

Special Publication No. BOF 2019-05

**Options for Amounts Reasonably Necessary for Subsistence
Uses of Salmon: Seldovia Fishery**

**Prepared for the December 2019 Lower Cook Inlet Board of Fisheries
Meeting**

by

Alaska Department of Fish and Game

December 2019

Alaska Department of Fish and Game



Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the reports by the Department of Fish and Game. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

all atomic symbols

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

General

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

Measures (fisheries)

fork length	FL
mid-eye-to-fork	MEF
mid-eye-to-tail-fork	METF
standard length	SL
total length	TL

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations

alternate hypothesis	H _A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2 , etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	log ₂ , etc.
minute (angular)	'
not significant	NS
null hypothesis	H ₀
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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**OPTIONS FOR AMOUNTS REASONABLY NECESSARY FOR
SUBSISTENCE USES OF SALMON: SELDOVIA FISHERY**

**PREPARED FOR THE DECEMBER 2019 LOWER COOK INLET BOARD OF FISHERIES
MEETING**

by

Alaska Department of Fish and Game, Anchorage

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ABSTRACT

This report provides options for amounts reasonably necessary for subsistence for consideration by the Alaska Board of Fisheries as it discusses proposals addressing the Seldovia subsistence salmon fishery, in Lower Cook Inlet, Alaska. This fishery is important for residents of Seldovia, as well as for subsistence fishers in Cook Inlet in general.

Key words: Subsistence fishing, Seldovia, Chinook salmon, king salmon, sockeye salmon, coho salmon, Board of Fisheries.

INTRODUCTION

This report has been prepared for the Alaska Board of Fisheries (BOF) for reference when considering proposals with implications for subsistence fisheries during its December 2019 meeting, especially proposals 18, 19, and 20.

Under AS 16.05.258 (a), the BOF is charged with identifying fish stocks, or portions of stocks, that “are customarily taken or used for subsistence.” If a portion of these stocks can be harvested consistent with sustained yield principles, the BOF “shall determine the amount of the harvestable portion that is reasonably necessary for subsistence uses” [AS 16.05.258(b)]. This is called the amount reasonably necessary for subsistence, or an “ANS finding”. The BOF has not yet made an ANS finding for this fishery.

In order to maintain consistency with regulatory language, “king salmon” is used throughout this report to also mean “Chinook salmon.”

SELDOVIA SUBSISTENCE SALMON FISHERY

History and Regulations

The BOF established this subsistence set gillnet fishery as a result of a positive customary and traditional use finding (C&T) by the BOF in 1995 [5 AAC 01.566 (1)(B)]. The basic structure of the current subsistence salmon fishery at Seldovia was developed at the BOF meeting in Homer in November 1995. This finding was based on a customary and traditional use worksheet prepared by the department (ADF&G 1995) and public testimony. From 1996–1998 subsistence salmon fishing was limited to the waters described in the customary and traditional use finding. An early season was established from April 1 through May 20, with a guideline harvest of 200 king salmon. The intention of the regulation was to minimize the harvest of enhanced king salmon bound for the Seldovia harbor area.

In February 1998, the BOF modified the regulations governing this fishery, extending the early season for ten days to May 30 and closing additional waters near the Seldovia harbor to reduce the potential to harvest enhanced king salmon. The latter change required a modification to the C&T determination because the closed waters regulation [5 AAC 01.575(8)] refers directly to the waters defined in the C&T use finding. The C&T use regulation now lists a positive finding for salmon in the waters defined as follows:

...in the waters along the eastern shoreline of Seldovia Bay from Seldovia Point at 59° 28.22' N. lat, 151° 42.37' W. long. to an ADF&G regulatory marker located at 59° 24.90' N.lat., and along the shoreline from an ADF&G regulatory marker located approximately 1,000 feet southwest of Naskowhak Point at 59° 27.10' N.lat, 151° 44.70' W.long. to an ADF&G regulatory marker located on an unnamed point at 59° 26.87' N. lat., 151° 46.042' W. long” (5 AAC 01.566(1)(B)).

Currently, the subsistence fishery is located on the south side of Kachemak Bay, near Seldovia, which is in the Southern District of the Lower Cook Inlet Fisheries Management Area. The spring fishery, open April 1–May 30, targets wild king salmon migrating through Lower Cook Inlet. The fall fishery, open the first two weekends of August, targets coho salmon.

In the spring season, fishing is allowed during two 48-hour periods each week, while in the fall season, fishing is open continuously during the two-day weekends. The BOF has set a guideline harvest level (GHL) of 200 king salmon and an annual possession limit of 20 king salmon per household. There are no annual limits for other salmon species.

The area open to subsistence set gillnetting includes those waters along the eastern shore of Seldovia Bay as well as a short stretch outside Seldovia Bay to the west of Point Naskowhak. Seasons and bag limits were designed in 1995 to reduce potential interceptions of enhanced king salmon bound for the stocking site in the Seldovia small boat harbor (Hollowell et al. 2012:14). The gear allowed includes set gillnets no longer than 35 fathoms, no deeper than 45 meshes, and no larger than a 6-inch stretched mesh. Nets must be set at least 600 feet apart. Other standard permit conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction.

Household permits are issued by the Division of Commercial Fisheries prior to fishing, and harvests are recorded on the permits (Appendices 1 and 2). Permits are also available from the harbormaster in Seldovia. Fishers are required to return their permits after each of the two fisheries. ADF&G sends reminder letters to permit holders if harvest records have not been returned in a timely manner, and telephone calls are also made to enhance permit returns.

Amounts Necessary for Subsistence

The BOF has not yet established an ANS for this fishery. Following are three main options, for the BOF to consider should it choose to adopt ANS ranges into regulation during its December 2019 meeting. The BOF also has a fourth option to postpone establishing an ANS for this fishery. The following ANS options were developed using data from returned permits between 1998–2018¹. Harvest data are available for 1996 and 1997; however, these years are excluded from this analysis because the harvests for 1996 and 1997 were regulated by a shorter fishing season, therefore these data are unrepresentative of the fishery as it exists today. The BOF typically sets minimum ANS ranges for any salmon stock at 50–100 fish in order to avoid unnecessary restrictions to subsistence opportunity. Ranges with zero as the low value are generally avoided and have not been adopted: therefore, the high and low values are rounded to the nearest 50 salmon. The department is neutral on all options.

OPTION 1: MEANS AND STANDARD DEVIATIONS, ALL HARVESTS, 1998–2018

Option 1 was developed using statistical means and standard deviations and is based on estimated harvests 1998–2018. Each range is based on the mean, bounded by the standard deviation (SD). Option 1 provides a low to high range for all salmon species combined.

Option 1:

All salmon: 100–350

Species	Range of harvest					<i>Bounded by</i>	Mean ± SD		Rounded SD	
	Low	High	Mean	Median	SD		Low	High	Low	High
All salmon	63	496	231	239	122		109	353	100	350

1. The 2019 permits are still being returned by permit holders, therefore those data are currently unavailable.

OPTION 2: MEANS AND STANDARD DEVIATIONS, ALL HARVESTS, 1998–2014

The date ranges selected for Option 2 were a result of a notable decrease in fishery participation based on number of permits issued, beginning in 2015. Option 2 was developed using statistical means and standard deviations and is based on estimated harvests 1998–2014. Each range is based on the mean, bounded by the standard deviation (SD). Option 2 provides a low to high range for all salmon species combined.

Option 2:

All salmon: 150–400

Species	Range of harvest					<i>Bounded by</i>	Mean ± SD		Rounded SD	
	Low	High	Mean	Median	SD		Low	High	Low	High
All salmon	66	496	263	251	113		150	376	150	400

OPTION 3: LOW AND HIGH VALUES, 1998–2018

Option 3 is based upon the estimated low and high harvest values from 1998 through 2018, rounded, to define the range. Option 3 provides a reported low to high range for all salmon species combined.

Option 3:

All salmon: 50–500

Species	Range of harvest		Rounded range	
	Low	High	Low	High
All salmon	63	496	50	500

OPTION 4: NO DETERMINATION

The BOF may select to postpone creating an ANS determination.

Options Summary

The following is a summary of the four ANS options presented above.

Option 1: All Salmon 100–350

Option 2: All Salmon 150–400

Option 3: All Salmon 50–500

Option 4: No Determination

Table 1.—Historical subsistence salmon harvests estimates, Seldovia, 1996–2018.

Year	Permits		Estimated salmon harvest					Total
	Issued	Returned	King	Sockeye	Coho	Chum	Pink	
1996	43	42	51	9	0	0	0	60
1997	20	17	52	22	0	0	0	74
1998	22	20	143	65	0	8	0	216
1999	16	16	136	130	0	38	0	304
2000	22	22	179	252	0	16	0	447
2001	19	16	149	142	0	0	0	290
2002	20	20	124	234	13	11	31	413
2003	18	15	117	290	2	66	22	496
2004	14	12	102	69	5	18	65	258
2005	18	16	53	74	14	11	100	251
2006	17	11	23	12	0	0	31	66
2007	19	15	24	66	12	35	103	239
2008	11	9	4	38	50	6	79	177
2009	18	17	15	115	22	13	77	242
2010	16	12	3	133	41	47	88	312
2011	7	4	0	96	0	0	18	114
2012	20	7	8	79	0	0	54	141
2013	12	8	3	147	2	15	68	234
2014	21	15	7	162	0	91	7	267
2015	8	6	16	70	0	0	4	90
2016	4	4	7	53	0	1	2	63
2017	13	8	11	99	0	3	0	114
2018	9	6	17	17	0	2	80	116
5-year average (2014–2018)	11	8	12	80	0	19	19	130
10-year average (2009–2018)	13	9	9	97	7	17	40	169
Historical average (1997–2018)	17	14	54	103	7	16	36	217

Source: Hollowell et al. (2019); ADF&G Division of Subsistence, 1996–2011.

REFERENCES CITED

ADF&G

1995 *Customary and traditional use worksheet: salmon: Lower Cook Inlet - Seldovia Area*. Alaska Department of Fish and Game Division of Subsistence: Anchorage.

Hollowell, G., E.O. Otis, and E. Ford

2019 *2018 Lower Cook Inlet Area finfish management report*. Alaska Department of Fish and Game, Fishery Management Report No. 19-23: Anchorage. <http://www.adfg.alaska.gov/FedAidPDFs/FMR19-23.pdf>

Hollowell, G., T. Otis, and E. Ford

2012 *2011 Lower Cook Inlet area finfish management report*. Alaska Department of Fish and Game Divisions of Sport Fish and Commercial Fisheries, Fishery Management Report No. 12-30: Anchorage.

APPENDIX A
2019 SELDOVIA EARLY SEASON SUBSISTENCE PERMIT

2019 Seldovia Early Season (April 1- May 30) Subsistence Salmon Fishing Permit

First name:	Last name:	Permit Number:
		SE-
Address		Alaska Driver's License Number (or other state ID)
City:	State:	Zip code:
Phone Number:	Email:	
Other individuals names if household permit:		

I hereby claim the information contained herein is a true statement as witnessed by my signature below; and I further state that I am a resident of Alaska.	
Permit holder signature:	Date issued:
Issuing officer:	Date issued:

fold along perforation

2019 Seldovia Early Season (April 1- May 30) Subsistence Salmon Fishing Permit

GEAR: Set gillnets less than 35 fathoms in length, 8 inch mesh size, and no more than 45 meshes in depth. 5AAC 01.570(b)(2)	Permit Number:
	SE-
Allowable annual total household catch:	
King salmon: 20 Other salmon: no limit	
The below named individuals and permit holder are authorized to fish for subsistence purposes in the portions of the Seldovia subdistrict as specified in 5AAC 01.560, and in accordance with regulations 5AAC 01.550 through 5AAC 01.599.	
Other individuals names if household permit:	
Permit holder name (printed):	Date issued:
Permit holder name (signature):	
Issuing officer:	Date issued:

fold along dotted line

2019 Seldovia Early Season Subsistence Salmon Fishing Permit

Permit # SE-

Indicate days fished even if no fish were taken. Write in date fished, catch by species and location. All harvested fish must be recorded in ink in the daily log 5AAC 01.580(a). Unsuccessful

Month	Day	Kings	Reds	Cohos	Chums	Pinks	Other	Location

If no one in your household fished during the 2019 season, then check this box. Return this permit to Fish and Game by November 29, 2019, even if you did not fish.

Upper portion to be retained by issuing officer
and returned to the Alaska Department of Fish and Game in Homer.

tear along perforation



This subsistence fishing permit is for the Seldovia subdistrict **ONLY** from April 1 through May 30. Permits for the Port Graham or other subsistence fishing areas in Cook Inlet cannot be issued to the holder of this permit or any member of their household because SAAC 01.580(a) states that, "only one subsistence permit may be issued to a household per year."

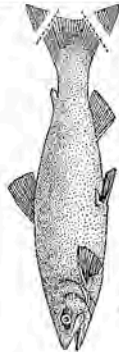
Legal gear is set gillnets which may be set from a point 1,000 feet southwest of Point Naskowhak (59° 27.10' N. Lat., 151° 44.70' W. Long.) to an unnamed point at 59° 26.87' N. Lat., 151° 46.42' W. Long., and on the eastern shore from Seldovia Point to Watch Point, and from a point 300 yards south of the Seldovia harbor at 59° 25.97' N. Lat., 151° 43.17' W. Long. to a point at 59° 24.90' N. Lat., 151° 41.94' W. Long. Subsistence gear specifications may be found in SAAC 01.570.

Fishing periods are from 6:00 AM Monday until 6:00 AM Wednesday, and 6:00 AM Thursday until 6:00 AM Saturday unless modified by Emergency Order.

If you have further questions please contact the Homer ADF&G office at (907) 235-8191.

fold along dotted line

Place
Stamp
Here



BOTH THE UPPER AND LOWER LOBES OF THE
TAIL FIN MUST BE IMMEDIATELY REMOVED
FROM FISH CAUGHT IN ALL LCI
SUBSISTENCE FISHERIES.

Alaska Department of Fish and Game
3298 Douglas Place
Homer, Alaska 99603

Tape
here

APPENDIX B
2019 SELDOVIA LATE SEASON SUBSISTENCE PERMIT

2019 Seldovia Late Season (August) Subsistence Salmon Fishing Permit

First name: Last name:		Permit Number: SL-	
Address		Alaska Driver's License Number (or other state ID)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
City:	State:	Zip code:	
Phone Number:		Email:	
Other individuals names if household permit:			
I hereby claim the information contained herein is a true statement as witnessed by my signature below: and I further state that I am a resident of Alaska.			
Permit holder signature:		Date issued:	
Issuing officer:		Date issued:	

2019 Seldovia Late Season (August) Subsistence Salmon Fishing Permit

GEAR: Set gillnets less than 35 fathoms in length, 6 inch mesh size, and no more than 45 meshes in depth. 5AAC 01.570(b)(2)	Permit Number: SL-
Allowable annual total household catch: King salmon: 20 Other salmon: no limit	
The below named individual's and permit holder are authorized to fish for subsistence purposes in the portions of the Seldovia subdistrict as specified in 5AAC 01.580 during the first 2 weekends in August (8/3-4 & 8/10-11), and in accordance with regulations 5AAC 01.550 through 5AAC 01.599.	
Other individual's names if household permit:	
Permit holder name (printed):	Date issued:
Permit holder name (signature):	
Issuing officer:	Date issued:

2019 Seldovia Late Season (August) Subsistence Salmon Fishing Permit

Permit # **SL-**

Indicate days fished even if no fish were taken. Write in date fished, catch by species and location. All harvested fish must be recorded in ink in the daily log. 5AAC 01.580(a). Unsuccessful

Month	Day	Kings	Reds	Cohos	Chums	Pinks	Other	Location

If no one in your household fished during the 2019 season, then check this box. Return this permit to Fish and Game by November 29, 2019, even if you did not fish.

Upper portion to be retained by issuing officer
and returned to the Alaska Department of Fish and Game in Homer.

tear along perforation



This subsistence fishing permit is for the Seldovia subdistrict **ONLY** during the first two weekends in August (8/3-4 & 8/10-11). Permits for the Port Graham or other subsistence fishing areas in Cook Inlet cannot be issued to the holder of this permit or any member of their household because 5AAC 01.580(a) states that, "only one subsistence permit may be issued to a household per year."

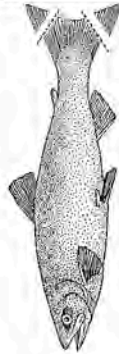
Legal gear is set gillnets which may be set from a point 1,000 feet southwest of Point Naskowhak (59° 27.10' N. Lat., 151° 44.70' W. Long.) to an unnamed point at 59° 26.87' N. Lat., 151° 46.42' W. Long., and on the eastern shore from Seldovia Point to Watch Point, and from a point 300 yards south of the Seldovia harbor at 59° 25.97' N. Lat., 151° 43.17' W. Long. to a point at 59° 24.90' N. Lat., 151° 41.94' W. Long. Subsistence gear specifications may be found in 5AAC 01.570.

Fishing periods are from 6:00 AM Saturday until 6:00 PM Sunday **ONLY** during the first two weekends in August (8/3-4 & 8/10-11) unless modified by Emergency Order.

If you have further questions please contact the Homer ADF&G office at (907) 235-8191.

fold along dotted line

Place
Stamp
Here



BOTH THE UPPER AND LOWER LOBES OF THE
TAIL FIN MUST BE IMMEDIATELY REMOVED
FROM FISH CAUGHT IN ALL LCI
SUBSISTENCE FISHERIES.

Alaska Department of Fish and Game
3298 Douglas Place
Homer, Alaska 99603

Tape
here