**Regional Operational Plan No. ROP.SF.1J.2023.07**

# Operational Plan: Juneau Shoreside Hatchery Chinook Salmon Sport Harvest Survey for 2023

**By**

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**Alaska Department of Fish and Game** **Divisions of Sport Fish and Commercial Fisheries**

## Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

**Weights and measures (metric)**

| | |
|---|---|
| centimeter | cm |
| deciliter | dL |
| gram | g |
| hectare | ha |
| kilogram | kg |
| kilometer | km |
| liter | L |
| meter | m |
| milliliter | mL |
| millimeter | mm |

**Weights and measures (English)**

| | |
|---|---|
| cubic feet per second | $ft^3/s$ |
| foot | ft |
| gallon | gal |
| inch | in |
| mile | mi |
| nautical mile | nmi |
| ounce | oz |
| pound | lb |
| quart | qt |
| yard | yd |

**Time and temperature**

| | |
|---|---|
| day | d |
| degrees Celsius | °C |
| degrees Fahrenheit | °F |
| degrees kelvin | K |
| hour | h |
| minute | min |
| second | s |

**Physics and chemistry**

| | |
|---|---|
| all atomic symbols | |
| alternating current | AC |
| ampere | A |
| calorie | cal |
| direct current | DC |
| hertz | Hz |
| horsepower | hp |
| hydrogen ion activity (negative log of) | pH |
| parts per million | ppm |
| parts per thousand | ppt, ‰ |
| volts | V |
| watts | W |

**General**

| | |
|---|---|
| Alaska Administrative Code | AAC |
| all commonly accepted abbreviations | e.g., Mr., Mrs., AM, PM, etc. |
| all commonly accepted professional titles | e.g., Dr., Ph.D., R.N., etc. |
| at | @ |
| compass directions: | |
| east | E |
| north | N |
| south | S |
| west | W |
| copyright | © |
| corporate suffixes: | |
| Company | Co. |
| Corporation | Corp. |
| Incorporated | Inc. |
| Limited | Ltd. |
| District of Columbia | D.C. |
| et alii (and others) | et al. |
| et cetera (and so forth) | etc. |
| exempli gratia (for example) | e.g. |
| Federal Information Code | FIC |
| id est (that is) | i.e. |
| latitude or longitude | lat or long |
| monetary symbols (U.S.) | $, ¢ |
| months (tables and figures): first three letters | Jan,...,Dec |
| registered trademark | ® |
| trademark | ™ |
| United States (adjective) | U.S. |
| United States of America (noun) | USA |
| U.S.C. | United States Code |
| U.S. state | use two-letter abbreviations (e.g., AK, WA) |

**Mathematics, statistics**

| | |
|---|---|
| *all standard mathematical signs, symbols and abbreviations* | |
| alternate hypothesis | $H_A$ |
| base of natural logarithm | $e$ |
| catch per unit effort | CPUE |
| coefficient of variation | CV |
| common test statistics | (F, t, $\chi^2$, etc.) |
| confidence interval | CI |
| correlation coefficient (multiple) | R |
| correlation coefficient (simple) | r |
| covariance | cov |
| degree (angular) | ° |
| degrees of freedom | df |
| expected value | $E$ |
| greater than | > |
| greater than or equal to | ≥ |
| harvest per unit effort | HPUE |
| less than | < |
| less than or equal to | ≤ |
| logarithm (natural) | ln |
| logarithm (base 10) | log |
| logarithm (specify base) | $\log_2$, etc. |
| minute (angular) | ′ |
| not significant | NS |
| null hypothesis | $H_O$ |
| percent | % |
| probability | P |
| probability of a type I error (rejection of the null hypothesis when true) | α |
| probability of a type II error (acceptance of the null hypothesis when false) | β |
| second (angular) | ″ |
| standard deviation | SD |
| standard error | SE |
| variance | |
| population | Var |
| sample | var |

*REGIONAL OPERATIONAL PLAN NO. ROP.SF.1J.2023.07*

# OPERATIONAL PLAN: JUNEAU SHORESIDE HATCHERY CHINOOK SALMON SPORT HARVEST SURVEY FOR 2023

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## SIGNATURE/TITLE PAGE

| | |
|---|---|
| Project Title: | Juneau Shoreside Hatchery Chinook Salmon Sport Harvest Survey for 2023 |
| Project leader(s): | Matt Catterson, Jeff Nichols |
| Division, Region and Area | Sport Fish, Region I, Douglas |
| Project Nomenclature: | *Pacific Salmon Commission, Stakeholder Mitigation Panel* |
| Period Covered | February – December, 2023 |
| Field Dates: | June 1 – August 31, 2023 |
| Plan Type: | Category III |

**Approval**

| Title | Name | Signature | Date |
|---|---|---|---|
| Project Leader | Matt Catterson | | 5/31/23 |
| Juneau Area Manager | Dan Teske | | 5/31/23 |
| Biometrician | Jiaqi Huang | | 5/31/23 |
| Research Coordinator | Jeff Nichols | | 3/28/23 |
| Regional Supervisor | Judith Lum | | 05.31.23 |

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# ABSTRACT

Sport anglers fishing from shore in the Juneau area of Southeast Alaska target and harvest Chinook salmon *Oncorhynchus tshawytscha*, primarily during April – August, the duration of which can be truncated due to wild stock management measures. Angler effort, catch, and harvest data will be collected from June through August 2023 from shore-based anglers at 2 prioritized locations in the Juneau area associated with Alaska hatchery release sites. Harvest sampling will be used to collect biological samples and associated data to estimate the age, length, and genetic composition of the Chinook salmon harvest. Chinook salmon will be inspected for missing adipose fins, indicating the head should be removed to recover a coded wire tag.

Keywords: Chinook salmon, *Oncorhynchus tshawytscha,* creel, coded wire tag, CWT, Juneau, hatchery, enhanced, genetic stock identification, GSI, Southeast Alaska

# PURPOSE

The Juneau shoreside Chinook salmon (*Oncorhynchus tshawytscha*) sport fishery provides significant opportunity to harvest Alaska hatchery-origin fish, which in-turn comprise the dominant stock component of the marine (and freshwater) harvest of Chinook salmon in the Juneau area (D. Teske, Area Management Biologist, Juneau, Division of Sport Fish, personal communication). A stakeholder process supported by the Alaska Department of Fish and Game (ADF&G; department) and Division of Sport Fish (DSF) identified a need to provide an assessment of harvest at prioritized hatchery release locations served by the Juneau area road system. This operational plan describes objectives, methods, and timelines for conducting this assessment during year 2 (2023) of a project funded for 3 years (2022–2024).

A creel survey independent of the Southeast Alaska Marine Harvest Studies marine boat (MHS-MB) sampling program (Jaenicke et al. 2022) will be implemented in the Juneau area during 2023 to estimate Chinook salmon harvest and effort by sport anglers at prioritized release locations where adult hatchery-origin Chinook salmon are anticipated to return. Additional information on stock contribution, age and sex composition, and other biological attributes, and spatial and temporal patterns of harvest and effort will also be obtained.

# BACKGROUND

Chinook salmon harvested in the Juneau area sport fishery occurs in marine waters accessed by boat and shore (foot) as well as in select freshwaters on the road system. The stock composition of the Juneau area sport harvest consists primarily of Alaska hatchery-origin and Southeast Alaska (SEAK) wild-origin fish, presumed to be of about equal proportions annually, yet varying across the season. Stock composition patterns for a larger geographic area (Northern Inside) that included the Juneau area suggested a greater contribution from Alaska hatchery-origin fish in recent years compared to SEAK wild-origin fish (Peterson et al. 2022); concerted wild stock management actions in place since 2018 are assumed to have played a role in decreasing harvest of SEAK wild-origin fish thereby increasing the stock composition of Alaska hatchery-origin Chinook salmon.

Estimation of the Chinook salmon sport harvest and effort across SEAK, and by finer spatial scales for specific time frames, supports management and enhancement strategies employed by the department and DSF. Cooperating hatchery operators, including Douglas Island Pink and Chum, Inc (DIPAC) in Juneau, also utilize information on returning Chinook salmon to evaluate their operations, some of which are derived from internal efforts and evaluation while others are obtained directly from the department and DSF.

The DSF has used various sport fishery estimation programs and projects for over 40 years in the Juneau area to inform management- and resource-driven questions that address domestic and international requirements. While the Marine Harvest Studies (MHS) program in SEAK has used location-level harvest information from the Alaska Sport Fishing Survey (commonly referred to as the Statewide Harvest Survey, or SWHS hereafter) to attribute harvest to the Juneau area shoreline, estimates for the entire area (Figure 1) served by boat and shore anglers requires integration of SWHS and data obtained from an onsite angler survey of marine boats through the MHS program (MHS–MB). Contemporary assessment (~ since 2005) has relied on this integrated approach. Intermittently, and prior to 2005, DSF employed the use of onsite angler surveys to estimate Chinook harvest patterns at a location associated with DIPACs only release site adjacent to the Macauley Salmon Hatchery—MSH (White 2004). The estimation was specific to shoreside harvest and effort—not marine boat.

This project will leverage advancements in electronic data collection employed by the current MHS–MB program to compliment a strategically modified shoreside angler survey to provide independent estimates of harvest and effort at two of the DIPAC Chinook salmon release sites in the Juneau area (Figure 2).

# OBJECTIVES

## PRIMARY OBJECTIVES

1) Estimate the sport fishing effort (angler-hours) and harvest (number) of large Chinook salmon by anglers fishing from shore in 2 release site locations (areas hereafter) from June 1, 2023, to August 27, 2023, such that the harvest estimate is within 35% of the true value 95% of the time, and the effort estimate is within 15% of the true value 95% of the time. The areas include:
    A. Macaulay Salmon Hatchery – Wayside Park (MSH)
    B. Fish Creek Area – Fritz Cove/Fish Creek Pond -& Fish Creek estuary (FCA)

## SECONDARY OBJECTIVES

1) Collect information on age (scales) and stock origin (CWTs, marks, genetics)
2) Estimate the sport fishing effort (angler hours) and harvest (number) of non-large Chinook salmon by anglers fishing from shore in 2 areas from June 1, 2023, to August 27, 2023.

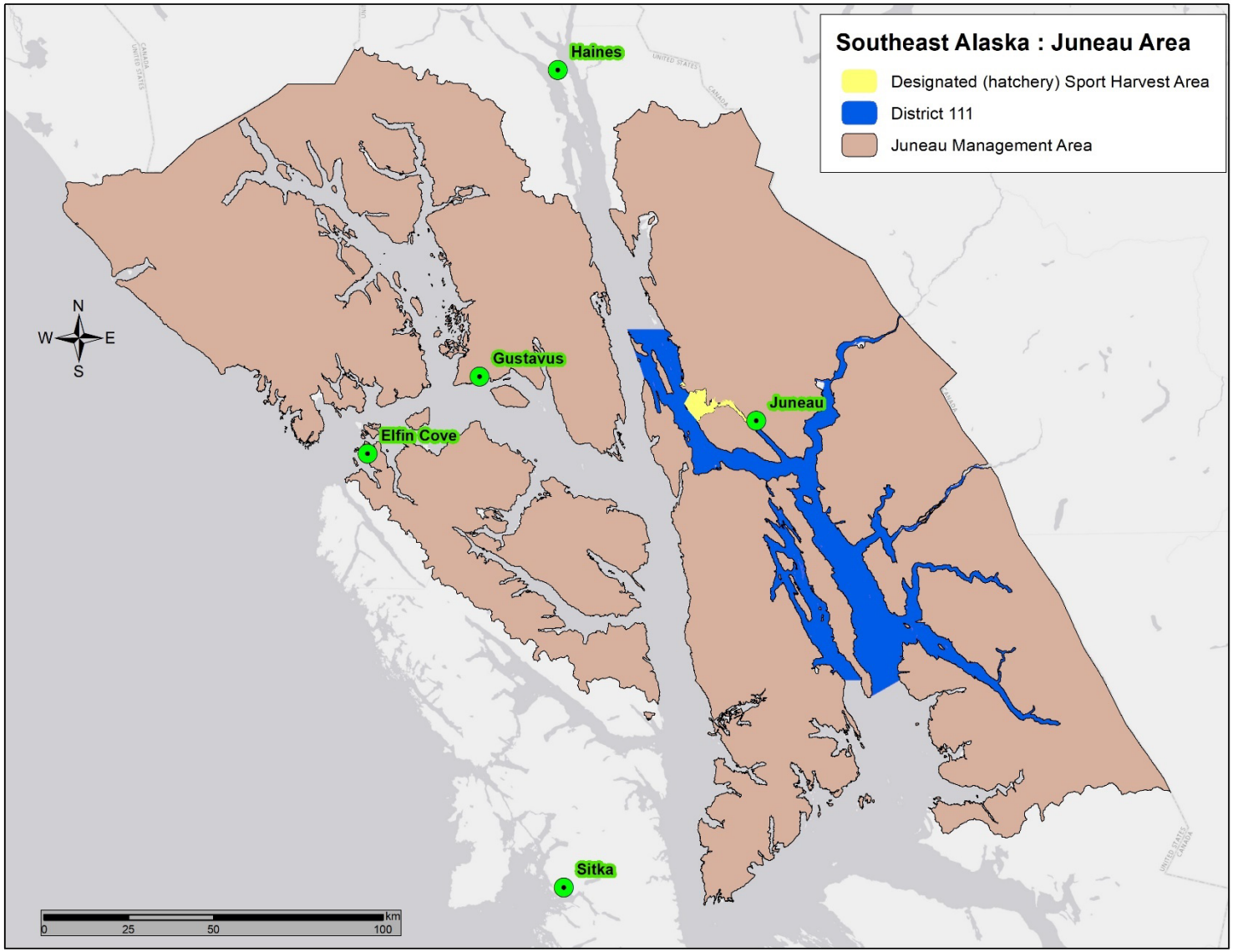


Figure 1.–Extent of the Juneau management area in Southeast Alaska.

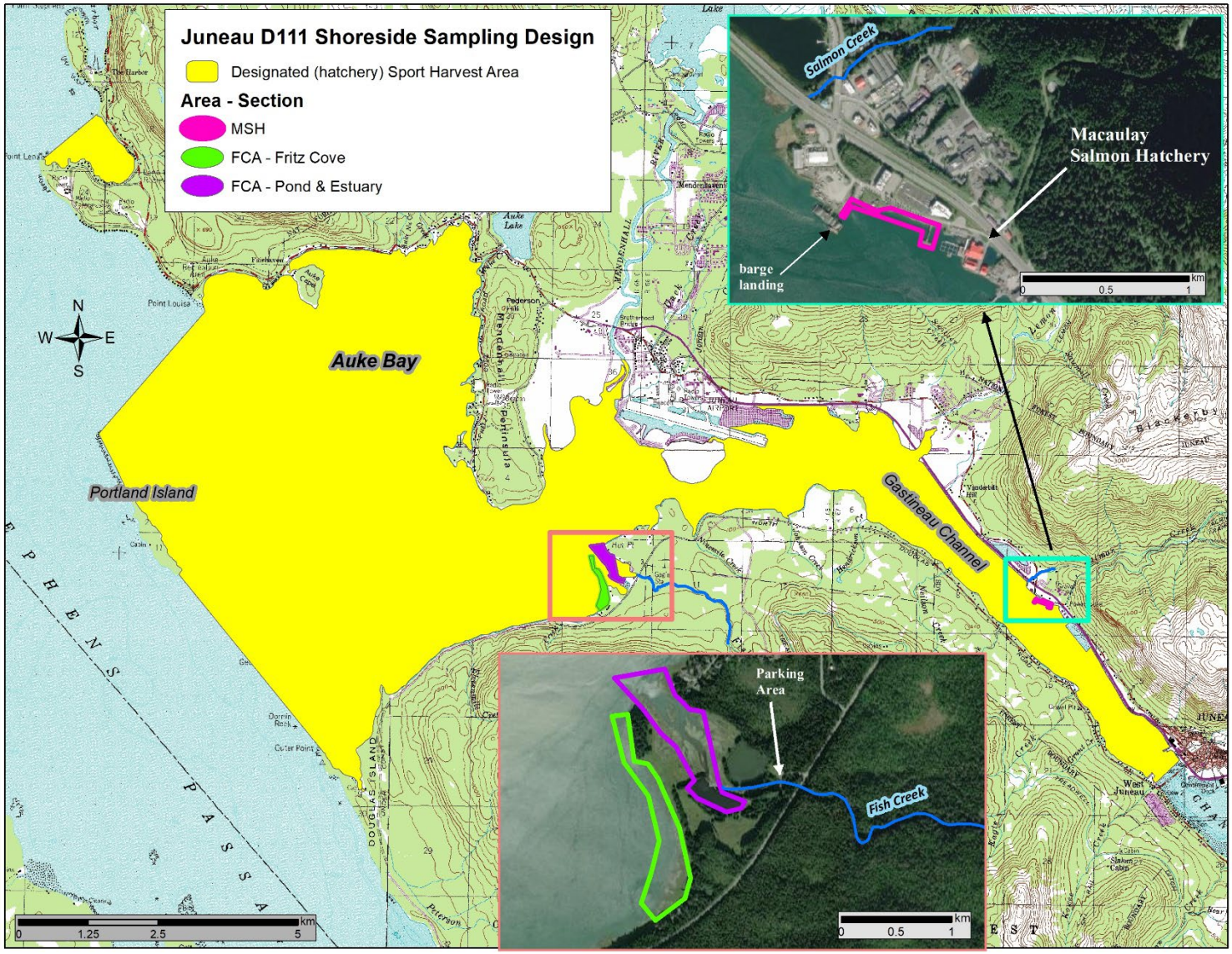


Figure 2.–Location of two sampling areas associated with the Juneau shoreline and designated hatchery sport harvest area, Southeast Alaska.

# METHODS

## STUDY DESIGN

The study location includes two shoreside fishery areas in Juneau, Alaska (Figure 2): Wayside Park at Macaulay Hatchery (MSH) and Fish Creek (FCA) including the Fritz Cove shoreline and Fish Creek Pond and estuary. The MSH study area consists of a north and south section, with the south encompassing the beach, beginning at the fish ladder, and extending 150 feet north of the dock (Figure 2). The northern section includes the remainder of beach, beginning at the boundary of the area to the South and ending at a private barge landing. The sampler will roam between the North and South sections to ensure equal sampling over the entire area. The FCA study area consists of two geographically distinct sections (Figure 2) temporally stratified based on the timing of fishing effort. Both sections will have sample counts and interviews, but the technician will spend more time ('roaming') at the Fritz Cove shoreline in June, then as the fish move into the pond in July, more interviews will be done in the Fish Creel Pond and Estuary.

A stratified, two-stage roving creel survey based on expansion of sample ratios will be used to estimate fishing effort and harvest of salmon at the survey areas from 01 June to 27 August. Six biweekly (14 day) seasonal strata and time of day stratification will be maintained at the two unique sampling areas. Thus, there are 12 discrete seasonal/temporal strata for each sampling area. Days are primary sampling units and anglers within days will be secondary units. Ten days out of 14 are sampled each biweek with five early and five late day shifts per biweek.

The early day shift begins at 7:00 am and ends at 2:00 pm, and the late day shift begins at 2:00 pm and ends at 9:00 pm. During each sampling day, a technician will both count and interview anglers within each sampling site. A "count" of anglers takes less than 5 minutes to accomplish. **When angler counts are completed, the technician will intercept and interview anglers completing their trip without regard to angler success (angler harvest).** The section to start counts will be selected at random for both MSH and FCA while the section to conduct interviews of is non-random in order to intercept the greatest number of exiting anglers.

In each interview, anglers will be asked to report their effort and harvest at the section and area being sampled. As many completed-trip interviews as possible will be obtained during each interview period and day selected for sampling. Sampling of anglers exiting the survey area is expected to be (on average) in proportion to the number exiting the site at different times of the day in each section.

During each sampling day, anglers will be counted 8 times. The first "count" in each sampling day will occur on the hour when the technician arrives. Subsequent "counts" will be conducted at one-hour intervals on the hour with the last count done prior to the technician leaving for the day. The counts will be considered instantaneous and reflect fishing effort at the time of the count.

Effort will be estimated by multiplying the average angler count for the day for each section by the hours available for sampling each day. The harvest per unit effort (HPUE) for each fish species will be estimated from the completed-trip interviews. The estimated harvest will be obtained from the product of the effort and HPUE estimates.

## DATA COLLECTION

Data collected during each sampling shift for each location will include 8 angler "counts", the number of anglers interviewed, and for each interview, the hours fished by the angler (in the

sampling area), the number of Chinook kept (from the sampling area), the number checked for a missing adipose fin, the number of large and small Chinook released, and residency of the angler being interviewed. Angler counts and interview data will be recorded on a custom electronic handheld application. Detailed instruction can be found in the Creel Marine Roadside Technician Manual, archived electronically on the Douglas DSF Network.

It is critical that samplers provide unbiased samples from the sections being sampled. This requires that samplers:

a) remain at their assigned shift/area even if no anglers are present;

b) make every effort to interview ALL anglers leaving the section or area (to avoid selective interviewing);

c) record anglers counts at the designated times; and

d) follow the sampling schedule meticulously without deviation, regardless of present day/shift activity (or lack thereof).

A shoreside creel survey to estimate the angler effort and sport harvests at MSH and FCA roadside sport fishery was conducted in 2022 (Catterson et al. 2023). The relative precisions of the large Chinook salmon harvest estimates were reported to be 29% and 44% at 95% confidence level at MSH and FCA, respectively (Catterson et al. 2023). The relative precisions of the angler effort estimates were reported to be 10% and 15% at 95% confidence level at MSH and FCA, respectively (Catterson et al. 2023). The sampling rate for 2023 will be the same as used in the 2022 study. The number of strata of this 2023 study will be reduced from 24 to 12 discrete seasonal/temporal strata when compared with the 2022 study. The elimination of the weekday/weekend stratification in the 2023 sampling design is based on the observation that the variation of the angler effort and harvest are largely due to seasonal change rather than weekday/weekday type. Assuming that the fishing activities at our 2 survey sites of this study are similar to the shoreside fishery in 2022, with the current scheduled sampling rate, we expect to meet our relative precision goal of 35% at 95% confidence level for the estimate of large Chinook harvest and 15% at 95% confidence level for the estimate of angler effort.

## DATA REDUCTION

Data will be electronically captured on the Marine Harvest Studies application (via handheld, waterproof unit) and transmitted daily to a cloud server by all technicians. From there the relational database located on a Juneau ADF&G server will be triggered to download the data from the cloud server. The data can be accessed and edited via SQL management studio, a web viewer, or accessed and read into a statistical analysis system dataset using SAS for Windows. If the application or handheld fail, backup units are available at each port.

All technicians will record angler information, effort, harvest, biological data, and photos into the application on their handhelds, currently an Apple iPad with waterproof case. The application has built in validations for common warnings and errors to assist the technicians while recording the data (see the Handheld training manual for the list). Technicians are required to review their data, correcting all errors and warnings, or making comments as to why the data is incomplete or in error. They will also verify all CWT, Whatman and scale card numbers to ensure all data was keyed in correctly. Once checked, data and photos are transmitted to the cloud server. In addition, all biological samples must also be turned into the area office each Sunday night. The supervisor

will verify all shifts have been transmitted and download the list of biological data expected in their port. They will recheck the data for completeness and consistency with the experimental design and provide guidance to technicians as needed to ensure the design is correctly implemented. The database will be reviewed and corrected at least weekly for any records not passing validation, and any records with CWT data will be verified and marked as clean to release these records for the tag lab to download the coded wire tag data report. If any errors are found in a CWT record after this point, the tag lab will need to be notified directly about the change.

Data will then be run through various SAS error checking programs with feedback passed on to technicians at each stage. After final checking of the SAS datasets, the data will be analyzed according to the procedures outlined below. In conjunction with Tag Lab personnel, the number of fish sampled for adipose finclips and estimated harvest (for the onsite creel survey locations) will also be entered into a related database so that hatchery contribution estimates can be generated directly. Once data are finalized, the data files will be archived on the Douglas server, with all raw data available in the relational database.

Coded wire tag heads from adipose fin clipped Chinook salmon will be checked and sent to the Mark, Tag and Age Lab (MTAL). Scale samples will be sent to the Commercial Fisheries scale aging lab and genetic samples will be sent to the Division of Commercial Fisheries Gene Conservation Laboratory (GCL) in Anchorage. Scale ages will be recorded on printouts, keypunched into the Excel spreadsheet, and then imported into the database. The MTAL and GCL will access all data associated with these samples directly from the relational database via report tables. The tag recovery information from each head will be entered into the MTAL database accessed directly by this program via relational database report table. Resulting data from the genetic samples are not returned to this program, but results remain on the associated Commercial Fisheries database.

# DATA ANALYSIS

## Effort, Harvest, and Catch

Estimates of angler effort, harvest, catch, and associated standard errors will be calculated according to the procedures outlined below (Bernard et al. 1998).

### *Angler Effort*

The mean number of anglers over the angler counting survey on day *i* in stratum *h* (defined in Table 1) will be estimated as follows:

$$\bar{x}_{hi} = \frac{\sum_{j=1}^{r_{hi}} x_{hij}}{r_{hi}} \qquad (1)$$

where

$x_{hij}$ = the number of anglers observed in the *j*th count of day *i* in stratum *h*, and

$r_{hi}$ = the number of counts on day *i* in stratum *h*.

Table 1.–Strata used for estimating creel survey statistics in each section.

| Stratum | No. of strata | Description |
|---|---|---|
| Temporal | 6 | Biweekly |
| Time of the day | 2 | Early day shift, Late day shift |

Angler counts will be conducted systematically within each sample day. The variance of the mean angler count will be estimated as follows:

$$\mathrm{var}(\bar{x}_{hi}) = \frac{\sum_{j=2}^{r_{hi}} \left(x_{hij} - x_{hi(j-1)}\right)^2}{2r_{hi}(r_{hi}-1)} \tag{2}$$

Daily estimates of angler effort (angler-hours) will be the product of total hours in the sampled period and the average number of anglers over the counting survey. Effort (angler-hours) during day *i* in stratum *h* will be estimated as follows:

$$\hat{E}_{hi} = L_{hi}\bar{x}_{hi} \tag{3}$$

where $L_{hi}$ is the number of hours of a sampling shift (7 hours).

The within-day variance (effort) will be estimated as follows:

$$var\left(\hat{E}_{hi}\right) = L_{hi}^2\, var(\bar{x}_{hi}) \tag{4}$$

The mean effort for stratum *h* will be estimated as follows:

$$\bar{E}_h = \frac{\sum_{i=1}^{d_h} \hat{E}_{hi}}{d_h} \tag{5}$$

where $d_h$ is the number of days sampled in stratum *h*.

The sample variance of daily effort for stratum *h* will be estimated as follows:

$$s^2(E_h) = \frac{\sum_{i=1}^{d_h} \left(\hat{E}_{hi} - \bar{E}_h\right)^2}{(d_h - 1)} \tag{6}$$

Total effort for stratum *h* will be estimated as follows:

$$\hat{E}_h = D_h\bar{E}_h \tag{7}$$

where $D_h$ is the total number of days the fishery will be open in stratum *h*.

The variance of total effort for each stratum in a 2-stage design, omitting the finite population correction factor for the second stage, will be estimated as follows (Bernard et al. 1998):

$$\mathrm{var}\left(\hat{E}_h\right) = (1-f)D_h^2\frac{s^2(E_h)}{d_h} + fD_h^2\frac{\sum_{i=1}^{d_h} var\left(\hat{E}_{hi}\right)}{d_h^2} \tag{8}$$

where $f$ is the fraction of days sampled ($d_h / D_h$).

### *Harvest and Catch*

Harvest and catch per unit (hour) of effort (HPUE and CPUE) for day $i$ will be estimated from angler interviews. The estimate of HPUE (similarly CPUE) on day $i$ in stratum $h$ will be estimated as follows[1]:

$$HPUE_{hi} = \frac{\sum_{a=1}^{m_{hi}} k_{hia}}{\sum_{a=1}^{m_{hi}} e_{hia}} \tag{9}$$

where

$k_{hia}$ = harvest of angler party $a$ interviewed on day $i$ in stratum $h$,

$e_{hia}$ = effort (hours fished) by angler party $a$ interviewed on day $i$ in stratum $h$, and

$m_{hi}$ = number of angler parties interviewed on day $i$ in stratum $h$.

The variance of HPUE (similarly CPUE) on day $i$ in stratum $h$ will be estimated as follows:

$$var(HPUE_{hi}) = \frac{\sum_{a=1}^{m_{hi}}(k_{hia} - e_{hia}\cdot HPUE_{hi})^2}{m_{hi}(m_{hi}-1)\bar{e}_{hi}^{\,2}} \tag{10}$$

where $\bar{e}_{hi}$ is the average of effort (hours fished) of all anglers interviewed on day $i$ in stratum $h$.

Daily estimates of harvest (similarly for catch) will then be calculated as the product of the daily estimate of angler effort and harvest (or catch) rates:

$$\hat{H}_{hi} = \hat{E}_{hi}HPUE_{hi} \tag{11}$$

Its variance will be estimated as follows (Goodman 1960):

$$\mathrm{var}\left(\hat{H}_{hi}\right) = \mathrm{var}\left(\hat{E}_{hi}\right)(HPUE_{hi})^2 + \mathrm{var}(HPUE_{hi})\,\hat{E}_{hi}^{\,2} - \mathrm{var}\left(\hat{E}_{hi}\right)\mathrm{var}(HPUE_{hi}) \tag{12}$$

CPUE will be estimated by substituting angler catch for angler harvest in Equations 9–10, respectively. Catch during sample day $i$ will be estimated by substituting the appropriate $CPUE_{hi}$ statistics into Equations 11 and 12.

Total harvest and catch during stratum $h$ will be estimated using Equations 5–8, substituting estimated harvest ($\hat{H}_{hi}$) and catch ($\hat{C}_{hi}$) during sample day $i$ for the estimated effort ($\hat{E}_{hi}$) during day $i$.

[1] The jackknife estimating procedure as outlined in Bernard et al. (1998: Appendix D) may be used in lieu of these procedures if sample sizes are deemed to be low (i.e., less than 5 anglers interviewed in a day).

# SCHEDULE AND DELIVERABLES

| Dates | Activity |
|---|---|
| Feb–April, 2023 | Technician recruitment and hiring |
| May 15, 2023 | ROP submission to RTS for publication |
| May 15–May 31, 2023 | Creel training, ADF&G-DSF – MSH |
| June 1–August 31, 2023 | Data collection surveys |
| July 31, 2023 | Semi-annual report submission to PSC Mitigation Panel |
| September–October, 2023 | Data analyses, FDS report development |
| November 15, 2023 | Draft FDS to Regional Research Coordinator |
| December 15, 2023 | FDS submission to RTS for peer review |
| January 31, 2024 | Annual report submission to PSC Mitigation Panel |

# RESPONSIBILITIES

**Matt Catterson, Regional Enhancement Coordinator**
Duties: Co-PI. Coordinate and provide direction on all aspects of the project including, planning, budgeting, data collection and reporting. Will be a co-author of final reports.

**Jeff Nichols, Regional Research Coordinator**
Duties: Co-PI. Coordinate and provide direction on all aspects of the project including, planning, budgeting, data collection and reporting. Will be a co-author of final reports.

**Dan Teske, Juneau Area Manager**
Duties: Supervises the sampling technicians (timesheets, evaluations, training); provide review of final report.

**David Love, Juneau Assistant Manager**
Duties: Assistance with hiring and training of technicians, data quality assurance.

**Jiaqi Huang, Biometrician IV**
Duties: Advise all portions of the biometrics including planning, sample sizes, statistical methods, and data analysis. Perform data analysis and produce final estimates.

**Diana Tersteeg, Research Analyst II**
Duties: Coordinate all staff training for data collection, data quality assurance, data analysis, and purchasing. Assist with writing the operational plan and final report.

**Mike Jaenicke, Fishery Biologist III**
Duties: Assist with data quality assurance, data analysis and writing the operational plan and final report.

**Adam Lake, Fish and Wildlife Technician IV**
Duties: May assist with Data collection, data entry, data quality assurance, and training.

**Vacant, Fish and Wildlife Technician II**
Duties: Data collection

**Vacant, Fish and Wildlife Technician II**
Duties: Data collection

**DIPAC – Katie Harms, Executive Director**
Duties: Review plans and reports, assist in technician interviews

**DIPAC- Brock Meredith, Operations Manager**
Duties: Review plans and reports

**DIPAC – Adam Zaleski, Research Manager**
Duties: Review plans and reports

# REFERENCES CITED


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# APPENDIX A: SAMPLING STRATA AND SCHEDULE

Appendix A1.–Sampling strata and associated sampling information for the shoreside Chinook salmon creel survey in Juneau, Alaska, 1 June–27 August 2023.

| Sampling stratum | Stratum number | Biweek[1] | Type[2] | No. days available to sample | SamplingPeriod | No. Days Selected to Sample |
|---|---|---|---|---|---|---|
| 1 June–18 June | 1 | 12 | ED | 18 | 7:00–14:00 | 6 |
| 1 June–18 June | 2 | 12 | LD | 18 | 14:00–21:00 | 6 |
| 19 June–2 July | 3 | 13 | ED | 14 | 7:00–14:00 | 5 |
| 19 June–2 July | 4 | 13 | LD | 14 | 14:00–21:00 | 5 |
| 3 July–16 July | 5 | 14 | ED[3] | 14 | 7:00–14:00 | 5 |
| 3 July–16 July | 6 | 14 | LD[3] | 14 | 14:00–21:00 | 5 |
| 17 July–30 July | 7 | 15 | ED | 14 | 7:00–14:00 | 5 |
| 17 July–30 July | 8 | 15 | LD | 14 | 14:00–21:00 | 5 |
| 31 July–13 Aug | 9 | 16 | ED | 14 | 7:00–14:00 | 5 |
| 31 July–13Aug | 10 | 16 | LD | 14 | 14:00–21:00 | 5 |
| 14 Aug–27 Aug | 11 | 17 | ED | 14 | 7:00–14:00 | 5 |
| 14 Aug–27 Aug | 12 | 17 | LD | 14 | 14:00–21:00 | 5 |

[1] Biweek designation for Juneau Sport Fish marine shoreside creel survey program in 2023.

[2] ED = Early Day, LD = Late Day.

[3] Including Independence Day holiday on July 4.