



Klamath River Outmigrant Trapping Summary

2009

Synopsis: The 2009 downstream migrant monitoring season on the mainstem Klamath River was conducted jointly by the USFWS Arcata Fish and Wildlife Office (AFWO), Karuk Tribe of California (KTOC), and USGS Fort Collins Science Center. Monitoring began March 2009 at three sites on the mainstem Klamath River between Iron Gate Dam (Rkm 309.65) and the Scott River confluence (Rkm 232.95). The upstream-most site (Rkm 307.75) was on the right bank downstream of the Bogus Creek confluence on Blue Heron RV Park property. The second site (Rkm 293.55) was on the left bank downstream of the Carson Creek confluence and upstream of the I-5 bridge river crossing. The downstream-most site (Rkm 237.55) was on the left bank just upstream of the Kinsman Creek confluence. Trapping at the Bogus site was conducted using a single frame net. Two inline, upstream (UPS) and downstream (DNS), eight-foot diameter rotary screw traps (RST) and one frame net were situated at the I-5 site. Two inline, UPS and DNS, eight-foot diameter RST's were situated at the Kinsman site. Traps were typically run four (Monday through Thursday) nights per week and checked once daily while in operation.

The first table below summarizes average salmonid catch per day for each week. The figures below are annual comparisons of raw weekly catches of wild YOY Chinook and coho salmon at key traps. Expansions have not been applied to the catches at this time. We also conduct weekly depletion seining at the Klamathon/Copco-Ager Bridge crossing (Rkm 300.70). Seine catches are not summarized in this summary but fish health observations at this site are included.

In previous years, peak catches at all traps typically occurred prior to the beginning of the young-of-the-year (YOY) Chinook salmon release from the Iron Gate Hatchery. Similar to 2008, in 2009 only at the Bogus and I-5 sites did peak catches occur before the first hatchery release on May 19, 2009. Trapping continued at the Kinsman site after the initial hatchery release since atypically late peak catch numbers occurred at this site. Trapping also continued at the Kinsman RST's as a means of collecting YOY Chinook salmon for fish health analysis. This catch summary includes daily overnight trapping data from the beginning (March 4) through the conclusion (June 2) of the 2009 season.

Trap catches primarily consisted of wild YOY Chinook salmon. Peak YOY Chinook salmon catches in the RST's occurred in late April at the I-5 site and throughout May at the Kinsman site. A temporal bimodal distribution of YOY Chinook salmon catch occurred in the Bogus and I-5 frame nets. An early peak in late-March was followed by larger peaks in mid-April at the Bogus site and late-April at the I-5 site. Peak catches of YOY coho salmon occurred in mid- to late-April at the Bogus and I-5 frame nets and late-May at the Kinsman RST's. Wild age 1+ coho salmon were mostly caught at the Kinsman site with two distinct peaks in mid-March and late-April. Age 1 hatchery coho salmon were mostly caught in the I-5 and Kinsman RST's in late-April/early-May, though not in large numbers. YOY steelhead were mostly caught at the Bogus site in mid-May. Age 1+ steelhead were mostly caught at the Kinsman site from late-April through late-May. Age 1+ hatchery steelhead were not captured in significant

numbers. Age 1+ Chinook salmon were not caught in large numbers but were higher than previous years' catches.

In addition to juvenile salmonids, a number of other native and non-native fishes were captured in the traps. Native fishes included lamprey (*Entosphenus* spp. ammocoetes, eyed juvenile and adult Pacific lamprey, and eyed juvenile and adult Klamath River lamprey), speckled dace, suckers (*Catostomus* spp.), and marbled sculpin. Non-native fishes included crappie, fathead minnow, golden shiner, bullhead, yellow perch, and various sunfish.

The last table of this document is a summary of clinical signs of disease. We merely note external symptoms of infection, which may not always be revealed by infected fish. QPCR assays and histology analyses conducted by the USFWS California-Nevada Fish Health Center (CA-NV FHC) will provide more accurate infection rates. Percentages of live YOY Chinook salmon with distended bellies, gill fungus, and pale gills are summarized. Distended bellies may be a clinical sign of infection by the myxosporean parasites, *Ceratomyxa shasta* and *Parvicapsula minibicornis*. Gills of juvenile salmonids ≥ 45 mm FL are evaluated for color (red, pale/pink, white, or tan) and condition (normal, eroded, or fungal). Pale gills may be due to anemia associated with *Parvicapsula minibicornis* infection or a natural reaction to the smoltification process. Gill fungus is likely *Saprolegnia* growing upon a columnaris (*Flavobacterium columnare*) infection.

Distended bellies, coincident with pale gills, were most evident at the Kinsman trap site in mid- to late-May and at the Klamathon seine site in mid-June. Gill fungus was most evident at the I-5 trap site from late-April to early-May.

The CA-NV FHC annually investigates infection rates of *C. shasta*, *P. minibicornis*, and other pathogens in juvenile salmonids in the Klamath River below Iron Gate Dam. Fish collections for these disease analyses began on April 20, 2009. Our field crew sampled YOY Chinook salmon for this study on the mainstem Klamath River between the Shasta and Scott rivers. Fish health sampling concluded once the YOY Chinook salmon had migrated downstream and samples were no longer obtainable.

If you have any questions regarding this summary, please contact Steve Gough at (707) 825-5197.



USFWS 2009 Mainstem Klamath River Outmigrant Trap Juvenile Salmonid Catch-per-Day Summary

U.S. Fish & Wildlife Service, Arcata Fish & Wildlife Office, 1655 Heindon Road, Arcata, CA 95521, (707)822-7201

Preliminary Data - Subject to Revision

Trap	Survey Week	Sample Dates	IGD Q (cfs)*		Water Temp. (F)**		Trapping Days	Chinook (<i>O. tshawytscha</i>)			Coho (<i>O. kisutch</i>)			Steelhead (<i>O. mykiss</i>)			
			Min	Max	Min	Max		YOY			Age 1 +			Age 1 +			
								No Clip	AD Clip	Age 1+	YOY	No Clip	LM Clip	YOY	No Clip	AD Clip	
Kinsman DNS RST	2	3/11-3/13	1755	1760	42.8	42.9	3	3.33	0.00	0.00	0.00	0.33	0.00	0.00	0.33	0.00	
	3	3/17-3/20	1750	1760	45.0	46.4	4	16.00	0.00	0.00	0.00	8.75	0.00	0.00	2.00	0.00	
	4	3/24-3/27	1745	1760	46.4	48.5	4	26.50	0.00	0.25	0.00	1.00	0.00	0.00	1.25	0.00	
	5	3/31-4/3	1600	1745	47.3	48.0	4	8.75	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.00	
	6	4/7-4/10	1600	1605	49.1	50.0	3	6.00	0.00	0.00	0.67	0.00	0.00	0.00	0.67	0.00	
	7	4/14-4/17	1595	1610	50.0	52.4	4	7.25	0.00	0.00	0.25	0.25	0.00	0.00	0.50	0.00	
	8	4/21-4/24	1595	1600	55.4	57.5	4	5.00	0.00	0.00	0.00	3.75	0.75	0.00	1.00	0.00	
	9	4/28-5/1	1555	1600	52.7	56.7	3	9.67	0.00	0.00	0.00	2.67	0.00	0.00	1.33	0.00	
	10	5/5-5/8	1555	1700	53.1	55.8	3	54.67	0.00	0.00	2.00	3.00	1.00	0.00	4.67	0.00	
	11	5/12-5/15	1420	1430	56.8	61.0	4	33.00	0.00	0.00	2.00	1.75	0.00	0.50	1.50	0.00	
	12	5/19-5/22	1430	1440	60.7	63.9	4	41.50	0.00	0.00	0.75	0.75	0.50	0.00	5.00	0.00	
	13	5/27-5/29	1430	1445	67.4	67.9	3	23.33	0.00	0.00	2.00	0.00	0.00	0.00	3.00	0.00	
	14	6/2-6/2	1550	1550	68.0	68.0	1	35.00	2.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	
	Kinsman UPS RST	2	3/10-3/13	1755	1760	42.8	42.9	4	1.75	0.00	0.75	0.00	0.50	0.00	0.00	1.75	0.00
3		3/17-3/20	1750	1760	45.0	46.4	4	15.25	0.00	0.00	0.00	35.00	0.00	0.00	3.50	0.00	
4		3/24-3/27	1745	1760	46.4	48.5	2	19.50	0.00	0.00	0.00	0.50	0.00	0.00	2.50	0.00	
5		3/31-4/3	1600	1745	47.3	48.0	4	33.50	0.00	0.25	0.00	1.00	0.00	0.00	2.25	0.00	
6		4/7-4/10	1600	1605	50.0	50.0	2	13.50	0.00	0.50	0.50	0.00	0.00	0.00	2.00	0.00	
7		4/14-4/17	1595	1610	50.0	52.4	4	66.50	0.00	0.50	1.00	0.50	0.00	0.00	1.00	0.00	
8		4/21-4/24	1595	1600	55.4	57.5	4	122.25	0.00	2.75	0.25	6.75	1.25	0.00	6.50	0.00	
9		4/28-5/1	1555	1600	52.7	56.7	4	119.75	0.00	1.00	0.00	13.75	2.00	0.00	5.00	0.25	
10		5/5-5/8	1555	1700	53.1	55.8	0	-	-	-	-	-	-	-	-	-	
11		5/12-5/15	1420	1430	56.8	61.0	4	345.25	0.00	1.25	6.00	5.50	2.50	0.50	9.00	0.00	
12		5/19-5/22	1430	1440	60.7	63.9	4	327.50	0.00	1.00	1.25	2.75	1.00	0.25	14.00	0.25	
13		5/27-5/29	1430	1445	67.4	67.9	3	348.33	7.33	0.00	11.00	1.00	0.67	2.00	11.33	1.00	
14		6/2-6/2	1550	1550	68.0	68.0	1	375.00	73.00	0.00	3.00	0.00	0.00	1.00	4.00	0.00	
I-5 Frame		2	3/11-3/13	1755	1760	41.4	42.7	3	16.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00
	3	3/17-3/20	1750	1760	43.5	47.3	4	45.75	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	
	4	3/24-3/27	1745	1760	45.0	47.6	4	43.75	0.00	0.00	2.50	0.00	0.00	0.00	0.25	0.00	
	5	3/31-4/3	1600	1745	46.9	48.6	4	22.50	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	
	6	4/7-4/10	1600	1605	48.7	50.1	4	6.00	0.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	
	7	4/14-4/17	1595	1610	49.8	52.6	4	71.75	0.00	0.00	7.50	0.00	0.00	0.00	0.00	0.00	
	8	4/21-4/24	1595	1600	56.2	59.9	4	84.50	0.00	0.00	4.75	0.00	0.25	0.25	0.50	0.00	
	9	4/28-5/1	1555	1600	54.6	57.0	3	57.33	0.00	0.00	3.00	0.00	0.33	0.67	0.33	0.00	
	10	5/5-5/8	1555	1700	54.7	60.2	3	12.67	0.00	0.00	0.33	0.00	0.00	0.00	0.33	0.00	
	11	5/12-5/14	1420	1430	55.9	60.9	1	36.00	0.00	0.00	3.00	0.00	0.00	1.00	0.00	1.00	
	I-5 DNS RST	2	3/11-3/13	1755	1760	41.4	42.7	3	13.67	0.00	0.67	0.00	0.00	0.00	0.00	0.33	0.00
3		3/17-3/20	1750	1760	43.5	47.3	3	18.67	0.00	0.00	0.00	0.33	0.00	0.00	1.33	0.00	
4		3/24-3/27	1745	1760	45.0	47.6	4	32.75	0.00	0.00	0.75	0.00	0.00	0.00	1.00	0.00	
5		3/31-4/3	1600	1745	46.9	48.6	4	20.75	0.00	0.00	0.25	0.00	0.00	0.00	0.50	0.00	
6		4/7-4/10	1600	1605	48.7	50.1	4	11.00	0.00	0.00	0.00	0.25	0.00	0.00	0.75	0.00	
7		4/14-4/17	1595	1610	49.8	52.6	4	73.75	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	
8		4/21-4/24	1595	1600	56.2	59.9	4	165.25	0.00	0.00	0.75	0.00	1.50	0.25	0.75	0.00	
9		4/28-5/1	1555	1600	54.6	57.0	4	194.25	0.00	0.00	0.25	0.25	1.00	0.00	0.00	0.00	
10		5/5-5/8	1555	1700	54.7	60.2	3	35.33	0.00	0.00	0.67	0.00	1.00	0.00	0.33	0.33	
11		5/12-5/15	1420	1430	55.9	60.9	4	77.75	0.00	0.00	1.50	0.25	1.00	3.00	0.75	0.75	
13		5/27-5/27	1430	1430	64.6	64.6	1	178.00	47.00	0.00	3.00	0.00	0.00	0.00	3.00	0.00	
I-5 UPS RST		1	3/4-3/4	1770	1770			1	3.00	0.00	0.00	1.00	2.00	0.00	0.00	4.00	0.00
		2	3/11-3/13	1755	1760	41.4	42.7	3	10.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
	3	3/17-3/20	1750	1760	43.5	47.3	4	11.00	0.00	0.00	0.00	0.50	0.00	0.00	0.50	0.00	
	4	3/24-3/27	1745	1760	45.0	47.6	4	12.25	0.00	0.00	0.00	0.50	0.00	0.00	0.75	0.00	
	5	3/31-4/3	1600	1745	46.9	48.6	4	12.75	0.00	0.00	0.00	0.50	0.00	0.00	0.50	0.00	
	6	4/7-4/10	1600	1605	48.7	50.1	4	8.50	0.00	0.00	0.25	0.25	0.00	0.00	1.00	0.00	
	7	4/14-4/17	1595	1610	49.8	52.6	4	34.50	0.00	0.00	0.25	0.25	0.00	0.00	2.75	0.00	
	8	4/21-4/24	1595	1600	56.2	59.9	4	105.75	0.00	0.00	0.00	0.75	1.50	0.00	0.75	0.00	
	9	4/28-5/1	1555	1600	54.6	57.0	4	143.00	0.00	0.00	0.00	0.25	2.25	0.00	0.25	0.50	
	10	5/5-5/8	1555	1700	54.7	60.2	3	82.67	0.00	0.00	0.67	0.67	2.67	0.33	2.00	0.33	
	11	5/12-5/15	1420	1430	55.9	60.9	4	93.75	1.75	0.00	0.00	0.50	1.50	0.00	2.50	1.50	



USFWS 2009 Mainstem Klamath River Outmigrant Trap Juvenile Salmonid Catch-per-Day Summary (continued)

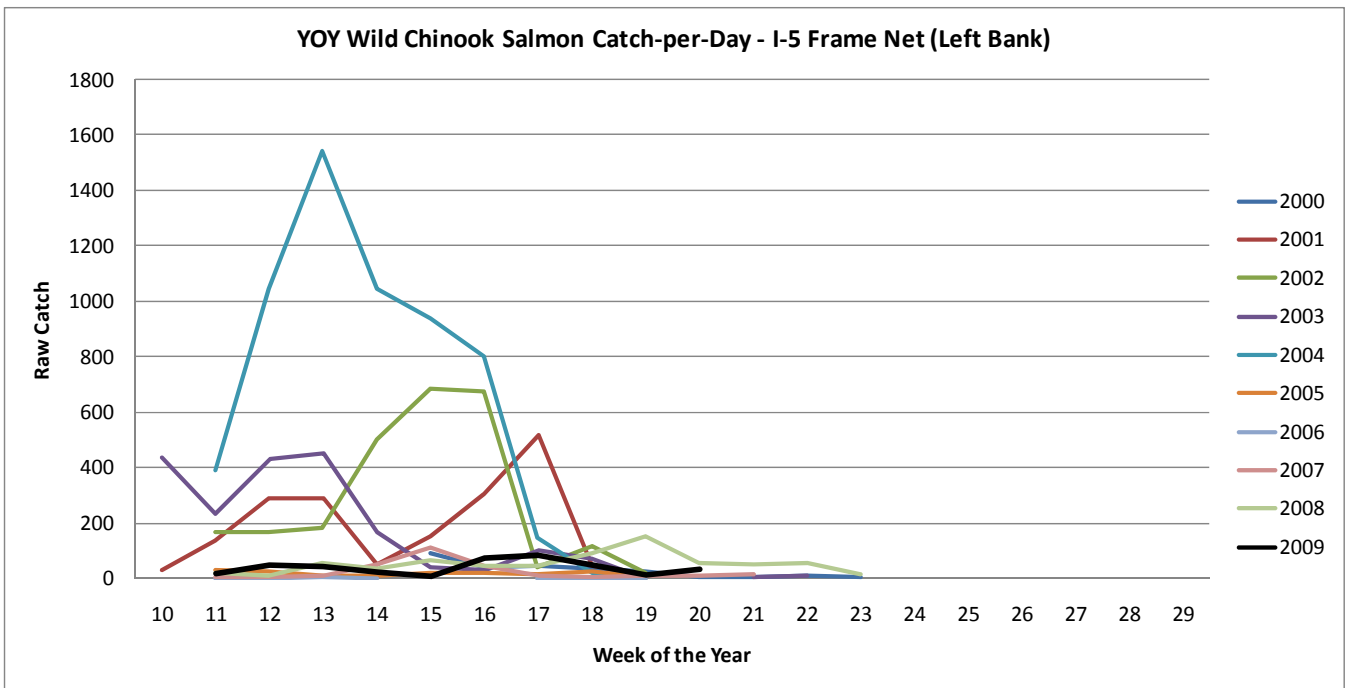
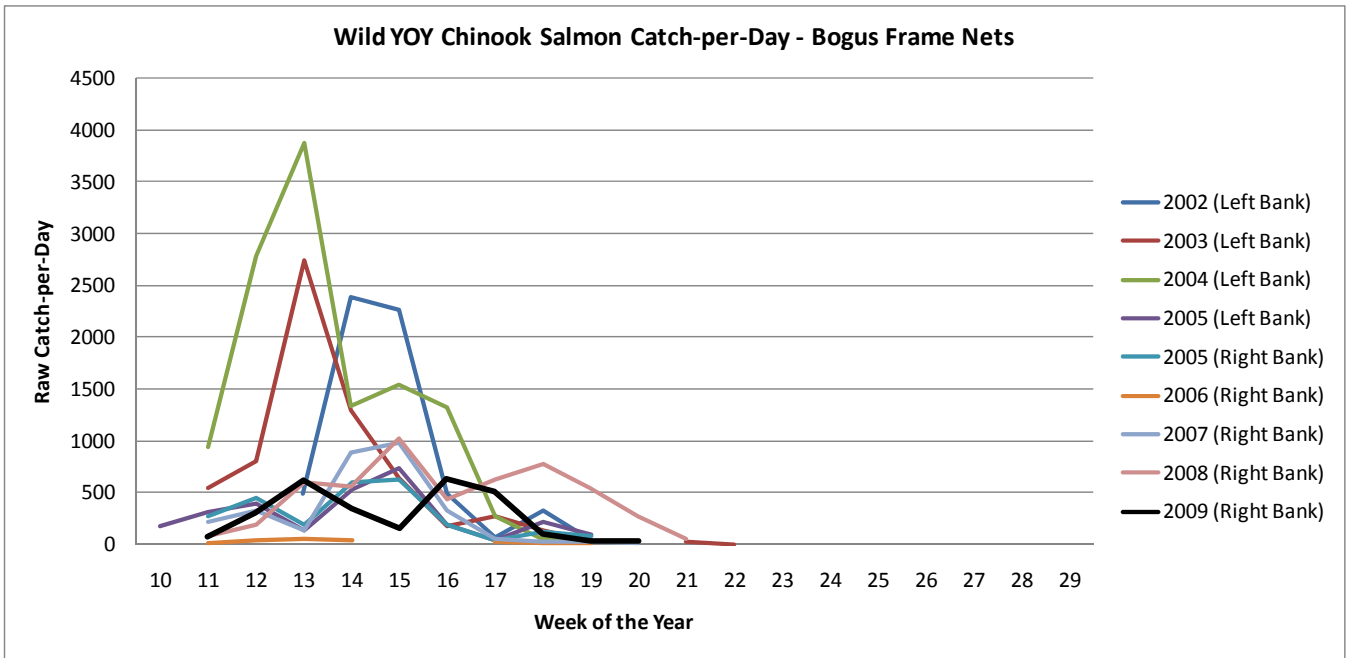
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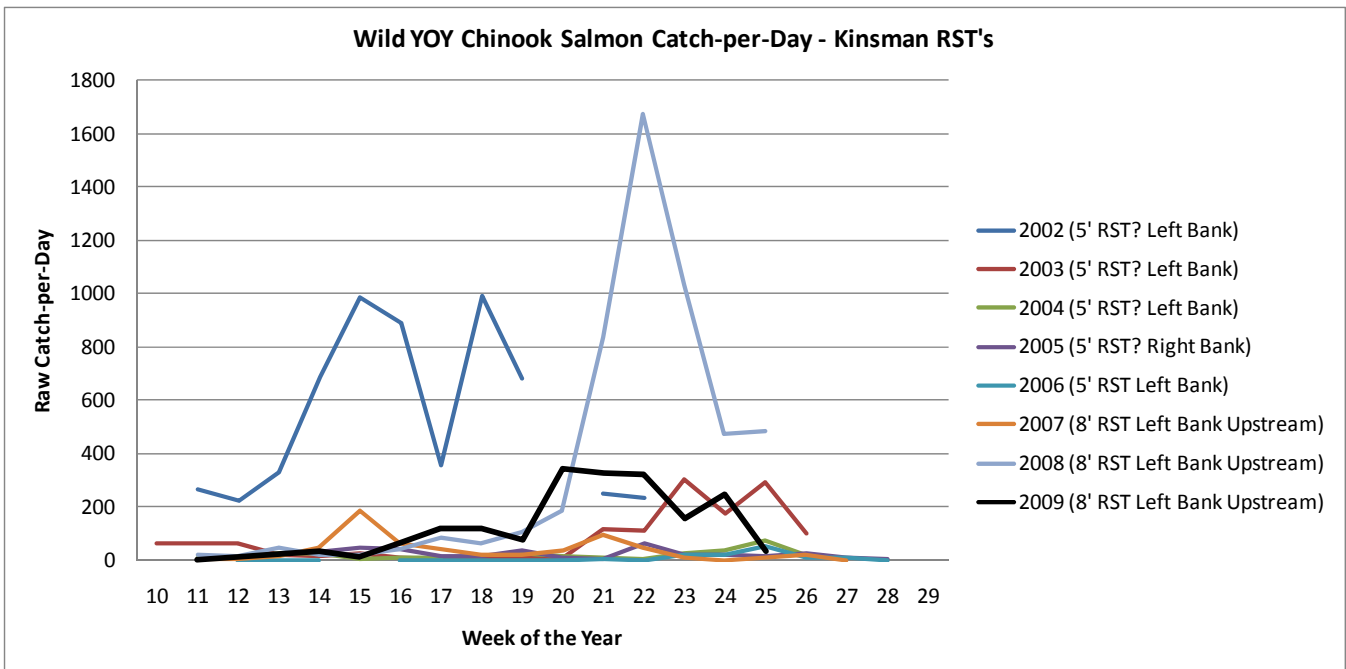
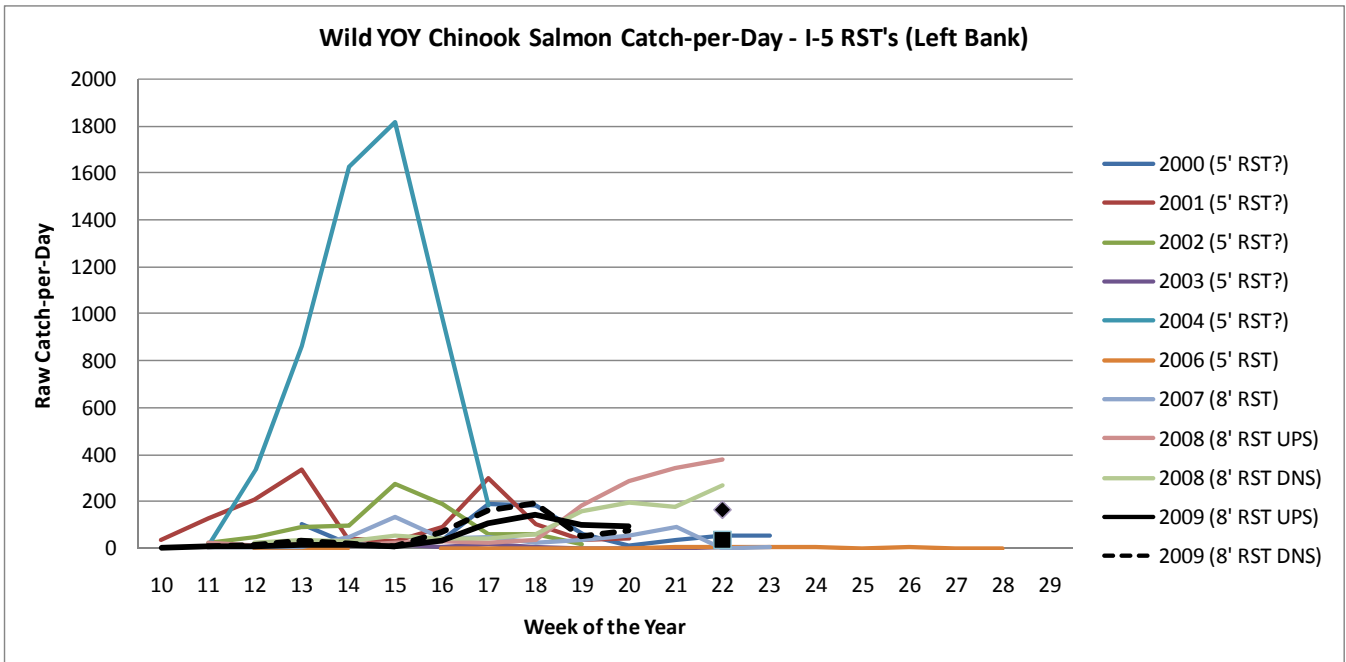
Preliminary Data - Subject to Revision

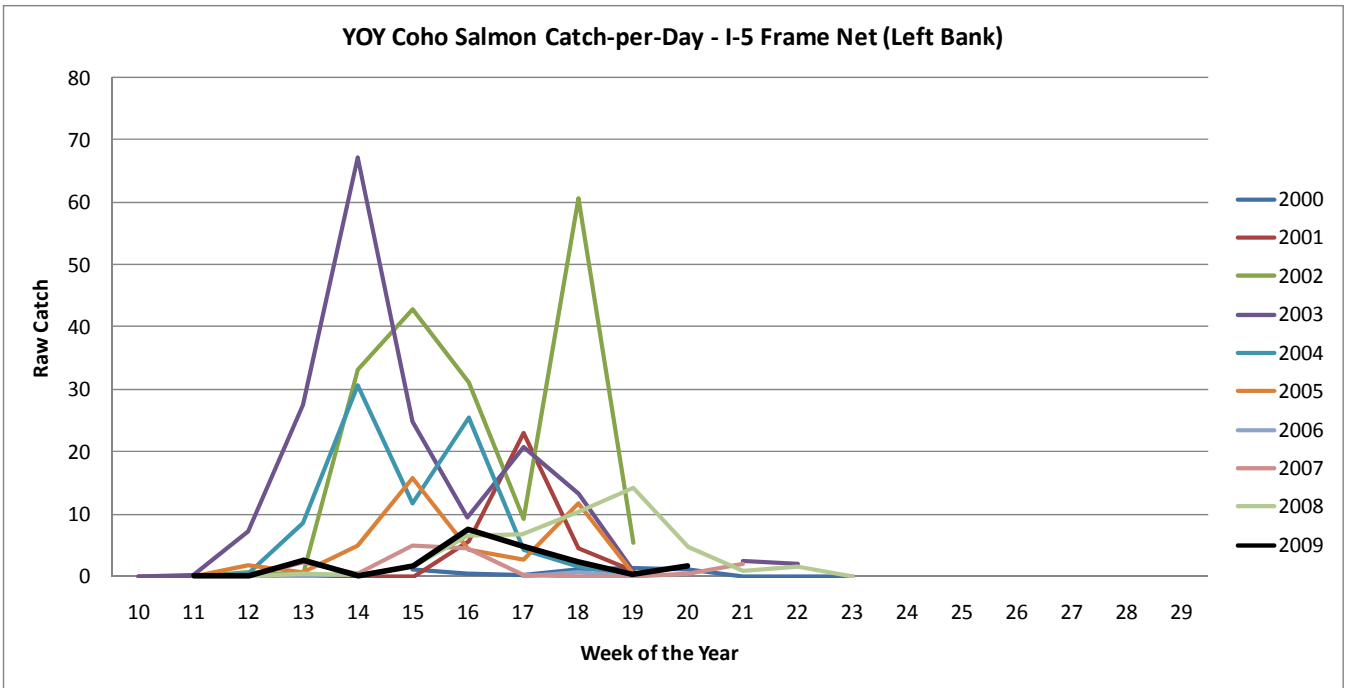
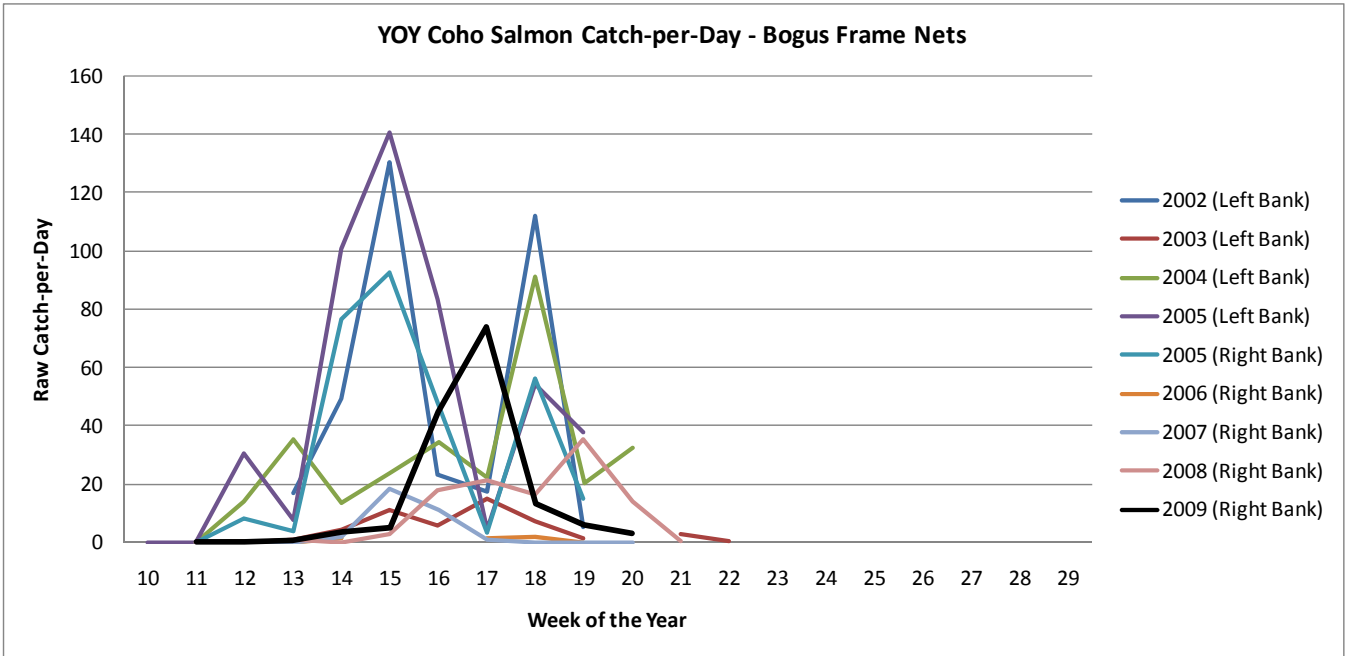
Trap	Survey Week	Sample Dates	IGD Q (cfs)*		Water Temp. (F)**		Trapping Days	Chinook (<i>O. tshawytscha</i>)			Coho (<i>O. kisutch</i>)			Steelhead (<i>O. mykiss</i>)		
			Min	Max	Min	Max		YOY			Age 1 +			Age 1 +		
								No Clip	AD Clip	Age 1+	YOY	No Clip	LM Clip	YOY	No Clip	AD Clip
Bogus Frame	2	3/11-3/13	1755	1760	42.7	43.5	3	65.00	0.00	0.00	0.00	0.33	0.00	0.00	0.33	0.00
	3	3/17-3/20	1750	1760	43.8	45.2	4	298.75	0.00	0.00	0.00	0.25	0.00	0.00	0.25	0.00
	4	3/24-3/27	1745	1760	44.9	46.0	4	619.25	0.00	0.00	0.50	0.75	0.00	0.00	0.00	0.00
	5	3/31-4/3	1600	1745	46.6	47.6	4	345.00	0.00	0.00	3.25	0.25	0.00	0.00	0.00	0.00
	6	4/7-4/10	1600	1605	48.8	49.4	4	147.75	0.00	0.25	4.75	0.00	0.00	0.00	0.00	0.00
	7	4/14-4/17	1595	1610	49.7	51.5	4	637.50	0.00	0.00	45.00	0.00	0.00	0.75	0.00	0.00
	8	4/21-4/24	1595	1600	54.3	55.7	4	519.25	0.00	0.00	74.00	0.00	0.25	0.50	0.25	0.00
	9	4/28-5/1	1555	1600	53.9	55.3	4	94.25	0.00	0.00	13.00	0.00	0.00	3.00	0.00	0.00
	10	5/5-5/8	1555	1700	55.5	56.8	4	35.25	0.00	0.00	6.00	0.25	0.00	3.75	0.00	0.00
	11	5/12-5/15	1420	1430	57.2	58.4	4	28.75	0.00	0.00	3.00	0.00	0.00	25.25	0.25	0.00

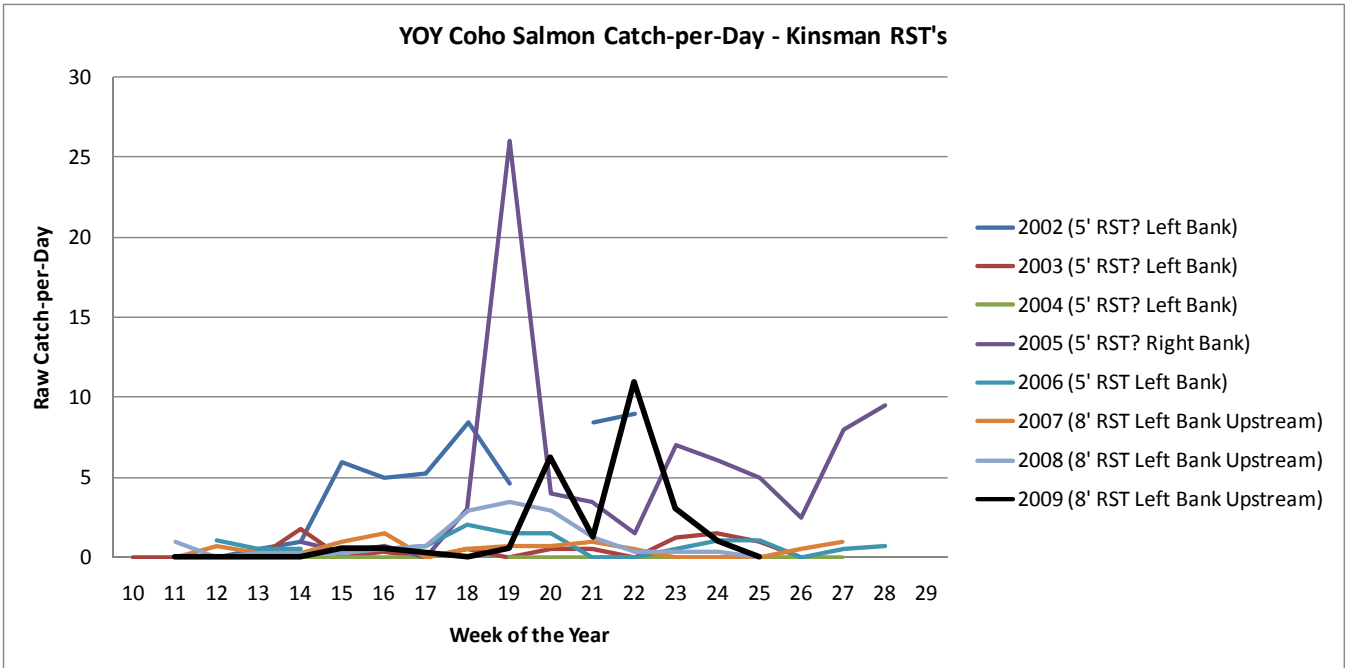
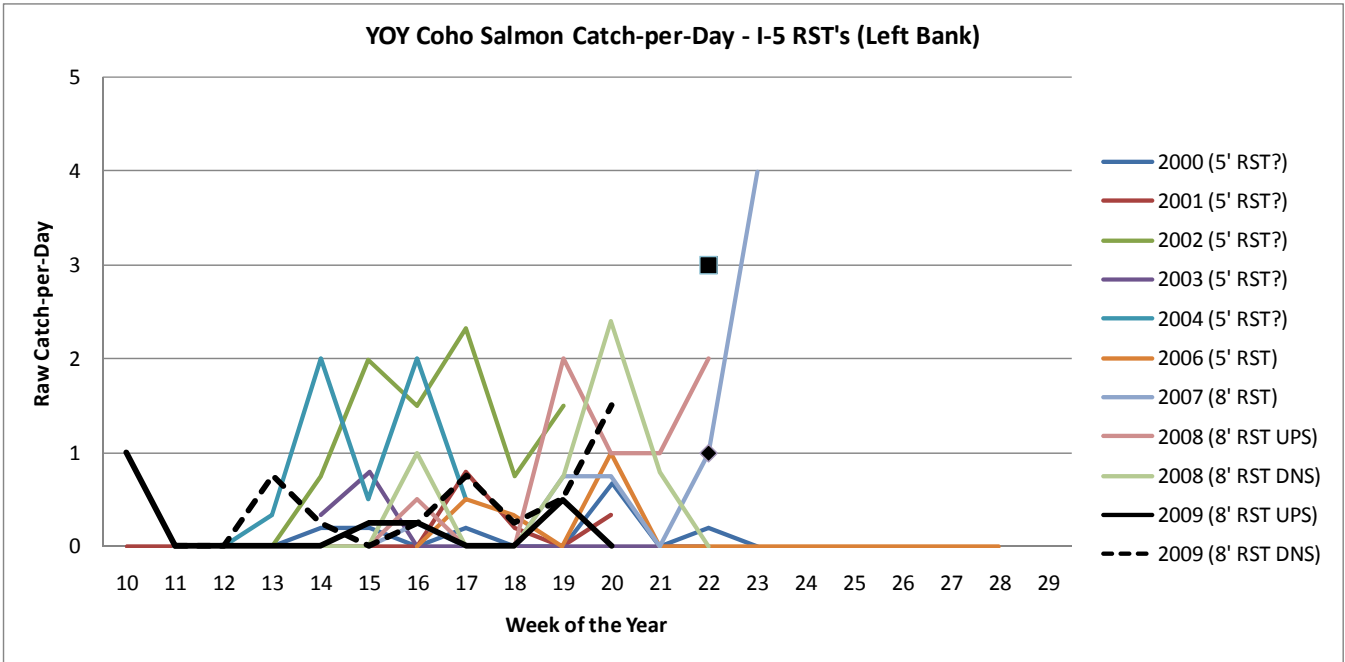
* mean discharge from day of sampling and previous day

** temperature recorded at time of trap check











USFWS 2009 Mainstem Klamath River YOY Chinook Salmon Clinical Signs of Disease Summary

U.S. Fish & Wildlife Service, Arcata Fish & Wildlife Office, 1655 Heindon Road, Arcata, CA 95521, (707)822-7201

Preliminary Data - Subject to Revision

Site	Survey Week	Sampling Dates	IGD Flow (cfs)*		Water Temp. (F)**		Belly Condition			Gills					
							Sample Size	Distended		Sample Size	Color		Condition		
								n	%		n	%	Eroded or Fungal	n	%
Kinsman	2	3/11-3/12	1755	1760	42.8	42.9	6	0	0.0%	0	-	-	-	-	
	3	3/17-3/19	1750	1760	45	46.4	123	0	0.0%	0	-	-	-	-	
	4	3/24-3/26	1745	1760	46.4	48.5	139	0	0.0%	0	-	-	-	-	
	5	3/31-4/2	1600	1745	47.3	48.0	105	0	0.0%	0	-	-	-	-	
	6	4/7-4/9	1600	1605	49.1	50.0	44	0	0.0%	30	1	3.3%	0	0.0%	
	7	4/14-4/16	1595	1610	50	52.4	103	1	1.0%	101	1	1.0%	0	0.0%	
	8	4/21-4/23	1595	1600	55.4	57.5	85	0	0.0%	81	1	1.2%	0	0.0%	
	9	4/28-4/30	1555	1600	52.7	56.7	74	7	9.5%	68	8	11.8%	0	0.0%	
	10	5/5-5/7	1555	1700	53.1	55.8	71	1	1.4%	69	38	55.1%	2	2.9%	
	11	5/12-5/14	1420	1430	56.8	61	59	14	23.7%	59	45	76.3%	11	18.6%	
	12	5/19-5/21	1430	1440	60.7	63.9	90	31	34.4%	90	82	91.1%	0	0.0%	
	13	5/27-5/28	1430	1445	67.4	67.9	60	14	23.3%	57	45	78.9%	1	1.8%	
	14	6/2	1550	1550	68	68	18	0	0.0%	18	5	27.8%	0	0.0%	
	15	6/11	1555	1555	67.7	67.7	30	0	0.0%	30	6	20.0%	0	0.0%	
	16	6/16	1560	1560	69.5	69.5	30	1	3.3%	30	19	63.3%	0	0.0%	
	I-5	1	3/4	1770	1770	NA	NA	0	-	-	0	-	-	-	-
2		3/11-3/12	1755	1760	41.4	42.7	76	0	0.0%	0	-	-	-	-	
3		3/17-3/19	1750	1760	43.5	47.3	150	0	0.0%	0	-	-	-	-	
4		3/24-3/26	1745	1760	45	47.6	195	0	0.0%	1	0	0.0%	0	0.0%	
5		3/31-4/2	1600	1745	46.9	48.6	148	0	0.0%	3	2	66.7%	0	0.0%	
6		4/7-4/9	1600	1605	48.7	50.1	77	0	0.0%	14	3	21.4%	1	7.1%	
7		4/14-4/16	1595	1610	49.8	52.6	180	1	0.6%	21	4	19.0%	3	14.3%	
8		4/21-4/23	1595	1600	56.2	59.9	180	0	0.0%	46	12	26.1%	1	2.2%	
9		4/28-4/30	1555	1600	54.6	57.0	174	0	0.0%	79	19	24.1%	5	6.3%	
10		5/5-5/7	1555	1700	54.7	60.2	111	1	0.9%	79	23	29.1%	13	16.5%	
11		5/12-5/14	1420	1430	55.9	60.9	169	1	0.6%	135	33	24.4%	8	5.9%	
13		5/27	1430	1430	64.6	64.6	30	0	0.0%	30	0	0.0%	0	0.0%	
Klamathon		3	3/18	1755	1755	44.6	44.6	17	0	0.0%	0	-	-	-	-
	4	3/25	1760	1760	41.5	41.5	20	0	0.0%	0	-	-	-	-	
	5	3/31	1745	1745	NA	NA	7	0	0.0%	0	-	-	-	-	
	6	4/7	1600	1600	48.4	48.4	22	0	0.0%	2	0	0.0%	0	0.0%	
	7	4/14	1610	1610	50.3	50.3	20	0	0.0%	0	-	-	-	-	
	8	4/21	1595	1595	56.6	56.6	30	0	0.0%	16	3	18.8%	0	0.0%	
	9	4/28	1600	1600	54.9	54.9	30	0	0.0%	20	3	15.0%	0	0.0%	
	10	5/5	1700	1700	54.6	54.6	30	0	0.0%	15	9	60.0%	0	0.0%	
	11	5/12	1430	1430	58.2	58.2	30	0	0.0%	27	0	0.0%	0	0.0%	
	12	5/19	1435	1435	64	64	30	0	0.0%	29	10	34.5%	0	0.0%	
	13	5/28	1435	1435	65	65	30	0	0.0%	29	5	17.2%	0	0.0%	
	14	6/2	1550	1550	67.9	67.9	30	2	6.7%	28	12	42.9%	0	0.0%	
	15	6/11	1555	1555	68.8	68.8	30	18	60.0%	30	7	23.3%	1	3.3%	
	16	6/16	1560	1560	69.5	69.5	27	20	74.1%	26	8	30.8%	1	3.8%	
	17	6/25	1545	1545	70.4	70.4	30	0	0.0%	30	0	0.0%	0	0.0%	
	Bogus	2	3/11-3/12	1755	1760	42.7	43.5	60	0	0.0%	0	-	-	-	-
		3	3/17-3/19	1750	1760	43.8	45.2	60	0	0.0%	0	-	-	-	-
4		3/24-3/26	1745	1760	44.9	46	90	0	0.0%	0	-	-	-	-	
5		3/31-4/2	1600	1745	46.6	47.6	90	0	0.0%	0	-	-	-	-	
6		4/7-4/9	1600	1605	48.8	49.4	90	0	0.0%	2	0	0.0%	0	0.0%	
7		4/14-4/16	1595	1610	49.7	51.5	90	0	0.0%	10	2	20.0%	0	0.0%	
8		4/21-4/23	1595	1600	54.3	55.7	85	0	0.0%	2	0	0.0%	0	0.0%	
9		4/28-4/30	1555	1600	53.9	55.3	90	0	0.0%	30	7	23.3%	3	10.0%	
10		5/5-5/7	1555	1700	55.5	56.8	77	0	0.0%	15	3	20.0%	5	33.3%	
11		5/12-5/14	1420	1430	57.2	58.4	64	0	0.0%	29	3	10.3%	5	17.2%	

* mean discharge from day of sampling and previous day

** temperature recorded at time of trap check