

Regional Operational Plan No. ROP.SF.1J.2022.11

**Operational Plan: Situk River Steelhead Stock
Assessment, 2020–2021**

by

Jason A. Pawluk

and

Randy L. Peterson

June 2022

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)		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 (multiple)	R
milliliter	mL	west	W	correlation coefficient (simple)	r
millimeter	mm	copyright	©	covariance	cov
		corporate suffixes:		degree (angular)	$^\circ$
Weights and measures (English)		Company	Co.	degrees of freedom	df
cubic feet per second	ft ³ /s	Corporation	Corp.	expected value	E
foot	ft	Incorporated	Inc.	greater than	>
gallon	gal	Limited	Ltd.	greater than or equal to	\geq
inch	in	District of Columbia	D.C.	harvest per unit effort	HPUE
mile	mi	et alii (and others)	et al.	less than	<
nautical mile	nmi	et cetera (and so forth)	etc.	less than or equal to	\leq
ounce	oz	exempli gratia (for example)	e.g.	logarithm (natural)	ln
pound	lb	Federal Information Code	FIC	logarithm (base 10)	log
quart	qt	id est (that is)	i.e.	logarithm (specify base)	\log_2 , etc.
yard	yd	latitude or longitude	lat or long	minute (angular)	'
		monetary symbols (U.S.)	\$, ¢	not significant	NS
Time and temperature		months (tables and figures): first three letters	Jan, ..., Dec	null hypothesis	H_0
day	d	registered trademark	®	percent	%
degrees Celsius	$^\circ\text{C}$	trademark	™	probability	P
degrees Fahrenheit	$^\circ\text{F}$	United States (adjective)	U.S.	probability of a type I error (rejection of the null hypothesis when true)	α
degrees kelvin	K	United States of America (noun)	USA	probability of a type II error (acceptance of the null hypothesis when false)	β
hour	h	U.S.C.	United States Code	second (angular)	"
minute	min	U.S. state	use two-letter abbreviations (e.g., AK, WA)	standard deviation	SD
second	s			standard error	SE
Physics and chemistry				variance	
all atomic symbols				population sample	Var var
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				

REGIONAL OPERATIONAL PLAN NO. ROP.SF.1J.2022.11

**OPERATIONAL PLAN: SITUK RIVER STEELHEAD STOCK
ASSESSMENT, 2020–2021**

by
Jason A. Pawluk
Alaska Department of Fish and Game, Division of Sport Fish, Yakutat
and
Randy L. Peterson
Alaska Department of Fish and Game, Division of Sport Fish, Douglas

Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
333 Raspberry Road, Anchorage, Alaska, 99518-1565

June 2022

The Regional Operational Plan Series was established in 2012 to archive and provide public access to operational plans for fisheries projects of the Divisions of Commercial Fisheries and Sport Fish, as per joint-divisional Operational Planning Policy. Documents in this series are planning documents that may contain raw data, preliminary data analyses and results, and describe operational aspects of fisheries projects that may not actually be implemented. All documents in this series are subject to a technical review process and receive varying degrees of regional, divisional, and biometric approval, but do not generally receive editorial review. Results from the implementation of the operational plan described in this series may be subsequently finalized and published in a different department reporting series or in the formal literature. Please contact the author if you have any questions regarding the information provided in this plan. Regional Operational Plans are available on the Internet at: <http://www.adfg.alaska.gov/sf/publications/>.

Product names used in this publication are included for completeness and do not constitute product endorsement. The Alaska Department of Fish and Game does not endorse or recommend any specific company or their products.

*Jason Pawluk,
Alaska Department of Fish and Game, Division of Sport Fish,
PO Box 49, Yakutat, Alaska 99689
and
Randy Peterson
Alaska Department of Fish and Game, Division of Sport Fish,
P.O. Box 110024, Juneau, AK 99811-0024*

This document should be cited as follows:

Pawluk, J. A., and R. L. Peterson. 2022. Operational Plan: Situk River steelhead stock assessment, 2020–2021. Alaska Department of Fish and Game, Division of Sport Fish, Regional Operational Plan No. ROP.SF.1J.2022.11, Anchorage.

The Alaska Department of Fish and Game (ADF&G) administers all programs and activities free from discrimination based on race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The department administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act (ADA) of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972.

If you believe you have been discriminated against in any program, activity, or facility please write:

ADF&G ADA Coordinator, P.O. Box 115526, Juneau, AK 99811-5526

U.S. Fish and Wildlife Service, 4401 N. Fairfax Drive, MS 2042, Arlington, VA 22203

Office of Equal Opportunity, U.S. Department of the Interior, 1849 C Street NW MS 5230, Washington DC 20240

The department's ADA Coordinator can be reached via phone at the following numbers:

(VOICE) 907-465-6077, (Statewide Telecommunication Device for the Deaf) 1-800-478-3648,

(Juneau TDD) 907-465-3646, or (FAX) 907-465-6078

For information on alternative formats and questions on this publication, please contact:

ADF&G, Division of Sport Fish, Research and Technical Services, 333 Raspberry Rd, Anchorage AK 99518 (907) 267-2375

SIGNATURE/TITLE PAGE

Project Title: Operational Plan: Situk River Steelhead Stock Assessment, 2020-2021

Project leader(s): Jason Pawluk, Fisheries Biologist III, Yakutat

Division, Region, and Area Sport Fish, Southeast, Yakutat

Project Nomenclature: F-10-34, F-10-35, F-10-36, R-1-6: Federal Aid in Sport Fish Restoration

Period Covered April 15, 2020 to April 14, 2022

Field Dates: May 4 to June 10, 2020 and May 4 to June 10, 2021

Plan Type: Category II

Approval

Title	Name
Project leader	Jason Pawluk
Biometrician	Randy Peterson
Research Coordinator	Jeff Nichols

TABLE OF CONTENTS

	Page
LIST OF TABLES.....	iii
LIST OF FIGURES.....	iii
LIST OF APPENDICES.....	iii
ABSTRACT.....	1
PURPOSE.....	1
BACKGROUND.....	1
OBJECTIVES.....	3
Primary Objectives.....	3
Secondary Objectives.....	3
METHODS.....	4
Study Design.....	4
Steelhead Kelt Weir.....	4
Sex Composition and Mean Length.....	5
Mortality Sampling.....	6
Satellite Tagging.....	6
DATA COLLECTION.....	7
Steelhead Kelt Weir.....	7
Sex and Length Composition and Scale Sampling.....	7
Sampling Fish Mortalities.....	8
Satellite Tagging.....	8
DATA REDUCTION.....	8
DATA ANALYSIS.....	9
Steelhead Kelt Weir.....	9
Sex and Length Composition.....	9
Satellite Tagging.....	11
SCHEDULE AND DELIVERABLES.....	11
DELIVERABLES:.....	11
RESPONSIBILITIES.....	11
REFERENCES CITED.....	13
APPENDIX A.....	14

LIST OF TABLES

Table	Page
1. Steelhead catch, harvest, and kelt counts on Situk River in Southeast Alaska, 2006–2019.	3

LIST OF FIGURES

Figure	Page
1. Location of weir to be used to count emigrating steelhead from the Situk River drainage, Southeast Alaska, 2018 and 2019.	2
2. Overhead view of the Situk River weir and individual components.	4

LIST OF APPENDICES

Appendix	Page
A1. Situk weir daily observations form.....	15
A2. Situk weir cumulative steelhead passage and sampled recording form.....	16
A3. Situk River Biological Sampling Form.....	17
A4. Scar code descriptions for weir sampling form, Situk River steelhead.....	18
A5. Biological sampling form for Situk River steelhead mortalities.	19
A6. ADF&G Covid-19 Response Action Plan-Situk River Steelhead Assessment	20

ABSTRACT

Steelhead *Oncorhynchus mykiss* are an important sport fish species in Alaska, and the Situk River hosts the state's largest steelhead sport fishery. The primary purpose of this project is to record abundance and size attributes of steelhead kelts in the Situk River. Observations of abundance and fish size are used to determine if run abundance and size characteristics of steelhead are changing across time. Decreasing trends in steelhead kelt abundance or size could necessitate changes to sport fishing regulations to help ensure the sustainability of the Situk River steelhead population. Furthermore, kelt abundance in the Situk River is used in combination with other abundance counts of steelhead in Alaska to assess trends, both regionally and statewide, that help sustain all steelhead fisheries in the state. The Situk River weir is also used to gather fish mortalities to obtain matched scale and otolith samples from steelhead for aging verification and archiving. Observations of fishery-related wounds are also recorded to assess potential fishery and predation impacts on steelhead.

Keywords: *Oncorhynchus mykiss*, Steelhead, kelt, weir, resistance board, fisheries management, remote video, passive integrated transponder

PURPOSE

The primary purpose of this project is to record abundance and size attributes of steelhead kelts using a weir on the Situk River. Observations of abundance and fish size are used to determine if run abundance and size of steelhead kelts are being sustained across time. This plan covers weir operations in 2020 and 2021.

BACKGROUND

The Situk River produces the largest known run of steelhead *Oncorhynchus mykiss* in Alaska, and supports the state's largest steelhead sport fishery, along with fisheries for five other salmonid species *Oncorhynchus sp.* The Situk River drains three lakes and flows 35.2 km before emptying into the Gulf of Alaska, southeast of the village of Yakutat; the drainage area is about 23,000 hectares (Figure 1). Steelhead kelts have been counted in the Situk River annually in the lower river since 1988 by the Alaska Department of Fish and Game (ADF&G), and data have been gathered since 1948 by various other agencies at other sites within the same watershed (Bain et al. 2003). Despite restrictive regulations that limit harvest to 2 fish per year over 36 inches, the Situk River steelhead fishery has continued to attract a large number of anglers, many of whom voluntarily practice catch-and-release fishing. Estimates from the Alaska Sport Fishing Survey (SWHS)¹ show that recent catches of steelhead in the Situk River are variable (3,000–16,000), while harvest remains very low (Table 1).

Steelhead abundance in the Situk River is enumerated annually by counting downstream migrating steelhead kelts as they pass a weir in the lower river after spawning. Counts of steelhead kelt abundance from the Situk River assist in monitoring efforts related to stock status considering the intensive sport fishery. This data is also used as part of an overall region wide steelhead abundance indexing program. A “resistance board” weir was first installed in 1995 at this site after more traditional weirs failed in previous years during periods of high stream flows. The weir was further modified in 1997 and 1998 to improve capture and holding capabilities (Johnson and Jones 1998–1999), and a video system was installed in 2002 that allowed fish to be counted from a nearby cabin. This video system allows unimpeded fish passage through the weir and helps efficiently obtain sampling goals.

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/>.



Figure 1.—Location of weir to be used to count emigrating steelhead from the Situk River drainage, Southeast Alaska, 2018 and 2019.

Downstream counts of steelhead kelts emigrating from the Situk River from 2006 to 2019 (Table 1) have varied from 4,864 to 15,003 fish (average = 7,531). The peak count occurred in 2006, and the low count in 2012. The most recent count in 2019 totaled 8,501 kelts and was above average.

The Situk River weir is also a fish capturing platform. Fish are trapped with a box trap behind the weir that can be remotely closed. Age, sex, and length (ASL) information is collected from steelhead kelts captured with this trap. These data are used to monitor the demographic and size characteristics of the Situk River steelhead population, as well as providing comparative information to that collected on other monitored steelhead streams in the region and across the state. All kelt mortalities found on the weir are sampled for scales, length, sex, and an otolith is extracted for archiving.

The Situk River steelhead weir will be operated each year: to count emigrating steelhead kelts, to sample and measure fish, to estimate sex and length composition, and to sample mortalities found on the weir.

Table 1.—Steelhead catch, harvest, and kelt counts on Situk River in Southeast Alaska, 2006–2019.

Year	SWHS catch	SWHS harvest	Weir kelt count
2006	10,592	0	15,003
2007	11,844	0	12,438
2008	16,418	53	7,312
2009	5,947	26	7,302
2010	5,630	0	5,335
2011	6,075	0	7,424
2012	10,611	87	4,864
2013	3,911	0	7,533
2014	2,920	0	5,567
2015	6,412	0	7,163
2016	6,140	0	5,720
2017	8,435	35	6,044
2018	11,758	0	5,221
2019	^a	^a	8,501

Source: Alaska Sport Fishing Survey database [Intranet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish. Available from: https://intra.dsf.dfg.alaska.local/swhs_est/.

Note: SWHS = Alaska Sport Fishing Survey

^a Not available at time of publication.

OBJECTIVES

PRIMARY OBJECTIVES

1. Count the number of steelhead kelts emigrating through the Situk River weir.
2. Estimate the mean length by sex of steelhead kelts emigrating past the Situk River weir such that the estimates are within 7.5% of the true value 95% of the time.
3. Estimate the sex composition of steelhead kelts emigrating past the Situk River weir such that the estimate is within 7.5 percentage points of the true value 95% of the time.

SECONDARY OBJECTIVES

1. Sample steelhead mortalities for scales and otoliths so that ages determined from scale pattern analysis can be compared to ages determined by reading otoliths.
2. Collect observations of scarring on immigrant and emigrant steelhead trout to determine effects of subsistence, commercial, and sport fishing activities on adult steelhead returning to the Situk River.
3. Collect scales from steelhead sampled for sex and length. Organize and archive scales and corresponding sampling information for future age and growth studies.
4. Deploy approximately thirty-four pop-up satellite archival tags (PSATs) on emigrating steelhead in 2020.

METHODS

STUDY DESIGN

Steelhead Kelt Weir

A “resistance board” weir (Figure 2) will be constructed on the Situk River approximately 2.4 km (1.5 miles) upstream from salt water and will be functional for fish passage by early May in each year. Prior to installation of the weir the kelt migration will be monitored to ensure the outmigration is not occurring early. The weir will be operated to capture and count steelhead kelts migrating downstream until approximately June 10, when the weir will be reconfigured to count immigrating salmon. Average run timing from past years indicates that normal kelt emigration timing is between early May and early June (Johnson and Jones 1998–2001, 2003; Marston et al. 2012), although this can be variable. The weir will be attended 24 hours per day and all emigrant steelhead will be visually counted passing through the weir with the aid of an underwater video system (Primary Objective 1); if any steelhead immigrants are observed passing upstream, they will also be recorded. Additionally, after June 10, emigrating steelhead will continue to be recorded and sampled as necessary by ADF&G, Division of Commercial Fisheries personnel, until the weir is dismantled in mid-August.



Figure 2.—Overhead view of the Situk River weir and individual components.

Note: A and B denote trap gates, positioned on the upstream and downstream ends of the trap box; C denotes the holding pen; D denotes the sampling pen; E denotes the tent covering the sampling platform; and F denotes the sloped resistance board section which floats at the surface and allows water flows and boats to pass through the weir.

Note: The direction of stream flow is upstream to downstream (top of photo to bottom of photo).

Fish will be counted primarily between the hours of 2200 and 0300 hours (Alaska Daylight time). This time frame matches the peak emigration timing seen in past years (Johnson and Jones 1998–2001, 2003; Marston et al. 2012). During other hours the weir gate is closed so fish cannot pass, but weir attendants will open the weir gate and begin counting if fish buildup occurs.

The underwater video camera system (first used in 2002; Ocean Systems™ Deep Blue²) will be used to count fish, and to avoid delaying downstream or upstream passage of fish. As fish pass through the weir gate, they will be recorded by the underwater camera and counted by observers in the weir cabin on the eastern shore. The low light requirements of the camera and the absence of personnel on the weir have reduced the trap shyness exhibited by steelhead during previous years (Bob Johnson, former ADF&G Yakutat Area Management Biologist, personal observation). The camera head will be positioned to observe the entire trap opening. If any part of the opening becomes obscured from camera view, the trap will be shut immediately so the camera can be repositioned. Illumination for the underwater camera will be provided via a dim light array placed over the trap opening. Additionally, a digital video recorder will be run during all counting events to permanently record fish passage and check data accuracy if necessary. These recordings are stored on DVD media and housed at the Yakutat ADF&G Office.

As a backup procedure, if the video system becomes inoperable, emigrant steelhead will be counted by direct observation through an opening by pulling a dozen or so consecutive pickets in the weir face near the eastern shore. When directly counting fish through pickets, lights will be set to provide the minimum illumination necessary to see all steelhead. This procedure can also be used to increase fish passage if abnormal amounts of fish above the weir cause concern that fish migration is being held up.

Sex Composition and Mean Length

The weir opening gate through which fish pass and are counted, leads to an 8' x 16' box trap which functions as a chute for fish passage, but can also be closed to capture fish for sampling (Figure 2). This downstream trap will be used to capture steelhead for ASL sampling.

Capture of kelts for sampling is achieved by closing the downstream gate of the trap, allowing fish to enter, then closing the upstream gate to enclose a subsample of fish in the trap. Subsamples can be held in the secondary holding pen section of the trap while more fish are captured to attain sampling goals. Once the desired number of fish are trapped and enclosed in the holding pen, the upstream and downstream trap gates can then be reopened to pass and count other fish. Processing and measurement of the captured fish should occur as soon as possible after trapping but can be delayed, to count and pass additional fish downstream if necessary.

Efforts will be made to capture and sample a representative subsample of the steelhead kelts throughout the entire emigration. If proportional sampling is not achieved, estimates will be temporally stratified (see Data Analysis section). Fish will be sampled twice weekly (Monday and Thursday). Previous investigations (Johnson and Jones 1998–1999) showed differences in sex composition between fish emigrating during early evening versus late evening, so sampling periods will alternate between “early” and “late” evening (e.g., Mondays: early; Thursdays: late).

The number of fish to be captured and sampled for biological data, n_i , will be calculated by multiplying a fixed proportion, Ψ , by the number of fish counted that passed the weir since the previous sampling event, N_{t-1} . Ψ will be 5%. We anticipate that this method of sampling will result

² This and subsequent product names are included for a complete description of the process and do not constitute product endorsement.

in an overall sample size of $n=N\cdot\Psi$; however, since emigration timing is not uniform, the actual sampling fraction could be less. The 2012–2017 average $\Psi=4.4\%$.

Sample Sizes–Sex Composition and Mean Length

The sample sizes needed to estimate sex composition and mean length will be determined using methods in Thompson (2002). Sample size calculations assume:

- 1) proportional sampling,
- 2) population size of steelhead kelt is equal to 6,337, the recent 10-year average (2010–2019),
- 3) sex composition is equal to 50%,
- 4) mean length and standard deviation of emigrating female kelt is equal to 735 and 72.2 respectively, the 2012–2017 averages,
- 5) mean length and standard deviation of emigrating male kelt is equal to 746 and 83.6 respectively, the 2012–2017 averages.

The sample size needed to estimate the mean length of female kelt is 7 ($z_{(1-\alpha/2)}=1.96$, $\mu=735$, $\sigma=72.2$, $r=7.5\%$, $N=50\%\cdot 6,337=3169$) and the sample size needed to estimate the mean length of male kelt is 9 ($z_{(1-\alpha/2)}=1.96$, $\mu=746$, $\sigma=83.6$, $r=7.5\%$, $N=50\%\cdot 6,337=3169$). The sample size needed to estimate the sex composition is 167 ($z_{(1-\alpha/2)}=1.96$, $p=0.5$, $d=7.5\%$, $N=6,337$). Because we expect to sample 317 kelt ($n=N\cdot\Psi = 6,337\cdot 5\%$), we anticipate that we will meet the objective criteria of Objectives 2 and 3.

Mortality Sampling

All steelhead mortalities collected at the weir or provided by anglers will be sampled for scales and otoliths that may be used in future age and growth studies. Any otoliths collected will be placed in coin envelopes labeled with corresponding sampling information. Age from otoliths will be estimated according to procedures currently being developed. Data from steelhead mortalities will be recorded on a separate “biological sampling” form (Appendix A4). Carcasses will be deposited in the stream thalweg below the weir after sampling.

Satellite Tagging

Approximately thirty-four pop-up satellite tags will be deployed only in 2020 on selected emigrating steelhead by University of Alaska Fairbanks (UAF) researchers, with assistance and oversight provided by project leader. Capture and tagging will occur in conjunction with of regular ASL sampling to ensure primary project objectives are met.

Relatively large fish will be targeted for tagging, with a minimum tagging size of 60 cm, to minimize drag effects of the externally attached PSATs on swimming fish. Fish identified as candidates for tagging will be blindfolded and placed in a custom-fabricated tagging cradle for further inspection. Fish health will be assessed by examining their body condition and coloration and looking for external injuries and scale loss. PSATs will be tethered to fish meeting health and size criteria using a minimally invasive “tag backpack” system that has been successfully used to attach PSAT tags to Dolly Varden char and Chinook salmon. The tag backpack will be secured through the dorsal musculature and pterygiophores, thus anchoring it in the bony fin-ray supports. PSAT tagged fish will be identified by tag number, measured in length and girth, photographed, and released. A Fish Research Permit (FRP) will be obtained to allow UAF personnel to participate in this project.

DATA COLLECTION

Steelhead Kelt Weir

The number of steelhead passing upstream and downstream through the weir, including steelhead sampled, will be recorded by date and time (using military time and 15-minute increments) on the “Situk weir daily observations” form (Appendix A1). Water level (nearest 1 cm, measured at a staff gauge located upstream of the weir) and water temperature (nearest 0.1°C) will also be recorded on this form each morning at approximately 0900 hours. Steelhead passage and sampling information will be compiled on the “Situk weir cumulative steelhead passage and sampled recording form” (Appendix A2). The crew leader and project leader will review data forms for accuracy each week.

Sex and Length Composition and Scale Sampling

The purpose of using a fixed sampling proportion is to proportionally sample the entire emigrating population. A sampling “day” encompasses all times from late evening to sunrise the next day. “Early” evening samples are defined as fish trapped from 2000 to 2400 hours (Alaska Daylight time). “Late” evening samples are defined as fish trapped between the hours of 0100 and 0430. Daily sampling goals will be determined by multiplying the weir passage since the last sampling event by 5%. The daily sample goal will be attained by trapping the required number of fish during each early or late sampling period while operating the weir to count and pass fish. If an insufficient number of fish pass in a given night to meet the sample goal, the remaining balance will be trapped and sampled the following night.

To avoid selectivity within the trap, all fish in the trap will be sampled (except any weak fish that have accumulated during the day above the weir prior to the early sample). An exception to this rule might occur if a large number of extra fish are inadvertently captured, and time does not allow for complete processing. It is not critical that the exact sampling goal be captured and sampled because data analysis procedures are available to adjust for non-proportional weekly sampling. However, obtaining approximately proportional samples is the goal.

Biological data for each fish sampled will be recorded on the “biological sampling” form (Appendix A2) and includes: date, time of passage through weir, sex, total length (from tip of snout to tip of tail, nearest 5 mm), presence or absence of an adipose fin (i.e., look for steelhead “strays” as other projects in Southeast Alaska use adipose fin clips to designate a fish has been PIT tagged), presence/absence of PIT tag, and PIT number if present, color (codes = 1 for bright; 2 for medium or dusky colored; and 3 for dark), presence or absence of fungus (codes = Y or N for present or absent), and miscellaneous comments. The code designation for scars observed is listed in Appendix A3 and is adopted from Seibel et al. (*unpublished*)³ and Taylor (1985).

Scales will be collected from all steelhead sampled for sex and length. Scales will be taken from the area 2 to 4 rows above or below the lateral line and along a line from the posterior end of the dorsal fin to the anterior end of the anal fin. A minimum of 4 scales will be taken from each fish. All slime, grit, and skin will be removed from the scales. Scales will then be placed on gum cards using 2 columns per fish: i.e., scales from fish #1 will be mounted over card numbers 1, 11, 21, 31 and 2, 12, 22, 32; scales from fish #2 go over card numbers 3, 13, 23, 33, and 4, 14, 24, 34, and so on. Scales will be moistened and mounted on the gum card directly over the appropriate scale numbers.

³ Seibel, M., A. Davis, J. Kelly, L. Talley, and P. Skannes. *Unpublished*. Observations on externally scarred and marked Chinook and coho salmon in the Southeast Alaska commercial troll fishery 1982. Located at: Alaska Department of Fish and Game, Juneau.

The side of the scale facing out on the gum card will be the same as the side facing out when the scale was adhered to the fish. This outward facing side is referred to as the "sculptured" side of the scale. Ridges on this (outward) side can be felt with a fingernail or forceps. Scales will be placed in a uniform direction on the gum card, e.g., anterior side up, and sculptured side out. The unique and consecutive scale card number and scale sample numbers will be recorded in the appropriate columns of the Biological Sampling form. Completed scale cards will be stored in a clean and dry location during the field season and submitted to the project leader with the corresponding data sheets. The project leader will be responsible for organizing, processing, and archiving all Situk steelhead scale samples.

Sampling Fish Mortalities

All fish that are found dead on the weir or stream bank will be sampled for scales and otoliths, as will be those provided by anglers. Scales will be sampled following protocols detailed above. The scale card will be labeled with a unique and consecutive identifying number, date, sex and length of fish, and "Mort" will be written in the comments. This information also be recorded on a corresponding Biological Sampling form.

Both otoliths will be sampled from each fish, cleaned, and stored in a coin envelope labeled with the same unique identifying number as the scale card, date, sex and length of fish. Completed data and biological samples from steelhead mortalities will be stored in a clean and dry location during the field season and submitted to the project leader. The project leader will be responsible for organizing, processing, and archiving all Situk steelhead mortality samples.

Satellite Tagging

PSAT tags attached to steelhead will measure and record temperature, depth, and ambient light data (for daily geo-position estimates) at user-programmable intervals of 10 seconds. On a user-programmable date, the tags will release from the fish, float to the surface of the ocean, and transmit a subset of the archived data set to satellites (Argos satellite system) which will be retrieved by the investigators. A staggered pop-up schedule will provide 4–8 month data records for individual fish, as well as insights into seasonal redistribution of steelhead kelts while in the Pacific Ocean. While transmitting, the tags' endpoint positions, i.e., where they come to the surface, will be determined from the Doppler shift of the transmitted radio frequency in successive uplinks received during one Argos satellite pass. If the tag is physically retrieved, either while attached to the fish or washed up on a beach after pop-up, the full data record can be accessed.

All satellite tagged steelhead will also be sampled for age, sex, and length.

DATA REDUCTION

The electronic data file(s) will be checked for mistakes and omissions before analysis. A final edited copy of the data, along with a data map, will be sent to Division of Sport Fish, Research and Technical Services (RTS) in 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 in RTS. For this project, data will be archived in Excel™ workbooks. The original hard copies of all data forms, scale gum cards and acetates, will be logged and stored in the Region 1 age-sex-length data archives, located at the Douglas regional office.

DATA ANALYSIS

Steelhead Kelt Weir

The numbers of steelhead moving upstream and downstream will be summed, and the daily counts, temperature, and stream level will be plotted. Daily kelt counts will be compared to averages from the preceding decade and plotted with stream temperature.

Sex and Length Composition

Statistics generated from data collected at the weir site include estimates of percent trophy length kelt, sex composition, and average length. Estimates will be temporally (e.g. time dependent) stratified or pooled (e.g. time independent), the choice of which conditioned on the outcome of a statistical test. Sex composition and percent trophy length kelt will be estimated using formulae for population proportions. Equations if stratification is used are (Cochran 1977):

$$\hat{p}_{s,t} = \frac{n_{s,t}}{n_t} \quad (1)$$

$$\hat{p}_s = \frac{1}{N} \sum_t N_t \hat{p}_{s,t} \quad (2)$$

$$\text{var}(\hat{p}_{s,t}) = \left(1 - \frac{n_t}{N_t}\right) \frac{\hat{p}_{s,t}(1 - \hat{p}_{s,t})}{n_t - 1} \quad (3)$$

$$\text{var}(\hat{p}_s) = \sum_t N_t^2 \text{var}(\hat{p}_{s,t}) \quad (4)$$

and equations if pooling is used are:

$$\hat{p}_s = \frac{n_s}{n} \quad (5)$$

$$\text{var}(\hat{p}_s) = \left(1 - \frac{n}{N}\right) \frac{\hat{p}_s(1 - \hat{p}_s)}{n - 1} \quad (6)$$

and equations for population totals (regardless of whether stratified or pooled) are:

$$\hat{N}_s = N \hat{p}_s \quad (7)$$

where, by Goodman (1960) for the variance of a product of independent variables:

$$\text{var}(\hat{N}_s) = N^2 \text{var}(\hat{p}_s) \quad (8)$$

where $n_{s,t}$ is the number of fish sampled by sex at time t , n_t is the number of fish sampled at time t , n is the number of fish sampled, N_t is the number of fish counted at the weir at time t , and N is the number of fish counted at the weir. Use of Equations 1–4 or Equations 5–6 depends on whether temporal stratification is necessary and χ^2 -tests will be used to determine if sex compositions are significantly different by time. A finite population correction factor (fpc), $(1-n/N)$, will be used because all emigrants are enumerated. The percent of trophy length kelt will be estimated using methods identical, replacing sex with if a fish was trophy length ($>36''$) or not.

Average length by sex are estimated using formulae for population means. Equations if stratification is used are (Cochran 1977):

$$\bar{y}_{s,t} = \frac{1}{n_{s,t}} \sum_i y_{s,t,i} \quad (9)$$

$$\bar{y}_s = \frac{1}{N} \sum_t N_t \bar{y}_{s,t} \quad (10)$$

$$\text{var}(\bar{y}_{s,t}) = \frac{s_{s,t}^2}{n_{s,t}} \left(1 - \frac{n_t}{N_t}\right) \quad (11)$$

$$\text{var}(\bar{y}_s) = \frac{1}{N^2} \sum_t N_t^2 \text{var}(\bar{y}_{s,t}) \quad (12)$$

and equations if pooling pooled is used are:

$$\bar{y}_s = \frac{1}{n_s} \sum_t \sum_i y_{s,t,i} \quad (13)$$

$$\text{var}(\bar{y}_s) = \frac{s_s^2}{n_s} \left(1 - \frac{n}{N}\right) \quad (14)$$

where $y_{s,t,i}$ is an individual fish i from time t of sex s , $n_{s,t}$ is the number of fish sampled by sex and time, n_t is the number of fish sampled at time t , n_s is the number of fish sampled of sex s , n is the number of fish sampled, N_t is the number of fish counted at the weir at time t , N is the number of fish counted at the weir, $s_{s,t}^2$ is the sample variance of sex s at time t , and s_s^2 is the sample variance of sex s . Use of Equations 9–12 or Equations 13–14 depends on whether temporal stratification is necessary and one-way analysis of variance (ANOVA) models will be used to determine if average lengths are significantly different by time. A fpc will be used because all emigrants are enumerated; however, note the fpc is not stratified by sex (since $N_{s,t}$ and N_s are unknown) and thus assumes a 1:1 sex ratio. Since the sex ratio is rarely highly skewed, this assumption should minimally impact inference.

Satellite Tagging

All data collected from satellite tagged steelhead will be analyzed by UAF researchers and shared with project leader. Daily geo-position estimates for the tag during its time at-liberty are calculated using Wildlife Computers' DAP software, based on times of sunrise and sunset. After daily longitude and latitude estimates are produced, they will be combined into estimated daily positions, from which utilization distributions can be inferred. Vertical distribution and thermal environment will be analyzed by generating depth and occupied temperature histograms on a variety of time scales (i.e., diel, lunar, and seasonally).

SCHEDULE AND DELIVERABLES

The following work schedules are planned yearly:

April 15	Begin weir assembly and repair, weir site preparation
May 4	Install weir
June 10	Transfer weir to Division of Commercial Fisheries for salmon enumeration
August 15	Assist with weir removal
October 15	Complete data input, quality assurance measures, and develop draft FDS analysis

Deliverables:

A draft Fishery Data Series report covering 2018–2019 will be submitted by spring 2021, and a report covering 2020–2021 in 2022.

RESPONSIBILITIES

Jason Pawluk, Fishery Biologist III, Project Leader.

Duties: Supervises all field work; edits, analyzes and reports data, assists with field work.

Randy Peterson, Biometrician III.

Duties: Provides input to sampling design and evaluation. Assists in data analysis and report writing. Reviews operational plan, data analysis, and final report.

Fishery Technician III

Duties: Acts as crew leader during installation and early operation of weir until transfer to Division of Commercial Fisheries. Works closely with the project leader, supervising construction and operation of the weir according to operational plan. Responsible for completion and error checking of weir data forms. Schedules crew to ensure days off and minimize overtime. Ensures timely submission and completion of crew time sheets.

Fishery Technician II

Duties: Assists with weir construction, maintenance, and operation. Other duties will include assisting with the capture and scientific sampling of steelhead, and assisting with counting adult steelhead through the weir on selected sampling nights.

Fishery Technician I

Duties: Assists with weir construction, maintenance, and operation. Other duties will include assisting with the capture and scientific sampling of steelhead and assisting with counting adult steelhead through the weir on selected sampling nights.

UAF Researchers

Duties: Lead satellite tag deployment, and data retrieval, management, and synthesis.

REFERENCES CITED

- Bain, C., S. T. Eliot, R. E. Johnson, and G. Woods. 2003. Situk River steelhead: a review of past data through 1996. Alaska Department of Fish and Game, Fishery Manuscript No. 03-01, Anchorage.
- Cochran, W. G. 1977. Sampling Techniques, 3rd Edition. Wiley and Sons, New York.
- Goodman, L. A. 1960. On the exact variation of products. Journal of the American Statistical Association 55:708–713.
- Johnson, R. E., and J. D. Jones. 1998. Southeast Alaska steelhead studies, 1997: Situk River weir and surveys of index streams. Alaska Department of Fish and Game, Fishery Data Series No. 98-45, Anchorage.
- Johnson, R. E., and J. D. Jones. 1999. Southeast Alaska steelhead studies, 1998: Situk River weir and surveys of index streams. Alaska Department of Fish and Game, Fishery Data Series No. 99-33, Anchorage.
- Johnson, R. E., and J. D. Jones. 2000. Southeast Alaska steelhead studies, 1999: Situk River weir and surveys of index streams. Alaska Department of Fish and Game, Fishery Data Series No. 00-16, Anchorage.
- Johnson, R. E., and J. D. Jones. 2001. Southeast Alaska steelhead studies, 2000: Situk River weir and surveys of index streams. Alaska Department of Fish and Game, Fishery Data Series No. 01-20, Anchorage.
- Johnson, R. E., and J. D. Jones. 2003. Southeast Alaska steelhead studies, 2001: Situk River weir and surveys of index streams. Alaska Department of Fish and Game, Fishery Data Series No. 03-18, Anchorage.
- Marston, B. H., R. E. Johnson, and S. Power. 2012. Steelhead studies from the Situk River in Southeast Alaska, 2002–2008. Alaska Department of Fish and Game, Fishery Data Series No. 12-40, Anchorage.
- Taylor, S. G. 1985. Scarred Pacific salmon, *Oncorhynchus* spp., at freshwater recovery sites in Southeastern Alaska. Marine Fisheries Review 47(1):39–42.
- Thompson, S. K. 2002. Sampling, 2nd edition. John Wiley and Sons, Inc, New York.

APPENDIX A

2020-2021 Situk River Steelhead Project

Daily Record Form

Date:

Time		Count		Daily Total		Comments and Trap Times
Start	Stop	Up	Down	Up	Down	
Daily Totals:						
Previous Days Cumulative:						
Total Cumulative:						

Appendix A2.–Situk weir cumulative steelhead passage and sampled recording form.

2022	STEELHEAD								Remarks	SAMPLING			
	Water		Down	Up	Down	Up	Morts			STEELHEAD		PIT TAGS	
	Date	Level	Temp	Daily	Daily	Cumulative	Cumulative	Daily		Cumulative	Daily	Cumulative	Daily
5/1													
5/2													
5/3													
5/4													
5/5													
5/6													
5/7													
5/8													
5/9													
5/10													
5/11													
5/12													
5/13													
5/14													
5/15													
5/16													
5/17													
5/18													
5/19													
5/20													
5/21													
5/22													
5/23													
5/24													
5/25													
5/26													
5/27													
5/28													
5/29													
5/30													
5/31													
6/1													
6/2													
6/3													
6/4													
6/5													
6/6													
6/7													
6/8													
6/9													

Appendix A4.–Scar code descriptions for weir sampling form, Situk River steelhead.

CATEGORY	DESCRIPTION
1	One or more fairly well delineated linear marks between the head and the dorsal fins, approximately perpendicular to the longitudinal body axis and encircling or partially encircling the body.
2	A series of approximately parallel marks or scrape lines over a substantial portion of the body; two or more series of such marks occurring at different angles may give the appearance of crosshatch marks.
3	A fairly well delineated scrape band generally occurring between the head and dorsal fins approximately perpendicular to the longitudinal body axis or angled slightly backward from the top to the bottom of the body and containing a nearly oval shape open wound, normally in the upper portion of the body.
4	Extensive descaling of at least 25% or more of one or both sides of the body but with marks or wounds not well delineated.
5	Open, gaping wounds or puncture marks located anywhere on the body, either with no other marks and scrapes or with adjacent irregular ‘scratch’ or ‘claw’ marks, but none of the marks described in categories 1 through 4.
6	Any scars/marks not fitting descriptions in categories 1 – 5 and 7.
7	A fresh or healed appearing wound on either side of the body—usually a couple of inches in length, and angled dorsally and forward toward the head of the fish, from the anterior insertion of the dorsal fin to the front of anal fin and behind the ventral fin. May also occur elsewhere on the fish, but the angle of cut is usually consistent with the ones described above. The fresh wound will have flesh exposed the whole length of the cut. The healed scar will have an ‘indentation or pucker’ type scar wherever it is located.

Category 8 – Sport fishing related - hook mark on body, torn mouthparts, hook in body/fin

Category 9 – Torn dorsal or caudal fin

Category 10 – Torn gill-plate(s)

Category 11 – Any scars/marks not fitting the descriptions in Categories 1–7

Category 12 – Healed scar of any kind except as described in category.

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

Project Title

Situk River Steelhead Assessment

Season Start and End Dates

April 15th through June 10th.

Administration

All paperwork will be provided to the crew members returning from SLWOP and new hires ahead of time to be filled out before coming to the office. If this is not practical, crew members will be provided locations where they can complete paperwork while maintaining 6-foot distancing.

Crew members start dates or start times should be staggered by one day or half days, and the minimum number of crew members will begin their first day of work on the same date. This is to minimize the number of crew members in the office at one time. Every effort should be made to minimize the number of technicians in the office at any one time.

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 3 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 field camp 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 \(alaska.gov\)](#); Supplemental B
[COVID-19: Quarantine guidance \(alaska.gov\)](#); Supplemental C

Transportation to Field

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

The field project is conducted on the Situk River in a remote field camp accessed by truck and then boat. Crew will drive out to the river in state vehicles provided to them. They will then be transported by a state skiff up to the weir camp.

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 working with others or while interacting with 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 crew exchanges. Masks will be worn when transporting to and from field camp.

Supply contingencies

The weir camp will maintain food supplies adequate for 2 weeks with 1 additional weeks' worth of supplies stored back in Yakutat.

Field camps will begin with and maintain sanitizing supplies, protective gloves, cloth masks, and safety goggles. The minimum number of masks needed for this project is six (2 per crew member).

During the season, the camp will resupply groceries in the town of Yakutat, which is the only resource available. Either the project leader or a field technician will conduct the resupply in town while wearing masks. Individuals will wear cloth masks and latex gloves while loading/offloading supplies at the store and from the truck and skiff.

Any expeditors will limit physical contact with field camp crews as much as possible.

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

FWT II = N/A

Crew leader will check in daily with project leader Jason Pawluk by vhf radio, 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

Transportation out of the field camp is possible by skiff and truck, or in case skiff is not functional, crew can walk out 1.5 miles on a trail to the Situk landing parking lot. The Situk landing parking lot is 9 miles from the Yakutat office by gravel road.

In an extreme emergency it could be possible to have a helicopter (Yakutat Coastal Airlines; (907)784-3831) land near the Situk landing parking lot to transport to Yakutat.

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 camp

If a crew member becomes symptomatic (fever over 100.3, dry cough, headache), the crew member will immediately be isolated and evacuated to town 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.

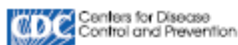
Prior to evacuation from Yakutat, the patient (if able) or crew leader will keep a daily health log where body temperature and symptoms will be recorded to identify severity and if necessary relay accurate information to health professionals.

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.

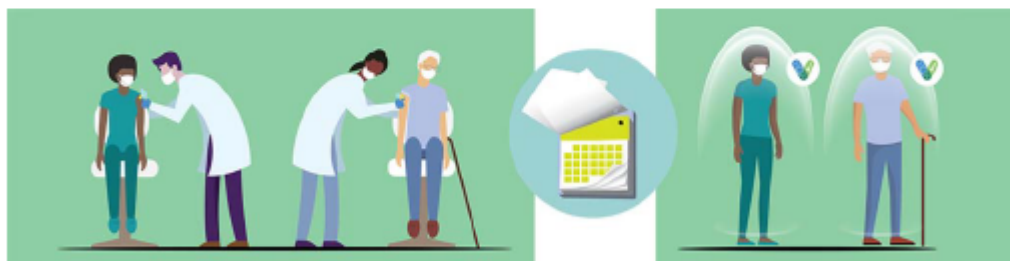
We're still learning how vaccines will affect the spread of COVID-19. After you've been fully vaccinated against COVID-19, you should keep taking precautions in public places like wearing a mask, staying 6 feet apart from others, and avoiding crowds and poorly ventilated spaces until we know more.

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

Supplemental C

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
- People at Increased Risk +
- Daily Activities & Going Out +
- Travel +
- Children & Teens +
- Stress & Coping +
- Pets & Other Animals +

Get Email Updates

To receive email updates about COVID-19, enter your email address:

Email Address

[What's this?](#)

Submit

When to Quarantine

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

Updated Mar. 12, 2021 Languages Print

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.



Last Updated Mar. 12, 2021
Content source: National Center for Immunization and Respiratory Diseases (NCIRD), Division of Viral Diseases