



Klamath River Outmigrant Monitoring Update - June 9, 2015

Synopsis: The outmigration of juvenile salmonids is monitored annually on the mainstem Klamath River by the USFWS Arcata Fish and Wildlife Office (AFWO) and the Karuk Tribe of California. The objectives of this collaborative project are to:

1. Estimate the weekly abundance of juvenile Chinook Salmon and collect pertinent biological data such as fork lengths and presence of clinical signs of disease at three selected locations on the mainstem Klamath River.
2. Collect, preserve, and deliver weekly-stratified, random samples of young-of-the-year (YOY) Chinook Salmon to the Service's California-Nevada Fish Health Center (CA/NV FHC) for conducting qPCR assays to estimate infection rates in the outmigrant population.
3. Collect relative abundance and biological data on Coho Salmon and Steelhead at the three locations on the mainstem Klamath River.

Information generated by this study are used for a variety of purposes, including stock recruitment analyses, to inform flow management decisions, to further develop a fish disease model, and to validate and calibrate the S³ (Stream Salmonid Simulator) Chinook salmon production model, among others.

Monitoring this season began on February 24, 2015 at three sites on the mainstem Klamath River between Iron Gate Dam (IGD; rkm 309.65) and the Scott River confluence (rkm 232.95). The upstream-most site (rkm 307.75), referred to as the "Bogus Trap Site", is located on the right bank downstream of the Bogus Creek confluence on Blue Heron RV Park property. The second location is the "I-5 Trap Site" (rkm 293.55), which is positioned on the left bank downstream of the Carson Creek confluence and upstream of the I-5 bridge river crossing. The site located furthest downriver is the "Kinsman Trap Site" (rkm 237.55) and is positioned on the left bank just upstream of the Kinsman Creek confluence. Trapping at the Bogus Trap Site is conducted using a single 3.1 m wide and 1.6 m tall frame net. Sampling at the I-5 Trap Site is conducted using two inline 8-ft diameter rotary screw traps (RST) and one 3.1-by-1.6 m frame net. One 5-ft diameter RST is used to capture fish at the Kinsman Trap Site. Traps are typically operated four nights per week (Monday through Thursday) and checked once daily while in operation.

Supplemental migration timing and magnitude and fish size data are also collected by weekly depletion seining at the Klamathon (Copco-Ager) Bridge crossing ("Klamathon Seine Site", rkm 300.70). Seine catch numbers are not reported in this summary but fish sizes and disease observations are included.

This project update provides an in-season summary of the total catch (Table 1) and mean catch per day by week (Table 2) of Chinook and Coho salmon, and Steelhead at each trap site. In addition, we provided weekly estimates of the mean fork length of YOY Chinook and Coho salmon from the each of the three trap sites and the Klamathon Seine Site (Table 2). Expansions to generate weekly-stratified abundance estimates are calculated after the end of the season and are not presented here.

Included in this project summary is a weekly-stratified summary of clinical signs of disease observed in the catch for the trap and seine sites (Table 4). Note that these data are based on the visual presence of external symptoms of disease, which may not always be revealed by infected fish. The percentage of live YOY Chinook Salmon in the trap and seine catches that exhibit distended bellies, gill fungus, and pale gills are presented separately for each site on a weekly basis (Table 4). Distended bellies may be a clinical sign of infection by the myxosporean parasites, *Ceratonova 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 *P. minibicornis* infection. Gill fungus is likely *Saprolegnia* growing upon a columnaris (*Flavobacterium columnare*) infection.

To more accurately determine infection rates for the outmigrant juvenile Chinook Salmon population passing the Kinsman Trap Site, weekly-stratified random samples are collected, preserved, and delivered to the CA-NV FHC to process using qPCR assays. The CA-NV FHC investigates infection rates of *C. shasta*, *P. minibicornis* and other pathogens in juvenile salmonids in the Klamath River annually in the reach between Iron Gate Dam and the estuary. The CA-NV FHC typically releases about two or three in-season updates (which are posted on the AFWO website) and a final report for each season.

We also present daily mean discharge below IGD (Figure 1) and at the Kinsman Trap Site (Figure 2) from March through July 2000 to 2015 to help portray pertinent flow conditions. Flow at the Bogus and I-5 trap sites is represented by USGS Gauging Station 11516530 (Klamath River below IGD, California). Discharge at USGS 11520500 (Klamath River near Seiad Valley, California) minus discharge at USGS 11519500 (Scott River near Fort Jones, California) is used as a surrogate flow for the Kinsman Trap Site.

If you have any questions regarding this summary, please contact Steve Gough at (707) 825-5197 or Bill Pinnix, (707) 825-5129.

Table 1. In-season summary of the total catch by week of adipose fin-clipped (AD Clip) and non adipose fin-clipped (No Clip) Chinook Salmon and Steelhead and left maxillary-clipped (LM Clip) and non-maxillary clipped (No Clip) Coho Salmon by trap at the Bogus, I-5, and Kinsman trap sites on the mainstem Klamath River, 2015. Note that RST = rotary screw trap, UPS = upstream, DNS = downstream, and YOY = young-of-the-year.

Preliminary Data - Subject to Revision																	
Trap	Survey Week	Sample Dates	Q (cfs) ^a		Water Temp. (F) ^b		Trapping Days	Chinook (O. tshawytscha)			Coho (O. kisutch)			Steelhead (O. mykiss)			
			Min	Max	Min	Max		YOY			Age 1 +	YOY	Age 1 +		YOY	Age 1 +	
								No Clip	AD Clip	Age 1+			No Clip	LM Clip		No Clip	AD Clip
Bogus Frame	1	2/26-2/27	954	959			2	1235	0	0	0	1	0	0	0	0	0
	2	3/3-3/6	1000	1100	44.9	45.1	4	2323	0	0	0	0	0	0	0	0	0
	3	3/10-3/13	1080	1180	46.7	46.9	4	6962	0	0	0	0	0	0	0	0	0
	4	3/17-3/20	1130	1250	48.5	50.1	4	14252	0	0	10	0	13	0	1	0	
	5	3/24-3/27	1230	1530	50.0	51.8	4	7668	0	0	72	1	0	56	0	0	
	6	3/31-4/3	1400	1550	52.1	54.6	4	1418	0	0	1	0	0	46	1	0	
	7	4/7-4/10	1480	1620	50.5	52.3	4	2950	0	0	2	0	0	61	0	0	
	8	4/14-4/17	1370	1470	52.1	53.2	4	2217	0	0	2	0	0	230	1	0	
	9	4/21-4/24	1320	1370	58.6	59.7	4	350	0	0	0	0	0	204	0	0	
	10	4/28-5/1	1250	1330	61.3	62.0	4	93	0	0	1	0	0	59	0	0	
	11	5/5-5/8	1170	1180	62.4	64.0	4	47	0	0	0	0	0	13	0	0	
I-5 UPS RST	1	2/25-2/27	951	959			3	770	0	1	0	0	0	0	1	0	
	2	3/3-3/6	1410	1100	44.9	47.3	4	1047	0	1	0	1	0	0	1	0	
	3	3/10-3/13	1080	1180	45.5	50.3	4	954	0	0	0	1	0	0	0	0	
	4	3/17-3/20	1130	1250	47.8	50.7	4	569	0	0	0	2	83	0	0	0	
	5	3/24-3/27	1230	1530	48.3	53.0	4	1708	0	0	9	2	6	3	4	0	
	6	3/31-4/3	1400	1550	50.5	54.1	4	468	0	0	1	2	0	13	1	0	
	7	4/7-4/10	1480	1620	49.1	53.0	4	1651	0	0	4	2	1	17	1	0	
	8	4/14-4/17	1370	1470	52.3	55.5	4	1462	0	0	2	0	1	42	1	0	
	9	4/21-4/24	1320	1370	56.3	60.2	4	793	0	0	3	2	0	90	0	0	
	10	4/28-5/1	1250	1330	59.3	61.5	4	285	0	0	3	1	0	25	0	0	
	11	5/5-5/8	1170	1180	62.0	65.6	4	397	0	0	4	0	0	18	0	0	
	12	5/12-5/15	1170	1170	57.5	60.4	4	304	0	0	5	0	1	24	0	0	
I-5 DNS RST	1	2/25-2/27	951	959			3	327	0	0	0	1	0	0	0	0	
	2	3/3-3/6	1410	1100	44.9	47.3	4	708	0	0	0	0	0	0	0	0	
	3	3/10-3/13	1080	1180	45.5	50.3	4	960	0	0	0	0	0	0	2	0	
	4	3/17-3/20	1130	1250	47.8	50.7	4	2347	0	0	0	0	28	0	0	0	
	5	3/24-3/27	1230	1530	48.3	53.0	4	2242	0	0	3	1	5	13	0	0	
	6	3/31-4/3	1400	1550	50.5	54.1	4	281	0	0	2	2	0	10	0	0	
	7	4/7-4/10	1480	1620	49.1	53.0	4	1076	0	0	3	3	6	3	0	0	
	8	4/14-4/17	1370	1470	52.3	55.5	4	1001	0	0	0	2	1	29	0	0	
	9	4/21-4/24	1320	1370	56.3	60.2	4	606	0	0	0	0	0	72	1	0	
	10	4/28-5/1	1250	1330	59.3	61.5	4	193	0	0	1	0	0	13	0	0	
	11	5/5-5/8	1170	1180	62.0	65.6	4	302	0	0	2	0	1	11	1	0	
	12	5/12-5/15	1170	1170	57.5	60.4	4	237	0	0	0	0	1	16	0	0	
I-5 Frame	1	2/26-2/27	954	959			2	279	0	0	0	0	0	0	0	0	
	2	3/2-3/5	1410	1100	44.9	47.3	4	532	0	0	0	0	0	0	0	0	
	3	3/11-3/13	1080	1170	46.9	50.3	3	677	0	0	1	0	0	0	0	0	
	4	3/17-3/20	1130	1250	47.8	50.7	3	1344	0	0	6	1	1	0	0	0	
	5	3/24-3/27	1230	1530	48.3	53.0	4	1380	0	0	60	0	1	10	0	0	
	6	3/31-4/3	1400	1550	50.5	54.1	4	155	0	0	11	0	8	23	0	0	
	7	4/7-4/10	1480	1620	49.1	53.0	4	701	0	0	18	0	0	28	0	0	
	8	4/14-4/17	1370	1470	52.3	55.5	4	384	0	0	15	0	0	45	0	0	
	9	4/21-4/24	1320	1370	56.3	60.2	4	135	0	0	8	0	0	70	0	0	
	10	4/28-5/1	1250	1330	59.3	61.5	2	13	0	0	0	0	0	12	0	0	
	11	5/5-5/8	1170	1180	62.0	65.6	4	32	0	0	1	0	0	13	0	0	
Kinsman RST	1	2/26-2/27	1635	1659	44.1	44.1	2	1078	0	0	0	2	0	0	4	0	
	2	3/3-3/6	1585	1718	44.4	45.7	4	1686	0	0	0	3	0	0	4	0	
	3	3/10-3/13	1577	1735	48.4	50.5	4	2236	0	0	23	4	0	0	4	0	
	4	3/17-3/20	1693	1794	50.4	51.3	3	1518	0	0	48	0	10	0	0	0	
	5	3/24-3/27	1925	2059	50.2	55.5	3	792	0	0	19	0	0	0	3	0	
	6	3/31-4/3	1889	1994	50.9	54.0	4	223	0	0	2	7	0	0	5	0	
	7	4/7-4/10	1912	2166	49.5	54.1	4	288	0	0	5	7	9	0	6	0	
	8	4/14-4/17	1776	1893	51.6	56.8	3	152	0	0	1	8	10	1	6	0	
	9	4/21-4/24	1668	1767	52.3	65.6	4	457	0	0	2	4	8	4	12	0	
	10	4/28-5/1	1602	1639	56.5	64.9	4	508	0	0	0	7	7	3	5	0	
	11	5/5-5/8	1422	1428	58.1	61.8	4	466	0	0	0	5	4	0	11	0	
	12	5/12-5/15	1426	1452	57.3	60.2	4	320	0	0	4	1	7	2	17	0	
	13	5/19-5/22	1490	1564	60.4	63.5	4	212	0	0	3	0	1	17	21	0	
	14	5/27-5/29	1414	1448	62.2	68.3	3	141	0	0	1	0	0	2	9	0	
	15	6/2-6/5	1253	1280	63.8	67.2	4	37	11	0	5	0	0	1	6	0	

Table 2. In-season summary of the average catch-per-day by week of non adipose fin-clipped (No Clip) and adipose fin-clipped (AD Clip) Chinook Salmon and Steelhead and non-maxillary clipped (No Clip) and left maxillary-clipped (LM Clip) Coho Salmon by trap at the Bogus, I-5, and Kinsman trap sites on the mainstem Klamath River, 2015. Note that RST = rotary screw trap, UPS = upstream, DNS = downstream, and YOY = young-of-the-year.

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Trap	Survey Week	Sample Dates	Q (cfs) ^a		Water Temp. (F) ^b		Trapping Days	Chinook (<i>O. tshawytscha</i>)			Coho (<i>O. kisutch</i>)			Steelhead (<i>O. mykiss</i>)			
								YOY			Age 1 +			Age 1 +			
			Min	Max	Min	Max		No Clip	AD Clip	Age 1+	YOY	No Clip	LM Clip	YOY	No Clip	AD Clip	
Bogus Frame	1	2/26-2/27	954	959			2	617.50	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00
	2	3/3-3/6	1000	1100	44.9	45.1	4	580.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	3/10-3/13	1080	1180	46.7	46.9	4	1740.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	3/17-3/20	1130	1250	48.5	50.1	4	3563.00	0.00	0.00	2.50	0.00	3.25	0.00	0.25	0.00	0.00
	5	3/24-3/27	1230	1530	50.0	51.8	4	1917.00	0.00	0.00	18.00	0.25	0.00	14.00	0.00	0.00	0.00
	6	3/31-4/3	1400	1550	52.1	54.6	4	354.50	0.00	0.00	0.25	0.00	0.00	11.50	0.25	0.00	0.00
	7	4/7-4/10	1480	1620	50.5	52.3	4	737.50	0.00	0.00	0.50	0.00	0.00	15.25	0.00	0.00	0.00
	8	4/14-4/17	1370	1470	52.1	53.2	4	554.25	0.00	0.00	0.50	0.00	0.00	57.50	0.25	0.00	0.00
	9	4/21-4/24	1320	1370	58.6	59.7	4	87.50	0.00	0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
	10	4/28-5/1	1250	1330	61.3	62.0	4	23.25	0.00	0.00	0.25	0.00	0.00	14.75	0.00	0.00	0.00
	11	5/5-5/8	1170	1180	62.4	64.0	4	11.75	0.00	0.00	0.00	0.00	0.00	3.25	0.00	0.00	0.00
I-5 UPS RST	1	2/25-2/27	951	959			3	256.67	0.00	0.33	0.00	0.00	0.00	0.00	0.33	0.00	0.00
	2	3/3-3/6	1410	1100	44.9	47.3	4	261.75	0.00	0.25	0.00	0.25	0.00	0.00	0.25	0.00	0.00
	3	3/10-3/13	1080	1180	45.5	50.3	4	238.50	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00
	4	3/17-3/20	1130	1250	47.8	50.7	4	142.25	0.00	0.00	0.00	0.50	20.75	0.00	0.00	0.00	0.00
	5	3/24-3/27	1230	1530	48.3	53.0	4	427.00	0.00	0.00	2.25	0.50	1.50	0.75	1.00	0.00	0.00
	6	3/31-4/3	1400	1550	50.5	54.1	4	117.00	0.00	0.00	0.25	0.50	0.00	3.25	0.25	0.00	0.00
	7	4/7-4/10	1480	1620	49.1	53.0	4	412.75	0.00	0.00	1.00	0.50	0.25	4.25	0.25	0.00	0.00
	8	4/14-4/17	1370	1470	52.3	55.5	4	365.50	0.00	0.00	0.50	0.00	0.25	10.50	0.25	0.00	0.00
	9	4/21-4/24	1320	1370	56.3	60.2	4	198.25	0.00	0.00	0.75	0.50	0.00	22.50	0.00	0.00	0.00
	10	4/28-5/1	1250	1330	59.3	61.5	4	71.25	0.00	0.00	0.75	0.25	0.00	6.25	0.00	0.00	0.00
	11	5/5-5/8	1170	1180	62.0	65.6	4	99.25	0.00	0.00	1.00	0.00	0.00	4.50	0.00	0.00	0.00
	12	5/12-5/15	1170	1170	57.5	60.4	4	76.00	0.00	0.00	1.25	0.00	0.25	6.00	0.00	0.00	0.00
I-5 DNS RST	1	2/25-2/27	951	959			3	109.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00
	2	3/3-3/6	1410	1100	44.9	47.3	4	177.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	3/10-3/13	1080	1180	45.5	50.3	4	240.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00
	4	3/17-3/20	1130	1250	47.8	50.7	4	586.75	0.00	0.00	0.00	0.00	7.00	0.00	0.00	0.00	0.00
	5	3/24-3/27	1230	1530	48.3	53.0	4	560.50	0.00	0.00	0.75	0.25	1.25	3.25	0.00	0.00	0.00
	6	3/31-4/3	1400	1550	50.5	54.1	4	70.25	0.00	0.00	0.50	0.50	0.00	2.50	0.00	0.00	0.00
	7	4/7-4/10	1480	1620	49.1	53.0	4	269.00	0.00	0.00	0.75	0.75	1.50	0.75	0.00	0.00	0.00
	8	4/14-4/17	1370	1470	52.3	55.5	4	250.25	0.00	0.00	0.00	0.50	0.25	7.25	0.00	0.00	0.00
	9	4/21-4/24	1320	1370	56.3	60.2	4	151.50	0.00	0.00	0.00	0.00	0.00	18.00	0.25	0.00	0.00
	10	4/28-5/1	1250	1330	59.3	61.5	4	48.25	0.00	0.00	0.25	0.00	0.00	3.25	0.00	0.00	0.00
	11	5/5-5/8	1170	1180	62.0	65.6	4	75.50	0.00	0.00	0.50	0.00	0.25	2.75	0.25	0.00	0.00
	12	5/12-5/15	1170	1170	57.5	60.4	4	59.25	0.00	0.00	0.00	0.00	0.25	4.00	0.00	0.00	0.00
I-5 Frame	1	2/26-2/27	954	959			2	139.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	3/2-3/5	1410	1100	44.9	47.3	4	133.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	3/11-3/13	1080	1170	46.9	50.3	3	225.67	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00
	4	3/17-3/20	1130	1250	47.8	50.7	3	448.00	0.00	0.00	2.00	0.33	0.33	0.00	0.00	0.00	0.00
	5	3/24-3/27	1230	1530	48.3	53.0	4	345.00	0.00	0.00	15.00	0.00	0.25	2.50	0.00	0.00	0.00
	6	3/31-4/3	1400	1550	50.5	54.1	4	38.75	0.00	0.00	2.75	0.00	2.00	5.75	0.00	0.00	0.00
	7	4/7-4/10	1480	1620	49.1	53.0	4	175.25	0.00	0.00	4.50	0.00	0.00	7.00	0.00	0.00	0.00
	8	4/14-4/17	1370	1470	52.3	55.5	4	96.00	0.00	0.00	3.75	0.00	0.00	11.25	0.00	0.00	0.00
	9	4/21-4/24	1320	1370	56.3	60.2	4	33.75	0.00	0.00	2.00	0.00	0.00	17.50	0.00	0.00	0.00
	10	4/28-5/1	1250	1330	59.3	61.5	2	6.50	0.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00
	11	5/5-5/8	1170	1180	62.0	65.6	4	8.00	0.00	0.00	0.25	0.00	0.00	3.25	0.00	0.00	0.00
Kinsman RST	1	2/26-2/27	1635	1659	44.1	44.1	2	539.00	0.00	0.00	0.00	1.00	0.00	0.00	2.00	0.00	0.00
	2	3/3-3/6	1410	1718	44.4	45.7	4	421.50	0.00	0.00	0.00	0.75	0.00	0.00	1.00	0.00	0.00
	3	3/10-3/13	1577	1735	48.4	50.5	4	559.00	0.00	0.00	5.75	1.00	0.00	0.00	1.00	0.00	0.00
	4	3/17-3/20	1693	1794	50.4	51.3	3	506.00	0.00	0.00	16.00	0.00	3.33	0.00	0.00	0.00	0.00
	5	3/24-3/27	1925	2059	50.2	55.5	3	264.00	0.00	0.00	6.33	0.00	0.00	0.00	1.00	0.00	0.00
	6	3/31-4/3	1889	1994	50.9	54.0	4	55.75	0.00	0.00	0.50	1.75	0.00	0.00	1.25	0.00	0.00
	7	4/7-4/10	1912	2166	49.5	54.1	4	72.00	0.00	0.00	1.25	1.75	2.25	0.00	1.50	0.00	0.00
	8	4/14-4/17	1776	1893	51.6	56.8	3	50.67	0.00	0.00	0.33	2.67	3.33	0.33	2.00	0.00	0.00
	9	4/21-4/24	1668	1767	52.3	65.6	4	114.25	0.00	0.00	0.50	1.00	2.00	1.00	3.00	0.00	0.00
	10	4/28-5/1	1602	1639	56.5	64.9	4	127.00	0.00	0.00	0.00	1.75	1.75	0.75	1.25	0.00	0.00
	11	5/5-5/8	1422	1428	58.1	61.8	4	116.50	0.00	0.00	0.00	1.25	1.00	0.00	2.75	0.00	0.00
	12	5/12-5/15	1426	1452	57.3	60.2	4	80.00	0.00	0.00	1.00	0.25	1.75	0.50	4.25	0.00	0.00
	13	5/19-5/22	1490	1564	60.4	63.5	4	53.00	0.00	0.00	0.75	0.00	0.25	4.25	5.25	0.00	0.00
	14	5/27-5/29	1414	1448	62.2	68.3	3	47.00	0.00	0.00	0.33	0.00	0.00	0.67	3.00	0.00	0.00
	15	6/2-6/5	1253	1280	63.8	67.2	4	9.25	2.75	0.00	1.25	0.00	0.00	0.25	1.50	0.00	0.00

Table 3. In-season summary of fork lengths, compared with the last ten years, of naturally-produced Chinook and Coho salmon by trap type at the Bogus, Klamathon, I-5, and Kinsman sites on the mainstem Klamath River, 2015. Note that RST = rotary screw trap and YOY = young-of-the-year.

Preliminary data - Subject to revision

Site	Calendar Week	2015 sampling dates	YOY Chinook (natural) - fork length data								YOY Coho - fork length data							
			2015				Previous 10 years				2015				Previous 10 years			
			n	Mean (mm)	Min. (mm)	Max. (mm)	% > 55 mm	n	Years of data	Mean (mm)	n	Mean (mm)	Min. (mm)	Max. (mm)	% > 55 mm	n	Years of data	Mean (mm)
Bogus Frame	9	Feb. 26	30	38.1	33	42	0.0%	30	1	37.1	0	-	-	-	-	0	0	-
	10	Mar. 3-5	90	37.9	31	42	0.0%	210	3	36.9	0	-	-	-	-	0	0	-
	11	Mar. 10-12	90	37.3	33	42	0.0%	592	9	37.1	0	-	-	-	-	2	1	34.0
	12	Mar. 17-19	90	37.0	32	40	0.0%	938	10	37.4	5	36.6	34	38	0.0%	116	4	34.8
	13	Mar. 24-26	90	37.4	33	48	0.0%	923	9	37.7	48	34.0	28	38	0.0%	134	5	34.5
	14	Mar. 31-Apr. 2	90	37.6	32	49	0.0%	960	10	37.6	1	32.0	32	32	0.0%	342	9	34.8
	15	Apr. 7-9	90	42.4	35	63	2.2%	810	9	37.8	1	36.0	36	36	0.0%	390	9	34.6
	16	Apr. 14-16	90	43.7	34	64	6.7%	909	9	38.2	1	40.0	40	40	0.0%	667	9	34.7
	17	Apr. 21-23	90	44.0	33	65	6.7%	906	10	40.2	0	-	-	-	-	540	10	35.4
Klamathon Seine	18	Apr. 28-30	72	46.1	35	67	11.1%	939	10	42.8	1	54.0	54	54	0.0%	440	9	36.2
	19	May 5-7	31	50.5	37	89	22.6%	776	10	44.3	0	-	-	-	-	275	8	39.3
	9	Feb. 26	30	40.7	37	47	0.0%	0	0	-	0	-	-	-	-	0	0	-
	10	Mar. 5	30	39.9	36	44	0.0%	2	2	39.5	0	-	-	-	-	0	0	-
	11	Mar. 12	30	39.8	37	47	0.0%	71	3	40.0	0	-	-	-	-	0	0	-
	12	Mar. 19	30	38.3	32	44	0.0%	176	9	38.5	0	-	-	-	-	0	0	-
	13	Mar. 26	30	40.0	36	46	0.0%	165	8	40.6	0	-	-	-	-	0	0	-
	14	Apr. 2	4	39.8	38	44	0.0%	148	8	40.6	0	-	-	-	-	1	1	42.0
	15	Apr. 9	30	42.8	35	51	0.0%	219	8	40.8	0	-	-	-	-	1	1	33.0
I-5 RST's	16	Apr. 16	30	47.9	36	62	10.0%	197	8	41.0	0	-	-	-	-	4	1	34.3
	17	Apr. 23	30	48.6	39	66	10.0%	226	10	44.1	0	-	-	-	-	2	1	34.0
	18	Apr. 30	30	56.7	40	68	56.7%	247	9	48.1	0	-	-	-	-	2	1	46.5
	19	May 7	30	57.7	43	73	63.3%	213	9	47.7	0	-	-	-	-	1	1	47.0
	9	Feb. 25-26	60	39.8	36	44	0.0%	0	0	-	0	-	-	-	-	0	0	-
	10	Mar. 3-5	90	38.4	32	42	0.0%	120	2	38.0	0	-	-	-	-	0	0	-
	11	Mar. 10-12	90	38.2	33	53	0.0%	310	8	37.2	0	-	-	-	-	0	0	-
	12	Mar. 17-19	90	38.0	33	46	0.0%	422	9	37.9	0	-	-	-	-	0	0	-
	13	Mar. 24-26	90	37.4	33	43	0.0%	526	8	37.9	8	34.0	33	37	0.0%	4	2	35.7
I-5 Frame	14	Mar. 31-Apr. 2	90	38.3	33	62	1.1%	558	8	38.3	3	32.7	31	35	0.0%	6	2	34.5
	15	Apr. 7-9	90	42.3	34	60	2.2%	550	8	39.3	6	33.7	32	37	0.0%	29	4	34.9
	16	Apr. 14-16	90	43.1	33	63	8.9%	598	8	40.4	0	-	-	-	-	108	7	34.2
	17	Apr. 21-23	90	45.1	34	66	8.9%	576	8	43.6	0	-	-	-	-	85	6	35.5
	18	Apr. 28-30	90	51.4	37	79	27.8%	555	9	47.7	4	48.3	47	52	0.0%	21	3	35.4
	19	May 5-7	90	54.6	37	94	43.3%	595	8	50.2	5	49.4	45	58	20.0%	21	7	43.1
	20	May 12-14	90	66.3	42	107	67.8%	634	8	55.8	4	62.5	54	73	75.0%	43	7	50.5
	9	Feb. 26	30	39.5	35	42	0.0%	0	0	-	0	-	-	-	-	0	0	-
	10	Mar. 3-5	90	38.9	33	48	0.0%	0	0	-	0	-	-	-	-	0	0	-
Kinsman RST	11	Mar. 11-12	60	38.4	34	43	0.0%	131	5	37.6	1	35.0	35	35	0.0%	0	0	-
	12	Mar. 17-19	90	38.1	32	51	0.0%	384	8	37.5	3	35.3	35	36	0.0%	18	3	33.7
	13	Mar. 24-26	90	37.5	34	42	0.0%	447	8	38.3	47	32.7	29	36	0.0%	44	6	35.2
	14	Mar. 31-Apr. 2	83	38.5	32	59	2.4%	510	8	38.8	11	33.3	32	36	0.0%	56	7	35.1
	15	Apr. 7-9	90	40.4	35	65	2.2%	402	5	39.4	14	34.6	32	39	0.0%	88	5	35.0
	16	Apr. 14-16	90	41.2	35	52	0.0%	533	6	40.7	10	38.8	33	50	0.0%	98	6	35.3
	17	Apr. 21-23	79	41.7	33	58	2.5%	371	6	42.9	5	38.6	34	47	0.0%	82	6	35.3
	18	Apr. 28-30	14	49.3	38	59	35.7%	390	7	43.6	0	-	-	-	-	104	5	38.6
	19	May 5-7	24	52.7	38	70	33.3%	235	7	48.1	0	-	-	-	-	48	3	38.2
Kinsman RST	9	Feb. 26	30	38.3	32	43	0.0%	30	1	37.4	0	-	-	-	-	0	0	-
	10	Mar. 3-5	90	38.4	29	53	0.0%	104	2	38.9	0	-	-	-	-	0	0	-
	11	Mar. 10-12	90	38.0	32	48	0.0%	286	8	39.7	12	33.4	32	36	0.0%	0	0	-
	12	Mar. 18-19	60	39.3	32	58	5.0%	508	9	41.6	30	34.3	32	37	0.0%	4	2	35.3
	13	Mar. 24-26	90	39.8	32	67	6.7%	582	7	43.5	19	34.4	32	37	0.0%	85	3	35.2
	14	Mar. 31-Apr. 2	90	46.5	34	75	16.7%	656	9	45.7	2	32.5	32	33	0.0%	65	8	35.4
	15	Apr. 7-9	90	52.8	35	76	40.0%	618	9	47.3	5	36.0	32	38	0.0%	62	7	35.0
	16	Apr. 14-16	84	52.4	35	74	35.7%	675	9	51.7	1	33.0	33	33	0.0%	130	6	33.3
	17	Apr. 21-23	90	50.9	38	70	17.8%	677	10	52.1	2	43.0	39	47	0.0%	104	6	37.2
	18	Apr. 28-30	90	52.4	38	92	36.7%	564	9	58.5	0	-	-	-	-	53	7	39.0
	19	May 5-7	90	58.1	42	100	55.6%	634	9	59.0	1	52.0	52	52	0.0%	94	9	44.3
	20	May 12-14	89	65.9	44	98	78.7%	619	10	64.9	4	62.3	56	70	100.0%	103	9	47.0
	21	May 19-22	90	70.5	43	100	85.6%	500	10	67.8	3	57.3	52	65	33.3%	104	7	54.4
	22	May 27-29	88	69.9	45	104	88.6%	332	6	75.8	1	65.0	65	65.0	100.0%	92	8	54.4
	23	June 2-5	0	-	-	-	-	175	5	75.1	0	68.8	59	85.0	100.0%	88	7	55.9

Table 4. In-season summary of clinical signs of disease in young-of-the-year Chinook Salmon by site at the Bogus, Klamathon, I-5, and Kinsman sites on the mainstem Klamath River, 2015. *Note: Although only Chinook Salmon are reported in this table, we do monitor clinical signs of diseases in Coho Salmon and other species as well. We have not observed any clinical signs of disease in Coho Salmon so far this season.*

Preliminary Data - Subject to Revision

Site	Calendar Week	Sampling Dates	Weekly Mean Flow (cfs) ^a	Water Temp. (F) ^b		Belly Condition			Gills				
						Sample Size	Distended		Sample Size	Color		Condition	
				Min	Max		n	%		n	Pale or Worse	n	Eroded or Fungal
													n
Bogus	9	Feb. 26	955	-	-	26	0	0.0%	0	-	-	-	-
	10	Mar. 3-5	1,022	44.9	45.1	88	0	0.0%	0	-	-	-	-
	11	Mar. 10-12	1,144	46.7	46.9	85	0	0.0%	0	-	-	-	-
	12	Mar. 17-19	1,210	48.5	50.1	86	0	0.0%	0	-	-	-	-
	13	Mar. 24-26	1,331	50.0	51.8	90	0	0.0%	0	-	-	-	-
	14	Mar. 31-Apr. 2	1,461	52.1	54.6	90	0	0.0%	2	0	- ^c	0	- ^c
	15	Apr. 7-9	1,576	50.5	52.3	90	0	0.0%	28	0	0.0%	0	0.0%
	16	Apr. 14-16	1,424	52.1	53.0	90	0	0.0%	37	0	0.0%	0	0.0%
	17	Apr. 21-23	1,356	58.6	59.1	89	0	0.0%	40	0	0.0%	0	0.0%
	18	Apr.28-30	1,294	61.8	62.0	72	0	0.0%	34	0	0.0%	1	2.9%
19	May 5-7	1,176	62.4	64.0	29	0	0.0%	14	1	7.1%	0	0.0%	
Klamathon	9	Feb. 26	955	-	-	30	0	0.0%	0	-	-	-	-
	10	Mar. 5	1,022	46.7	46.7	30	0	0.0%	0	-	-	-	-
	11	Mar. 12	1,144	48.2	48.2	30	0	0.0%	3	0	- ^c	0	- ^c
	12	Mar. 19	1,210	50.3	50.3	30	0	0.0%	0	-	-	-	-
	13	Mar. 26	1,331	52.1	52.1	30	0	0.0%	1	0	- ^c	0	- ^c
	14	Apr. 2	1,461	52.3	52.3	4	0	0.0%	0	-	-	-	-
	15	Apr. 9	1,576	53.2	53.2	30	0	0.0%	10	0	0.0%	0	0.0%
	16	Apr. 16	1,424	54.5	54.5	30	0	0.0%	21	0	0.0%	0	0.0%
	17	Apr. 23	1,356	60.2	60.2	30	0	0.0%	24	1	4.2%	1	4.2%
	18	Apr. 30	1,294	-	-	30	0	0.0%	29	0	0.0%	0	0.0%
19	May 7	1,176	65.4	65.4	30	0	0.0%	28	3	10.7%	0	0.0%	
I-5	9	Feb. 25-26	955	-	-	89	0	0.0%	0	-	-	-	-
	10	Mar. 3-5	1,022	44.9	47.3	180	0	0.0%	0	-	-	-	-
	11	Mar. 10-12	1,144	45.5	50.3	145	0	0.0%	1	0	- ^c	0	- ^c
	12	Mar. 17-19	1,210	47.8	50.7	179	0	0.0%	2	1	- ^c	0	- ^c
	13	Mar. 24-26	1,331	48.3	53.0	180	0	0.0%	0	-	-	-	-
	14	Mar. 31-Apr. 2	1,461	51.4	54.1	173	0	0.0%	11	0	0.0%	0	0.0%
	15	Apr. 7-9	1,576	49.1	53.0	180	0	0.0%	35	1	2.9%	1	2.9%
	16	Apr. 14-16	1,424	52.3	55.5	180	0	0.0%	41	0	0.0%	0	0.0%
	17	Apr. 21-23	1,356	56.3	60.2	169	0	0.0%	70	1	1.4%	0	0.0%
	18	Apr.28-30	1,294	59.3	61.5	104	0	0.0%	76	1	1.3%	0	0.0%
19	May 5-7	1,176	62.0	65.6	112	0	0.0%	98	8	8.2%	2	2.0%	
20	May 12-14	1,770	57.5	60.4	90	1	1.1%	86	1	1.2%	0	0.0%	
Kinsman	9	Feb. 26	1,690	44.1	44.1	30	0	0.0%	0	-	-	-	-
	10	Mar. 3-5	1,627	44.4	45.7	90	0	0.0%	6	0	- ^c	0	- ^c
	11	Mar. 10-12	1,653	48.4	49.5	88	0	0.0%	5	1	- ^c	0	- ^c
	12	Mar. 18-19	1,765	50.4	51.3	59	0	0.0%	8	0	- ^c	0	- ^c
	13	Mar. 24-26	1,950	50.2	52.3	90	0	0.0%	13	1	7.7%	0	0.0%
	14	Mar. 31-Apr. 2	1,968	50.9	54.0	90	0	0.0%	45	0	0.0%	0	0.0%
	15	Apr. 7-9	2,039	49.5	50.4	90	0	0.0%	75	0	0.0%	0	0.0%
	16	Apr. 14-16	1,842	51.6	52.7	84	0	0.0%	66	1	1.5%	0	0.0%
	17	Apr. 21-24	1,713	52.3	65.6	112	7	6.3%	100	31	31.0%	0	0.0%
	18	Apr.28-May1	1,610	56.5	64.9	120	31	25.8%	107	69	64.5%	0	0.0%
	19	May 5-8	1,426	58.1	61.8	120	86	71.7%	114	87	76.3%	1	0.9%
	20	May 12-14	1,430	57.3	60.2	120	53	44.2%	120	54	45.0%	0	0.0%
	21	May 19-22	1,502	60.4	63.5	202	84	41.6%	200	95	47.5%	2	1.0%
	22	May 27-29	1,462	62.2	68.3	154	31	20.1%	154	73	47.4%	3	1.9%
23	June 2-5	1,295	63.8	67.2	26	6	23.1%	26	9	34.6%	0	0.0%	

^a discharge below IGD used for Bogus, Klamathon, and I-5 sites; flow at Kinsman Site is Klamath River flow at Seiad minus Scott River flow

^b temperature recorded at time of trap check/seine (true daily ranges from temperature loggers will become available at the end of the season)

^c sample size too low for a reportable calculation

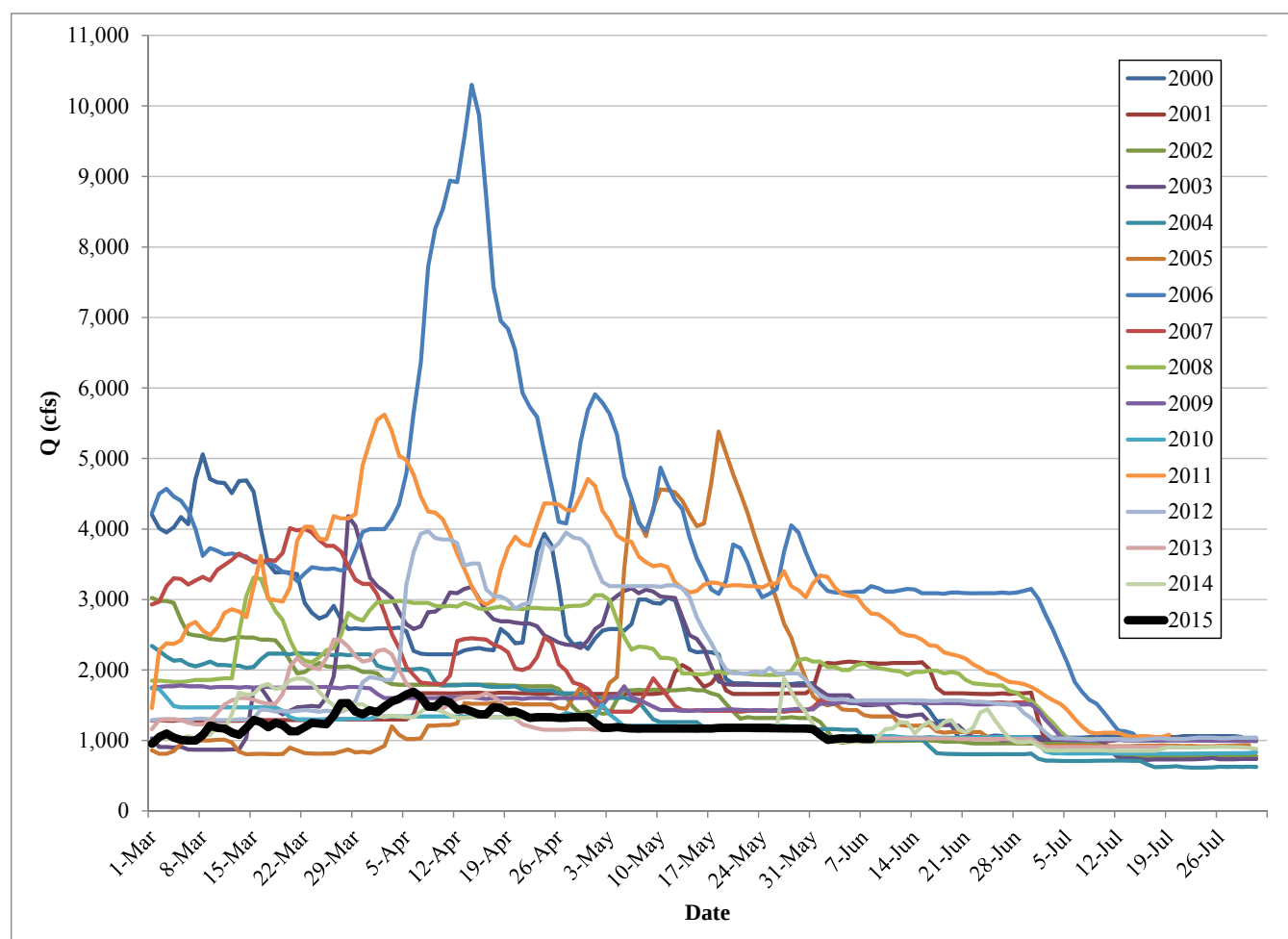


Figure 1. Daily mean discharge below Iron Gate Dam, Klamath River (USGS Gaging Station 11516530) from March through July, 2000 to 2015.

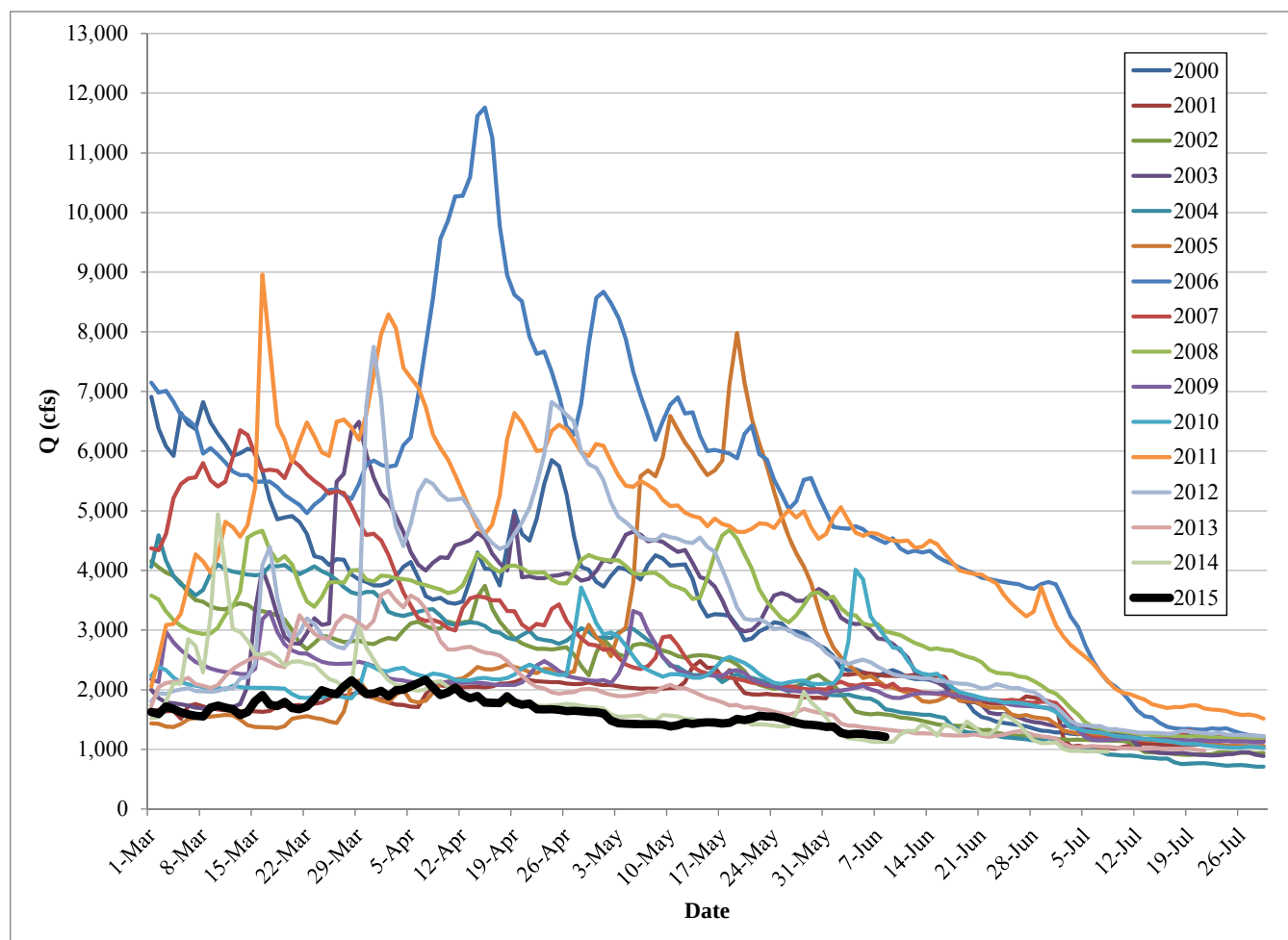


Figure 2. Klamath River daily mean discharge at the Kinsman Trap Site from March through July, 2000 to 2015. Flow measurements are not available at this location. Therefore Klamath River flow near Seiad Valley, CA (USGS Gaging Station 11520500) minus flow from the Scott River near Fort Jones, CA (USGS 11511950) is used as a surrogate.