U.S. Fish & Wildlife Service

Arcata Fish & Wildlife Office Fisheries Program

Klamath River Outmigrant Monitoring Update - April 14, 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 S^3 (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 (Figure2) 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

								Chinook (*O. tshawytscha*)			Coho (*O. kisutch*)			Steelhead (*O. mykiss*)		
								YOY				Age 1 +			Age 1 +	
Trap	Survey Week	Sample Dates	Q (cfs) [a] Min	Q (cfs) [a] Max	Water Temp. (F) [b] Min	Water Temp. (F) [b] Max	Trapping Days	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	1235	0	0	0	1	0	0	0	0
	2	3/3-3/6	1010	1100	44.9	45.1	4	2323	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
	4	3/17-3/20	1140	1260	48.5	50.1	4	14252	0	0	10	0	13	0	1	0
	5	3/24-3/27	1230	1540	50.0	51.8	4	7668	0	0	72	1	0	56	0	0
	6	3/31-4/3	1410	1560	52.1	54.6	4	1418	0	0	1	0	0	46	1	0
	7	4/7-4/10	1480	1630	50.5	52.3	4	2950	0	0	2	0	0	61	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	1140	1260	47.8	50.7	4	569	0	0	0	2	83	0	0	0
	5	3/24-3/27	1230	1540	48.3	53.0	4	1708	0	0	9	2	6	3	4	0
	6	3/31-4/3	1410	1560	50.5	54.1	4	468	0	0	1	2	0	13	1	0
	7	4/7-4/10	1480	1630	49.1	53.0	4	1651	0	0	4	2	1	17	1	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	1140	1260	47.8	50.7	4	2347	0	0	0	0	28	0	0	0
	5	3/24-3/27	1230	1540	48.3	53.0	4	2242	0	0	3	1	5	13	0	0
	6	3/31-4/3	1410	1560	50.5	54.1	4	281	0	0	2	2	0	10	0	0
	7	4/7-4/10	1480	1630	49.1	53.0	4	1076	0	0	3	3	6	3	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	1140	1260	47.8	50.7	3	1344	0	0	6	1	1	0	0	0
	5	3/24-3/27	1230	1540	48.3	53.0	4	1380	0	0	60	0	1	10	0	0
	6	3/31-4/3	1410	1560	50.5	54.1	4	155	0	0	11	0	8	23	0	0
	7	4/7-4/10	1480	1630	49.1	53.0	4	701	0	0	18	0	0	28	0	0
Kinsman RST	1	2/26-2/27	1609	1634	44.1	44.1	2	1078	0	0	0	2	0	0	4	0
	2	3/3-3/6	1570	1696	44.4	45.7	4	1686	0	0	0	3	0	0	4	0
	3	3/10-3/13	1565	1722	48.4	50.5	4	2236	0	0	23	4	0	0	4	0
	4	3/17-3/20	1680	1785	50.4	51.3	3	1518	0	0	48	0	10	0	0	0
	5	3/24-3/27	1914	2048	50.2	55.5	3	792	0	0	19	0	0	0	3	0
	6	3/31-4/3	1883	1991	50.9	54.0	4	223	0	0	2	7	0	0	5	0
	7	4/7-4/10	1913	2166	49.5	54.1	4	288	0	0	5	7	9	0	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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								Chinook (*O. tshawytscha*)			Coho (*O. kisutch*)			Steelhead (*O. mykiss*)		
								YOY				Age 1 +			Age 1 +	
Trap	Survey Week	Sample Dates	Q (cfs) [a] Min	Q (cfs) [a] Max	Water Temp. (F) [b] Min	Water Temp. (F) [b] Max	Trapping Days	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
	2	3/3-3/6	1010	1100	44.9	45.1	4	580.75	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
	4	3/17-3/20	1140	1260	48.5	50.1	4	3563.00	0.00	0.00	2.50	0.00	3.25	0.00	0.25	0.00
	5	3/24-3/27	1230	1540	50.0	51.8	4	1917.00	0.00	0.00	18.00	0.25	0.00	14.00	0.00	0.00
	6	3/31-4/3	1410	1560	52.1	54.6	4	354.50	0.00	0.00	0.25	0.00	0.00	11.50	0.25	0.00
	7	4/7-4/10	1480	1630	50.5	52.3	4	737.50	0.00	0.00	0.50	0.00	0.00	15.25	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
	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
	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
	4	3/17-3/20	1140	1260	47.8	50.7	4	142.25	0.00	0.00	0.00	0.50	20.75	0.00	0.00	0.00
	5	3/24-3/27	1230	1540	48.3	53.0	4	427.00	0.00	0.00	2.25	0.50	1.50	0.75	1.00	0.00
	6	3/31-4/3	1410	1560	50.5	54.1	4	117.00	0.00	0.00	0.25	0.50	0.00	3.25	0.25	0.00
	7	4/7-4/10	1480	1630	49.1	53.0	4	412.75	0.00	0.00	1.00	0.50	0.25	4.25	0.25	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
	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
	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
	4	3/17-3/20	1140	1260	47.8	50.7	4	586.75	0.00	0.00	0.00	0.00	7.00	0.00	0.00	0.00
	5	3/24-3/27	1230	1540	48.3	53.0	4	560.50	0.00	0.00	0.75	0.25	1.25	3.25	0.00	0.00
	6	3/31-4/3	1410	1560	50.5	54.1	4	70.25	0.00	0.00	0.50	0.50	0.00	2.50	0.00	0.00
	7	4/7-4/10	1480	1630	49.1	53.0	4	269.00	0.00	0.00	0.75	0.75	1.50	0.75	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
	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
	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
	4	3/17-3/20	1140	1260	47.8	50.7	3	448.00	0.00	0.00	2.00	0.33	0.33	0.00	0.00	0.00
	5	3/24-3/27	1230	1540	48.3	53.0	4	345.00	0.00	0.00	15.00	0.00	0.25	2.50	0.00	0.00
	6	3/31-4/3	1410	1560	50.5	54.1	4	38.75	0.00	0.00	2.75	0.00	2.00	5.75	0.00	0.00
	7	4/7-4/10	1480	1630	49.1	53.0	4	175.25	0.00	0.00	4.50	0.00	0.00	7.00	0.00	0.00
Kinsman RST	1	2/26-2/27	1609	1634	44.1	44.1	2	539.00	0.00	0.00	0.00	1.00	0.00	0.00	2.00	0.00
	2	3/3-3/6	1410	1696	44.4	45.7	4	421.50	0.00	0.00	0.00	0.75	0.00	0.00	1.00	0.00
	3	3/10-3/13	1565	1722	48.4	50.5	4	559.00	0.00	0.00	5.75	1.00	0.00	0.00	1.00	0.00
	4	3/17-3/20	1680	1785	50.4	51.3	3	506.00	0.00	0.00	16.00	0.00	3.33	0.00	0.00	0.00
	5	3/24-3/27	1914	2048	50.2	55.5	3	264.00	0.00	0.00	6.33	0.00	0.00	0.00	1.00	0.00
	6	3/31-4/3	1883	1991	50.9	54.0	4	55.75	0.00	0.00	0.50	1.75	0.00	0.00	1.25	0.00
	7	4/7-4/10	1913	2166	49.5	54.1	4	72.00	0.00	0.00	1.25	1.75	2.25	0.00	1.50	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

			YOY Chinook (natural) - fork length data								YOY Coho - fork length data							
		2015	2015					Previous 10 years			2015					Previous 10 years		
Site	Calendar Week	sampling dates	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	9	Feb. 26	30	38.1	33	42	0.0%	30	1	37.1	0	-	-	-	-	0	0	-
Frame	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
Klamathon	9	Feb. 26	30	40.7	37	47	0.0%	0	0	-	0	-	-	-	-	0	0	-
Seine	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	9	Feb. 25-26	60	39.8	36	44	0.0%	0	0	-	0	-	-	-	-	0	0	-
RST's	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
	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
I-5	9	Feb. 26	30	39.5	35	42	0.0%	0	0	-	0	-	-	-	-	0	0	-
Frame	10	Mar. 3-5	90	38.9	33	48	0.0%	0	0	-	0	-	-	-	-	0	0	-
	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
Kinsman	9	Feb. 26	30	38.3	32	43	0.0%	30	1	37.4	0	-	-	-	-	0	0	-
RST	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

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: Altough 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

						Belly Condition			Gills				
										Color		Condition	
			Weekly	Water Temp. (F) [b]		Sample	Distended		Sample	Pale or Worse		Eroded or Fungal	
Site	Calendar Week	Sampling Dates	Mean Flow (cfs) [a]	Min	Max	Size	n	%	Size	n	%	n	%
Bogus	9	Feb. 26	955	-	-	26	0	0.0%	0	-	-	-	-
	10	Mar. 3-5	1,028	44.9	45.1	88	0	0.0%	0	-	-	-	-
	11	Mar. 10-12	1,146	46.7	46.9	85	0	0.0%	0	-	-	-	-
	12	Mar. 17-19	1,213	48.5	50.1	86	0	0.0%	0	-	-	-	-
	13	Mar. 24-26	1,339	50.0	51.8	90	0	0.0%	0	-	-	-	-
	14	Mar. 31-Apr. 2	1,469	52.1	54.6	90	0	0.0%	2	0	- [c]	0	- [c]
	15	Apr. 7-9	1,579	50.5	52.3	90	0	0.0%	28	0	0.0%	0	0.0%
Klamathon	9	Feb. 26	955	-	-	30	0	0.0%	0	-	-	-	-
	10	Mar. 5	1,028	46.7	46.7	30	0	0.0%	0	-	-	-	-
	11	Mar. 12	1,146	48.2	48.2	30	0	0.0%	3	0	- [c]	0	- [c]
	12	Mar. 19	1,213	50.3	50.3	30	0	0.0%	0	-	-	-	-
	13	Mar. 26	1,339	52.1	52.1	30	0	0.0%	1	0	- [c]	0	- [c]
	14	Apr. 2	1,469	52.3	52.3	4	0	0.0%	0	-	-	-	-
	15	Apr. 9	1,579	53.2	53.2	30	0	0.0%	10	0	0.0%	0	0.0%
I-5	9	Feb. 25-26	955	-	-	89	0	0.0%	0	-	-	-	-
	10	Mar. 3-5	1,028	44.9	47.3	180	0	0.0%	0	-	-	-	-
	11	Mar. 10-12	1,146	45.5	50.3	145	0	0.0%	1	0	- [c]	0	- [c]
	12	Mar. 17-19	1,213	47.8	50.7	179	0	0.0%	2	1	- [c]	0	- [c]
	13	Mar. 24-26	1,339	48.3	53.0	180	0	0.0%	0	-	-	-	-
	14	Mar. 31-Apr. 2	1,469	51.4	54.1	173	0	0.0%	11	0	0.0%	0	0.0%
	15	Apr. 7-9	1,579	49.1	53.0	180	0	0.0%	35	1	2.9%	1	2.9%
Kinsman	9	Feb. 26	1,664	44.1	44.1	30	0	0.0%	0	-	-	-	-
	10	Mar. 3-5	1,608	44.4	45.7	90	0	0.0%	6	0	- [c]	0	- [c]
	11	Mar. 10-12	1,639	48.4	49.5	88	0	0.0%	5	1	- [c]	0	- [c]
	12	Mar. 18-19	1,752	50.4	51.3	59	0	0.0%	8	0	- [c]	0	- [c]
	13	Mar. 24-26	1,940	50.2	52.3	90	0	0.0%	13	1	7.7%	0	0.0%
	14	Mar. 31-Apr. 2	1,963	50.9	54.0	90	0	0.0%	45	0	0.0%	0	0.0%
	15	Apr. 7-9	2,041	49.5	50.4	90	0	0.0%	75	0	0.0%	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

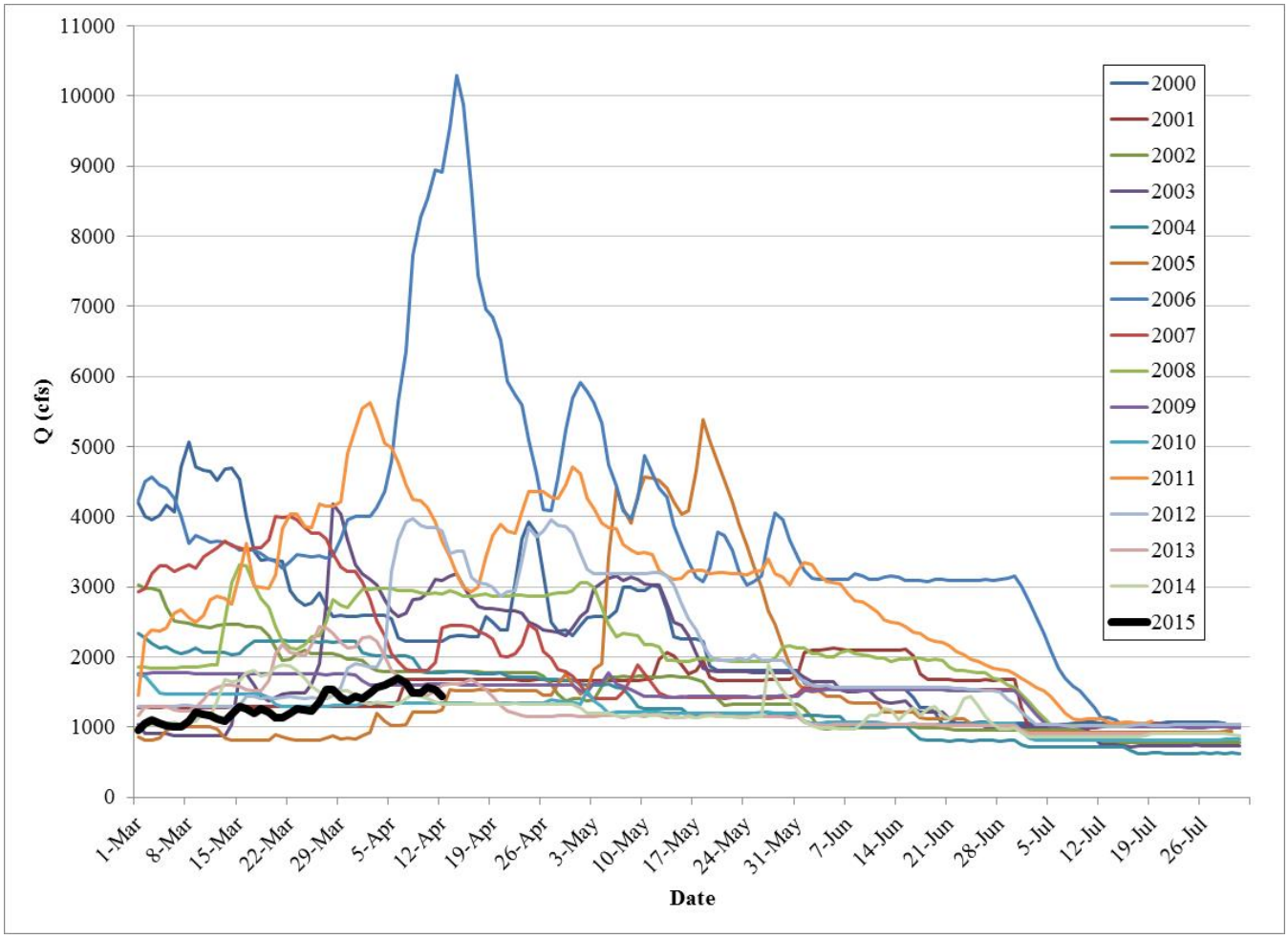

Figure 1. Daily mean discharge below Iron Gate Dam, Klamath River (USGS Gaging Station 11516530) from March through July, 2000 to 2015.

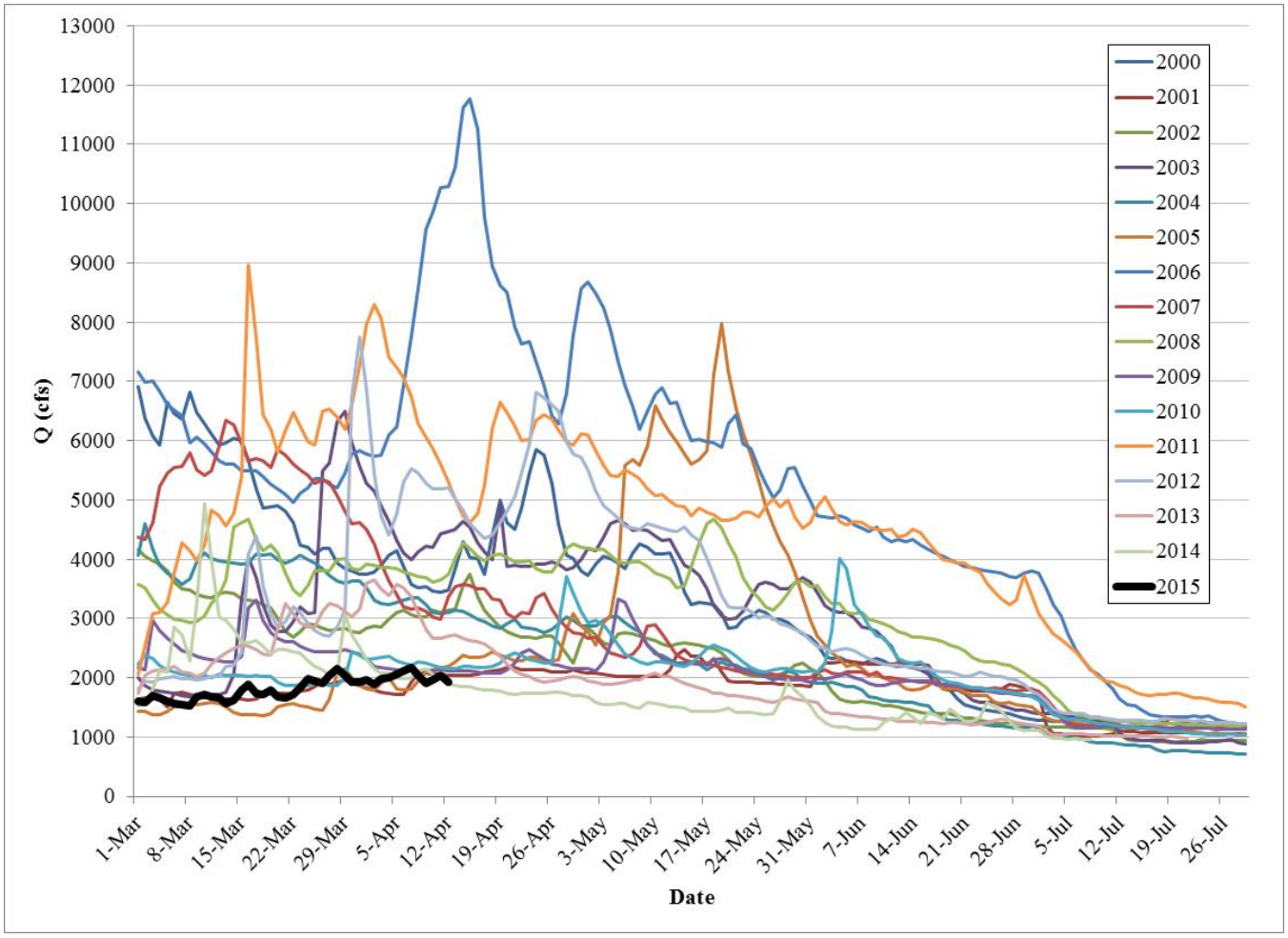

Figure 2. Klamath River daily mean discharge at the Kinsman Trap Site from March through July, 2000 to 2015. Flow measurements are not available at this location. Therefore Klamath River flow near Seiad Valley, CA (USGS Gaging Station 11520500) minus flow from the Scott River near Fort Jones, CA (USGS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