

Regional Operational Plan No. ROP.SF.1J.2022.07

**Operational Plan: Situk River Chinook Salmon Creel
Survey, 2021–2022**

by

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and

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June 2022

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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Weights and measures (metric)		General		Mathematics, statistics	
centimeter	cm	Alaska Administrative Code	AAC	<i>all standard mathematical signs, symbols and abbreviations</i>	
deciliter	dL	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	H_A
gram	g	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	base of natural logarithm	e
hectare	ha	at	@	catch per unit effort	CPUE
kilogram	kg	compass directions:		coefficient of variation	CV
kilometer	km	east	E	common test statistics	(F, t, χ^2 , etc.)
liter	L	north	N	confidence interval	CI
meter	m	south	S	correlation coefficient	
milliliter	mL	west	W	(multiple)	R
millimeter	mm	copyright	©	correlation coefficient (simple)	r
		corporate suffixes:		covariance	cov
Weights and measures (English)		Company	Co.	degree (angular)	$^\circ$
cubic feet per second	ft ³ /s	Corporation	Corp.	degrees of freedom	df
foot	ft	Incorporated	Inc.	expected value	E
gallon	gal	Limited	Ltd.	greater than	>
inch	in	District of Columbia	D.C.	greater than or equal to	\geq
mile	mi	et alii (and others)	et al.	harvest per unit effort	HPUE
nautical mile	nmi	et cetera (and so forth)	etc.	less than	<
ounce	oz	exempli gratia (for example)	e.g.	less than or equal to	\leq
pound	lb	Federal Information Code	FIC	logarithm (natural)	ln
quart	qt	id est (that is)	i.e.	logarithm (base 10)	log
yard	yd	latitude or longitude	lat or long	logarithm (specify base)	log ₂ , etc.
		monetary symbols (U.S.)	\$, ¢	minute (angular)	'
Time and temperature		months (tables and figures): first three letters	Jan, ..., Dec	not significant	NS
day	d	registered trademark	®	null hypothesis	H_0
degrees Celsius	°C	trademark	™	percent	%
degrees Fahrenheit	°F	United States (adjective)	U.S.	probability	P
degrees kelvin	K	United States of America (noun)	USA	probability of a type I error (rejection of the null hypothesis when true)	α
hour	h	U.S.C.	United States Code	probability of a type II error (acceptance of the null hypothesis when false)	β
minute	min	U.S. state	use two-letter abbreviations (e.g., AK, WA)	second (angular)	"
second	s			standard deviation	SD
Physics and chemistry				standard error	SE
all atomic symbols				variance	
alternating current	AC			population sample	Var
ampere	A			sample	var
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				

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SURVEY, 2020–2021**

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June 2022

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SIGNATURE/TITLE PAGE

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ABSTRACT

The purpose of this project is to determine Chinook salmon *Oncorhynchus tshawytscha* harvest by sport anglers on the Situk River and the age components of that harvest. Additionally, sockeye salmon *Oncorhynchus nerka* harvest will be determined and various methods of angler use patterns for both species will be recorded. Creel sampling techniques will be used to collect catch, harvest, effort and biological information from the Situk River for this purpose. This information is used to manage for the Chinook salmon biological escapement goal for the Situk River as per the Situk-Ahrnklin and Lost River Chinook salmon Management Plan, along with achieving the Situk River sockeye salmon biological escapement goal. Inriver abundance for both Situk River Chinook and sockeye is obtained from another project with a fish weir, and escapement is calculated by subtracting the above-weir sport harvest estimate of this project from that weir count. Additionally, the Chinook salmon age component information of the harvest gathered here is required for yearly stock assessment models to predict the following years run and set preseason management regulations.

Keywords: Chinook salmon, *Oncorhynchus tshawytscha*, sockeye salmon, *Oncorhynchus nerka*, Situk River, Southeast Alaska, Yakutat, creel survey, effort, harvest, catch, scale aging

PURPOSE

Creel sampling techniques will be used to estimate the Chinook salmon *Oncorhynchus tshawytscha* harvest by sport anglers on the Situk River, and the age composition of that harvest. Additionally, sockeye salmon *Oncorhynchus nerka* harvest will be estimated, and various angler use patterns will be recorded. A weir will be used to enumerate the Chinook salmon inriver run (separately funded project), and escapement will be calculated by subtracting the above-weir sport harvest from the weir count. This information will be used for management of sport and commercial fisheries to ensure the Chinook salmon biological escapement goal (BEG) is achieved per the Situk-Ahrnklin Inlet and Lost River King salmon Management Plan (5AAC 30.365), along with the Situk River sockeye salmon biological escapement goal. Additionally, the Chinook salmon age composition information collected by this project will be used in stock assessment models to predict the following year's run, upon which preseason management regulations will be set.

BACKGROUND

The Situk River is located approximately 10 km east of Yakutat, Alaska and flows into the Gulf of Alaska (Figure 1). It is 35.2 km long and drains 3 lakes that have a combined surface area of 17,000 ha. The Situk River supports sport fisheries for salmon *Oncorhynchus* spp., steelhead *O. mykiss* and Dolly Varden *Salvelinus malma* in addition to commercial and subsistence fisheries for salmonids. The majority of freshwater angling effort for Chinook salmon *O. tshawytscha* in the Yakutat vicinity occurs in the Situk River. Since 1999, Chinook salmon harvest and age data gathered with a creel survey on the Situk River are used for inseason harvest management and cohort analyses. This document details plans for the Situk River creel survey at primary exit locations for sport anglers on the Situk River during the 2021 and 2022 field seasons (June and July).

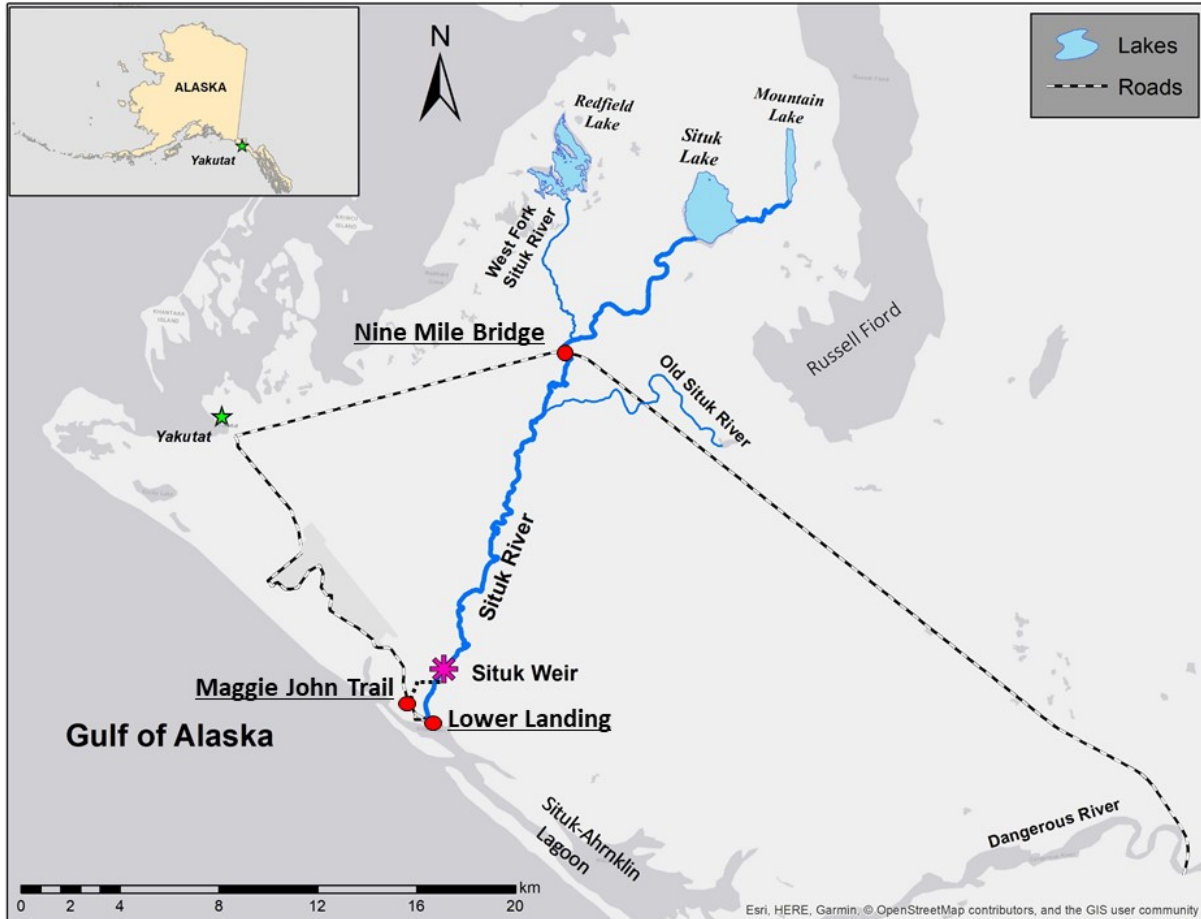


Figure 1.–Map of the Situk River drainage and location of the Situk weir and the three access sites of the Situk River creel survey, near Yakutat in Southeast Alaska.

Since 1995, the total run of large Chinook salmon (ocean-age-3 or older) to the Situk River has declined to very low abundance levels (Figure 2). The 1996 to 2003 average run size of Chinook of all ages was greater than 6,500 fish, and a historic high of 18,045 fish occurred in 1995 (Pahlke 2007). Since 2003, the average total run size of Chinook of all ages has been <2,500 fish (Pahlke 2007). Likewise, estimates of sport angler harvests of Chinook salmon declined from over 1,816 in 1998 to 332 in 2005 (Alaska Sport Fishing Survey¹: SWHS, hereafter, although historically sport harvest has been highly variable since 1976 (Pahlke 2007). Restrictions have been in place for the Situk River Chinook salmon sport fisheries for all years since 2006.

¹ The annual statewide mail survey of licensed sport anglers in Alaska conducted by ADF&G, Division of Sport Fish. Statewide Harvest Survey (SWHS) estimates from the Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK are available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

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Chinook salmon; very small numbers of Chinook salmon were reported to be harvested incidentally during sockeye salmon openers.

The Situk River Chinook salmon sport fishery is managed inseason and may be altered by emergency order to achieve a BEG of 450 to 1,050 large (age-.3+) Chinook salmon (McPherson et al. 2005). The inriver run of Chinook salmon is counted on the Situk River at a weir 2.5 km from salt water by the Division of Commercial Fisheries (DCF). Average weir counts of Chinook salmon from past years are used to predict daily weir counts prior to the potential sport harvest above the weir. The weir is also used to collect scales from Chinook salmon to estimate the proportion that is ocean-age 3+ for stock-recruit analysis and BEG assessment. Sport harvest (when the sport fishery is open) above the weir must be removed from the weir counts to calculate daily escapement and determine if the BEG will be met.

In addition to inseason management, a preseason forecast of the total run is made each year. The preseason estimate allows the Alaska Department of Fish and Game (ADF&G) to plan for fisheries that target Chinook salmon on the Situk River. The 2021 preseason run estimate of 1,550 ocean-age 3+ fish (SE = 950) suggests that an open sport fishery is possible at some point during the season. Sport fisheries for Chinook salmon will be closed in 2021 until weir counts are sufficient to indicate at least 750 large fish will escape the fisheries.

Since 1999, the Division of Sport Fish (DSF) has conducted a creel survey to calculate an inseason sport harvest estimate of all Chinook salmon taken below and above the weir. Weekly sport harvest estimates from above the weir are calculated and subtracted from weir counts (inriver run) to estimate escapement. Inseason management decisions for Situk River fisheries are based on the resulting escapement calculation and its progress towards attaining the BEG. In addition, creel survey scale samples are used to reconstruct age-size composition as part of the calculation of the preseason run estimate, noted above.

This project has used a single sampler to collect harvest information at the Lower Landing boat ramp, traditionally the most popular access point on the river. Expansion factors have then been used to expand estimates to assess total harvest (see Data Analysis section). In recent years evidence has been gathered that shows significantly more angler effort has been shifting to the Nine Mile Bridge and Maggie John Trail access points, potentially changing the relationship between the expansion factors and total harvest. In 2021 and 2022 this project will continue with a second sampler to survey harvest at these additional access points and assess harvest more directly for comparison to the expansion factor method.

Several other tasks are accomplished by this project. The creel survey also provides an inseason estimate of Chinook salmon harvested below the weir. Additionally, a sockeye salmon sport harvest estimate is calculated that can be subtracted from weir counts of sockeye salmon to assess daily escapement, and the proportions of each species harvested by guided or unguided anglers are estimated. Angler residency, effort, and catch are also estimated for both species. The creel samplers also provide departmental presence on the river and information to the angling public and others.

OBJECTIVES

PRIMARY OBJECTIVES

1. To provide 2021 and 2022 inseason estimates of the number of Chinook salmon harvested by anglers exiting the Situk River access locations such that, by the end of the season, the resulting estimate of total escapement is within 25% of the true value 95% of the time.
2. To estimate the age composition of Chinook salmon harvested by the sport fishery in the Situk River in 2021 and 2022 above and below the weir, such that the proportion of fish ocean-age-3 or older is within 0.15 of the true value 90% of the time.

SECONDARY OBJECTIVES

1. Estimate the harvest of sockeye salmon above and below the weir by anglers exiting the Situk River access locations.
2. Estimate the total angler effort and catch of Chinook and sockeye salmon by anglers exiting the Situk River access locations from 10 June through 31 July 2021 and 2022 from 1000 to 2300 hours
3. Estimate the proportions of guided versus unguided trips, type of access used by the angler, residency status of the angler (resident or nonresident), and in the event that the angler is guided, the guide's logbook number.
4. Collect angler observations on in-river king salmon distribution and movement.

METHODS

STUDY DESIGN

OBJECTIVE 1, SECONDARY OBJECTIVES 1, 2 AND 3: INSEASON HARVEST, CATCH, AND EFFORT

Chinook and sockeye salmon angling on the Situk River originates via three access points. These points are the Lower Landing, Maggie John Trail, and the bridge at Nine Mile of Forest Highway 10 (Figure 1). Anglers do float trips from the Nine Mile Bridge downstream to the Lower Landing, boat upstream from the Lower Landing then return, or hike in from all three access points. A stratified two-stage "direct expansion" survey of anglers exiting the Situk River will be used to estimate angler effort, as well as Chinook and sockeye salmon catch and harvest.

The sampling schedule used since 2006 will remain in place during 2021 and 2022 and includes two shifts: 10:00-16:30 and 16:30-23:00. The two-stage survey design has "days" within each location/time of day (TOD) stratum as primary sampling units and "anglers within days" as secondary sampling units. Once a "day" is selected for sampling within each location/TOD stratum, the entire sampling period will be covered. All anglers exiting the Situk River fishery at the three access points between the start and stop hours defining each period will either be counted or interviewed on each sampled "day". An attempt will be made to interview all individuals exiting the fishery for effort, catch, harvest, and any Chinook salmon observational information (nearly every exiting angler has been interviewed in past surveys). All individuals seen leaving the fishery who are not interviewed will also be counted.

Large Chinook salmon are defined as those ≥ 28 inches TL, and Chinook salmon less than 28 inches are primarily males that have spent 1 or 2 years in the ocean. Situk River is managed for escapement of large Chinook ≥ 28 inches; however, the ocean-age-2 (20.1–27.9 inches), and ocean-age-1 (≤ 20 inches) fish will also be recorded in the survey.

Sampling Methodology for Lower Landing

One technician is employed to sample the Lower Landing access point. Plots of angler effort, catch, and harvest of Chinook salmon from 1999 showed clear differences in effort and CPUE and HPUE between TOD strata for both guided and unguided anglers at the Lower Landing access point. There was little evidence of a significant type-of-day (i.e., weekday/ weekend) effect for guided anglers and mild evidence for type-of-day effects for unguided anglers around the 4th of July (near the peak of the Chinook salmon fishery). Thus, a TOD stratified design (Bernard et al. 1998) has and will continue to be used.

The logistics of scheduling a single-technician survey necessitate a tradeoff between unbiased estimates and precision (Bernard et al. 1998). Since 2000, equal sampling effort has been allocated between mid- and late-day strata. Because the mid-day stratum has had slightly greater harvest on average, it was sampled systematically, every third day, with a random starting day. Sampling of the late-day stratum was constrained to preserve back-to-back days off for the technician (as required under the State labor contract), which led to sampling 2 consecutive days with 4 days in between (“quasi”-systematic sampling). The 2021 sampling schedule is presented in Appendix A1. Table 1 shows the summary of stratification structure for the Lower Landing.

Table 1.–Summary of stratification structure and sampling characteristics for the 2021 & 2022 Situk River Chinook salmon creel surveys at Lower Landing, June 10–July 31.

Stratum	Time of day	Number of days	Days sampled	Sampling method ^a
Mid-day	1000–1630	53	18	SYS
Late-day	1630–2300	53	18	q-SYS

^a SYS = systematic sampling, q-SYS = “quasi” systematic sampling.

Expansion Factor Methodology for Entire River Harvest

The creel survey at Lower Landing captures a large fraction, but not 100%, of the Chinook and sockeye salmon harvest. Additional fish are harvested before 10 June by anglers exiting at Nine Mile Bridge and those that use Maggie John Trail, as well as before and after the hours of the survey at Lower Landing. Comparison of SWHS and creel survey estimates from 2000 to 2016 indicate that the Chinook harvest estimates from the SWHS are approximately 1.1925 times greater than the estimates produced from the creel survey (Figure 3). The fitted linear relationship was obtained using a model that considered the measurement error in both variables. When there is a need to obtain inseason estimates of Chinook salmon harvest above the weir for projecting escapement, the creel survey harvest will be expanded upward by a factor of 1.1925. The standard error of the estimated expansion factor, considering the measurement error in each variable, is 0.16. The same expansion method will be used to derive the sockeye salmon harvest above and below the weir. A linear relationship will be established between the historical sockeye salmon creel survey estimates at Lower Landing and the SWHS harvests for the entire river. An expansion

factor will be calculated from the linear relationship. The current year’s sockeye salmon creel estimate will be expanded by this factor to derive the harvest of sockeye salmon upstream and downstream of the weir. Since 2010, a second technician has been added to the creel survey. This enables us to survey all three angler exiting sites. A new linear relationship will be evaluated between the historical sockeye salmon creel estimates from all three exiting sites and the SWHS harvest estimates from 2010 to 2020. The estimates from the new expansion method will be compared with the old ones. Past performance of the creel survey with respect to the precision of the resulting end-of-the-season estimate of escapement is detailed in Table 2.

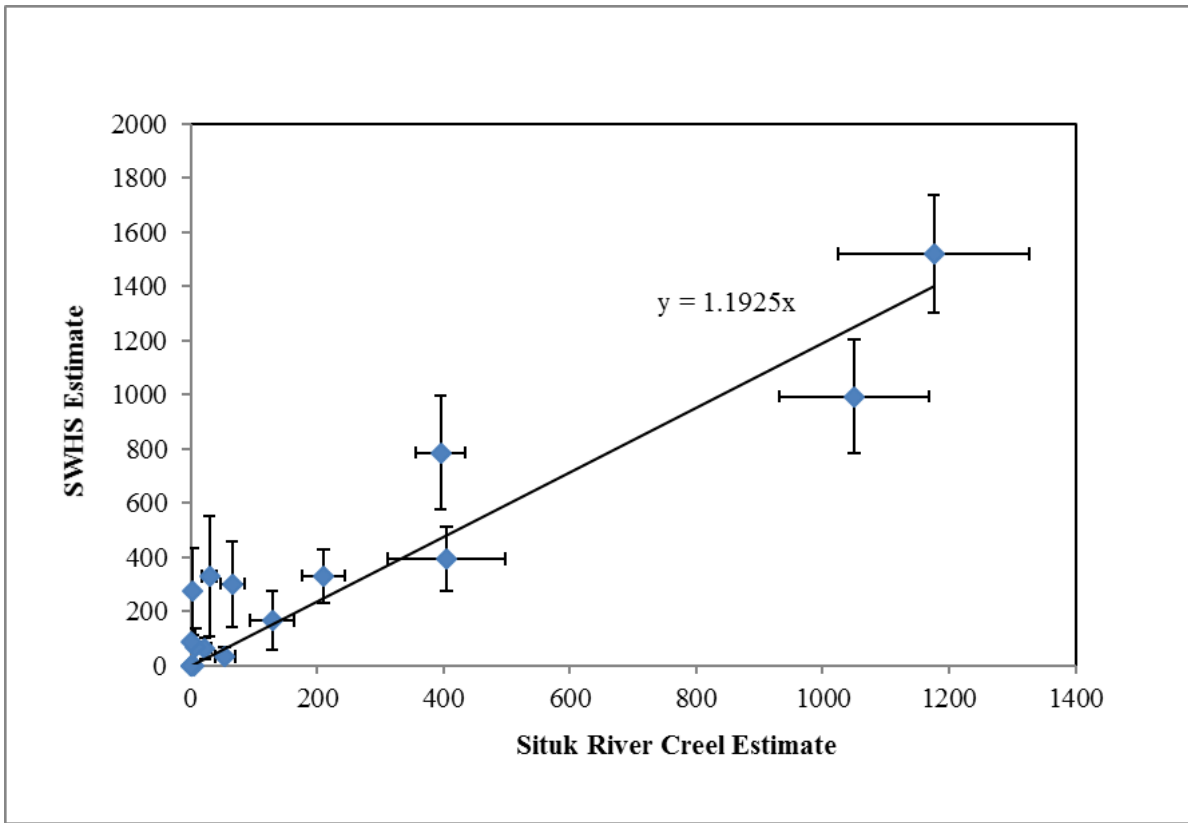


Figure 3.–Situk River Creel survey harvest estimates versus SWHS estimates for Chinook salmon (all sizes), for both above and below the weir, 2000–2016.

Note: Bars represent standard errors.

Table 2.—Hypothetical end-of-season estimates of sport harvest above the weir, escapement, and relative precision (RP, $\alpha = 0.05$) of large Chinook salmon in the Situk River, 2000–2005.

Year	Creel, all Chinook above/ below	CV	Creel, Expanded to SWHS	CV	All Chinook above only	CV	Large Chinook above only	CV	Inriver run (weir count)	Escapement	CV	RP	Harvest rate of large fish above the weir
2000	1,176	0.13	1,505	0.17	759	0.24	493	0.43	2,518	2,025	0.11	21%	0.20
2001	405	0.23	518	0.26	261	0.31	170	0.47	696	526	0.15	30%	0.24
2002	129	0.26	165	0.29	83	0.33	54	0.48	1,024	970	0.03	5%	0.05
2003	1,050	0.11	1,344	0.16	677	0.24	440	0.43	2,615	2,175	0.09	17%	0.17
2004	396	0.10	507	0.15	255	0.23	166	0.43	798	632	0.11	22%	0.21
2005	210	0.16	269	0.20	135	0.26	88	0.44	613	525	0.07	15%	0.14

Note: Creel estimates of all Chinook salmon above and below the weir are spatially/temporally expanded by a factor of 1.28 (SE = 0.15) derived from a comparison with the SWHS for 2000–2005, multiplied by 0.50 (SD = 0.09) to convert to harvest above the weir, and multiplied by 0.65 (SD = 0.24) to convert to large Chinook salmon only.

Note: The Chinook salmon sport fishery has been closed, for some or all days of the seasons, to retention of fish ≥ 20 inches in all years since 2006.

The coefficient of variation of the harvest of large Chinook above the weir is very stable at 43–48%, translating to 5–30% relative precision (RP) for the resulting estimates of escapement. Hypothetically this would have resulted in meeting the current Objective 1 criterion. Note that the RP of the escapement estimate is closely tied to the estimated harvest of large Chinook above the weir: higher harvests cause greater uncertainty in the escapement². There was no harvest of large Chinook salmon in 2006 through 2008 because the Situk River was closed to the harvest of large Chinook salmon (≥ 20 inches), and in 2009 one fish was sampled in a largely restricted season; the fishery was again closed to the harvest of Chinook salmon ≥ 20 inches in 2010–2012. Since 2012, Chinook salmon sport fisheries have been very limited, resulting in no large fish (≥ 28 inches) harvested.

Sampling Methodology for Other Locations

Similar to methodology used in 2010 through 2020, two samplers will be used in 2021 and 2022 utilizing similar sampling schedule and general method, but the samplers will rotate between Lower Landing, the Nine Mile Bridge and Maggie John Trailhead. The rotation schedule will be to systematically sample the Nine Mile Bridge and Maggie John Trailhead locations every other day (except scheduled days off) after randomly selecting which area will be sampled on the first day. Alternating two samplers between locations will be employed in 2021 and 2022 to introduce some diversity and boost the morale of sampling personnel. This change preserves the systematic nature of the sampling design. The resulting estimate of harvest from those locations will be added to the estimate from the Lower Landing to create an entire-river harvest estimate. The entire-river estimate using two samplers will be used to evaluate the new linear relationship between creel survey estimates and the SWHS estimates. The results from the new expansion methods will be compared to the results from the old one. Table 3 shows the summary of stratification structure for the Nine Mile Bridge and Maggie John Trailhead access points.

Table 3.—Summary of stratification structure and sampling characteristics for the 2021 and 2022 Situk River Chinook salmon creel surveys at Nine Mile Bridge and Maggie John Trailhead, June 10–July 31.

Location ^a	TOD ^b stratum	Time of day	Number of days	Sampling method for days	Days sampled
MJT	Mid-day	1000–1630	53	SYS ^c	9
	Late-day	1630–2300	53	SYS	9
NMB	Mid-day	1000–1630	53	SYS	9
	Late-day	1630–2300	53	SYS	9

^a MJT = Maggie John Trailhead, NMB = Nine Mile Bridge.

^b TOD = time of day.

^c SYS = systematic sampling.

² During high harvest years, the amount of uncertainty could probably be reduced somewhat by analyzing the harvest age composition data inseason, enabling current-year estimates of the proportion of large fish, rather than relying on the multi-year average, as has been done above.

OBJECTIVE 2; AGE COMPOSITION OF CHINOOK SALMON

Age, sex, and length composition of the harvest in the Situk River sport fishery will be estimated from sampling the harvest of all interviewed anglers during the creel survey.

Assuming that age, sex, and length composition does not vary between the TOD strata, the data collected can be treated as a simple random sample. Accordingly, a sample of 35 fish is needed to meet the Objective 2 criterion for a binomial proportion, assuming 15% scale regeneration (Cochran 1977). We expect that the objective criterion for age composition will be met in 2021 and 2022 unless inseason management actions cause a restriction in the daily bag limit. The projected Chinook salmon run of 1,550 large fish for 2021 suggests a sport fishery could be possible. Small sample sizes in the event of a restricted fishery do not present a problem because correspondingly few fish are harvested, and the harvest then represents a very small fraction of the total run. The age composition of fish passing the weir is estimated by the DCF by sampling fish at the Situk weir.

DATA COLLECTION

During each sampling period, the technicians will record the number of anglers who have completed their fishing trips in the identified area. If possible, every angler completing a fishing trip during the sampling period will be interviewed. If not interviewed however, a counted angler will be identified by recording a valid interview number without additional interview information.

Data to be recorded during each interview will include the following, which is further described in Appendix A2:

- time of interview;
- the number of Chinook and sockeye salmon kept;
- the number of Chinook and sockeye salmon released;
- angler effort to the nearest 0.25 hour;
- whether Chinook and sockeye salmon were caught above or below the ADF&G weir;
- whether Chinook salmon harvested or released were ≤ 20 in (small), >20 in and <28 in (medium), or ≥ 28 in (large) TL;
- whether the trip was guided or unguided;
- what type of access was used by the angler;
- residency status of the angler, resident or nonresident;
- in the event that the angler is guided, the guide's logbook number;
- any in-river observations of king salmon presence, location, and abundance.

Data are to be recorded for individual anglers, and not pooled into a single interview for a "fishing party". Field data will be entered onto the Situk River Creel Survey Form (Appendix A3), and then transferred to a custom Excel^{®3} spreadsheet for final editing and analysis.

Each Chinook salmon observed (all size groups included) will be "sampled" by measuring the mid-eye to fork (MEF) length, and recording the sex of the fish. Four scales will be sampled near the preferred area on each Chinook salmon at a point on a diagonal line from the posterior insertion of the dorsal fin to the anterior insertion of the anal fin, 2 rows above the lateral line (Welanders 1940). If the scales in the preferred location cannot be obtained, another set of scales will be taken

³ This and subsequent product names are included for a complete description of the process and do not constitute product endorsement.

from as close to the preferred scale area as possible. However, scales will only be taken from the area bounded dorsally by the fourth row of scales above the lateral line, ventrally by the lateral line, and between lines drawn vertically from the posterior insertion of the dorsal fin and the anterior insertion of the anal fin. If no scales are available in the preferred area on the left side of the fish, scales will be collected from the preferred area on the right side of the fish. Scales will then be mounted on gum cards and sex and lengths in millimeters (MEF) of Chinook salmon recorded on Alternate Age-Weight-Length (AWL) mark-sense forms and coded wire tag (CWT) sampling forms (see Appendices 4–7). Gum cards will be taped to mark-sense forms and sent to the scale aging laboratory in Douglas. Scale impressions will then be made in cellulose acetates (Clutter and Whitesel 1956) and aged using procedures designed by Van Alen (B. Van Alen, Fishery Biologist-retired, DCF, Douglas, personal communication) and McPherson (S. McPherson, Chinook Advisor, ADF&G-DSF, Douglas, personal communication). Methods identified in Olsen (1992) may also be incorporated.

All harvested Chinook salmon will be checked for adipose fin clips (a standard procedure in Southeast Alaska to provide information on straying in systems which have no juvenile coded-wire-tagging component). In addition, any incidental steelhead harvested by anglers will be checked for an adipose fin clip as well. If an adipose-clipped fish is found, the head will be collected, a cinch strap inserted, and a CWT sampling form filled out. Adipose-clipped sockeye salmon may also be found in angler's catches. When possible, heads will be collected, a cinch strap inserted, and a CWT form filled out (this is not a priority duty). This form will be filled out by the crew leader for the Yakutat marine harvest study project (separately funded) from information collected at the time of interview.

If an angler comes in with a trophy-sized Chinook salmon with an adipose fin clip and prefers to keep it intact, then as much information as possible will be recorded, such as name and address of the person, and where they are going to have it mounted. The importance of eventually obtaining the head will be stressed, and, if possible, permission to retrieve it from the taxidermist will be obtained; thus a CWT recovery form will be filled out (Appendices 6 and 7) and a cinch-strap inserted (to permit identification if retrieving the head from the taxidermist).

DATA REDUCTION

The technician will first check the data forms and then turn them in to the area office on a weekly basis. The project leader or technician will then enter the completed Situk River creel data into a custom Excel[®] spreadsheet. This electronic data file will then be rechecked for obvious mistakes and omissions before processing to estimate angler effort, catch, and harvest. Chinook salmon scales will be pressed onto acetates, and then read by DSF personnel. Ages will be recorded onto the matching Alternate AWL mark-sense forms and the forms will be submitted to marine harvest study staff in Douglas for opscan reading, and then returned to the project leader in Yakutat for editing and data analysis.

A final, edited copy of the data, along with a data map, will be sent with the final report to Research and Technical Services (RTS, DSF Anchorage) electronically for archiving. The data map will include a description of all electronic files contained in the data archive, all data fields and details of where hard copies of any associated data are to be archived, if not with RTS. The original hard copies of the data forms will be logged and stored in the Yakutat ADF&G DSF office, and scale gum cards and acetates will be logged and stored in the Region 1 scale data archives, located in the Douglas regional office.

DATA ANALYSIS

EFFORT, CATCH AND HARVEST

Angler effort (in hours), harvest, and catch of Chinook and sockeye salmon in each stratum will be estimated using procedures for a stratified two-stage sample survey (Cochran 1977) where "days" (mid- or late-day periods) are first stage sampling units and "anglers" are second stage sampling units. Location and TOD will be considered their own strata. First, the mean harvest (or catch or effort) is obtained over all anglers interviewed within each sampled day and location:

$$\bar{n}_{hi} = \frac{\sum_{j=1}^{m_{hi}} n_{hij}}{m_{hi}} \quad (1)$$

where n_{hij} is the number of fish harvested (or caught, etc.) by interviewed person j during sampled day i for location/TOD stratum h , and m_{hi} is the number of people interviewed during each day. This estimate is then expanded by the number of people (counted) who exit the site during the day (M_{hi}) to estimate a total for each sampled day:

$$\hat{N}_{hi} = M_{hi} \bar{n}_{hi} \quad (2)$$

The mean harvest over all days sampled within each stratum h is then estimated:

$$\bar{\hat{N}}_h = \frac{\sum_{i=1}^{d_h} \hat{N}_{hi}}{d_h} \quad (3)$$

where d_h is the number of days sampled in each stratum. Finally, this estimate is expanded by the number of days in the stratum (D_h) to estimate a total for each stratum:

$$\hat{N}_h = D_h \bar{\hat{N}}_h \quad (4)$$

Estimates of catch and angler effort will be obtained similarly by substituting the appropriate statistics (catch or effort) into equations (1) through (4), above. Similar substitutions will be obtained to estimate residency, guided versus unguided trips, and type of access used by the angler.

The variance of the stratum estimates is estimated:

$$\hat{V}[\hat{N}_h] = (1 - f_{1h}) D_h^2 \frac{S_{1h}^2}{d_h} + \frac{D_h}{d_h'} \sum_{i=1}^{d_h'} \hat{V}[\hat{N}_{hi}] \quad (5)$$

where $f_{1h} = d_h / D_h$ is the sample fraction for "days", S_{1h}^2 is sample variance among "days", and d_h' is the number of days in which s_{2hi}^2 (see below) are estimable (i.e., when at least 2 people are interviewed or the number interviewed equals the number counted). The among-day sample variance for days selected systematically for sampling (the mid-day stratum for all locations and

late-day stratum for Maggie John Trailhead and Nine Mile Bridge) is estimated using an approximation proposed by Wolter (1985):

$$S_{1h}^2 \approx \frac{\sum_{i=2}^{d_h} (\hat{N}_{hi} - \hat{N}_{h(i-1)})^2}{2(d_h - 1)} \quad (6)$$

The among-angler variance component (usually 0 in this survey because all anglers exiting the fishery are interviewed) is estimated by:

$$\hat{v}[\hat{N}_{hi}] = \left(1 - \frac{m_{hi}}{M_{hi}}\right) M_{hi}^2 \frac{s_{2hi}^2}{m_{hi}} \quad (7)$$

where s_{2hi}^2 is the among-angler sample variance:

$$s_{2hi}^2 = \frac{\sum_{j=1}^{m_{hi}} (n_{hij} - \bar{n}_{hi})^2}{m_{hi} - 1} \quad (8)$$

Sampling in the late-day stratum at Lower Landing is “quasi”-systematic, i.e., it has irregular sampling intervals between sampling days. However, if 2 consecutive days are considered as a single sampling unit (see sampling schedule in Appendix A1), then sampling becomes systematic with respect to the new 2-day sampling units. In this case equations (2) – (8) can still be used for the late-day stratum at Lower Landing with the appropriate substitutions. For example, n_{hij} becomes the number of fish harvested (or caught, etc.) by interviewed person j during sampled 2-day period i for late-day stratum; the number of days sampled, d_h , becomes the number of 2-day units sampled; the total for each sampled day, \hat{N}_{hi} , becomes the total for each 2-day sampling unit; the number of days in the stratum, D_h , becomes the number of 2-day units in the late-day stratum; etc.

Variances of the stratum estimates of catch by species and angler effort will be obtained similarly, by substituting the appropriate catch and effort statistics into equations (5) through (8), above.

Estimates of angler effort, catch, and harvest by species and their variances across all strata, or select combinations of strata, will be obtained by summing the individual stratum estimates (assuming independence). Similarly, total estimates of above and below the weir catch and harvest across the TOD strata will be obtained by summing the individual stratum estimates. Standard errors of the stratum and total estimates are obtained by taking the square root of the variance estimate.

Expanded Chinook salmon harvest estimates for inseason escapement projections will be obtained by multiplying \hat{N} by an expansion factor ($\hat{E} = 1.19$, SE = 0.16, Figure 3) to account for harvest outside the framework of the creel survey design.:

$$\hat{H}_{EXP} = \hat{N}\hat{E} \quad (9)$$

where the variance is calculated by Goodman's (1960) formula:

$$\hat{V}[\hat{H}_{EXP}] = \hat{N}^2 \hat{V}[\hat{E}] + \hat{E}^2 \hat{V}[\hat{N}] - \hat{V}[\hat{E}] \hat{V}[\hat{N}] \quad . \quad (10)$$

Similarly expanded sockeye salmon harvest will be obtained by multiplying sockeye salmon creel harvest estimate by its own expansion factor to account for harvest outside the survey framework.

AGE COMPOSITION OF CHINOOK SALMON

The age composition of the harvested Chinook salmon will be estimated as follows:

$$\hat{p}_z = \frac{n_z}{n_a} \quad (11)$$

$$\hat{V}[\hat{p}_z] = \left(1 - \frac{n_a}{\hat{N}}\right) \frac{\hat{p}_z(1 - \hat{p}_z)}{n_a - 1} \quad (12)$$

where \hat{p}_z is the estimated proportion of Chinook salmon in age category z , n_a is the number of sampled fish classified by age, n_z is the subset of n_a belonging to category z .

Harvests by age are estimated by multiplying \hat{p}_z by the appropriate harvest estimate from the SWHS:

$$\hat{H}_z = \hat{H} \hat{p}_z \quad (13)$$

$$\hat{V}[\hat{H}_z] = \hat{H}^2 \hat{V}[\hat{p}_z] + \hat{p}_z^2 \hat{V}[\hat{H}] - \hat{V}[\hat{p}_z] \hat{V}[\hat{H}] \quad (14)$$

where the variance follows Goodman (1960).

All age composition estimates will be conducted separately for fish harvested above and below the weir.

SCHEDULE AND DELIVERABLES

Field activities will be initiated shortly before the creel survey begins 10 June 2021/2022 and will conclude on 31 July 2021/2022.

Final estimates will be completed by November 2021/2022 and incorporated into a Fishery Data Series report for the years 2021 to 2022 to be drafted in 2023.

RESPONSIBILITIES

Jason Pawluk, Project Leader. Supervises project personnel. Writes operational plan in conjunction with biometrician, including objectives, study design, and sampling schedule. Performs and coordinates data analyses in conjunction with biometrician. Lead author for final report.

Jiaqi Huang, Biometrician. Provides input in sampling design and allocation, designs scheduling procedures and incorporates into operational plan. Provides procedures for calculation of harvest estimates and confidence intervals. Assists in report writing. Also reviews operational plan and final report.

Juliet Harrison, Fishery Technician III. Conducts creel surveys as schedule dictates.

Fishery Technician II. Conducts creel surveys as schedule dictates.

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APPENDIX A: FORMS AND INSTRUCTIONS

Appendix A1.–Sampling schedule example for the 2021 and 2022 Situk River Chinook salmon creel surveys.

Date	Mid-Day (1000-1630 hours)	Late Day (1630-2300 hours)	Sampler 1 is Blue Sampler 2 is Yellow		Date	Mid-Day (1000-1630 hours)	Late Day (1630-2300 hours)	Sampler 1 is Blue Sampler 2 is Yellow		Date	Mid-Day (1000-1630 hours)	Late Day (1630-2300 hours)	Sampler 1 is Blue Sampler 2 is Yellow	
					23-Jun		x	9	LL	13-Jul	x		9	LL
					24-Jun		x	LL	MJ	14-Jul	OFF	OFF	OFF	OFF
					25-Jun	x		9	LL	15-Jul	OFF	OFF	OFF	OFF
					26-Jun	OFF	OFF	OFF	OFF	16-Jul	x		LL	MJ
					27-Jun	OFF	OFF	OFF	OFF	17-Jul		x	9	LL
					28-Jun	x		LL	MJ	18-Jul		x	LL	MJ
					29-Jun		x	9	LL	19-Jul	x		9	LL
					30-Jun		x	LL	MJ	20-Jul	OFF	OFF	OFF	OFF
					1-Jul	x		9	LL	21-Jul	OFF	OFF	OFF	OFF
10-Jun	x		LL	MJ	2-Jul	OFF	OFF	OFF	OFF	22-Jul	x		LL	MJ
11-Jun		x	9	LL	3-Jul	OFF	OFF	OFF	OFF	23-Jul		x	9	LL
12-Jun		x	LL	MJ	4-Jul	x		LL	MJ	24-Jul		x	LL	MJ
13-Jun	x		9	LL	5-Jul		x	9	LL	25-Jul	x		9	LL
14-Jun	OFF	OFF	OFF	OFF	6-Jul		x	LL	MJ	26-Jul	OFF	OFF	OFF	OFF
15-Jun	OFF	OFF	OFF	OFF	7-Jul	x		9	LL	27-Jul	OFF	OFF	OFF	OFF
16-Jun	x		LL	MJ	8-Jul	OFF	OFF	OFF	OFF	28-Jul	x		LL	MJ
17-Jun		x	9	LL	9-Jul	OFF	OFF	OFF	OFF	29-Jul		x	9	LL
18-Jun		x	LL	MJ	10-Jul	x		LL	MJ	30-Jul		x	LL	MJ
19-Jun	x		9	LL	11-Jul		x	9	LL	31-Jul	x		9	LL
20-Jun	OFF	OFF	OFF	OFF	12-Jul		x	LL	MJ					
21-Jun	OFF	OFF	OFF	OFF										
22-Jun	x		LL	MJ										

Note: Lower landing (LL) is surveyed on every sampling day (“x”), and secondary areas (9 mile Bridge (9) or Maggie John trail (MJ)) alternate as designated every sampling day. Use mid or late stratum for all areas as indicated. Color codes (Blue or Yellow) depict which sample works at which site.

Appendix A2.–Instructions for completing the Situk River creel survey form during the 2021 and 2022 Situk River Chinook salmon creel survey.

Date and period - **Today's date and period number 2 or 3. (2 for mid-day and 3 for late-day)**

Interview Number - **Start with number one (1) at the beginning of each sampling period (day) and number consecutively.**

Time of Interview – Record the time the interview started.

Guided? Ask if the person was guided today. Mark a Y for yes, N for no.

Logbook Number – Mark the guide logbook number if the angler was on a guided trip.

Resident? Is the person an Alaska state resident? Mark a Y for yes, N for no.

Target Species. What was the person primarily fishing for?

Mark 1 for Chinook

Mark 2 for sockeye

Mark 3 for both

Mark the appropriate box regarding the primary mode of angler access

Mark the actual amount of time spent *fishing*, not walking, traveling, sleeping, etc.

Enter the total number of fish caught and/or kept by species upstream of the weir.

Enter the total number of fish caught and/or kept by species downstream of the weir.

JK-K= jack king, kept. King salmon harvested less than or equal to **20 inches**.

JK-R= jack king, released. King salmon harvested less than or equal to **20 inches**.

SK-K= small king, kept. King salmon harvested **greater than 20 inches** but less than **28 inches**

SK-R= small king , released. King salmon released **greater than 20 inches** but and less than **28 inches** in length.

KS-K= king salmon, kept. King salmon harvested **28 inches or greater in length**

KS-R= king salmon, released. King salmon released **28 inches or greater in length**

RS-K= sockeye (red) salmon kept, any size.

RS-R= sockeye (red) salmon released, any size.

Please take the effort to stress that "released" means "fair hooked" (in the mouth), and not snagged, broken off, or otherwise not legally harvestable.

Record any in-river observation of Chinook salmon, including presence, location, abundance in **KS Observations/Comments** column.

Appendix A3.–Situk River creel survey form to be used during the 2021 and 2022 Situk River Chinook salmon creel survey.

Date:		Period (2 or 3):						Area/Sampler:											
KS = Greater than 28", SK = 20.1" - 28", JK = 20" or less																			
Interview #	Time of Interview	Guided?	Logbook #	Resident?	Target Species	Conveyance	Hours Fished	Fish Caught Above Weir				Fish Caught Below Weir				KS Observations/Comments			
								JK - K	JK - R	SK - K	SK - R	KS - K	KS - R	RS - K	RS - R		JK - K	JK - R	SK - K
Conveyance: F = Foot, DB = Drift Boat, MB = Motor, Non- Jet, JB = Jet Boat																			

Appendix A4.–Instructions for completing the Alternate Age-Weight-Length mark-sense forms to be used during the 2021 and 2022 Situk River Chinook salmon creel survey.

MARK-SENSE ALTERNATE AGE-WEIGHT-LENGTH FORM

Biological information recorded on the age-weight-length (AWL) forms will be limited. Lengths and scales will be taken only from Chinook salmon. The object of biological sampling is to get information from a representative sample of fish from the fishery. As there are lines for only 9 fish on the front side of the AWL form, scales from a maximum of 9 Chinook salmon should be placed on each scale card. Only one scale card should match with each AWL form. The 5-digit number on the AWL form will be recorded on the scale card next to "Card Number". Mount scales onto gum cards and tape onto the front of the AWL form. Be sure your scales are mounted correctly with the rough side of the scale up.

Scales should not be taken from adipose-finclipped salmon voluntarily (select fish) brought in by anglers not contacted during the sampling period while leaving the Situk River fishery. Adipose-finclipped Chinook salmon observed during the creel survey should be sampled for age, sex, and length. Any adipose-finclipped steelhead observed during the creel survey should also be sampled for age, sex, and length information with this data recorded on a separate mark-sense form (since each page of the mark-sense form is associated with only one species at a time).

Line by line instructions for use of the AWL forms follow.

HEADER FIELDS:

Fishery and Name Fishery should be filled in as "**Situk River KS Creel**", and you should put your name in the Name blank.

Page

Leave Blank

Year, Month and Day

record using leading zeros on month and day. Note that these are additive binary fields.

Survey Area, Site, and Sublocation

Leave Blank, since forms will be grouped over the season, it can be filled in on the first sheet and repeated for the entire batch.

Period - **Leave Blank**

Species

Chinook = **410**

Steelhead = **540**

(Do Not Fill Out This Form For Sockeye)

Last 4 header fields - **Leave Blank**

BIOLOGICAL INFORMATION LINES:

Sex

Mark "M" or "F" if known, leave blank if uncertain

Length

record length of fish from middle of eye to fork of tail to the nearest 5 millimeters.

Tag Number

record cinch strap number used for adipose fin-clipped Chinook salmon or steelhead if a head was collected. Note the additive fields in the 10,000's and 1,000's columns. If a steelhead is sampled the information should be recorded on a separate form.

Weight Variable- Leave Blank

Rest of fields - Leave Blank

Examples (see AWL form attached):

Example 1: During interview 1, scales and lengths were taken from Chinooks with fork lengths of 820mm (male), 850mm (male, adipose-clipped and given cinch strap #62358), 790mm (female), and 1011mm (female).

Appendix A5.—Filled-out example Alternate Age-Weight-Length mark-sense form to be used during the 2021 and 2022 Situk River Chinook salmon creel survey. Refer to Appendix A4 for details regarding the example.

PLEASE DO NOT WRITE IN THIS MARGIN

108591

PLEASE DO NOT WRITE IN THIS AREA

PAGE	YEAR	MONTH	DAY	SURVEY AREA	SITE	PERIOD	CARD #	CARD POSITION	AGE
1	05	05	1	SITUK RIVER	SITUK RIVER	4/10			
ALASKA DEPARTMENT OF FISH AND GAME ALTERNATE AGE-WEIGHT-LENGTH MARK-SENSE FORM VER. 1.0									
FISH #	STATUS	LENGTH	TAG NUMBER	WEIGHT	OPTION 1	OPTION 2	OPTION 3	VARIABLE	AGE
10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
1	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

PLEASE DO NOT WRITE IN THIS MARGIN

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Appendix A6.–Instructions for filling out coded wire tag sampling forms.

All harvested Chinook and coho salmon need to be checked for adipose clips. If an adipose-clipped fish is found, the head will be collected, a cinch strap inserted, and a coded wire tag (CWT) sampling form filled out. Adipose-clipped pink, chum, and sockeye salmon, and steelhead may also be found in anglers' catches, so heads should be collected and a CWT form will also need to be filled in for these fish (This is not a priority duty, however).

If someone comes in with a trophy, adipose-clipped fish and doesn't want to give you the head, record as much information as possible -- such as name and address of person, and where they are going to have it mounted. Stress the importance of finally getting the head and then try to get permission to retrieve it from the taxidermist, if possible. You should fill out a CWT form and record the cinch tag number on the age-weight-length (AWL) mark-sense form anytime that you see a missing adipose fin on a Chinook salmon, regardless of whether you obtain the head.

Line by line instructions for CWT data forms follow (see the CWT manual from the ADF&G Mark, Tag, and Age Laboratory for further information):

INTERVIEWER INFORMATION:

Sample Number - leave blank (will be filled in at office)

Source - circle "SPORT."

Survey Site - record "Yakutat."

Sample Type - circle "random" if the fish is randomly sampled during a creel survey or CWT sampling, circle "select" if the head is voluntarily brought in by a fisherman, or circle "voluntary" if the fish was taken from an unsampled fishery.

Sampler - record your last name

Name of Place Sampled - use for random heads only. Record "Lower Landing."

Date Sampled - record month and day the fish was sampled for random heads, otherwise for select head, when it was caught.

STRATIFICATION INFORMATION

Sport Harvest Code - record for randomly sampled heads only. Record FF

Fishing Site - Leave blank unless otherwise instructed

ANGLER INFORMATION:

Name & Mailing Address - record name and address of angler.

CATCH INFORMATION:

Date Caught - record month and day that the fish was caught

Water Type - circle freshwater.

Name of Place Fished - record Situk River.”

Area Information (District-Subdistrict) – record “182-70.”

Anadromous Stream# - record “182-70-10100.”

SAMPLING INFORMATION:

Do not use in SE. Note gray box w/ arrow at bottom of page!

HEAD RECOVERY INFORMATION:

Head Number - record 6-digit cinch strap number assigned to head of fish. Hint: check cinch strap number with paperwork. They may not be used in numerical order. It is very important the correct paperwork matches the correct fish head.

Species Code - record appropriate species number: **410** for Chinook (king) salmon >28”, **411** for small (<28”) Chinook salmon, **430** for coho (silver) salmon, **440** for pink (humpy) salmon, **450** for chum (dog) salmon, **420** for sockeye (red) salmon, or **540** for steelhead trout.

Mid-eye-to-Fork Length - record length from mid-eye-to-fork of tail to the nearest 5 mm.


Clip Status - circle "Good" if the adipose looks to be cleanly sliced off and healed, circle "???" if the adipose looks like it may have been torn off or looks questionable, or circle "Unkn" if only the head is seen

Chinook Flesh Color - leave blank unless the fish is a Chinook-then circle the appropriate flesh color

IMPORTANT NOTE: It is very important that we account for every fish head this year. We will be shipping heads weekly to the ADF&G Mark, Tag, and Age Laboratory, so there should be plenty of room in the freezers provided. In the odd event, however, that you put a fish head elsewhere - we must know where it is!

If you turn in a form for a fish head that you did not put it in the usual place please note WHERE this head is in the upper right hand corner of the form: e.g. fish head lost by angler at cleaning table, or fish head in Comm Fish freezer.

Appendix A7.-Coded wire tag sampling form example.



Alaska Department of Fish and Game

Coded Wire Tag Sampling Form

Personal Use, Sport and Subsistence Fisheries
Southeast Region

Page info for this Sample Number only! See instructions

PAGE	OF	PAGES

INTERVIEWER INFORMATION

SAMPLE NUMBER: 0 6

SOURCE: (circle one) personal use **sport** subsistence

SURVEY SITE: HAINES

SAMPLE TYPE: (circle one) random select voluntary

SAMPLER: JOE SAMPLER

NAME OF PLACE SAMPLED: LETNIKOF

DATE SAMPLED: 05 - 16 - 06

EXPLANATION OF SAMPLE TYPES

random: CWT recoveries made during the course of random sampling for a creel survey.

select: CWT recoveries made in an area having a creel survey, but not taken in the random sampling process.

voluntary: CWT recoveries made in an area which isn't covered by a random creel survey (e.g. Hoonah)

SPORT HARVEST CODE

(RANDOM, SPORT SAMPLES ONLY)

M B

DE--Derby Entered FF--Freshwater Fishery MR--Marine Roadside A-Z
DT--Derby Takehome MB--Marine Boat TF--Terminal Fishery (See instructions: Fishing Site Code may be blank)

FISHING SITE CODE

ANGLER INFORMATION (Please print legibly)

ANGLER'S NAME: J A P U B L I C

MAILING ADDRESS: PO BO X 339

City, State, Zip Code

Country (if outside US): MIDDLETOWN, MN 66666

CATCH INFORMATION

DATE CAUGHT: 05 - 16 - 06

NAME OF PLACE FISHED: CHILKAT INLET

AREA INFORMATION: (DISTRICT(S) - SUBDISTRICT(S)) 115 - 32

ANADROMOUS STREAM# (FRESHWATER-ONLY)

WATER TYPE: (circle one) **saltwater** freshwater

SE Sport only

SAMPLING INFORMATION

For RANDOM Samples Only (Personal Use and Subsistence)

SPECIES (CODE)	TOTAL # FISH CHECKED FOR AD-CLIPS	# AD-CLIPS SEEN	WERE ALL CHECKED
(410)CHIN			y n
(411)JACK (CHN-ONLY)			y n
(420)SOCK			y n
(430)COHO			y n
(440)PINK			y n
(450)CHUM			y n
(540)STHD			y n

HEAD RECOVERY INFORMATION

HEAD NUMBER	SPECIES CODE	LENGTH MID-EYE TO FORK	CLIP STATUS	CHINOOK Flesh Color
662358	410	830	Good	(R) W
			Good ??? Unkn No Ad Clip	R W
			Good ??? Unkn No Ad Clip	R W
			Good ??? Unkn No Ad Clip	R W
			Good ??? Unkn No Ad Clip	R W
			Good ??? Unkn No Ad Clip	R W
			Good ??? Unkn No Ad Clip	R W
			Good ??? Unkn No Ad Clip	R W
			Good ??? Unkn No Ad Clip	R W

T:\FORMS\2005\MGO\SPORTS\2005_VSD_02-19-05_10.00

Not for use in SE for Sport Samples (PUT COMMENTS ON BACK)

CONFIDENTIAL INFORMATION

Appendix A8.—Final review recommendation history related to the Situk River Chinook salmon creel survey.

It had been suggested by the final reviewer of the previous operational plan (2015 – 2016) to adapt the data analysis procedure for estimating age composition to the study design of the creel survey. This approach, usually possible when all creels encountered by technicians are sampled, post-stratifies the total harvest into different age categories and then estimates the harvest for each category following the standard access point survey methodology (Bernard et al. 1998). We considered implementing this approach for data analysis in 2015 (and 2011–2013), but after joint discussion (between Brian Marston, Sarah Power, and Anton Antonovich) decided against it for the following reasons:

1) Due to variable and recent low run abundance and restricted sport fisheries, very low harvest has occurred since 2007. The sport fishery may be closed again in 2021 for at least a significant part of the early run due to low predicted run size. Small expected sample sizes combined with the large number of age categories (as many as 10 for Situk Chinook salmon) can prevent us from taking a full advantage of the proposed approach, especially when it comes to obtaining estimates of variability.

2) The potential analytical approach can be done with the current data gathering methods. As of 2008, interview numbers are now assigned to each angler in an interview. If sufficient fish are harvested, we may then use that approach, but given low sample sizes, committing to that approach may not succeed.

It has also been suggested that the information and parameter estimates presented in Figure 3 be updated. No substantial information on the relationship between SWHS and creel survey estimates of Chinook harvest have been obtained since 2007. We will not attempt to update Figure 3 until we have Chinook escapements that can provide sport harvests in excess of 250 as this is the minimum amount and quality of information necessary to improve our understanding of this relationship.

This Plan assumes that all crew members are negative when they start this project, and also assumes that if a crew member begins to show symptoms, that the other members of the crew have a high level of exposure and are likely infected. There are two crew members working on this project, 1 resides in Juneau, and one position has yet to be filled. All state and local travel and Covid-19 guidelines will be followed by staff.

Project Title

Situk River Creel Project

Season Start and End Dates

June 10th through July 31st.

Administration

This project uses technicians that will have been previously working on the Situk Steelhead Assessment and will not need to do any administrative tasks prior to working.

Nobody will be expected or pressured to participate on these projects. If staff are uncomfortable and would like to withdraw from a project, please let the project leader know as soon as you can so that new plans can be made. These actions will have no bearing on the status of the employee's PCN, and their position will be secured until next year.

Project leaders will contact community leaders and/or visit the local community website to determine any community health mandates/requirements prior to entry into the local community or start of a project to communicate the department's intent and how to best address concerns.

Training

Standard group trainings such as Firearms, Wildlife Safety, Spot Sexual Harassment and First Aid/CPR will be postponed for this field season, unless individualized online versions are available (e.g., Spot Sexual Harassment training). Employees that passed the Firearms training since 2019 must be the crew member handling firearms. If possible, staff are encouraged to practice shooting at least once during the early portion of the field season.

Currently 1 of the 2 staff on the project were either certified or recertified in 2020 in Firearms Safety training. One of the three staff are current on their Wildlife Safety. New staff should be able to complete Wildlife Safety training in the office while maintaining social distancing, if not already qualified.

Project specific training that must be conducted will be done in as small a group as possible while maintaining 6-foot distancing.

Prior to Departure

All state and local travel guidelines will be followed for staff traveling from within or outside Alaska to Juneau.

All staff will be screened for fever prior to returning to work and departure for interview sites and no staff who are symptomatic will be allowed to return to work or into the field. Fever

screening should be conducted by the Project Leader, Crew Leader or other local available department personnel in the absence of the Project Leader and Crew Leader.

The DOA has indicated that the SOA is not requiring employees to receive the Covid-19 vaccine. CDC Guidelines for staff who have been fully vaccinated can be found at [When You've Been Fully Vaccinated | CDC](#); Supplemental A. A standard set of COVID-19 questions will be asked prior to departure to the field to assess risk and the following guidelines will be followed.

COVID-19 Risk Questionnaire/Questions

- Within the last 14 days have you traveled outside of the state of Alaska or your home community? If YES, see quarantine guidelines (Supplemental C).
- Do you have any Covid-related symptoms (wet or dry cough, shortness of breath or difficulty breathing, fever, chills, muscle aches, headache, loss of smell or taste, sore throat, fatigue, etc.)? If YES, see quarantine guidelines.
- Have you been in contact or have been exposed to anyone who has tested positive for COVID-19? If YES, see quarantine guidelines as well as Health Advisory No. 1 Recommendations for Keeping Alaskans Safe. If NO, see SOA guidelines Health Advisory No. 1 regarding practicing good hygiene, social distancing, wearing a mask, monitoring your health, and testing.
- Do you live or take care of someone who have tested positive for COVID-19? If YES, see quarantine guidelines as well as Health Advisory No. 1 Recommendations for Keeping Alaskans Safe.
- Have you been in “close contact” with a person who has tested positive for COVID-19 for more than 10 minutes? Close contact is someone who was within 6 feet of an infectious person for a *cumulative total* of 15 minutes or more over 24 hours while the person was infectious. This definition applies regardless of whether the infected person or close contacts were wearing masks. If YES, see quarantine guidelines as well as Health Advisory No. 1 Recommendations for Keeping Alaskans Safe.
- Were you in the same indoor environment as a confirmed case for a prolonged period but not within 6 feet of the confirmed case? If YES, see Health Advisory No. 1 Recommendations for Keeping Alaskans Safe regarding practicing good hygiene, social distancing, wearing a mask, monitoring your health, and testing.
- Have you had a negative Covid test within the last 72 hours, if not, could you get tested prior to departing for the field and provide the results to your supervisor?

Information and guidelines on when and how to quarantine is available on the CDC and DHSS webpages:

[02.14.21-Health-Advisory-1-Recommendations.pdf \(alaska.gov\)](#); Appendix B
[COVID-19: Quarantine guidance \(alaska.gov\)](#); Appendix C
[COVID-19: When to Quarantine | CDC](#); Appendix D

Transportation to Field

During transportation to the field, field crew members should wear masks and disposable gloves.

The field project is conducted along the Situk River in parking lots and access points accessed by truck. Crew will drive out to the sites in state vehicles provided to them.

Cloth masks will be assigned to each crew member (at least 2 per person) to be kept for the duration of the project. Staff will clean cloth masks daily and will be expected to wear them during transportation to and from field and camp and when interviewing members of the public and anglers.

Crew exchanges should be minimized as much as possible, limiting contact between staff and crew, and sanitizing equipment (including vehicles and skiff) and living quarters between shifts. Masks will be worn when transporting to and from field camp.

Supply contingencies

During the season, the crew will resupply data sheets and supplies at the office in Yakutat. Due to the schedule, these resupplies will take place when staff isn't present minimizing the contact between them.

Work and Living Protocols

Crew members will maintain 6-foot distancing as much as possible when actual work needs do not require working closer than 6 feet.

Crew members will practice Covid-19 protocol measures, including frequent hand washing, wearing cloth masks, sanitize common areas and equipment, wear gloves when practical.

Crew members will similarly practice Covid-19 protocol while present in the office to transfer data collected in field (scale cards, fish tissue samples, data sheets) to office staff/supervisor, while using all of the fish tissue drying equipment, completing timesheets and during meetings at the office.

Crew members will take their temperatures each morning and evening.

Crew members will not report to work if they become ill. Any illness will be immediately reported to the supervisor. See section "Possible cases of Covid-19 occur in camp."

Communication

The field crew leader will maintain a list of emergency contacts in town (Jason Pawluk, 784-3222 office; 398-3873 cell; Rick Hoffman 784-3255 office; 209-5545 cell; Hannah Christian 784-3255 office; 942-4513 cell).

The field crew leader and Project leader will maintain a list of emergency contacts for all crew members. This list will be on file with the Project leader and in personnel files at the Yakutat office.

Juliet Harrison = (360)576-5975 (mother)

FWT II = N/A

Crew leader will check in daily with project leader Jason Pawluk by phone (784-3222) or at office.

Project leader will designate secondary contact in town (Rick Hoffman 784-3255).

Satellite phones, Satellite Texting devices, and radios will be sanitized between each use and are stored at the field camp.

Transportation Plan Contingency

If crew needed to be transported out of Yakutat due to COVID-19, a Medevac Alaska flight (1-877-985-5022) would be used to transport the crew member to either Anchorage or Juneau.

Possible cases of COVID-19 occur in Yakutat

If a crew member becomes symptomatic (fever over 100.3, dry cough, headache), the crew member will immediately be isolated seeking medical advice and testing. The remaining crew will continue their daily activities.

If crew are unable to be tested due to no tests being available, then they should be quarantined at a private facility until a decision can be made on what to do.

If a crew member tests positive, then a decision on whether or not that person needs to receive medical care should be determined. If medical care is determined by local area medical providers, then the crew member should be evacuated from Yakutat to Anchorage or Juneau.

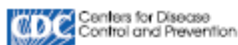
Prior to evacuation from Yakutat, the patient (if able) or crew leader will keep a daily health log where body temperature and symptoms will be recorded to identify severity and if necessary relay accurate information to health professionals.

During extraction, all crew will wear cloth masks and try when possible to maintain 6-foot distancing.

All equipment used will be disposed, sanitized, or quarantined before next use.

If extraction of one or multiple crew members is necessary due to suspected COVID-19 illness, at the Division of Sport Fish Director's discretion the project will be shut down for the year, and the crew should decommission the camp as much as practical prior to evacuation.

Supplemental A



When You've Been Fully Vaccinated

How to Protect Yourself and Others

Updated Mar. 23, 2021

[Print](#)

COVID-19 vaccines are effective at protecting you from getting sick. Based on what we know about COVID-19 vaccines, people who have been fully vaccinated can start to do some things that they had stopped doing because of the pandemic.

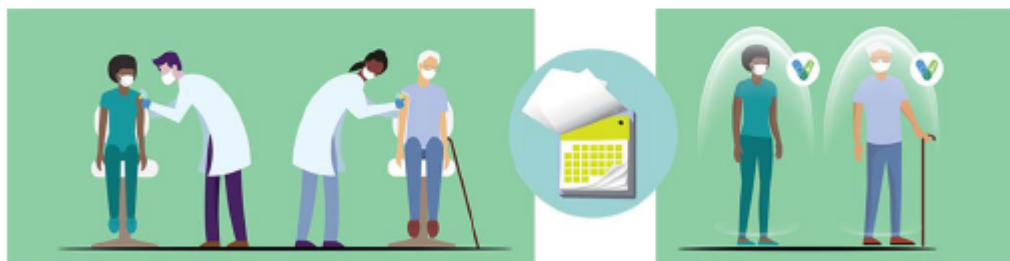
We're still learning how vaccines will affect the spread of COVID-19. After you've been fully vaccinated against COVID-19, you should keep taking precautions in public places like wearing a mask, staying 6 feet apart from others, and avoiding crowds and poorly ventilated spaces until we know more.

Have You Been Fully Vaccinated?

People are considered fully vaccinated:

- 2 weeks after their second dose in a 2-dose series, such as the Pfizer or Moderna vaccines, or
- 2 weeks after a single-dose vaccine, such as Johnson & Johnson's Janssen vaccine

If it has been less than 2 weeks since your 1-dose shot, or if you still need to get your second dose of a 2-dose vaccine, you are NOT fully protected. Keep taking all prevention steps until you are fully vaccinated.



What's Changed

If you've been fully vaccinated:

- You can gather indoors with fully vaccinated people without wearing a mask.
- You can gather indoors with unvaccinated people from one other household (for example, visiting with relatives who all live together) without masks, unless any of those people or anyone they live with has an increased risk for severe illness from COVID-19.



- If you've been around someone who has COVID-19, you do not need to stay away from others or get tested unless you have symptoms.
 - However, if you live in a group setting (like a correctional or detention facility or group home) and are around someone who has COVID-19, you should still stay away from others for 14 days and get tested, even if you don't have symptoms.



What Hasn't Changed

For now, if you've been fully vaccinated:

- You should still take steps to [protect yourself and others](#) in many situations, like wearing a mask, staying at least 6 feet apart from others, and avoiding crowds and poorly ventilated spaces. Take these precautions whenever you are:
 - In public
 - Gathering with unvaccinated people from more than one other household
 - Visiting with an unvaccinated person who is at [increased risk of severe illness or death from COVID-19](#) or who lives with a person at [increased risk](#)
- You should still avoid medium or large-sized gatherings.
- You should still delay domestic and international travel. If you do travel, you'll still need to follow CDC [requirements and recommendations](#).
- You should still watch out for [symptoms of COVID-19](#), especially if you've been around someone who is sick. If you have symptoms of COVID-19, you should get tested and stay home and away from others.
- You will still need to follow guidance at your workplace.



What We Know and What We're Still Learning

- We know that COVID-19 vaccines are effective at preventing COVID-19 disease, especially severe illness and death.
 - We're still learning how effective the vaccines are against variants of the virus that causes COVID-19. Early data show the vaccines may work against some variants but could be less effective against others.
- We know that other [prevention steps](#) help stop the spread of COVID-19, and that these steps are still important, even as vaccines are being distributed.
 - We're still learning how well COVID-19 vaccines keep people from spreading the disease.
 - Early data show that the vaccines may help keep people from spreading COVID-19, but we are learning more as more people get vaccinated.
- We're still learning how long COVID-19 vaccines can protect people.
- As we know more, CDC will continue to update our recommendations for both vaccinated and unvaccinated people.

Until we know more about those questions, everyone — even people who've had their vaccines — should continue taking [basic prevention steps](#) when recommended.



Want to learn more about these recommendations? Read our expanded [Interim Public Health Recommendations for Fully Vaccinated People](#), and corresponding [Science Brief](#) and [recommendations for healthcare providers](#).



Last Updated Mar. 23, 2021
Content source: National Center for Immunization and Respiratory Diseases (NCIRD), Division of Viral Diseases

COVID-19 Response and Recovery Health Advisory No. 1 Recommendations for Keeping Alaskans Safe

Issued: February 14, 2021

By: Commissioner Adam Crum, Alaska Department of Health and Social Services
Dr. Anne Zink, Chief Medical Officer, State of Alaska

COVID-19 poses a risk to all Alaskans. Containing the virus that causes COVID-19 cannot be done through community measures alone; Alaskans must take individual responsibility to protect themselves, their loved ones, and their community. The primary ways to do this are:

- Wearing a cloth face covering/mask when in public settings and when you are around people outside your household.
- Practicing social distancing by avoiding close contact and minimizing time spent indoors with persons outside your household.
- Monitoring your health and staying at home when sick.
- Practicing good hygiene by frequently washing your hands and disinfecting high-touch surfaces in your home and workplace.

When we reduce the spread of the virus by taking these individual measures, we reduce the need for government intervention.

Wear a cloth face covering/mask

Wearing a cloth face covering is strongly recommended for all Alaskans two years of age and older, other than those with breathing problems and those who cannot remove the covering without assistance. **Face coverings protect those around you, and also offer you some protection.**

- Make sure the face covering is made with at least two layers of fabric and covers both the nose and mouth.
- When removing the face covering, avoid touching the front of the face covering
- *Wash your hands immediately* after removing the face covering and before touching anything else.
- Wash cloth face coverings in hot, soapy, water between every use.
- Be careful to avoid developing a false sense of security when using face coverings.

Practice Social Distancing: Avoid close contact with people who are not in your household

- Put at least six feet of distance between yourself and people who don't live in your household.
- Remember that people infected with the virus, but who do not have any symptoms, can also spread the virus.
- Keeping distance from others is especially important for people who are at higher risk of getting very sick.
- Minimize time indoors with individuals outside your household even if you can maintain a distance of six feet.
- Avoid all gatherings, even small ones, with persons who are not in your household.

Monitor your health and stay home if you are sick

- Be alert for symptoms. Watch for fever, cough, shortness of breath, muscle and body aches, new loss of taste or smell, and other [symptoms of COVID-19](#).
 - Take your temperature if symptoms develop.
- If you develop symptoms, stay home – even if symptoms are only mild.
 - Consider providing additional protections or more intensive care for household members over 65 or with underlying health conditions.
- Get tested as soon as symptoms start, if you can, and stay away from others until your test results are back.

Practice good hygiene

- Wash your hands often.
- Cover coughs and sneezes.
- Disinfect surfaces like doorknobs, tables, desks, and handrails regularly.
- Increase ventilation by opening windows when able.
- Use noncontact methods of greeting each other.

Additional information

If you test positive

- If you test positive, you need to isolate away from others to keep them safe. “Isolate” is the term used in association with individuals who are sick with, or have tested positive for, the virus that causes COVID-19. Isolation means staying home all the time and keeping away from household members as much as possible. More information is available on the CDC and DHSS webpages.
- For most people with no, or mild, symptoms that are improving, isolation will be for ten days since your symptoms start, or if you never have any symptoms,

ten days since you had your test. Consult with a healthcare provider or public health staff member if you have questions about how long you need to be in isolation.

- You do not need to have a negative test to be cleared from isolation.
- It is very important for people who test positive to notify anyone they may have had contact with while infectious.
- Information on what counts as a “contact” can be found on the CDC webpages.
- If you test positive and are unable to isolate safely, or need resources during your isolation period, contact your local public center.

If you have had close contact with a confirmed case

If you have close contact with a confirmed case, you need to quarantine to keep others safe. “Quarantine” is the term used in association with individuals who have been exposed to someone with the virus that causes COVID-19. Quarantine means staying home all the time and keeping away from household members as much as possible. Information on when and how to quarantine is available on the CDC and DHSS webpages.

- The preferred quarantine period is currently 14 days from the last exposure to a known case, but may be able to be shorter under certain circumstances for contacts who do not develop symptoms. Briefly, those two options apply as follows:
 - Seven-day quarantine with a molecular or antigen test <48 hours before the end of quarantine. Individuals must remain in quarantine until their test results are available.
 - Ten-day quarantine.
- There is some risk of post-quarantine transmission associated with discontinuing quarantine before 14 days. Individuals should continue to monitor themselves for symptoms for a full 14 days after their last contact with a confirmed case.

Testing guidance

- Anybody with symptoms of COVID-19 should be tested.
 - A positive test within 90 days of someone’s first infection can be difficult to interpret and needs to be discussed with a medical professional.
- Some people without symptoms should also be tested, including:
 - All close contacts of confirmed COVID-19 patients.
 - Health care workers in hospitals and congregate living settings.
 - Residents in congregate living settings (see [DHSS guidance](#) for specific groups) and other high- consequence settings (e.g., people coming into remote communities from areas where COVID-19 is circulating).
 - People who may be at increased risk for infection (discuss with medical professional).

- Please note: People with a prior positive test in the past 90 days, should NOT be re-tested.
- More information can be found in the [Alaska Section of Epidemiology's testing guidance](#).

Travel considerations

- Follow [State of Alaska travel](#) and [CDC travel recommendations](#).
- Assess the risks of travel including the mode of transportation and the level of spread of the virus in the location you will be visiting.
- At-risk individuals and communities with limited health care infrastructure or high-risk populations should consider limiting all non-essential travel.

Special considerations for workplaces, schools and childcare, correctional facilities, and other community locations and events are available at <https://www.cdc.gov/coronavirus/2019-ncov/community/index.html> and <http://dhss.alaska.gov/dph/Epi/id/Pages/COVID-19/default.aspx>

This is not a mandate.

Visit the State of Alaska's COVID-19 website at coronavirus.alaska.gov for more information

State of Alaska myAlaska My Government Resident Business in Alaska Visiting Alaska State Employees

Alaska Department of Health and Social Services ENHANCED BY Google

Home Divisions and Agencies Services News Contact Us COVID-19 Resources

Health and Social Services > Public Health > Epidemiology > Infectious Disease > COVID-19: Quarantine guidance

COVID-19 Home Sitemap Vaccine State of Alaska COVID-19 CDC COVID-19

Quarantine Guidance

Updated March 30, 2021

If you have been in close contact with someone who is infected with the SARS-CoV-2 virus, you must quarantine to prevent further spread to others.

- › **Quarantine** keeps someone who might have been exposed to the virus away from others.
- › **Isolation** keeps someone who is infected with the virus away from others, even in their home.

On this page:

- › [How long to quarantine](#)
- › [How is close contact defined?](#)
- › [Keeping yourself and others safe](#)
- › [What to do if someone in your household is sick](#)
- › [Non-medical help](#)
- › [Resources and CDC links](#)

How long to quarantine

According to the U.S. Centers for Disease Control and Prevention (CDC), a 14-day quarantine period is still the safest quarantine duration; however, based on emerging science, CDC has issued updated guidance to provide two acceptable alternatives to shorten the quarantine period.

- › If testing is available, you may be able to end your quarantine after 7 days of quarantine, on the 8th day. You can take a COVID-19 test within 48 hours prior when you hope to end your quarantine (on day 6 or 7). You must continue to quarantine until your test comes back negative, which may be longer than 7 days. Even if your test is negative and you end quarantine, you must continue to wear a mask when around others and monitor for symptoms for the full 14 days. If you develop any symptoms or your test result is positive, you must self-isolate.
- › If testing is not readily available, quarantine for a full 10 days after you were exposed. You may end your quarantine on day 11 if you do not develop symptoms. You must continue to wear a mask when around others and monitor for symptoms for the full 14 days. Self-isolate if you develop symptoms and get tested.

People who have been in close contact with someone who has COVID-19 are not required to quarantine if they have been fully vaccinated against the disease within the last three months and show no symptoms.

If you are fully vaccinated and have been exposed to someone who has COVID-19, you do not need to quarantine or get tested unless you have symptoms or you live in a group setting (like a correctional or detention facility or group home). Review the complete updated guidelines at the CDC website.

Table: Options to reduce quarantine period

Table. Options to reduce quarantine period for close contacts.

	Option 1	Option 2
	<i>7-day Quarantine + Test</i>	<i>10-day Quarantine</i>
What type of test is required and when should it be obtained?	Molecular or antigen; specimen must be collected <48 hours before the time of planned quarantine discontinuation (i.e., on day 6 or 7 of quarantine)	No Test Required
Can quarantine be further shortened with a negative test result?	No	No
When is the earliest that a person can be released from quarantine and go back to work or school?	8 days after exposure with a negative test result	11 days after exposure
What should patients do if they haven't gotten their test result back before the time of planned quarantine discontinuation?	Remain in quarantine until they get a negative test result or 10 days have passed, whichever is earlier	No Test Required
Estimated residual post-quarantine transmission risk	5% (upper limit: 12%)	1% (upper limit: 10%)
What added precautions should people take after being released from quarantine under option 1 or 2?	Take extra precautions until 14 days after exposure: watch for symptoms, wear a mask when in public areas, avoid crowds, maintain 6-foot distance from others, wash hands frequently, avoid any contact with high-risk persons, discuss with employer whether it is safe to return to work.	

Notes:

1. The above options are only for contacts who have remained asymptomatic for the entire duration of their quarantine. Anyone who develops symptoms within 14 days of an exposure (regardless of whether or not they remain in quarantine) should immediately self-isolate and seek testing.
2. Persons can continue to be quarantined for 14 days per existing CDC recommendations; this option maximally reduces the risk of post-quarantine transmission and is the strategy with the greatest collective experience at present.
3. Due to the added risk of transmission associated with reduced quarantine periods, a full 14-day quarantine period is recommended for persons in certain high-risk settings, such as long-term care facility residents and correctional facility inmates. Administrators of such facilities should also consider excluding staff from work for 14 days after exposure, if operationally feasible.
4. [CDC guidance for health care workers](#) who are close contacts has not changed from the standard 14-day quarantine.
5. Local community leadership (e.g., city mayor or Incident Command) may decide to continue a 14-day quarantine for residents of their communities, based on local conditions and needs. Prior to making this decision, community leadership should reach out to the Alaska Section of Public Health Nursing or the Section of Epidemiology to assure unified coordination.

How is close contact defined?



A close contact is someone who was within 6 feet of an infectious person for a *cumulative total* of 15 minutes or more over 24 hours while the person was infectious. This definition applies regardless of whether the infected person or close contacts were wearing masks.

- › The infectious period for COVID-19 starts 2 days before the patient experiences symptoms (or, for patients who show no symptoms, 2 days prior to testing) until the time the patient is isolated.
- › Example of cumulative exposure:
Three separate 5-minute exposures (for a total of 15 minutes) over a 24-hour period.

Keeping yourself and others safe

With cases on the rise in communities across Alaska, public health contact tracers may not be able to notify all close contacts. Because of this, contact tracers are asking people who have tested positive for COVID-19 to begin informing their close contacts of their potential exposure to the virus as soon as possible. The faster people begin to quarantine, the better we can prevent further transmission.

These resources can help you determine your close contacts and know what to say when you call:

- ›  [Thank you for getting tested – what to do after your test](#)
- ›  [What to do if you have been exposed to COVID-19](#)

If you are in quarantine, stay home, separate yourself from others, monitor your health and follow CDC, state and local health guidance. If you don't have symptoms, other household members do not need to quarantine. However, no visitors should come to your home during this time. If household members need to be in the same room with person in quarantine, everyone should wear a mask and stay six feet apart. [Wash hands](#) often and frequently [clean and disinfect](#) commonly-touched surfaces.

What to do if someone in your household is sick

Even if you experience very mild symptoms, isolate yourself immediately, call a health care provider and get tested. Isolation separates someone who is sick or tested positive for COVID-19 without symptoms away from others, even in their own home. If you live with others, try to stay in a specific "sick room" or area and away from other people. Use a separate bathroom, if available.


If you do experience symptoms or test positive, others in your household will need to quarantine. Their quarantine period begins on the date they last had close contact with you (before you were able to effectively isolate apart from household members). Any time a new household member gets sick with COVID-19 and others in the household have had close contact with that person, household members will need to restart their quarantine.

If you live in a household and cannot avoid close contact with family members or roommates who have COVID-19, you should avoid contact with others outside your home while the person is sick. Your quarantine period begins when the person who has COVID-19 meets the [criteria to end home isolation](#).

Non-medical help

If you need non-medical help to successfully quarantine or isolate (e.g., groceries or other support) call 2-1-1 or 1-800-478-2221.

Resources and CDC links

- ›  Letter template for returning to school or work after quarantining
- › [Options to Reduce Quarantine for Contacts of Persons with SARS-CoV-2 Infection Using Symptom Monitoring and Diagnostic Testing \(CDC\)](#)
- › [When to Quarantine \(CDC\)](#)
- › [What to Do If You are Sick \(CDC\)](#)
- › [Isolate if You are Sick \(CDC\)](#)

Supplemental D

COVID-19



- Your Health
- Vaccines
- Cases & Data
- Work & School
- Healthcare Workers
- Health Depts
- Science
- More

Your Health

- About COVID-19 +
- Symptoms +
- Testing +
- Prevent Getting Sick +
- If You Are Sick -
 - What to Do If You Are Sick
 - Isolate If You Are Sick
 - When to Quarantine**
 - Caring for Someone
 - Sick Parents and Caregivers
 - When You Can be Around Others
 - Potential Treatments
 - Long-Term Effects
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When to Quarantine

Stay home if you might have been exposed to COVID-19

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Health departments: Detailed CDC recommendations for public health agencies on the duration of quarantine [can be found here](#).

Local public health authorities determine and establish the quarantine options for their jurisdictions. Quarantine is used to keep someone *who might have been exposed to COVID-19* away from others. Quarantine helps prevent spread of disease that can occur before a person knows they are sick or if they are infected with the virus without feeling symptoms. People in quarantine should stay home, separate themselves from others, monitor their health, and follow directions from their state or local health department.

Quarantine or isolation: What's the difference?

Quarantine keeps someone who might have been exposed to the virus away from others.

[Isolation](#) keeps someone who is infected with the virus away from others, even in their home.



Who needs to quarantine?

People who have been in [close contact](#) with someone who has COVID-19—excluding people who have had COVID-19 within the past 3 months or [who are fully vaccinated](#).

- People who have tested positive for COVID-19 within the past 3 months and recovered do not have to quarantine or get tested again as long as they do not develop new symptoms.
- People who develop symptoms again within 3 months of their first bout of COVID-19 may need to be tested again if there is no other cause identified for their symptoms.
- People who have been in close contact with someone who has COVID-19 are not required to quarantine if they have been [fully vaccinated](#) against the disease and show no symptoms.

What counts as [close contact](#)?

- You were within 6 feet of someone who has COVID-19 for a total of 15 minutes or more
- You provided care at home to someone who is sick with COVID-19
- You had direct physical contact with the person (hugged or kissed them)
- You shared eating or drinking utensils
- They sneezed, coughed, or somehow got respiratory droplets on you

Steps to take

Stay home and monitor your health

- Stay home for 14 days after your last contact with a person who has COVID-19.
- Watch for fever (100.4°F), cough, shortness of breath, or [other symptoms](#) of COVID-19
- If possible, stay away from others, especially people who are at [higher risk](#) for getting very sick from COVID-19

Options to reduce quarantine

Reducing the length of quarantine may make it easier for people to quarantine by reducing the time they cannot work. A shorter quarantine period also can lessen stress on the public health system, especially when new infections are rapidly rising.

Your local public health authorities make the final decisions about how long quarantine should last, based on local conditions and needs. Follow the recommendations of your local public health department if you need to quarantine. Options they will consider include stopping quarantine

- After day 10 without testing
- After day 7 after receiving a negative test result (test must occur on day 5 or later)

After stopping quarantine, you should

- Watch for symptoms until 14 days after exposure.
- If you have symptoms, immediately self-isolate and contact your local public health authority or healthcare provider.
- Wear a mask, stay at least 6 feet from others, wash your hands, avoid crowds, and take other steps to [prevent the spread of COVID-19](#).

CDC continues to endorse quarantine for 14 days and recognizes that any quarantine shorter than 14 days balances reduced burden against a small possibility of spreading the virus. CDC will continue to evaluate new information and update recommendations as needed. See [Options to Reduce Quarantine for Contacts of Persons with SARS-CoV-2 Infection Using Symptom Monitoring and Diagnostic Testing](#) for guidance on options to reduce quarantine.

Confirmed and suspected cases of reinfection of the virus that causes COVID-19

[Cases of reinfection](#) of COVID-19 have been reported but are rare. In general, reinfection means a person was infected (got sick) once, recovered, and then later became infected again. Based on what we know from similar viruses, some reinfections are expected.



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Content source: National Center for Immunization and Respiratory Diseases (NCIRD), Division of Viral Diseases