23.4	58.5	72.1	76.0	164.8
24.0	4.3	41.5	24.3	59.0	74.0	76.5	168.3
24.5	4.6	42.0	25.3	59.5	76.0	77.0	171.8
25.0	4.9	42.5	26.2	60.0	78.1	77.5	175.3
25.5	5.2	43.0	27.2	60.5	80.1	78.0	179.0
26.0	5.6	43.5	28.2	61.0	82.3	78.5	182.6
26.5	5.9	44.0	29.3	61.5	84.4	79.0	186.3
27.0	6.3	44.5	30.4	62.0	86.6	79.5	190.1
27.5	6.6	45.0	31.4	62.5	88.8	80.0	193.9
28.0	7.0	45.5	32.6	63.0	91.1	80.5	197.7
28.5	7.4	46.0	33.7	63.5	93.4	81.0	201.6
29.0	7.8	46.5	34.9	64.0	95.7	81.5	205.6
29.5	8.3	47.0	36.1	64.5	98.1	82.0	209.6
30.0	8.7	47.5	37.3	65.0	100.6	82.5	213.7
30.5	9.2	48.0	38.6	65.5	103.0	83.0	217.8
31.0	9.7	48.5	39.8	66.0	105.5	83.5	222.0
31.5	10.2	49.0	41.2	66.5	108.1	84.0	226.2
32.0	10.7	49.5	42.5	67.0	110.7	84.5	230.5
32.5	11.2	50.0	43.9	67.5	113.3	85.0	234.8
33.0	11.8	50.5	45.3	68.0	116.0	85.5	239.2
33.5	12.4	51.0	46.7	68.5	118.7	86.0	243.7
34.0	13.0	51.5	48.2	69.0	121.5	86.5	248.2
34.5	13.6	52.0	49.7	69.5	124.3	87.0	252.7
35.0	14.2	52.5	51.2	70.0	127.1	87.5	257.4
35.5	14.9	53.0	52.7	70.5	130.0	88.0	262.0
36.0	15.5	53.5	54.3	71.0	132.9	88.5	266.8
36.5	16.2	54.0	56.0	71.5	135.9	89.0	271.6
37.0	16.9	54.5	57.6	72.0	138.9	89.5	276.4
37.5	17.7	55.0	59.3	72.5	142.0	90.0	281.3
38.0	18.4	55.5	61.0	73.0	145.1	90.5	286.3
38.5	19.2	56.0	62.8	73.5	148.3	91.0	291.3
39.0	20.0	56.5	64.6	74.0	151.5	91.5	296.4
39.5	20.8	57.0	66.4	74.5	154.8	92.0	301.6