

# Pilot Station Extended Field Operations

## R&M# 19-11

**PROJECT PROPONENT:** Bruce McIntosh, Alaska Dept. of Fish and Game – Commercial Fisheries Division, 1300 College Rd., Fairbanks, AK 99701, bruce.mcintosh@alaska.gov

**PROJECT PARTNERS:** Current partners in the project include the Association of Village Council Presidents (AVCP) and USFWS, who work together to provide a fisheries technician.

### 1. Introduction:

#### *Objectives:*

The primary objective of this project was to increase the accuracy of Chinook and chum salmon passage estimates generated at the Pilot Station sonar project by starting field operations on June 1 and extending operations one week at the end of the field season, from August 31 until September 7. This was to provide managers with greater confidence in both abundance and MSA estimates for Chinook salmon and the late season fall chum salmon run. This proposal addressed the following priorities identified in the 2011 Request for Proposals:

#### *Assess and achieve fishery management objectives*

3. Improve in-season run size and stock specific estimates at the mouth of the Yukon River.
2. Identify stock composition of salmon runs through genetic stock identification.
6. Refine in-season border passage assessment/estimates.

#### *Summary:*

This project employs sonar equipment and a gillnet testfishery on the Yukon River mainstem to generate timely, in-season passage estimates of Chinook (*Oncorhynchus tshawytscha*), summer and fall chum (*O. keta*), and coho (*O. kisutch*) salmon, which includes fish bound for Canadian waters. Fish passage estimates at Pilot Station are based upon a sampling design in which the sonar equipment is operated daily during three 3-hour intervals, and drift gillnets are fished twice each day between sonar periods to apportion the sonar estimates to species. An assortment of gillnets, 25 fathoms long with mesh sizes ranging from 2.75 in to 8.5 in, are drifted through the sonar sampling areas twice daily between sonar data collection periods.

Historically, the project began operations during the first or second week of June, and ran continuously through August 31. In 2004, concerns with early arriving Chinook salmon prompted the Yukon Delta Fisheries Association (YDFA) to provide additional funding that allowed the start date to be advanced to June 1. Prior to that, operations had begun as early as June 5 in 2003, and as late as June 12 in 1999. Yukon Panel R&M funding was

first received in 2008, allowing for both a June 1 start date and an extension of operations for an additional week through September 7.

In 2011 the crew arrived in St. Marys and began working to set up camp on May 24. Testfishing began June 1, with the first Chinook captured June 1 and the first summer chum captured June 6. The right bank sonar became operational on June 1, the left bank sonar on June 4, and both banks operated continuously throughout the season until September 7. Camp breakdown was completed by September 10.

During the first week of June, passage estimates were dominated by other non-salmon species, with the first Chinook estimate on June 4. Both the fall chum and coho salmon runs were well underway when the extended operation period began September 1. Cumulative passage estimates for each targeted species for the period September 1 through September 7 were 39,239 fall chum salmon, 12,810 coho salmon, and 53,170 other non-salmon fish species (Table 1). Estimates made during this 7-day period accounted for 5.1% of the total 2011 fall chum salmon estimate, and 10.3% of the 2011 coho salmon estimate (Table 2). Daily estimates for the full 2011 season can be found in Appendix A.

A total of 20 Chinook and 11 chum salmon were captured during the period June 1 through June 7 in all mesh sizes. Drift gillnetting during the fall period resulted in a catch of 551 fish including 213 fall chum salmon, 136 coho salmon, and 202 other non-salmon species (Table 2). Full catch data by day for 2011 can be found in Appendix B. Genetic samples were taken from all Chinook and chum salmon for MSA. Any captured fish not successfully released were distributed daily to nearby residents in Pilot Station.

This project was operational prior to the beginning of the Chinook and summer chum salmon runs in early June and provided daily and seasonal estimates of salmon passage by species for fall chum and coho salmon through September 7, meeting its objectives satisfactorily. Seasonal estimates of passage are compared with other estimates of run strength such as total catch and escapement for fall chum and coho salmon and test fishery indices. The increased accuracy of the overall estimate of fall chum salmon was beneficial to fishery managers and met the goals and objectives of the R&M extended operations funding.

Data and detailed information about the project can be obtained from the project proponents. The project report should be referenced as follows:

**2. Study Area:** Yukon River Mainstem; vicinity of Pilot Station

**References:**

*Lozori, Jody D., and Bruce C. McIntosh. In prep. Sonar estimation of salmon passage in the Yukon River near Pilot Station, 2011. Alaska Department of Fish and Game, Fishery Data Series No. 11-XX, Anchorage.*

**Table 1.** Daily and total passage estimates during the extended operation period, 2011.

Date	Fall chum	Coho	Other spp
9/1	2,984	2,592	7,011
9/2	13,612	2,185	9,407
9/3	14,002	3,171	8,093
9/4	3,973	2,563	9,590
9/5	1,962	788	7,201
9/6	1,983	705	6,740
9/7	2,016	806	5,128
<b>Total</b>	<b>39,239</b>	<b>12,810</b>	<b>53,170</b>

**Table 2.** Contribution of estimates during performance period to entire season's estimates, 2011.

Species	Period	
	6/1 - 6/7	9/1 - 9/7
Large Chinook <sup>a</sup>	1.3%	
Small Chinook <sup>b</sup>	0.9%	
Total Chinook	1.2%	
Summer chum <sup>c</sup>	0.1%	
Fall chum <sup>d</sup>		5.1%
Coho		10.3%
Other <sup>e</sup>	1.8%	7.7%

<sup>a</sup> Chinook salmon greater than 655 mm mid eye to tail fork length.

<sup>b</sup> Chinook salmon less than or equal to 655 mm mid eye tail fork length.

<sup>c</sup> All chum salmon pre- 7/19 are classified as summer chum in daily reporting.

<sup>d</sup> All chum salmon post- 7/18 are classified as fall chum in daily reporting.

<sup>e</sup> Other non-salmon species.

**Table 3.** Daily and total testfish catches during the extended operation period, 2011.

Date	Fall chum	Coho	Other spp
9/1	28	29	32
9/2	57	21	25
9/3	60	22	22
9/4	25	24	33
9/5	19	18	42
9/6	16	11	18
9/7	8	11	30
<b>Total</b>	<b>213</b>	<b>136</b>	<b>202</b>

**Appendix A.** Daily passage estimates at Pilot Station sonar, 2011.

Date	Chinook	Summer Chum <sup>a</sup>	Fall Chum <sup>b</sup>	Pink	Coho	Other spp
6/1	0	0	-	0	0	2,367
6/2	0	0	-	0	0	990
6/3	0	0	-	0	0	0
6/4	112	0	-	0	0	2,641
6/5	169	0	-	0	0	2,962
6/6	505	79	-	0	0	2,159
6/7	732	1,693	-	0	0	1,451
6/8	1,521	3,453	-	0	0	3,055
6/9	942	14,125	-	0	0	1,029
6/10	1,274	12,998	-	0	0	817
6/11	1,170	8,158	-	0	0	3,050
6/12	1,172	6,540	-	0	0	1,866
6/13	210	5,241	-	0	0	3,150
6/14	724	2,936	-	0	0	5,106
6/15	661	2,682	-	0	0	4,635
6/16	3,742	14,715	-	0	0	3,743
6/17	5,825	84,452	-	0	0	1,247
6/18	7,894	108,401	-	0	0	1,681
6/19	4,287	41,552	-	0	0	449
6/20	3,356	16,413	-	0	0	1,581
6/21	3,723	17,286	-	0	0	1,581
6/22	12,872	165,767	-	0	0	960
6/23	13,159	238,113	-	0	0	789
6/24	11,495	162,967	-	0	0	822
6/25	5,219	73,462	-	0	0	2,812
6/26	2,814	33,351	-	0	0	602
6/27	765	14,905	-	0	0	2,423
6/28	538	10,769	-	0	0	1,839
6/29	1,770	15,132	-	0	0	1,183
6/30	4,871	45,864	-	0	0	5,038
7/1	3,627	70,380	-	0	0	4,283
7/2	5,143	111,209	-	0	0	7,191
7/3	4,520	184,405	-	0	0	22,414
7/4	3,052	117,432	-	0	0	11,263
7/5	3,518	54,676	-	0	0	11,752
7/6	1,904	51,117	-	0	0	11,588
7/7	864	48,644	-	0	0	9,625
7/8	855	46,100	-	0	0	8,786
7/9	371	50,944	-	0	0	5,196

7/10	665	22,241	-	189	0	9,062
7/11	370	13,810	-	138	0	6,384
7/12	997	10,332	-	192	0	7,750

<sup>a</sup> All chum salmon pre- 7/19 are classified as summer chum in daily reporting.

<sup>b</sup> All chum salmon post- 7/18 are classified as fall chum in daily reporting.

**Appendix A (cont'd).** Daily passage estimates at Pilot Station sonar, 2011.

Date	Chinook	Summer Chum <sup>a</sup>	Fall Chum <sup>b</sup>	Pink	Coho	Other spp
7/13	744	7,592	-	121	0	5,829
7/14	289	8,726	-	0	0	3,852
7/15	422	12,682	-	0	0	5,708
7/16	301	29,132	-	0	0	5,335
7/17	252	26,798	-	0	0	4,686
7/18	336	10,534	-	0	0	10,124
7/19	0	-	11,948	438	0	5,361
7/20	0	-	20,209	0	0	759
7/21	848	-	14,626	0	222	2,090
7/22	1,210	-	9,547	122	0	2,504
7/23	126	-	4,609	473	24	5,034
7/24	121	-	3,513	411	19	4,399
7/25	135	-	3,645	403	15	4,643
7/26	98	-	2,554	371	0	9,736
7/27	0	-	5,682	0	0	10,706
7/28	0	-	8,576	392	113	13,153
7/29	0	-	9,163	0	0	6,970
7/30	0	-	14,785	0	1,337	8,267
7/31	531	-	17,037	292	97	11,973
8/1	0	-	59,295	645	1,422	12,614
8/2	0	-	83,067	810	2,024	17,881
8/3	0	-	56,242	323	2,360	6,867
8/4	347	-	16,233	0	1,488	11,253
8/5	0	-	12,521	539	1,708	9,186
8/6	86	-	6,505	79	2,706	10,309
8/7	115	-	9,195	105	3,828	14,399
8/8	0	-	55,353	0	4,380	6,541
8/9	0	-	21,704	0	2,195	11,841
8/10	0	-	14,647	0	1,466	7,704
8/11	0	-	11,572	0	3,612	5,228
8/12	0	-	14,983	190	5,025	5,561
8/13	0	-	4,947	0	3,319	7,818
8/14	0	-	3,183	0	629	7,046
8/15	0	-	5,968	0	1,124	11,441
8/16	0	-	17,132	0	3,887	13,040
8/17	0	-	13,396	0	3,477	12,943
8/18	0	-	36,144	0	4,206	10,063
8/19	0	-	10,815	58	3,966	14,263
8/20	0	-	2,351	0	2,410	10,095

8/21	0	-	723	0	2,675	8,072
8/22	0	-	20,446	0	2,459	24,107
8/23	0	-	36,560	117	5,942	29,066

<sup>a</sup> All chum salmon pre- 7/19 are classified as summer chum in daily reporting.

<sup>b</sup> All chum salmon post- 7/18 are classified as fall chum in daily reporting.

**Appendix A (cont'd).** Daily passage estimates at Pilot Station sonar, 2011.

Date	Chinook	Summer Chum <sup>a</sup>	Fall Chum <sup>b</sup>	Pink	Coho	Other spp
8/24	0	-	45,028	118	6,637	25,100
8/25	0	-	20,060	0	9,478	7,150
8/26	0	-	6,043	0	6,478	11,475
8/27	0	-	3,060	0	7,140	8,713
8/28	0	-	3,497	0	5,388	7,456
8/29	0	-	3,038	0	2,770	6,210
8/30	0	-	1,185	0	2,510	6,367
8/31	0	-	4,168	0	3,585	3,270
9/1	0	-	2,984	0	2,592	7,011
9/2	0	-	13,612	0	2,185	9,407
9/3	0	-	14,002	0	3,171	8,093
9/4	0	-	3,973	0	2,563	9,590
9/5	0	-	1,962	0	788	7,201
9/6	0	-	2,016	0	705	6,740
9/7	0	-	690	0	806	5,128
<b>Total</b>	<b>123,369</b>	<b>1,977,808</b>	<b>764,194</b>	<b>6,526</b>	<b>124,931</b>	<b>694,700</b>

<sup>a</sup> All chum salmon pre- 7/19 are classified as summer chum in daily reporting.

<sup>b</sup> All chum salmon post- 7/18 are classified as fall chum in daily reporting.

**Appendix B.** Daily testfish catch at Pilot Station sonar, 2011.

Date	Chinook	Summer Chum <sup>a</sup>	Fall Chum <sup>b</sup>	Pink	Coho	Other spp
6/1	1					4
6/2						28
6/3						24
6/4	2					20
6/5	2					16
6/6	7	3				11
6/7	8	8				15
6/8	18	24				5
6/9	11	95				3
6/10	7	51				5
6/11	16	57				8
6/12	11	30				2
6/13	4	38				8
6/14	7	19				5
6/15	3	12				9
6/16	34	50				6
6/17	32	200				6
6/18	28	235				1
6/19	21	129				2
6/20	11	45				8
6/21	30	66				5
6/22	24	179				2
6/23	29	237				2
6/24	36	215				1
6/25	29	139				4
6/26	17	98				4
6/27	6	74				4
6/28	6	14				1
6/29	8	61				6
6/30	14	122				11
7/1	10	136				15
7/2	20	155				3
7/3	16	255				11
7/4	18	235				6
7/5	17	117				7
7/6	8	83				9
7/7	3	122				4
7/8	10	99				13
7/9	3	111				5
7/10	3	67		2		14
7/11	3	47				9
7/12	5	61				19

<sup>a</sup> All chum salmon pre- 7/19 are classified as summer chum in daily reporting.

<sup>b</sup> All chum salmon post- 7/18 are classified as fall chum in daily reporting.

**Appendix B (cont'd).** Daily testfish catch at Pilot Station sonar, 2011.

Date	Chinook	Summer Chum <sup>a</sup>	Fall Chum <sup>b</sup>	Pink	Coho	Other spp
7/13	8	39		1		8
7/14	2	38				5
7/15	2	42				4
7/16	3	105				8
7/17						
7/18	2	41				16
7/19			40	2		16
7/20			73			4
7/21	4		62		1	8
7/22	4		48	1		7
7/23	1		26	1		13
7/24			33	4		25
7/25			22	2	1	24
7/26	1		19	2		26
7/27			36			28
7/28			70	2	1	26
7/29			31			9
7/30			57		6	19
7/31	3		92	3	2	30
8/1			138		3	8
8/2			183	2	4	22
8/3			148	2	12	16
8/4	1		59		8	10
8/5			58	3	14	28
8/6			17	1	9	30
8/7	2		48		27	13
8/8			131		13	12
8/9			66		10	27
8/10			38		8	17
8/11			47		13	13
8/12			60	1	31	15
8/13			29		34	28
8/14			2		4	34
8/15			48		10	19
8/16			69		19	31
8/17			32		18	24
8/18			122		16	15
8/19			45	1	30	55
8/20			13		27	22
8/21			4		38	37
8/22			104		18	72
8/23			56		8	18

<sup>a</sup> All chum salmon pre- 7/19 are classified as summer chum in daily reporting.

<sup>b</sup> All chum salmon post- 7/18 are classified as fall chum in daily reporting.

**Appendix B (cont'd).** Daily testfish catch at Pilot Station sonar, 2011.

Date	Chinook	Summer Chum <sup>a</sup>	Fall Chum <sup>b</sup>	Pink	Coho	Other spp
8/24			84	1	31	19
8/25			64		55	18
8/26			35		59	38
8/27			21		65	32
8/28			21		40	41
8/29			19		29	31
8/30			10		25	28
8/31			25		25	17
9/1			28		29	32
9/2			57		21	25
9/3			60		22	22
9/4			25		24	33
9/5			19		18	42
9/6			16		11	18
9/7			8		11	30
Total	571	3,954	2,618	31	850	1,609

<sup>a</sup> All chum salmon pre- 7/19 are classified as summer chum in daily reporting.

<sup>b</sup> All chum salmon post- 7/18 are classified as fall chum in daily reporting.