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## IPHC Fishery-independent setline survey (FISS) design and implementation in 2019

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### PURPOSE

To provide an overview of the International Pacific Halibut Commission's (IPHC) fishery-independent setline survey (FISS) design and implementation in 2019.

### BACKGROUND

The IPHC's FISS provides catch-rate information and biological data on Pacific halibut (*Hippoglossus stenolepis*) that are collected independently from the commercial fishery. These data are collected using standardized methods, bait, and gear during the summer of each year, and provide a comparison with data collected from the commercial fishery. Biological data collected on the FISS (e.g. the size, age, and sex composition of Pacific halibut) are used to monitor changes in recruitment, biomass, growth, and mortality in the Pacific halibut population. In addition, records of non-target species caught during FISS operations provide estimates of bait competition, making them valuable to the IPHC stock assessment, and to provide information for the avoidance of non-target species. Non-Pacific halibut catch rates and biological data also provide an index of abundance and demographic trends over time for the management of those species.

The IPHC has carried out the FISS in the years 1963 to 1966, 1976 to 1986, and from 1993 to 2018. Prior to 1998, FISS coverage was typically limited to parts of 2 to 4 Regulatory Areas each year, and prior to 1993 bait use was not standardized. The majority of the current FISS station design and sampling protocols have been standardized since 1998, and from that year onwards, setline survey coverage became more comprehensive and consistent. Beginning in 2017 and with key updates made for 2018, interactive views of the FISS results were provided via the IPHC website:

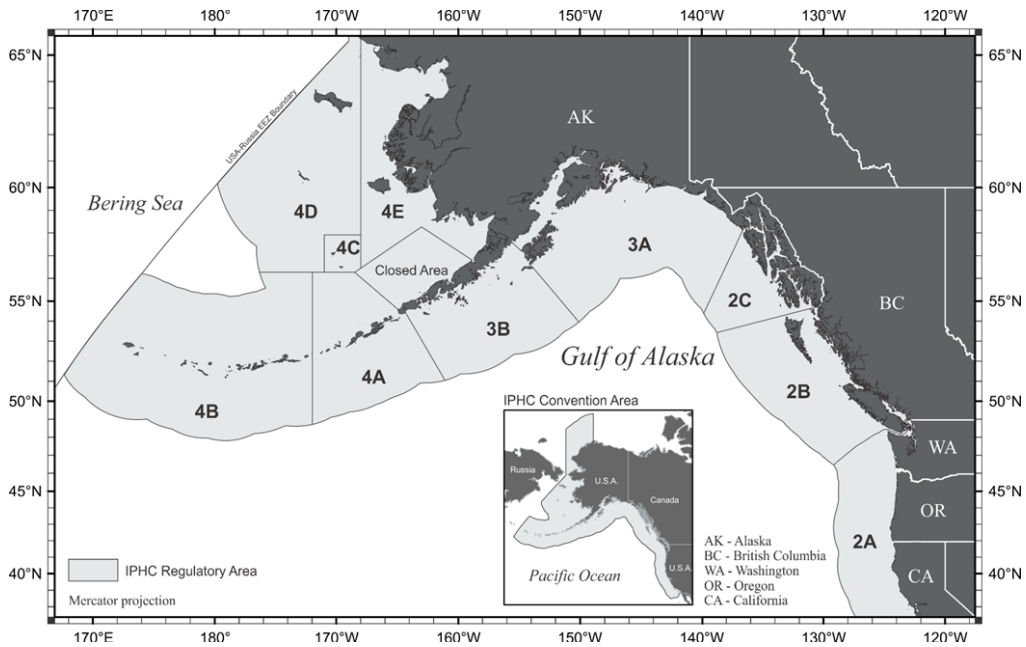
<https://iphc.int/data/setline-survey-catch-per-unit-effort>.

### MATERIALS AND METHODS

The IPHC's FISS design encompasses nearshore and offshore waters of the IPHC Convention Area ([Figure 1](#)). The current annually-fished FISS station layout has been in place since 1998 (with some additions in 2006 (Bering Sea), and in 2011 (IPHC Regulatory Area 2A)).

For logistical purposes, the survey footprint is divided into 31 survey charter regions, each requiring between 10 and 46 charter days to sample. FISS stations are located at the intersections of a 10 nmi by 10 nmi square grid within the depth range of 37-503 m (20-275 fm) in most Regulatory Areas).

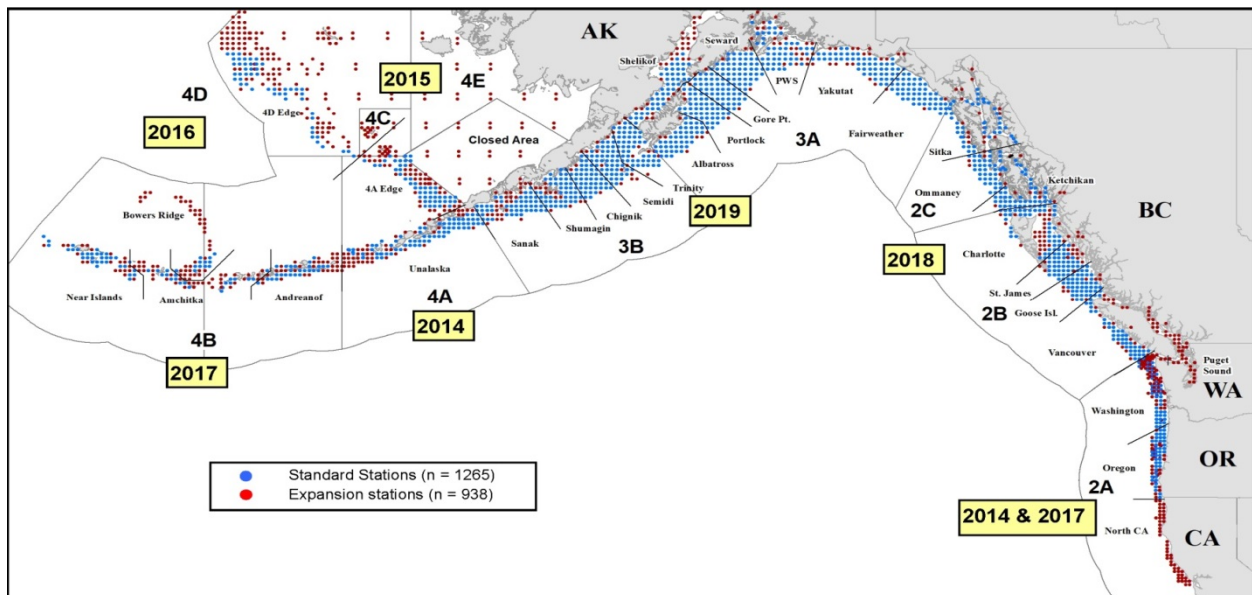
Fishing vessels are chosen through a competitive bid process each year where up to three regions per vessel are awarded and 10-15 vessels are chosen.



**Figure 1.** Map of the IPHC Convention Area (insert) and IPHC Regulatory Areas.

**Expansion stations**

In 2014, the IPHC began a six year FISS expansion project, sampling previously unsampled stations in one or two IPHC Regulatory Areas per year (Figure 2). This expansion included stations deeper and shallower than the historical design, down to depths of 732 m (400 fm) and in waters shallower than 37 m (20 fm). Further, most IPHC Regulatory Areas had substantial gaps in station coverage within the standard 37-503 m depth range. Sampling these additional stations over the first five years of the expansion project has led to a reduction in variance and bias of the weight per unit effort (WPUE) and numbers per unit effort (NPUE) used as indices for stock assessment modelling and for stock distribution estimation.

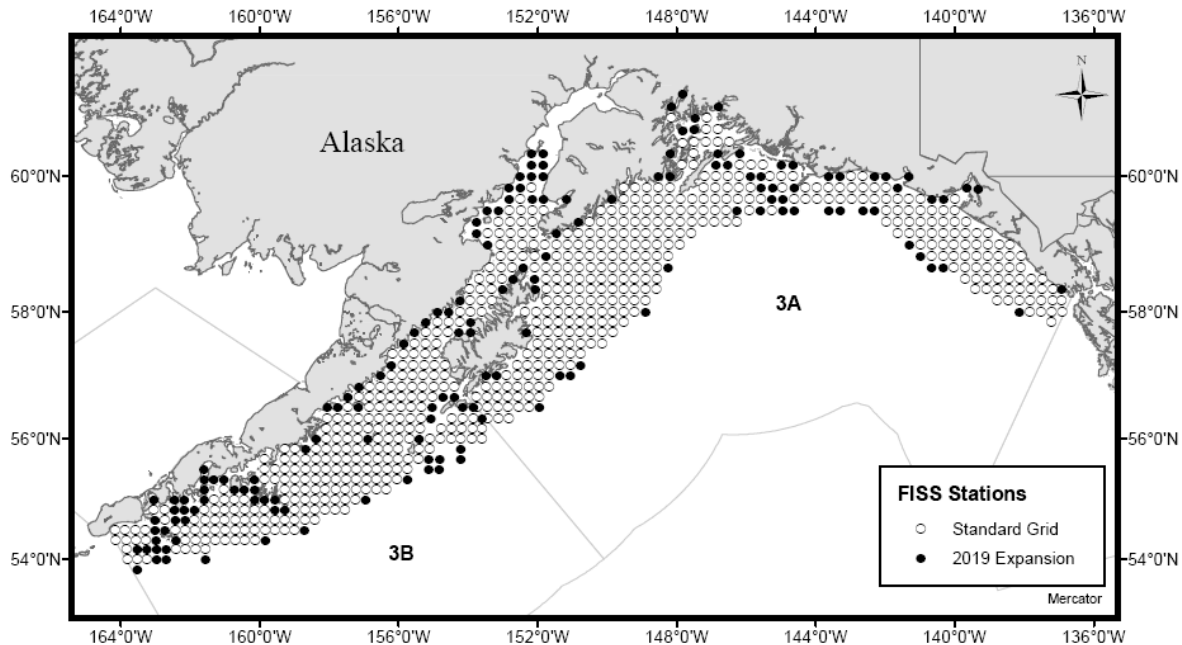


**Figure 2.** FISS expansion stations planned for 2014-19.

**2019 expansions**

As shown in Figure 3, one more year remains to complete the coastwide FISS expansion project. The 2019 IPHC FISS expansion will occur in IPHC Regulatory Areas 3A and 3B, as

approved by the Commission in 2014. The IPHC has begun vetting the proposed FISS stations with the respective State and Federal agencies. In some cases, this also involves special permitting requirements. There are 89 expansion stations planned for IPHC Regulatory Area 3A and 67 for IPHC Regulatory Area 3B.

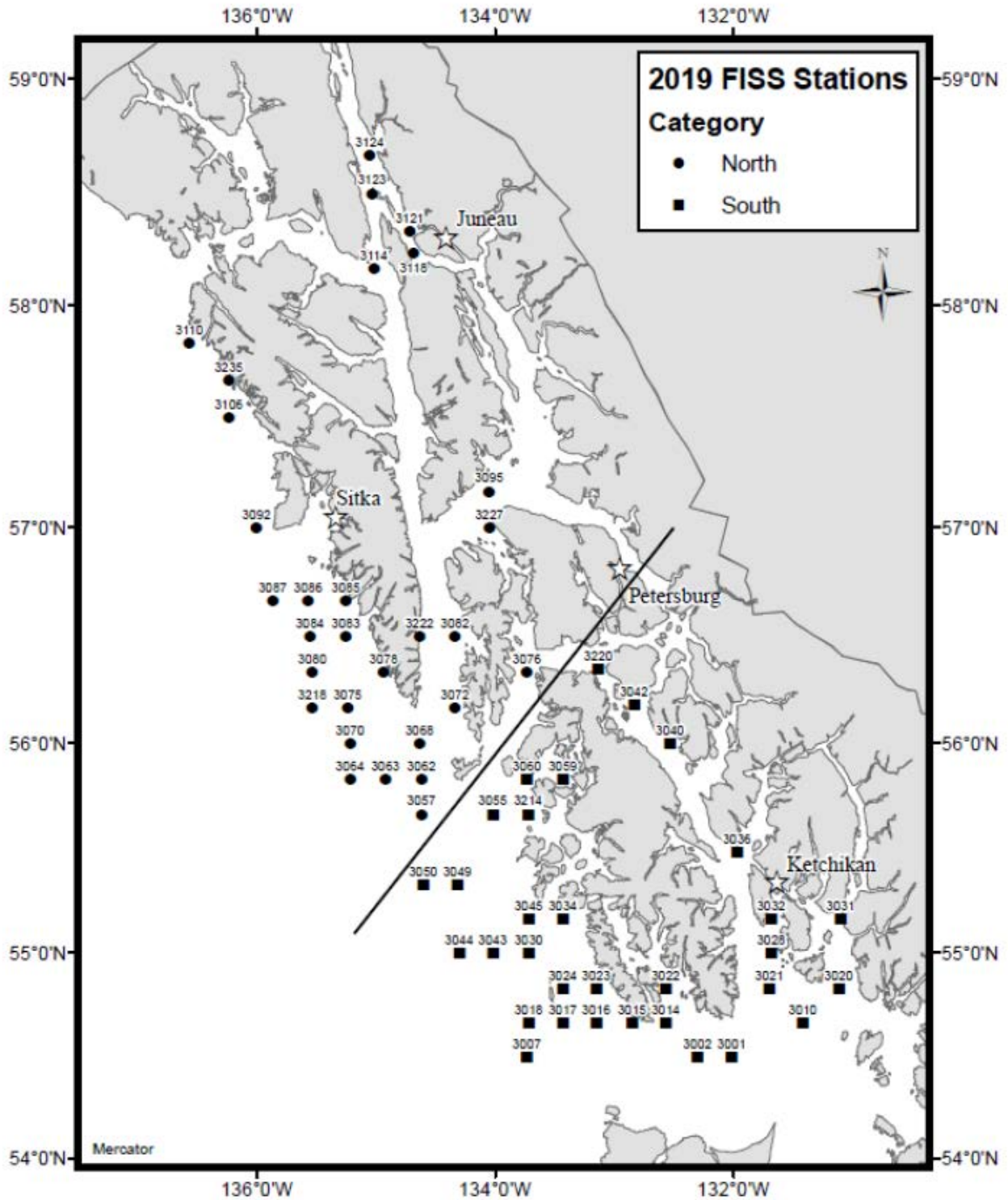


**Figure 3.** Proposed 2019 IPHC Regulatory Areas 3A and 3B FISS stations.

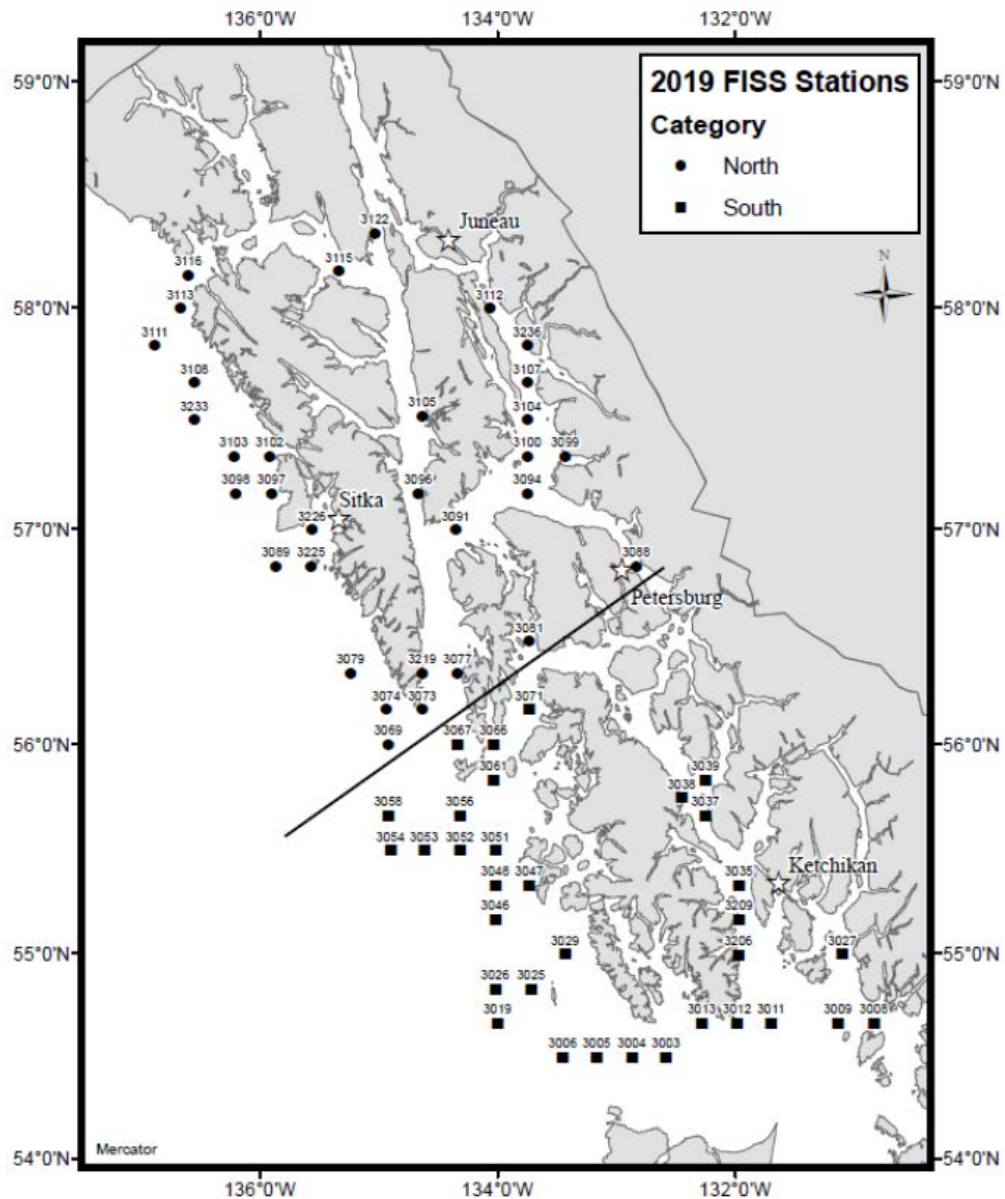
### ***Gear comparison***

The IPHC will be undertaking a gear comparison during the 2019 FISS to compare the catch-rates of fixed-hook and snap gear. The comparison will evaluate whether data from both gear types can be used in the calculation of indices, and how data collected on the FISS compare to that obtained from the snap and fixed-hook gear used by the commercial fishery. All stations in IPHC Regulatory Area 2C will be fished twice, once by the FISS standard of fixed-hook gear and once by snap gear (order assigned randomly).

To accomplish this work, IPHC Regulatory Area 2C has been divided into early and late charter regions instead of by the traditional three charter regions of Ketchikan, Sitka and Ommaney. Vessels using snap or fixed-hook gear interested in bidding on IPHC Regulatory Area 2C should refer to the 2019 FISS Bid Specifications for the bidding options (<https://iphc.int/the-commission/opportunities>). Vessels using any single gear type will not be able to fish more than half the stations in IPHC Regulatory Area 2C in 2019 i.e. 65 stations. The stations for each charter region by gear type are shown in [Figures 4 and 5](#).



**Figure 4.** IPHC Regulatory Area 2C fixed-hook gear early (26 May to 15 July) charter region or snap gear late (16 July to 31 August) charter region.



**Figure 5.** IPHC Regulatory Area 2C fixed-hook gear late (16 July to 31 August) charter region or snap gear early (26 May to 15 July) charter region.

#### RECOMMENDATION/S

That the RAB **NOTE** paper IPHC-2019-RAB020-06 which provided an overview of the International Pacific Halibut Commission's (IPHC) fishery-independent setline survey (FISS) design and implementation for 2019.

#### APPENDICES

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