



## IPHC Fishery-Independent Setline Survey (FISS) design and implementation in 2024

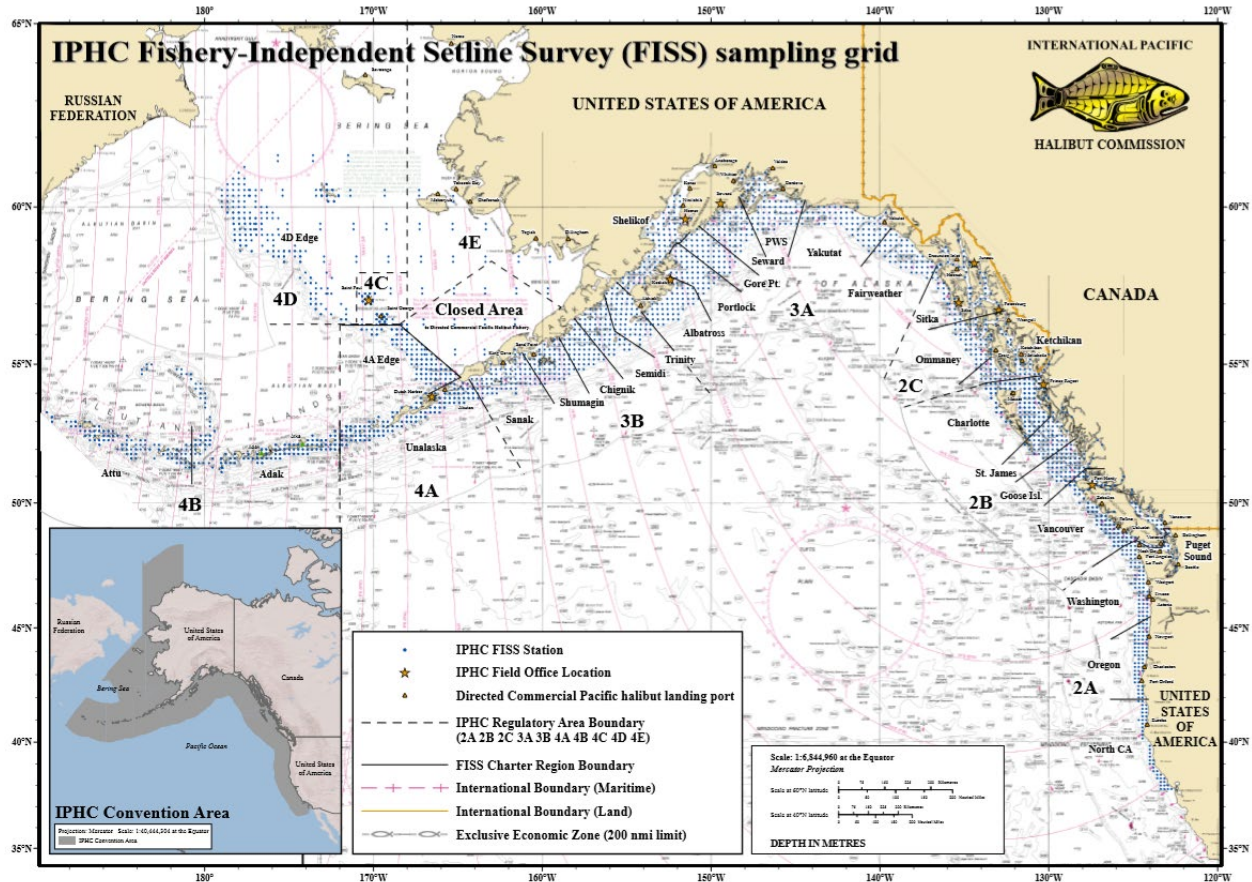
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### PURPOSE

To provide a summary of the IPHC Fishery-Independent Setline Survey (FISS) design and implementation in 2024.

### BACKGROUND

The annual IPHC Fishery-Independent Setline Survey (FISS) of the Pacific halibut stock was augmented from 2014-2019 with expansion stations that filled in gaps in coverage in the annual FISS. Prior to 2020, the standard grid of stations comprised 1,200 stations. Following the completion in 2019, expansion stations were added to the standard grid in all IPHC Regulatory Areas, now totaling 1,890 stations for the full FISS design ([Figure 1](#)), within the prescribed depth range of 18 to 732 metres (10 to 400 fathoms).



**Figure 1.** IPHC Fishery-Independent Setline Survey (FISS) with full sampling grid shown.

Prior to 2019, only fixed gear was used to fish FISS sets. With increasing use of snap gear in the commercial fishery, this restriction has limited the number of vessels available for the FISS. Further, any differences between snap and fixed gears (including catch rate differences and differences in fishing locations) may affect our understanding of trends in commercial fishery indices. This has motivated the need for a study comparing the two gear types with this work being done in 2019, 2020, and again in 2021. While no study was completed in 2022, we

recognized the increased use of snap gear and integrated snap gear into the FISS tender specifications for 2023 and 2024.

Beginning in 2019, individual weight data were collected coastwide from Pacific halibut caught on the FISS to eliminate questions that have arisen regarding the accuracy of estimates that depend on these weights, including weight per unit effort (WPUE) indices of density. Data from IPHC collections from commercial landings and other sources had provided evidence that the current standard length-net weight curve used for estimating Pacific halibut weights on the FISS may have been over-estimating weights on average in most IPHC Regulatory Areas, and that the relationship between weight and length may vary spatially.

## 2024 FISS design

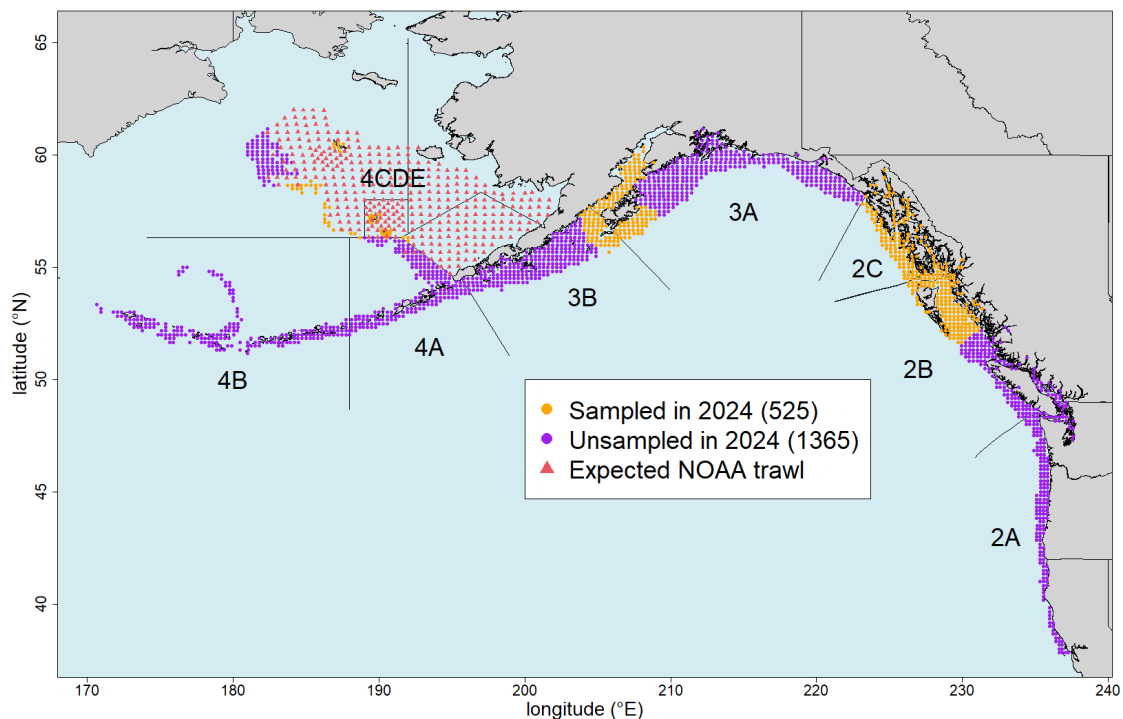
At IM099, the Commission agreed on an optimized version of the revenue positive design:

[IPHC-2023-IM099-R](#), para. 51: *The Commission **AGREED** on an optimized design for the 2024 FISS as provided at Appendix IV, that balances the Commission's primary and secondary objectives for the FISS. Specifically, the 2024 design shall include Options 1, 2, and 3.... In addition, Option 4 shall be included in the RFT process but is not yet endorsed. Once bids are received and evaluated in February 2024, the Commission will make a final decision on whether to proceed or not with Option 4, based on bids and logistical constraints at that time and potentially a new option [Option 9] for IPHC Regulatory Area 4CDE.*

On 22 December 2023, the 2024 FISS Tender Specifications were published to the IPHC website with a deadline of 4 February 2024 for tenders.

At IM099 the Commission **AGREED** on a 2024 design that included Options 1, 2 and 3. In the 2024 FISS tender specifications, Option 4 and Option 9 were also included as tentative design additions for the Commission's review in February 2024. A special session was held on 13 February where the final 2024 FISS design was **ENDORSED**.

The design ([Figure 2](#)) comprised sampling of subareas within IPHC Regulatory Areas 2B, 3A, 3B, 4CDE intended to balance the Commissions primary and secondary objectives for the FISS. 2024, sampling in IPHC Regulatory Areas 2C included 100% of the full FISS design.



**Figure 2.** Map of the 2024 FISS design endorsed by the Commission on 13 February 2024 ([IPHC-2024-MR-002](#)). Purple circles were not sampled in 2024.

## MATERIALS AND METHODS

The IPHC's FISS design encompasses nearshore and offshore waters of the IPHC Convention Area ([Fig. 1](#)). The IPHC Regulatory Areas are divided into 29 charter regions, each requiring between 10 and 46 charter days to complete. FISS stations are located at the intersections of a 10 nmi by 10 nmi square grid within the depth range occupied by Pacific halibut during summer months (18 – 732 m [10 – 400 fm]). [Figure 2](#) depicts the 2024 FISS station positions, and IPHC Regulatory Areas.

Fishing vessels are chosen through a competitive bid process where up to four (4) charter regions per vessel may be awarded and typically 8-15 vessels are chosen. In 2024, the process was clearly documented on the IPHC website for accountability and transparency purposes: [Vessel Recruiting - IPHC](#).

In 2024, five (5) vessels were chartered to complete the FISS, as detailed in [IPHC-2024-MR-003 Notification of IPHC Fishery-Independent Setline Survey \(FISS\) 2024 Contract Awards - IPHC](#).

### **Sampling protocols**

IPHC Setline Survey Specialists (Field) collected data according to protocols established in the 2024 FISS Sampling Manual ([IPHC-2024-VSM01](#)).

### **Sampling challenges - 2024**

Of the 525 FISS stations planned for the 2024 FISS season, 507 (97%) were effectively sampled.

**Not sampled:** A total of three (3) initially planned stations were not sampled in 2024. Two stations in the Sitka charter region were unsampled as they were within Glacier Bay National Park and we were not permitted to complete these stations within the park this year. There was also one station in the St James charter region that was unsampled as it was located in the Hecate Marine Protected Area.

**Ineffective stations:** Coastwide, fifteen (15) stations were deemed ineffective due to orca depredation (n=2), sperm whale depredation (n=9), sand fleas (n=3), and setting and gear issues (n=1).

### **Bait (Chum salmon & Pink salmon)**

The minimum quality requirement for FISS bait is No. 2 semi-bright (Alaska Seafood Marketing Institute grades A through E), headed and gutted, and individually quick-frozen chum or pink salmon. Bait usage is based on 0.17 kilograms (0.37 pounds) per hook resulting in approximately 136 kilograms (300 pounds) per eight skate station. Bait quality was monitored and documented throughout the season and found to meet the standard as described above.

**Pre-season:** In October 2024 ([IPHC Media Release 2023-014](#)), the Secretariat made pre-season bait purchases of approximately 30 tonnes (66,000 lbs) of chum salmon and 30 tonnes (66,000 lbs) of pink salmon to ensure a smooth start to the 2024 FISS.

## **RESULTS**

**Interactive views of the FISS results are provided via the IPHC website here:**

<https://www.iphc.int/data/setline-survey-catch-per-unit-effort>

As in previous years, legal-sized (O32) Pacific halibut caught on the FISS were sacrificed in order to obtain biological data and were retained for sale. In addition, beginning in 2020, sub-legal (U32) Pacific halibut randomly selected for otolith sampling were also retained and sold. This helped to offset costs of the FISS. FISS vessels also retained for sale incidentally captured rockfish (*Sebastes spp.*) and Pacific cod (*Gadus macrocephalus*) as these species rarely survive the barotrauma resulting from capture. Most vessel contracts provided the vessel a lump sum payment, along with a 10% share of the Pacific halibut proceeds and a 50% share of the incidental catch proceeds.

The 2024 FISS chartered 5 commercial longline vessels (three Canadian and two USA) during a combined 29 trips and 275 charter days ([Tables 1](#)). Otoliths were removed from 5,771 fish coastwide. Approximately 153 tonnes (337,674 pounds) of Pacific halibut, 22 tonnes (48,993 pounds) of Pacific cod, and 27 tonnes (60,044 pounds) of rockfish were landed from the FISS stations.

**Table 1a.** Effort and landing summary by FISS charter region and vessel for all 2024 stations and all Pacific halibut (sampled U32 and all O32).

IPHC Regulatory Area	Charter Region	Vessel	Vessel Number <sup>1</sup>	Charter Days <sup>2</sup>	Planned Stations	Effective Stations <sup>3</sup>	Pacific halibut Sold (t) <sup>4</sup>	Pacific halibut Sold (lb) <sup>4</sup>	Average Price USD/kg <sup>5</sup>	Average Price USD/lb <sup>5</sup>
2B	Charlotte	<i>Bold Pursuit</i>	20875	41	89	88	31	68,361	\$15.88	\$7.20
2B	St. James	<i>Vanisle</i>	21912	35	60	57	16	36,071	\$16.27	\$7.38
2C	Ketchikan	<i>Pender Isle</i>	27282	22	43	43	18	39,170	\$11.88	\$5.39
2C	Ommaney	<i>Pender Isle</i>	27282	26	52	46	36	78,604	\$13.97	\$6.34
2C	Sitka	<i>Vanisle</i>	21912	33	52	47	19	41,234	\$12.72	\$5.77
3A	Albatross	<i>Kema Sue</i>	41033	25	49	49	10	21,325	\$11.98	\$5.43
3A	Shelikof	<i>Kema Sue</i>	41033	32	64	64	11	23,970	\$12.52	\$5.68
3B	Trinity	<i>Kema Sue</i>	41033	28	56	56	10	22,250	\$12.03	\$5.45
4CDE	4CDE South	<i>Saint Peter</i>	76769	33	60	58	3	6,689	\$6.81	\$3.09
<b>Total</b>		<b>5 Vessels</b>		<b>275</b>	<b>525</b>	<b>507</b>	<b>153</b>	<b>337,674</b>	<b>\$13.71</b>	<b>\$6.22</b>

<sup>1</sup> Canada: Vessel Registration Number and USA: ADF&G vessel number.

<sup>2</sup> Days are estimated - some vessels fished two charter regions in one day.



3 Stations that did not meet setting parameters or deemed ineffective are excluded.

4 Net weight (head-off, dressed, washed). May not sum to correct total due to rounding.

5 Ex-vessel price.

**Table 1b.** Effort and landing summary by FISS charter region and vessel for all 2024 stations and O32 Pacific halibut.

IPHC Regulatory Area	Charter Region	Vessel	Vessel Number <sup>1</sup>	Charter Days <sup>2</sup>	Planned Stations	Effective Stations <sup>3</sup>	Pacific halibut Sold (t) <sup>4</sup>	Pacific halibut Sold (lb) <sup>4</sup>	Average Price USD/kg <sup>5</sup>	Average Price USD/lb <sup>5</sup>
2B	Charlotte	<i>Bold Pursuit</i>	20875	41	89	88	30	66,960	\$15.90	\$7.21
2B	St. James	<i>Vanisle</i>	21912	35	60	57	16	35,293	\$16.28	\$7.39
2C	Ketchikan	<i>Pender Isle</i>	27282	22	43	43	17	38,217	\$11.89	\$5.39
2C	Ommaney	<i>Pender Isle</i>	27282	26	52	46	35	77,088	\$14.02	\$6.36
2C	Sitka	<i>Vanisle</i>	21912	33	52	47	18	39,652	\$12.81	\$5.81
3A	Albatross	<i>Kema Sue</i>	41033	25	49	49	9	19,684	\$11.99	\$5.44
3A	Shelikof	<i>Kema Sue</i>	41033	32	64	64	10	22,756	\$12.58	\$5.70
3B	Trinity	<i>Kema Sue</i>	41033	28	56	56	9	20,796	\$12.12	\$5.50
4CDE	4CDE South	<i>Saint Peter</i>	76769	33	60	58	2	4,692	\$7.66	\$3.47
<b>Total</b>		<b>5 Vessels</b>		<b>275</b>	<b>525</b>	<b>507</b>	<b>147</b>	<b>325,138</b>	<b>\$13.82</b>	<b>\$6.27</b>

1 Canada: Vessel Registration Number and USA: ADF&G vessel number.

2 Days are estimated - some vessels fished two charter regions in one day.

3 Stations that did not meet setting parameters or deemed ineffective are excluded.

4 Net weight (head-off, dressed, washed). May not sum to correct total due to rounding.

5 Ex-vessel price.

**Table 1c.** Effort and landing summary by FISS charter region and vessel for all 2024 stations and sampled U32 Pacific halibut.

IPHC Regulatory Area	Charter Region	Vessel	Vessel Number <sup>1</sup>	Charter Days <sup>2</sup>	Planned Stations	Effective Stations <sup>3</sup>	Pacific halibut Sold (t) <sup>4</sup>	Pacific halibut Sold (lb) <sup>4</sup>	Average Price USD/kg <sup>5</sup>	Average Price USD/lb <sup>5</sup>
2B	Charlotte	<i>Bold Pursuit</i>	20875	35	89	88	1	1,401	\$14.82	\$6.72
2B	St. James	<i>Vanisle</i>	21912	41	60	57	0	778	\$15.56	\$7.06
2C	Ketchikan	<i>Pender Isle</i>	27282	22	43	43	0	953	\$11.27	\$5.11
2C	Ommaney	<i>Pender Isle</i>	27282	26	52	46	1	1,516	\$11.46	\$5.20
2C	Sitka	<i>Vanisle</i>	21912	33	52	47	1	1,582	\$10.41	\$4.72
3A	Albatross	<i>Kema Sue</i>	41033	25	49	49	1	1,641	\$11.87	\$5.38
3A	Shelikof	<i>Kema Sue</i>	41033	32	64	64	1	1,214	\$11.41	\$5.17
3B	Trinity	<i>Kema Sue</i>	41033	28	56	56	1	1,454	\$10.65	\$4.83
4CDE	4CDE South	<i>Saint Peter</i>	76769	33	60	58	1	1,997	\$4.81	\$2.18
<b>Total</b>		<b>5 Vessels</b>		<b>275</b>	<b>525</b>	<b>507</b>	<b>6</b>	<b>12,536</b>	<b>\$10.84</b>	<b>\$4.92</b>

1 Canada: Vessel Registration Number and USA: ADF&G vessel number.

2 Days are estimated - some vessels fished two charter regions in one day.

3 Stations that did not meet setting parameters or deemed ineffective are excluded.

4 Net weight (head-off, dressed, washed). May not sum to correct total due to rounding.

5 Ex-vessel price.

Vessels chartered by the IPHC delivered fish to nine (9) different ports ([Tables 2](#)). Fish sales were awarded based on obtaining a fair market price. When awarding sales, the Commission considered the price offered, the number of years that a buyer had been buying and marketing

Pacific halibut, how fish were graded at the dock (including the determination of No. 2 and chalky Pacific halibut), and the promptness of settlements following deliveries. Individual sales were evaluated after each event to ensure that the buyer was meeting IPHC standards. Average prices increased from \$13.31/kg in 2023 to \$13.71/kg in 2024 (Tables 3). This represents a 2.9% increase in price.

**Table 2a.** FISS Pacific halibut landings by port for all Pacific halibut (sampled U32 and all O32), 2024<sup>1,2</sup>.

Offload Port	Trips	Tonnes	Pounds	Total USD	Average Price (USD/kg)	Average Price (USD/lb)
Dutch Harbor	1	1.33	2,930	\$8,143.80	\$6.13	\$2.78
Homer	4	14.65	32,297	\$180,104.77	\$12.29	\$5.58
Ketchikan	2	17.00	37,487	\$201,573.05	\$11.85	\$5.38
Kodiak	4	15.99	35,248	\$193,256.64	\$12.09	\$5.48
Petersburg	1	6.75	14,889	\$89,416.45	\$13.24	\$6.01
Port Hardy	3	14.18	31,265	\$226,385.03	\$15.96	\$7.24
Prince Rupert	8	55.23	121,755	\$879,730.37	\$15.93	\$7.23
St. Paul	2	1.71	3,759	\$12,508.33	\$7.34	\$3.33
Sitka	4	26.33	58,044	\$308,603.90	\$11.72	\$5.32
<b>Grand Total</b>	<b>29</b>	<b>153</b>	<b>337,674</b>	<b>\$2,099,722.34</b>	<b>\$13.71</b>	<b>\$6.22</b>

<sup>1</sup> Net weight (head-off, dressed, washed).

<sup>2</sup> Prices based on net weight.

**Table 2b.** FISS Pacific halibut landings by port for O32 Pacific halibut, 2024<sup>1,2</sup>.

Offload Port	Trips	Tonnes	Pounds	Total USD	Average Price (USD/kg)	Average Price (USD/lb)
Dutch Harbor	1	0.89	1,970	\$5,791.80	\$6.48	\$2.94
Homer	4	13.87	30,573	\$171,261.09	\$12.35	\$5.60
Ketchikan	2	16.58	36,549	\$196,775.80	\$11.87	\$5.38
Kodiak	4	14.82	32,663	\$179,960.03	\$12.15	\$5.51
Petersburg	1	6.41	14,138	\$86,036.95	\$13.42	\$6.09
Port Hardy	3	14.02	30,903	\$223,860.54	\$15.97	\$7.24
Prince Rupert	8	54.06	119,192	\$862,641.97	\$15.96	\$7.24
St. Paul	2	1.23	2,722	\$10,506.92	\$8.51	\$3.86
Sitka	4	0	56,428	\$301,264.90	\$11.77	\$5.34
<b>Grand Total</b>	<b>29</b>	<b>147</b>	<b>325,138</b>	<b>\$2,038,100.00</b>	<b>\$13.82</b>	<b>\$6.27</b>

<sup>1</sup> Net weight (head-off, dressed, washed).

<sup>2</sup> Prices based on net weight.

**Table 2c.** FISS Pacific halibut landings by port for sampled U32 Pacific halibut, 2024<sup>1,2</sup>.

Offload Port	Trips	Tonnes	Pounds	Total USD	Average Price (USD/kg)	Average Price (USD/lb)
Dutch Harbor	1	0.44	960	\$2,352.00	\$5.40	\$2.45
Homer	4	0.78	1,724	\$8,843.68	\$11.31	\$5.13
Ketchikan	2	0.43	938	\$4,797.25	\$11.28	\$5.11
Kodiak	4	1.17	2,585	\$13,296.61	\$11.34	\$5.14
Petersburg	1	0.34	751	\$3,379.50	\$9.92	\$4.50
Port Hardy	3	0.16	362	\$2,524.49	\$15.37	\$6.97
Prince Rupert	8	1.16	2,563	\$17,088.40	\$14.70	\$6.67
St. Paul	2	0.47	1,037	\$2,001.41	\$4.25	\$1.93
Sitka	4	0.73	1,616	\$7,339.00	\$10.01	\$4.54
<b>Grand Total</b>	<b>29</b>	<b>6</b>	<b>12,536</b>	<b>\$61,622.34</b>	<b>\$10.84</b>	<b>\$4.92</b>

<sup>1</sup> Net weight (head-off, dressed, washed).

<sup>2</sup> Prices based on net weight.

**Table 3a.** FISS landings (total pounds and price) of all Pacific halibut (sampled U32 and all O32) by IPHC Regulatory Area in 2024<sup>1</sup>.

IPHC Regulatory Area	2B	2C	3A	3B	4CDE	Total Weight and Average Price
Tonnes	47	72	21	10	3	153
Pounds	104,432	159,008	45,295	22,250	6,689	337,674
Price USD/kg	\$16.01	\$13.13	\$12.26	\$12.02	\$6.81	\$13.71
Price USD/lb	\$7.26	\$5.96	\$5.56	\$5.45	\$3.09	\$6.22

<sup>1</sup> Net weight (head-off, dressed, washed)

**Table 3b.** FISS landings (total pounds and price) of O32 Pacific halibut by IPHC Regulatory Area in 2024<sup>1</sup>.

IPHC Regulatory Area	2B	2C	3A	3B	4CDE	Total Weight and Average Price
Tonnes	46	70	20	9	2	147
Pounds	102,253	154,957	42,440	20,796	4,692	325,138
Price USD/kg	\$16.03	\$13.19	\$12.30	\$12.12	\$7.66	\$13.82
Price USD/lb	\$7.27	\$5.98	\$5.58	\$5.50	\$3.47	\$6.27

<sup>1</sup> Net weight (head-off, dressed, washed)

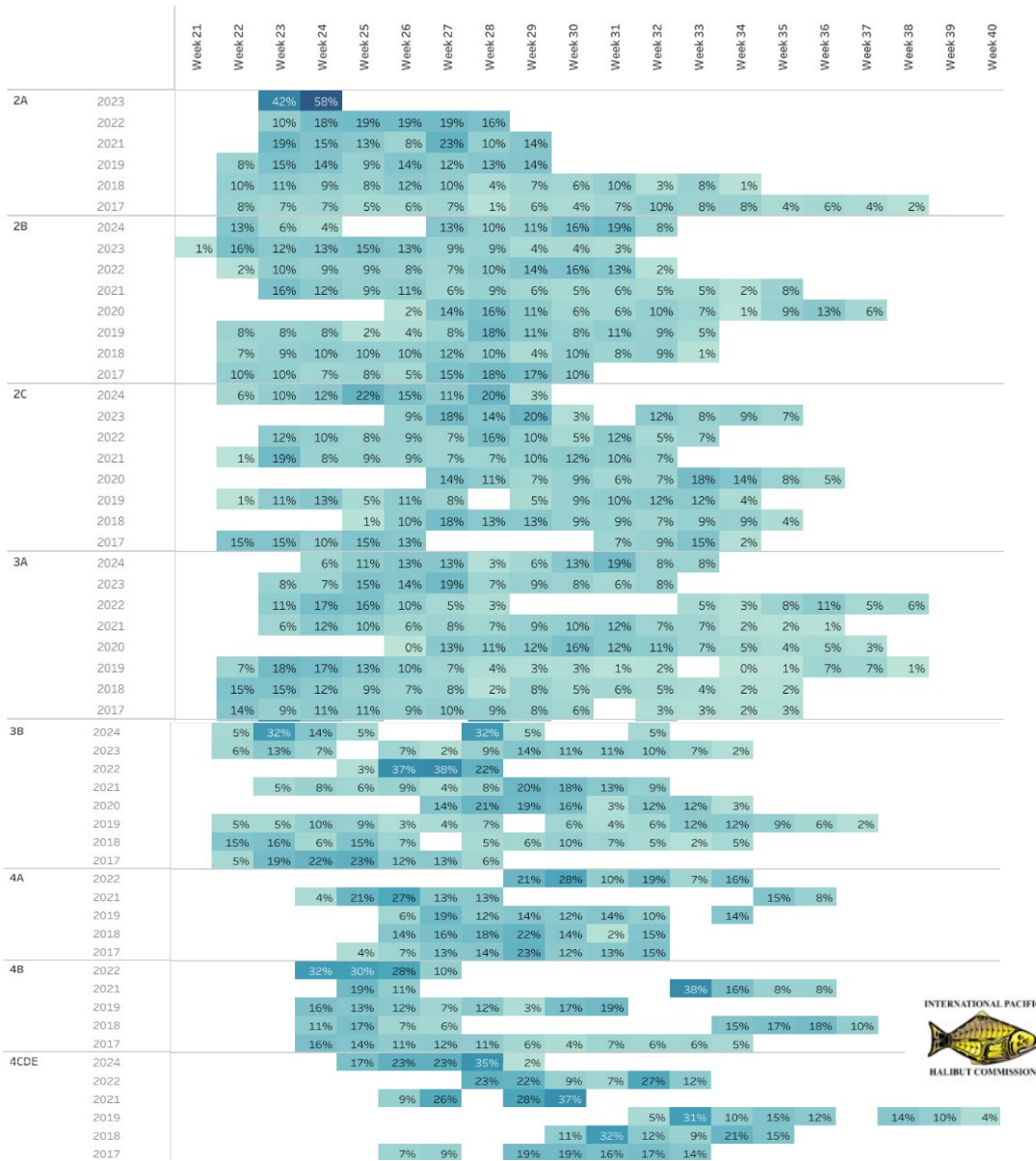
**Table 3c.** FISS landings (total pounds and price) of sampled U32 Pacific halibut by IPHC Regulatory Area in 2024<sup>1</sup>.

IPHC Regulatory Area	2B	2C	3A	3B	4CDE	Total Weight and Average Price
Tonnes	1	2	1	1	1	6
Pounds	2,179	4,051	2,855	1,4054	1,997	12,536
Price USD/kg	\$15.08	\$11.00	\$11.67	\$10.65	\$4.81	\$10.84
Price USD/lb	\$6.84	\$4.99	\$5.29	\$4.81	\$2.18	\$4.92

<sup>1</sup> Net weight (head-off, dressed, washed)

### ***FISS timing***

The months of June, July, and August are targeted for FISS fishing every year. In 2024, this activity took place from 24 May through 15 August. On a coastwide basis, FISS vessel activity was highest in intensity at the beginning of the FISS season and declined in early August as boats finished their charter regions ([Figure 3](#)). All FISS activity was completed by mid-August.



**Figure 3.** Percent of the total FISS stations completed by IPHC Regulatory Area during each week of the year (2017-2023). Week 21 begins in late May or early June depending on the year.

**RECOMMENDATION/S**

That the RAB:

- 1) **NOTE** paper IPHC-2024-RAB025-07 that provides a summary of the IPHC Fishery-Independent Setline Survey (FISS) design and implementation in 2024.

**APPENDICES**

Nil.