

CLEARWATER

FISH

HATCHERY

2008

CHINOOK RUN REPORT



LOWER SNAKE RIVER
COMPENSATION PLAN
Hatchery Program

By:

Brad George, Assistant Hatchery Manager
Millie Brookshier, Office Specialist II

**TABLE
OF CONTENTS**

SUMMARY	1
South Fork (Red River / Crooked River)	1
Powell.....	2
Chinook Adult Returns to CFH Satellite Facilities 2008	2
CHINOOK TRAPPING SOUTH FORK.....	3
Weir Management.....	3
Trap Dates	3
Adult Trapping.....	3
CWT Recoveries	5
PIT Tags / Radio Tags	5
SPAWNING SOUTH FORK.....	5
DISEASE SAMPLING	6
GENETIC SAMPLING	6
FORMALIN TREATMENTS.....	6
MISCELLANEOUS.....	6
RESIDENT SPECIES TRAPPED.....	6
CHINOOK TRAPPING POWELL	6
Weir Management.....	6
Trap Dates	7
CWT Recoveries	8
PIT Tags.....	8
SPAWNING POWELL	9
DISEASE SAMPLING	9
GENETIC SAMPLING	9
FORMALIN TREATMENTS.....	9
MISCELLANEOUS.....	9
CHINOOK EGGS TRANSFERRED.....	11
TRANSFER OF LIVE FISH TO NPTH AND FOOD BANK.....	11
RESIDENT SPECIES TRAPPED	11

APPENDICES	PAGE
1. Crooked River chinook run timing 2008.....	11
2. Red River chinook run timing 2008.....	12
3. South Fork length frequency 2008.....	13
4. South Fork chinook summary of fish trapped, released, spawned, and disposition of carcasses, Brood Year 2008	14
5A. Chinook spawning record for South Fork	15
5B. Chinook spawning record for Powell	16
6. Satellite water temperatures 2008	17
7. Powell chinook run timing 2008	18
8. Powell chinook length frequency 2008	20
9. Powell chinook summary of fish trapped, released, spawned, and disposition of carcasses, 2008	21
10A. South Fork Pit Tag Recoveries.....	22
10B. Powell Pit Tag Recoveries.....	23

SUMMARY

A total of 2,957 Chinook were trapped: Crooked River (728), Red River (919), and Powell (1,310). There were 156 fish released to spawn naturally; South Fork (106) Powell (50). A total of 576 females at the South Fork (561 CFH, 15 NPTH) and 491 females at Powell (451 CFH, 40 NPTH) were spawned during 2008. A total of 488 females at the South Fork and 395 females at Powell were kept for the Brood Year 2008 program.

South Fork (Red River / Crooked River) produced 2,122,052 green eggs, which yielded 2,041,298 eyed-eggs (96.19%).

Powell produced 1,703,428 green eggs, which yielded 1,532,741 eyed-eggs (89.98%).

South Fork (Red River and Crooked River) (1,647 fish trapped)

<u>Age Classes</u>	<u>Females</u>	<u>Males</u>	<u>Unknowns</u>
3 years	3	284	3
4 years	663	489	18
5 years	55	129	3
Total	<u>721</u>	<u>902</u>	<u>24</u>

<u>Fish Disposition Females</u>		<u>Fish Disposition Males</u>	
Spawned	576	Spawned	644
Mortality	40	Mortality	16
Food Bank	0	Food Bank	28
Transfer NPTH	0	Transfer NPTH	15
Outplants	82	Outplant	128
Killed CWT	<u>1</u>	Killed CWT	<u>11</u>
TOTAL	<u>699</u>	TOTAL	<u>842</u>

<u>Released Above Weir</u>	<u>Females</u>	<u>Males</u>	<u>Unknowns</u>
Crooked River	17	34	10
Red River	5	26	14
Total	<u>22</u>	<u>60</u>	<u>24</u>

Powell (1,310 Fish Trapped Powell and Crooked Fork)

<u>Age Classes</u>	<u>Females</u>	<u>Males</u>	<u>Unknowns</u>
3 Years	0	178	0
4 years	549	379	0
5 years	43	161	0
Total	<u>592</u>	<u>718</u>	<u>0</u>

<u>Fish Disposition Females</u>		<u>Fish Disposition Males</u>	
Spawned	491	Spawned	574
Mortality	15	Mortality	4
Spawn Reject	12	Spawn Reject	0
Outplant	35	Outplant	62
Transfer NPTH	20	Transfer NPTH	20
Killed CWT	<u>4</u>	Killed CWT	<u>23</u>
TOTAL	<u>577</u>	TOTAL	<u>683</u>

<u>Released Fish</u>	<u>Females</u>	<u>Males</u>	<u>Unknowns</u>
Powell	2	5	0
Crooked Fork Creek	13	30	0
	<u>15</u>	<u>35</u>	<u>0</u>

Chinook Adult Returns to Clearwater Hatchery Satellite Facilities 2008

	Powell	Crooked River	Red River
Date of first return	6/30/2008	6/26/2008	6/28/2008
Date of last return	9/4/2008	9/8/2008	9/3/2008
Number of females returning	592**	721*	
Number of males returning	718**	902*	
Number of unknown sex returning	0	10	14
Date of peak returns	7/22/2008	7/5/2008	7/10/2008
Total trapped	1,310	728	919
Number released to spawn naturally above weir	15 females 35 males 0 unknowns	17 females 34 males 10 unknowns	5 females 26 males 14 unknowns
Released to spawn below weir and sport fishery	35 females 62 males	82 females*** 128 males***	
Trap Mortality	0 females 2 males	0 females 0 male	0 females 0 males
Fish transferred from other traps	117**	0	0
Number Spawned	491 females 574 males	576 females* 644 males*	
Pre-spawning mortality	15 females 4 males	30 females* 16 males*	
Fish transferred to other hatcheries	20 females 20 males	15 males	
Fish given to Kamiah Food Bank	0	28 males***	
Eggs Transferred to NPTH	40 females 40 males	15 females*** 15 males***	

* In 1997, Red River and Crooked River Chinook were combined to make the South Fork stock.

**Includes fish trapped at Crooked Fork Weir.

***Includes Crooked and Red River.

CHINOOK TRAPPING

South Fork (Red River/Crooked River)

Weir management

In 1997, Red River and Crooked River Chinook were combined to make the South Fork stock. This policy was continued in 2008.

Trapping protocol for Red River and Crooked River included ponding all ad-clipped Chinook as broodstock.

A total of 1,000 adults (500 females, 500 males) were the anticipated broodstock needs to fill the South Fork Clearwater Program. Although fish were held temporarily at Red River, all broodstock were transported to Clearwater for final holding and spawning.

The adult traps at both South Fork facilities were put in operation for steelhead trapping and remained open for the entire chinook run.

All chinook were sorted on a daily basis and transported to Red River for temporary holding or transported directly to Clearwater.

All natural and supplementation fish were right opercle punched and passed above the weir daily through the entire run.

Trap Dates

The Crooked River trap was installed for steelhead trapping on March 27, 2008, and trapping continued for chinook until September 13, 2008.

The first fish trapped at Crooked River was on June 26, 2008, and the last on September 8, 2008 (Appendix 1). A total of 728 Chinook (667 hatchery and 61 naturals) were trapped during 2008.

The Red River trap was installed for steelhead trapping on April 1, 2008, and trapping continued for chinook until September 14, 2008.

The first fish trapped at Red River was on June 28, 2008, and the last on September 3, 2008 (Appendix 2). A total of 919 Chinook (874 hatchery and 45 naturals) were trapped during 2008.

Adult Trapping (Red River/Crooked River)

A total of 1,647 Chinook were trapped between both traps.

There were 290 one-ocean Chinook trapped in 2008 that came from brood year 2005 fish. Of these fish, 275 were ad-clipped that came from spring release of 650,921 smolts at Crooked River and 375,759 smolts at Red River (Appendices 3 and 4).

There were 1,170 two-ocean Chinook trapped in 2008 that came from brood year 2004 fish. Of these fish, 1,096 were ad-clipped that came from a spring release of 749,461 smolts at Crooked River and 423,603 smolts at Red River (Appendices 3 and 4).

A total of 187 three-ocean fish were trapped in 2008 that came from brood year 2003 fish. Of these fish, 170 were ad-clipped that came from a spring release of 700,387 smolts at Crooked River and 401,362 smolts at Red River (Appendices 3 and 4).

A total of 106 fish (60 males, 22 female and 24 unknowns) were released above the weirs for natural spawning. Of this total, 61 fish (34 male, 17 female and 10 unknowns) were released back into Crooked River for natural spawning. A total 45 fish (26 males, 5 females and 14 unknowns) were released in Red River for natural spawning.

Of the 1,541 ad-clipped Chinook trapped during 2008, 103 Chinook (54 Crooked River, 49 Red River) were identified as misclipped fish for a 6.68% rate.

A total of 169 Chinook were identified as having significant body/head trauma at trapping. This represents 10.9% of the total fish trapped.

A total of 46 pre-spawned mortalities occurred from the South Fork stock (30 females, 16males) for a pre-spawn mortality of 2.8%.

At trapping, the fish at Crooked River were handled as follows:

Marks	PONDED		RELEASED		TOTAL	
	Jacks	Adults	Jacks	Adults	Jacks	Adults
Ad-clip	129	530	0	8	129	538
Non-clip	0	0	11	50	11	50
TOTAL	129	530	11	58	140	588
						728

At trapping, the fish at Red River were handled as follows:

Marks	PONDED		RELEASED		TOTAL	
	Jacks	Adults	Jacks	Adults	Jacks	Adults
Ad-clip	133	736	0	5	133	741
Non-clip	0	0	4	41	4	41
TOTAL	133	736	4	46	137	782
						919

The marks and ages of Chinook captured at the South Fork are summarized:

		I Ocean			II Ocean			III Ocean			TOTAL
Status	Marks	Male	Female	Unknown	Male	Female	Unknown	Male	Female	Unknown	
Production	Ad-clipped	274	1	0	450	646	0	118	52	0	1541
Natural	Non-clipped	10	2	3	39	17	18	11	3	3	106
Total		284	3	3	489	663	18	129	55	3	1647

CWT Recoveries

The South Fork traps recovered 86 Chinook with CWT tags (31 females, 55 males). The recovered snouts were sent to the Nampa Research Lab for reading.

PIT Tags / Radio Tags

There were 38 passive integrated transponder (PIT) tags and two radio tags recovered at Red River and 13 PIT tags and one radio at Crooked River in 2008. See Appendix 10A

SPAWNING

A 1:1 spawning ratio was used for the South Fork stock during 2008.

This was the twelfth year where Crooked River and Red River were combined to make the South Fork stock. All CFH production fish from South Fork stock were held at Clearwater Fish Hatchery for spawning.

At the Clearwater Fish Hatchery, eggs were disinfected in 100-PPM Argentyne for one hour, tempered to ambient incubation temperature (45 to 50° F), and placed in egg trays.

A total of 576 females were spawned between August 6, 2008 and September 2, 2008 for a total of 8 egg takes. Three females were culled at spawning.

Eggs from 488 females were picked and enumerated. There were 70 females culled in Incubation (52 for BKD and 18 for bad eggs). A total of 2,122,052 green eggs were collected and resulted in 2,041,298 eyed-eggs (96.19%). Mean fecundity was 4,375 eggs per female (Appendix 5A).

DISEASE SAMPLING

When the females were spawned, kidney samples were collected from all females; ovarian samples were collected from 60 females, head wedges from 20 fish for disease testing. All samples

were shipped overnight weekly to the Eagle Fish Health lab for analysis.

Females were screened for BKD using ELISA techniques. The cull rate was set by the Eagle Fish Health Lab at 0.250.

GENETIC SAMPLING

All broodstock fish (576 males, 644 females) were sampled for genetics. All samples were shipped to the Eagle Genetics Lab for analysis.

FORMALIN TREATMENTS

Fish held at Clearwater Hatchery were treated for one hour with a flow through treatment at 140 ppm every day. Formalin treatments were successful in controlling fungal growth. Adults showed no adverse reactions to the treatments.

MISCELLANEOUS

At Crooked River, water temperatures climbed to 66°F with a seasonal average of 55°F (Appendix 6).

At Red River, water temperatures climbed to 64°F with a seasonal average of 51°F (Appendix 6).

RESIDENT SPECIES TRAPPED

At the Crooked River satellite, a total of 36 bull trout ranging from 40-61 cm were trapped. No bull trout were trapped at Red River.

All resident fish trapped were returned to the river. All bull trout information will be documented on the database.

Powell

Weir management

Trapping protocol for the Powell trap included ponding all ad-clipped Chinook as broodstock.

A total of 1,020 adults (510 females, 510 males) were the anticipated broodstock needs to fill the Lochsa and Selway programs. All broodstock were held at the Powell facility for spawning.

Trapping protocol for the Crooked Fork Creek trap included transporting and ponding ad-clipped Chinook at the Powell facility as broodstock.

The Powell trap remained open for the entire chinook run until five consecutive days of zero fish were achieved in September.

All natural and supplementation fish were left opercle punched and passed above the weirs daily throughout the run.

Trap Dates

The Powell trap was installed on May 22, 2008 and taken out of operation on September 15, 2008 (Appendices 7 and 8).

The Crooked Fork trap was installed on July 10, 2008 and taken out of operation on September 18, 2008. (Appendices 7 and 8).

The first fish trapped at Powell was on June 30, 2008, and the last fish was trapped on September 4, 2008.

The first fish trapped at Crooked Fork was on July 11, 2009, and the last fish was trapped on September 3, 2008.

A total of 1,310 Chinook (1,150 Powell and 160 Crooked Fork) were trapped during 2008. A total of 1,260 hatchery and 7 natural Chinook were trapped at Powell and a total of 117 hatchery and 43 natural were trapped at the Crooked Fork trap (Appendix 9).

At trapping, the fish at Powell were handled as follows:

Marks	PONDED		RELEASED		TOTAL	
	Jacks	Adults	Jacks	Adults	Jacks	Adults
Ad-clip	157	1,006	19	78	176	1,084
Non-clip	0	0	2	48	2	48
TOTAL	157	1,006	21	126	178	1,132
						1,310

The marks and ages of chinook captured at Powell and Crooked Fork fish traps are summarized:

Status	Marks	I Ocean		II Ocean			III Ocean			Total
		Males	Females	Males	Females	UNK	Males	Females	UNK	
Production	Ad	176	0	350	535	0	157	42	0	1260
Naturals	Non-clipped	2	0	29	14	0	4	1	0	50
Total		178	0	379	549	0	161	43	0	1310

There were 178 one-ocean Chinook trapped in 2008 that came from brood year 2005 fish. Of these, 176 were ad-clipped that came from a spring release of 373,977 smolts. A total of two natural Chinook were trapped.

A total of 928 two-ocean fish were trapped in 2008 that came from brood year 2004 fish. Of

these fish, 885 were ad-clipped that came from a spring release of 423,633 smolts and a 347,299 pre-smolt release. A total of 43 naturals were trapped.

A total of 204 three-ocean fish were trapped in 2008 that came from brood year 2003 fish. A total of 199 were ad-clipped that came from a spring release of 403,917 smolts and a 410,117 pre-smolt release. A total of five naturals were trapped.

A total of 50 Chinook (15 females, 35 males, and 0 unknowns) were released to spawn naturally.

Of the 1,260 ad-clipped fish trapped at Powell, 38 were identified as misclipped fish for a 3.0% rate.

A total of 141 Chinook were identified as having significant body/head trauma at trapping. This represents 11.2% of the total fish trapped.

There were 19 pre-spawn mortalities (15 females, 4 males) at Powell for a rate of 1.5%.

CWT Recoveries

A total of 197 Chinook were recovered with CWT's (89 females, 108 males). The snouts collected at Powell were sent to the Nampa Lab for analysis.

PIT Tags/ Radio Tags

There were 43 PIT tags and two radio transmitters recovered at the Powell and five PIT tags and one radio at Crooked Fork trap in 2008. See Appendix 10B

SPAWNING

Powell utilized 1:1 spawning ratio for males and females in 2008.

At Powell, eggs were water hardened in 100-PPM Argentyne solution for one hour. After one hour, eggs were rinsed, chilled, and transferred to the main facility. At the Clearwater Fish Hatchery (CFH), eggs were disinfected in 100-PPM Argentyne for fifteen minutes, tempered to ambient incubation temperature (45 to 50° F), and placed in egg trays.

All CFH production broodstock from Powell stock were held and spawned at the Powell facility.

A total of 491 females were spawned between August 7, 2008 and August 21, 2008, for a total of 5 egg takes. A total of two females were culled at spawning for BKD, 5 in incubation for dead eggs and 49 for BKD. Eggs from 395 females were kept for hatchery production.

A total of 1,703,428 green eggs were collected and resulted in 1,532,741 eyed eggs for a total eye-up of 89.98% (Appendix 5B). Mean fecundity was 4,312 eggs per female.

DISEASE SAMPLING

When the females were spawned, kidney samples were collected from all females; ovarian samples were collected from 60 females, head wedges from 20 fish for disease testing. All samples were shipped overnight weekly to the Eagle Fish Health Lab for analysis.

Females were screened for BKD using ELISA techniques. Females with optical densities (OD) of 0.250 or higher were culled.

GENETIC SAMPLING

All Clearwater broodstock fish were sampled for genetics. All samples were shipped to the Eagle Genetics Lab for analysis.

FORMALIN TREATMENTS

Powell was treated for one hour with a flow through treatment at 140 ppm. Fish were treated every day. Formalin treatments were successful in controlling fungal growth. Adults showed no adverse reactions to the treatments.

MISCELLANEOUS

The Crooked Fork weir was installed for the tenth year to prevent hatchery strays from spawning in Brushy Fork, a natural control stream.

At Powell water temperatures climbed to 54° F with a seasonal average of 47°F (Appendix 6).

TRANSFER OF LIVE FISH TO NPTH AND FOOD BANKS

A total of 28 jacks (SF stock) were given to the Kamiah food bank on 8/7/2008. Between 9/21/2008 and 9/2/2008 a total of 361 adults were outplanted or transferred to NPTH. On 8/28/2008, 82 adults (Powell stock) were outplanted by NPTH personnel to Colt Killed Creek at Colt Killed cabin (30 adult females, 36 adult males, and 16 jacks). Also 40 adults (Powell stock) were transferred by NPTH personnel to NPTH at Cherry Lane (20 females and 20 males). On 9/4/2008, 20 adults (Powell stock) were outplanted by NPTH personnel to O'Hare Creek (6 adult females, 11 adult males, and 3 jacks). Five of these fish were recaptures from the Colt Killed outplant on 8/28/2008.

On 8/25/2008, 15 adult males (SF stock) were transferred to NPTH by NPTH personnel. Between 8/27/2008 and 9/2/2008, 209 adults (SF Stock: 82 females and 127 males) were outplanted to McComas Meadows on Meadow Creek by NPTH and CFH personnel.

CHINOOK EGGS TRANSFERRED TO OTHER HATCHERIES

A total of 40 females were spawned at Powell Satellite, and 15 females were spawned from the

South Fork stock and eggs were transferred to the Nez Perce Tribe on August 18, 2008 and August 5, 2008, respectively to assist with the Nez Perce Tribe egg needs. An estimated total of 236,500 green eggs were collected and were transferred.

RESIDENT SPECIES TRAPPED

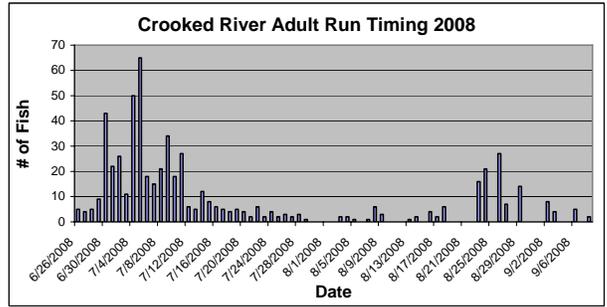
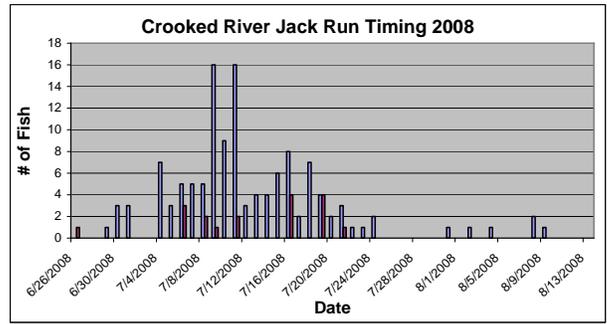
At Powell, a total of 27 cutthroat trout ranging from 12 to 45 cm and 10 bull trout ranging from 13 to 25 cm were trapped.

All resident fish trapped were returned to the river. All bull trout information will be documented on the database.

Appendix 1. Crooked River Run Timing

DATE	JACK	ADULT	TOTAL
6/26/2008	0	5	5
6/27/2008	0	4	4
6/28/2008	0	5	5
6/29/2008	1	9	10
6/30/2008	3	43	46
7/1/2008	3	22	25
7/2/2008	0	26	26
7/3/2008	0	11	11
7/4/2008	7	50	57
7/5/2008	3	65	68
7/6/2008	5	18	23
7/7/2008	5	15	20
7/8/2008	5	21	26
7/9/2008	16	34	50
7/10/2008	9	18	27
7/11/2008	16	27	43
7/12/2008	3	6	9
7/13/2008	4	5	9
7/14/2008	4	12	16
7/15/2008	6	8	14
7/16/2008	8	6	14
7/17/2008	2	5	7
7/18/2008	7	4	11
7/19/2008	4	5	9
7/20/2008	2	4	6
7/21/2008	3	2	5
7/22/2008	1	6	7
7/23/2008	1	2	3
7/24/2008	2	4	6
7/25/2008	0	2	2
7/26/2008	0	3	3
7/27/2008	0	2	2
7/28/2008	0	3	3
7/29/2008	0	1	1
7/30/2008	0	0	0
7/31/2008	1	0	1
8/1/2008	0	0	0
8/2/2008	1	0	1
8/3/2008	0	2	2
8/4/2008	1	2	3
8/5/2008	0	1	1
8/6/2008	0	0	0
8/7/2008	0	1	1
8/8/2008	2	6	8
8/9/2008	1	3	4
8/10/2008	0	0	0
8/11/2008	0	0	0
8/12/2008	0	0	0

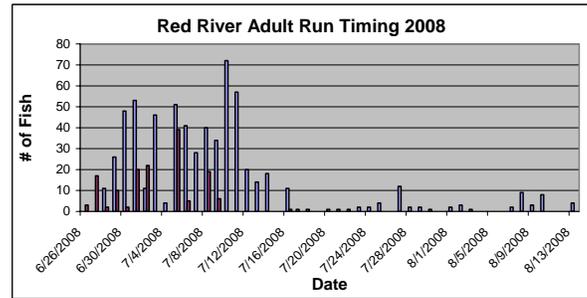
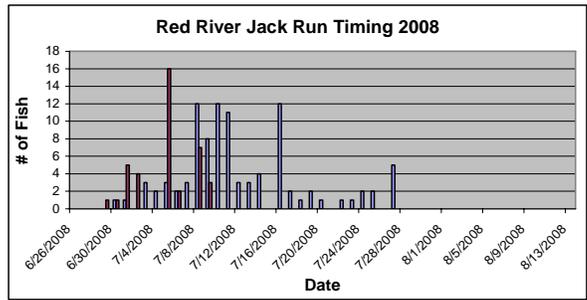
DATE	JACK	ADULT	TOTAL
8/14/2008	1	2	3
8/15/2008	0	0	0
8/16/2008	0	4	4
8/17/2008	0	2	2
8/18/2008	0	6	6
8/19/2008	0	0	0
8/20/2008	0	0	0
8/21/2008	0	0	0
8/22/2008	0	0	0
8/23/2008	0	16	16
8/24/2008	3	21	24
8/25/2008	0	0	0
8/26/2008	2	27	29
8/27/2008	1	7	8
8/28/2008	0	0	0
8/29/2008	2	14	16
8/30/2008	0	0	0
8/31/2008	0	0	0
9/1/2008	0	0	0
9/2/2008	0	8	8
9/3/2008	4	4	8
9/4/2008	0	0	0
9/5/2008	0	0	0
9/6/2008	4	5	9
9/7/2008	0	0	0
9/8/2008	1	2	3
TOTAL	144	587	728



Appendix 2 Red River Run Timing

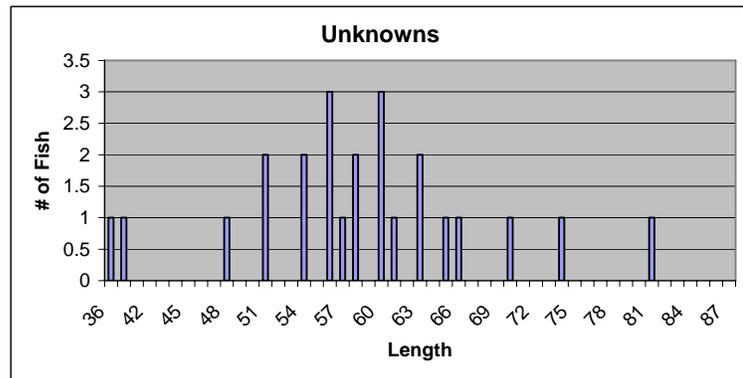
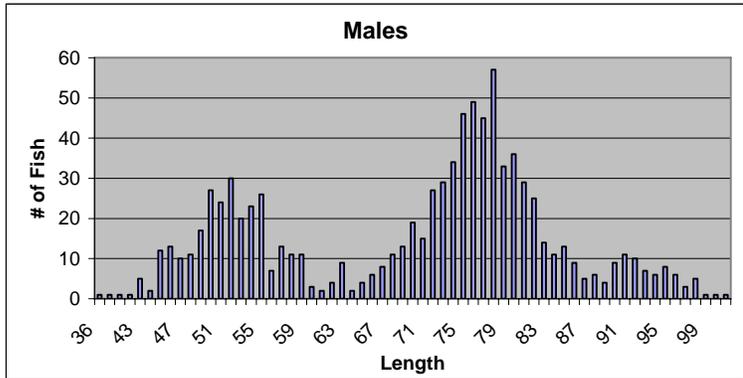
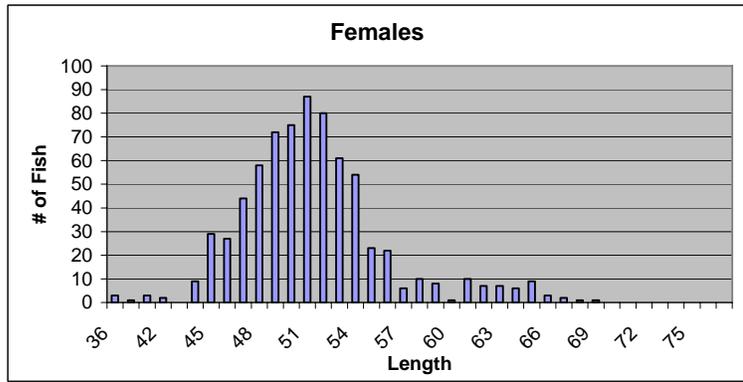
DATE	JACK	ADULT	TOTAL
6/26/2008	0	0	0
6/27/2008	0	0	0
6/28/2008	0	11	11
6/29/2008	0	26	26
6/30/2008	1	48	49
7/1/2008	1	53	54
7/2/2008	0	11	11
7/3/2008	3	46	49
7/4/2008	2	4	6
7/5/2008	3	51	54
7/6/2008	2	41	43
7/7/2008	3	28	31
7/8/2008	12	40	52
7/9/2008	8	34	42
7/10/2008	12	72	84
7/11/2008	11	57	68
7/12/2008	3	20	23
7/13/2008	3	14	17
7/14/2008	4	18	22
7/15/2008	0	0	0
7/16/2008	12	11	23
7/17/2008	2	1	3
7/18/2008	1	1	2
7/19/2008	2	0	2
7/20/2008	1	1	2
7/21/2008	0	1	1
7/22/2008	1	1	2
7/23/2008	1	2	3
7/24/2008	2	2	4
7/25/2008	2	4	6
7/26/2008	0	0	0
7/27/2008	5	12	17
7/28/2008	0	2	2
7/29/2008	0	2	2
7/30/2008	0	1	1
7/31/2008	0	0	0
8/1/2008	0	2	2
8/2/2008	0	3	3
8/3/2008	0	1	1
8/4/2008	0	0	0
8/5/2008	0	0	0
8/6/2008	0	0	0
8/7/2008	0	2	2
8/8/2008	0	9	9
8/9/2008	0	3	3
8/10/2008	0	8	8
8/11/2008	0	0	0
8/12/2008	0	0	0
8/13/2008	0	4	4

DATE	JACK	ADULT	TOTAL
8/14/2008	0	3	3
8/15/2008	0	17	17
8/16/2008	0	2	2
8/17/2008	1	10	11
8/18/2008	1	2	3
8/19/2008	5	20	25
8/20/2008	4	22	26
8/21/2008	0	0	0
8/22/2008	0	0	0
8/23/2008	16	39	45
8/24/2008	2	5	7
8/25/2008	0	0	0
8/26/2008	7	19	26
8/27/2008	3	6	9
8/28/2008	0	0	0
8/29/2008	0	0	0
8/30/2008	0	0	0
8/31/2008	0	0	0
9/1/2008	0	0	0
9/2/2008	0	0	0
9/3/2008	0	1	1
9/4/2008			
9/5/2008			
9/6/2008			
9/7/2008			
9/8/2008			
TOTAL	136	783	919



South Fork Chinook Length Frequency 2008

Length	F	M	U	Total
36		1		1
39		1		1
41		1		1
42		1		1
43		5		5
44		2		2
45		12		12
46		13		13
47		10		10
48		11		11
49		17		17
50		27		27
51		24		24
52		30		30
53		20	1	21
54		23	1	24
55		26		26
56		7		7
57		13		13
58		11		11
59		11		11
60		3		3
61		2		2
62		4	1	5
63	3	9		12
64	1	2		3
65	3	4	2	9
66	2	6		8
67		8		8
68	9	11	2	22
69	29	13		42
70	27	19	3	49
71	44	15	1	60
72	58	27	2	87
73	72	29		101
74	75	34	3	112
75	87	46	1	134
76	80	49		129
77	61	45	2	108
78	54	57		111
79	23	33	1	57
80	22	36	1	59
81	6	29		35
82	10	25		35
83	8	14		22
84	1	11	1	13
85	10	13		23
86	7	9		16
87	7	5		12
88	6	6	1	13
89	9	4		13
90	3	9		12
91	2	11		13
92	1	10		11
93	1	7		8
94		6		6
95		8	1	9
96		6		6
97		3		3
98		5		5
99		1		1
100		1		1
102		1		1
Grand Total	721	902	24	1647



Appendix 4. South Fork Chinook Summary of Fish Trapped, Released, Spawned and Disposition of Carcasses Brood Year 2008

TOTAL SOUTH FORK FISH TRAPPED:

Crooked River	728
Red River	919
TOTAL	1647

AGE CLASSES	FEMALES	MALES	UNK	TOTAL
3 Years = (<64 cm)	3	284	3	290
4 Years = (64 - 82 cm)	663	489	18	1170
5 Years = (> 82 cm)	55	129	3	187
	721	902	24	1647

FISH DISPOSITION FEMALES:

Crooked River	Red River	CFH	TOTAL
MORTALITY 0	MORTALITY 0	SPAWNED 576	576
		MORTALITY 40	40
RELEASED 17	RELEASED 5	KILLED/CWT 1	1
		RELEASED 82	104
TOTAL 17	TOTAL 5	TOTAL 699	721

FISH DISPOSITION MALES:

Crooked River	Red River	CFH	TOTAL
MORTALITY 0	MORTALITY 0	SPAWNED 644	644
RELEASED 34	RELEASED 26	MORTALITY 16	16
		RELEASE 128	128
		FOOD BANK 28	28
		TRANSFER NPTH 15	15
		KILLED/CWT 11	11
TOTAL 34	TOTAL 26	TOTAL 842	902

FISH DISPOSITION UNKNOWN:

Crooked River	Red River	CFH	TOTAL
MORTALITY 0	MORTALITY 0	SPAWNED 0	0
RELEASED 10	RELEASED 14	MORTALITY 0	0
		SPAWN/RELEASE 0	24
TOTAL 10	TOTAL 14	TOTAL 0	24

TOTAL TRAP 1647

APPENDIX 5A. Chinook Spawning Record 2008 for South Fork.

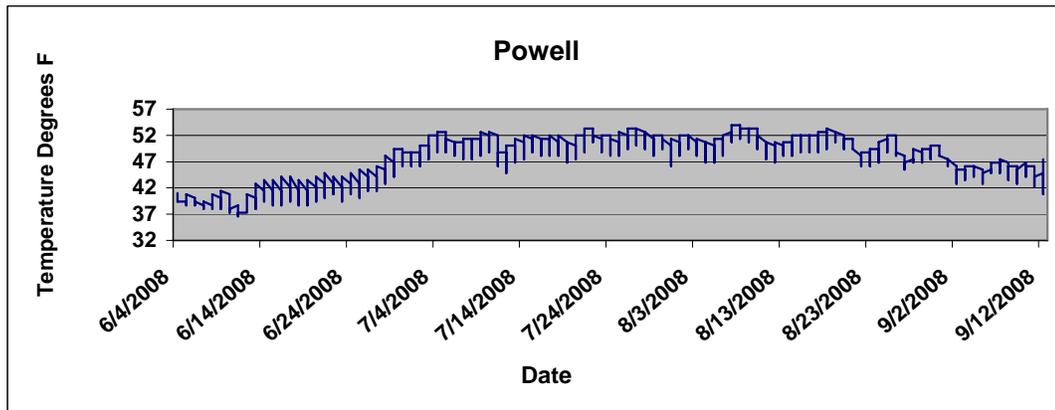
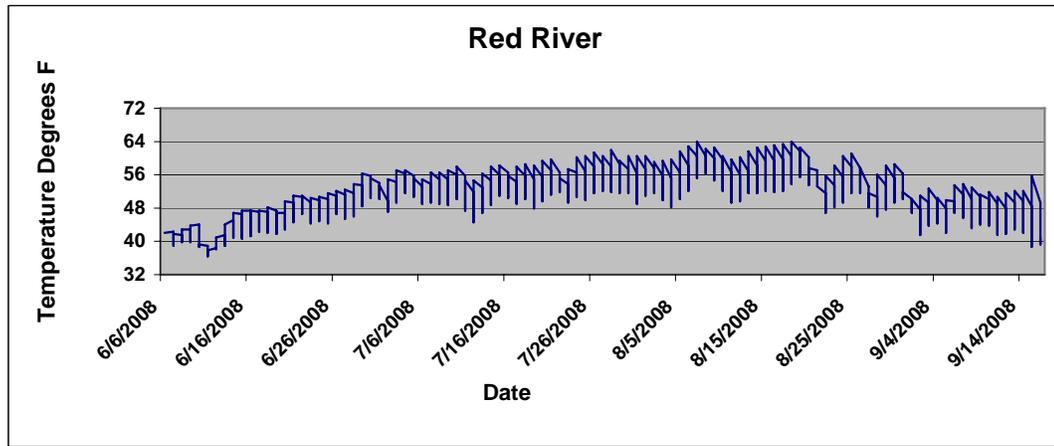
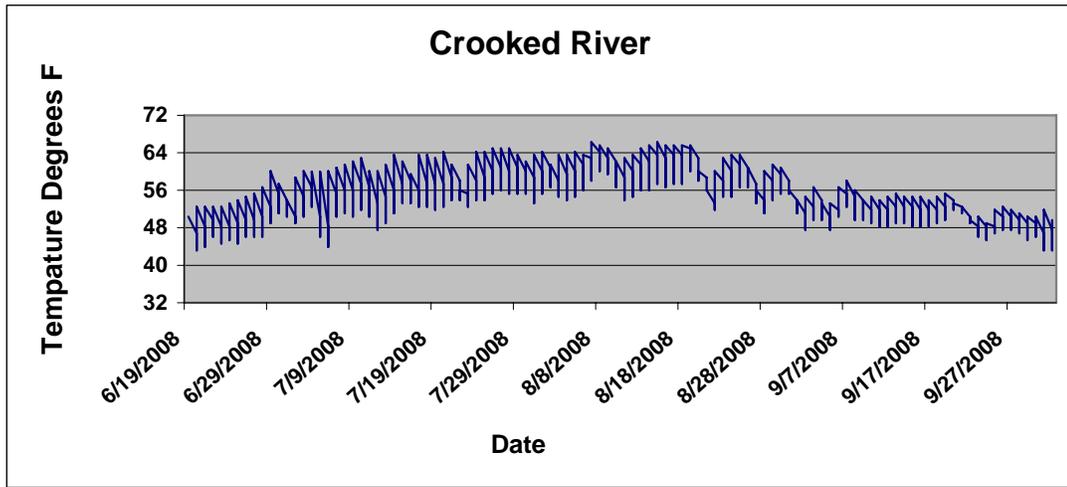
SOUTH FORK (Red River / Crooked River).

Lot	Spawn Date	Total Females	BKD Females Culled		Other Females Culled		Females Kept	Green Eggs	Eyed Eggs	Percent Eye Up	Fecundity
			Table	Incubation	Table	Incubation					
1	8/6/2008	16	0	0	0	0	16	69,278	67,592	97.56	4,330
2	8/12/2008	70	0	10	2	0	58	255,365	246,564	96.56	4,403
3	8/15/2008	75	0	8	0	0	67	299,481	287,372	95.95	4,469
4	8/19/2008	125	0	16	0	16	93	417,611	395,678	94.75	4,490
5	8/22/2008	117	0	8	1	1	107	460,473	441,853	95.95	4,303
6	8/25/2008	61	0	4	0	0	57	243,849	236,544	97.00	4,278
7	8/28/2008	70	0	3	0	1	66	271,122	262,963	97.00	4,108
8	9/2/2008	27	0	3	0	0	24	104,873	102,732	98.00	4,370
Total/Average		561	0	70	3	18	488	2,122,052	2,041,298	96.19%	4,375

APPENDIX 5B. Chinook Spawning Record 2008 for Powell.

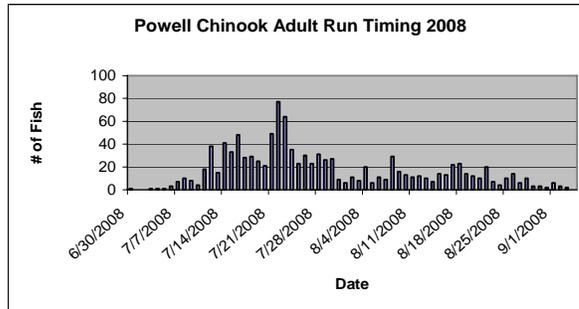
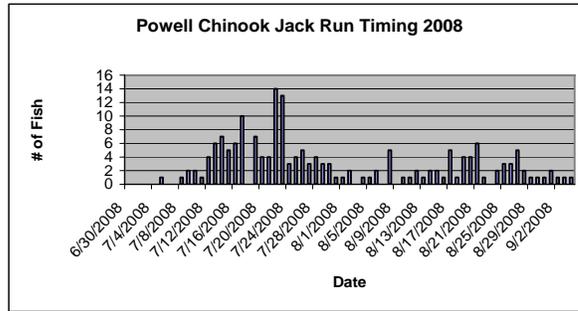
POWELL (Powell/Crooked Fork).

Lot	Spawn Date	Total Females	BKD Females Culled		Other Females Culled		Females Kept	Green Eggs	Eyed Eggs	Percent Eye Up	Fecundity
			Table	Incubation	Table	Incubation					
1	8/7/2008	114	1	12	0	2	99	422,332	373,230	88.37	4,266
2	8/11/2008	112	0	15	0	0	97	434,379	390,246	89.83	4,478
3	8/14/2008	79	1	4	0	1	73	311,092	283,119	91.08	4,262
4	8/18/2008	131	0	16	0	1	114	485,304	441,363	90.90	4,257
5	8/21/2008	15	0	2	0	1	12	50,321	44,783	88.99	4,193
Total/Average		451	2	49	0	5	395	1,703,428	1,532,741	89.98%	4,312



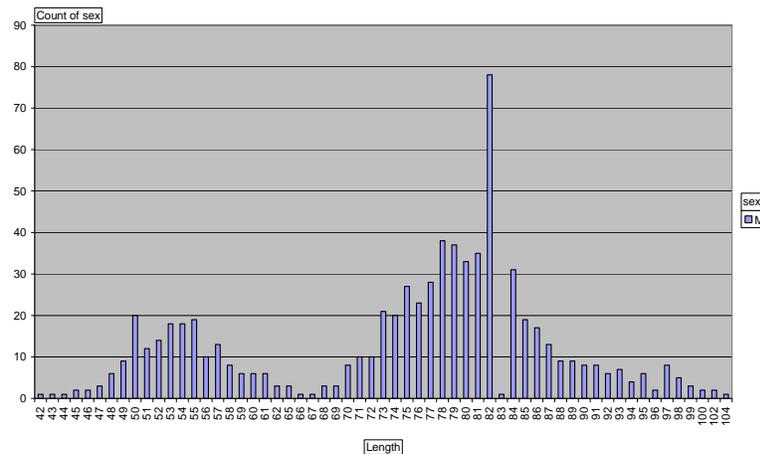
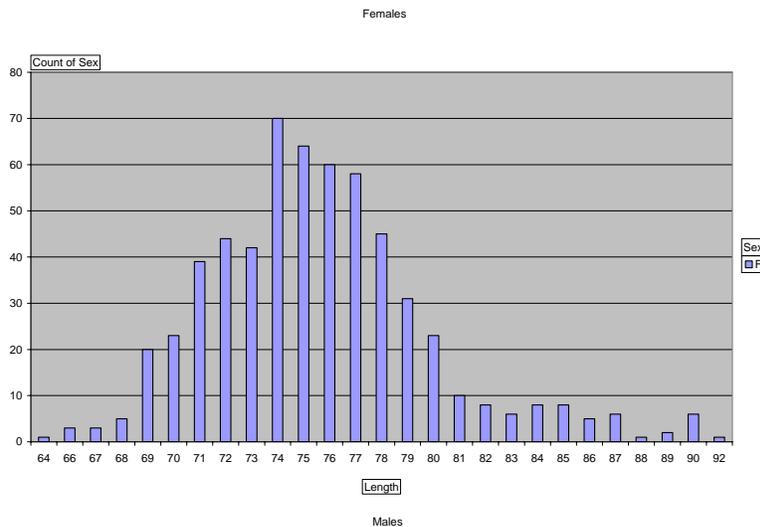
Appendix 7 Powell/Crooked Fork Chinook Run Timing 2008

DATE	JACKS	ADULTS	TOTAL
6/30/2008	0	1	1
7/1/2008	0	0	0
7/2/2008	0	0	0
7/3/2008	0	1	1
7/4/2008	0	1	1
7/5/2008	1	1	2
7/6/2008	0	3	3
7/7/2008	0	7	7
7/8/2008	1	10	11
7/9/2008	2	8	10
7/10/2008	2	4	6
7/11/2008	1	18	19
7/12/2008	4	38	42
7/13/2008	6	15	21
7/14/2008	7	41	48
7/15/2008	5	33	38
7/16/2008	6	48	52
7/17/2008	10	28	38
7/18/2008	0	29	29
7/19/2008	7	25	32
7/20/2008	4	21	25
7/21/2008	4	49	53
7/22/2008	14	77	91
7/23/2008	13	64	77
7/24/2008	3	35	38
7/25/2008	4	23	27
7/26/2008	5	30	35
7/27/2008	3	23	26
7/28/2008	4	31	35
7/29/2008	3	26	29
7/30/2008	3	27	30
7/31/2008	1	9	10
8/1/2008	1	6	7
8/2/2008	2	11	13
8/3/2008	0	8	8
8/4/2008	1	20	21
8/5/2008	1	6	7
8/6/2008	2	11	13
8/7/2008	0	9	9
8/8/2008	5	29	34
8/9/2008	0	16	16
8/10/2008	1	13	14
8/11/2008	1	11	12
8/12/2008	2	12	14
8/13/2008	1	10	11
8/14/2008	2	7	9
8/15/2008	2	14	16
8/16/2008	1	13	14
8/17/2008	5	22	27
8/18/2008	1	23	24
8/19/2008	4	14	18
8/20/2008	4	12	16
8/21/2008	6	10	16
8/22/2008	1	20	21
8/23/2008	0	7	7
8/24/2008	2	4	6
8/25/2008	3	10	13
8/26/2008	3	14	17
8/27/2008	5	6	11
8/28/2008	2	10	12
8/29/2008	1	3	4
8/30/2008	1	3	4
8/31/2008	1	2	3
9/1/2008	2	6	8
9/2/2008	1	3	4
9/3/2008	1	2	3
9/4/2008	1	0	1
	179	1093	1270



Appendix 8 Powell/Crooked Fork Chinook Length Frequency 2008

Length	F	M	Total	Length	F	M	Total
42		1	1	89	2	9	11
43		1	1	90	6	8	14
44		1	1	91		8	8
45		2	2	92	1	6	7
46		2	2	93		7	7
47		3	3	94		4	4
48		6	6	95		6	6
49		9	9	96		2	2
50		20	20	97		8	8
51		12	12	98		5	5
52		14	14	99		3	3
53		18	18	100		2	2
54		18	18	102		2	2
55		19	19	104		1	1
56		10	10	Grand Total	592	718	1310
57		13	13				
58		8	8				
59		6	6				
60		6	6				
61		6	6				
62		3	3				
64	1		1				
65		3	3				
66	3	1	4				
67	3	1	4				
68	5	3	8				
69	20	3	23				
70	23	8	31				
71	39	10	49				
72	44	10	54				
73	42	21	63				
74	70	20	90				
75	64	27	91				
76	60	23	83				
77	58	28	86				
78	45	38	83				
79	31	37	68				
80	23	33	56				
81	10	35	45				
82	8	78	86				
83	6	1	7				
84	8	31	39				
85	8	19	27				
86	5	17	22				
87	6	13	19				
88	1	9	10				



Appendix 9. Powell Chinook Summary of Fish Trapped, Released, Spawning and Disposition of Carcasses for Powell and Crooked Fork Adult Traps, Brood Year 2008.

TOTAL FISH TRAPPED:

Powell	1150
Crooked Fork Creek	160
TOTAL	1310

AGE CLASSES	FEMALES	MALES	UNK	TOTAL
3 Years = (<64 cm)	0	178	0	178
4 Years = (64 - 82 cm)	549	379	0	928
5 Years = (> 82 cm)	43	161	0	204
	592	718	0	1310

FISH DISPOSITION FEMALES:

SPAWNED	491
MORTALITY	15
KILLED/CULLED@SPAWN	12
RELEASED	15
Outplant	35
Transfer NPTH	20
Killed/CWT	4
TOTAL	592

FISH DISPOSITION MALES:

SPAWNED	574
MORTALITY	4
Released	35
Outplant	62
Transfer NPTH	20
Killed/CWT	23
TOTAL	718

FISH DISPOSITION UNKNOWN:

SPAWNED	0
MORTALITY	0
SPAWN/RELEASE	0
TOTAL	0

TOTAL DISPOSITION	1310
--------------------------	-------------

Appendix 10A South Fork Pit Tag Recoveries 2008
 RED RIVER PIT TAGS

DATE	MARKS	LENGTH	PIT TAG NUMBER	RADIO
28-Jun	AD	78	3D9.1BF24322F9	
30-Jun	AD	67	3D9.1BF24640D9	
30-Jun	AD	69	3D9.1BF23AA175	
1-Jul	AD	78	3D1.2E9143F50F	RADIO #41
1-Jul	AD	73	3D9.1BF234523E	
2-Jul	AD	74	3D9.1BF23F31D4	
3-Jul	AD	95	3D9.239F83E8D9	
4-Jul	AD	52	3D9.1BF236C4E0	
5-Jul	AD	73	3D9.1BF23F2D92	
5-Jul	AD	71	3D9.1BF245FEB9	
6-Jul	AD	79	3D9.1BF233FC50	
6-Jul	AD	75	3D9.1BF23F2B5E	
7-Jul	AD	78	3D9.1BF233FE54	
8-Jul	AD	50	3D9.1C2C507E4C	
8-Jul	AD	73	3D9.1BF24323AB	
9-Jul	AD	54	3D9.1BF27F222E	
9-Jul	AD	74	3D9.1BF262AEE	
10-Jul	AD	67	3D9.1BF23F64BC	
10-Jul	AD	50	3D9.1BF27ED2BF	
10-Jul	AD	76	3D9.1BF25EE2A0	
10-Jul	AD	74	3D9.1BF2465B68	
11-Jul	AD	82	3D9.1BF23F2841	
11-Jul	AD	83	3D9.1BF2621BDD	
11-Jul	AD	52	3D9.1BF2341AFB	
11-Jul	AD	55	3D9.239F83E93B	
11-Jul	AD	46	3D9.1BF27D35A1	
12-Jul	AD	75	3D9.1BF2506C5A	
13-Jul	AD	84	3D9.1BF2465FA4	
14-Jul	AD	74	3D9.1BF250A17A	
24-Jul	AD	54	3D9.1C2CDDAFEC	
25-Jul	AD	50	3D9.1BF27EF9E8	
27-Jul	AD	73	3D1.2E91412A66	RADIO #24
3-Aug	AD	82	3D9.1BF242D751	
8-Aug	AD	76	3D9.1BF22E1ECD	
15-Aug	AD	75	3D9.1BF24648B5	
17-Aug	AD	74	3D9.1BF246081C	
19-Aug	AD	74	3D9.1BF24C25A2	
20-Aug	AD	72	3D9.1BF260C049	

CROOKED RIVER PIT TAGS

DATE	MARKS	LENGTH	PIT TAG NUMBER	RADIO
1-Jul	AD	75	3D9.1BF25ED631	
2-Jul	AD	79	3D9.1BF25030C8	
4-Jul	AD	77	3D9.1C2C4F8FFC	
5-Jul	AD	77	3D9.1BF23F3214	
5-Jul	AD	54	3D9.1BF27BB696	
8-Jul	AD	82	3D9.1BF23A0F51	
9-Jul	AD	73	3D9.239F83E959	
11-Jul	AD	82	3D9.1C2C94884F	
11-Jul	AD	71	3D9.1BF23F2CC5	
14-Jul	AD	85	3D1.2E91418314	RADIO
14-Jul	AD	51	3D9.1C2CF94F58	
18-Jul	AD	59	3D9.1BF23F2856	
25-Jul	AD	74	3D9.1BF2341A25	

Appendix 10B Powell Pit Tag Recoveries 2008

Powell Pit Tags

DATE	MARKS	LENGTH	PIT TAG NUMBER	RADIO
7-Jul	AD	74	3D9.1BF22E0E50	
9-Jul	AD	83	3D9.1C2C504211	
12-Jul	AD	56	3D9.1BF2649307	
13-Jul	AD	58	3D9.1BF265378F	
13-Jul	AD	77	3D9.C2CD07A2A	
14-Jul	AD	77	3D9.1BF24F77F3	
15-Jul	AD	86	3D9.1BF248D860	
16-Jul	AD	77	3D9.1BF22DD9F2	
17-Jul	AD	72	3D9.1BF245F9C3	
18-Jul	AD	81	3D9.1BF24C32A5	
18-Jul	AD	84	3D9.1BF243B999	
19-Jul	AD	73	3D9.1BF246605E	
21-Jul	AD	84	3D1.2E9144E160	RADIO
21-Jul	AD	76	3D9.1BF2624E00	
23-Jul	AD	74	3D1.2E9141CBFA	
23-Jul	AD	70	3D9.1BF2463E8A	
23-Jul	AD	83	3D9.1BF24600C9	
23-Jul	AD	55	3D9.1C2C4F88CF	
24-Jul	AD	51	3D9.1BF24A0584	
27-Jul	AD	73	3D9.1BF2463806	
28-Jul	AD	81	3D9.1BF245F39E	
29-Jul	AD	71	3D9.1BF2308335	
30-Jul	AD	78	3D1.2E9144F904	RADIO
30-Jul	AD	66	3D9.1BF242D78F	
31-Jul	AD	78	3D9.1BF2483B1B	
4-Aug	AD	90	3D9.1C2C503650	
6-Aug	AD	74	3D9.1BF2464F6D	
6-Aug	AD	83	3D9.1BF2483AF6	
7-Aug	AD	70	3D9.1BF2462C7C	
8-Aug	AD	77	3D9.1BF248392B	
8-Aug	AD	80	3D9.239F83E927	
9-Aug	AD	75	3D9.1BF244F8FC	
11-Aug	AD	75	3D9.1BF19716BF	
12-Aug	AD	85	3D9.1BF2463627	
14-Aug	AD	73	3D1.2E9141A665	
17-Aug	AD	45	3D9.1C2CDE117C	
18-Aug	AD	88	3D9.1C2C65B9A3	
18-Aug	AD	62	3D9.1BF2395B09	
20-Aug	AD	50	3D9.1BF26936AE	
20-Aug	AD	41	3D9.ABF27F3EFC	
22-Aug	AD	53	3D9.239F83E8E6	
26-Aug	AD	55	3D9.1BF26485DA	
2-Sep	AD	52	3D9.1BF27D2B74	

Crooked Fork Pit Tags

DATE	MARKS	LENGTH	PIT TAG NUMBER	RADIO
16-Jul	AD	70	3D9.1BF2483D56	
17-Jul	AD	75	3D9.1BF2463C15	
17-Jul	AD	81	3D9.1BF241F202	
2-Aug	AD	76	3D9.1BF24653C8	
3-Aug	AD	75	3D9.1BF24BC965	