

# San Joaquin River Restoration Program, 2013 Chinook Salmon Trap and Haul Summary

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## Introduction

The Hills Ferry Barrier (HFB) is constructed annually by California Department of Fish and Wildlife (CDFW) to prevent upstream movement of fall-run Chinook salmon in the San Joaquin River (SJR) beyond the confluence with the Merced River. Upstream of this confluence, the SJR does not provide access to suitable spawning habitat for adult salmon because upstream obstacles prevent passage (*e.g.* dry river sections, Sack Dam, Mendota Dam). Furthermore, return flows from Salt and Mud Slough often attract salmon into irrigation canals that provide no spawning habitat nor return access to the river. However, even with the HFB in place, some salmon are able to circumvent the barrier. Because fish passing this point would otherwise be lost in the system, it provides an opportunity to translocate fall-run Chinook salmon to study their behavior and spawning site preference prior to reintroduction. During the 2013 Trap and Haul, from October 1 – December 15, 2013, Reclamation personnel captured Chinook salmon using fyke nets in the mainstem SJR, Mud and Salt Slough, and near the confluence of the SJR with the Eastside Bypass, and CDFW personnel captured salmon using dip nets at the terminal end of irrigation canals upstream of the HFB. Once captured, these fish were transported upstream to suitable spawning habitat in Reach 1 of the Restoration Area. While the majority of fish were released back into the SJR, some fish were retained for artificial spawning and incubation purposes.

## Methods

### Location, capture, and transport

Reclamation personnel captured salmon using fyke nets at five locations: immediately above the HFB, approximately 0.6 river miles upstream of the barrier (Casey property), Mud Slough, Salt Slough, and near the confluence of the Eastside Bypass and the SJR (near Van Clief Rd.). The two downstream-most fyke nets were placed in the river with wing walls extending towards each bank, leaving approximately 3 – 5 m open on one side for boat passage. The remaining three fyke nets were placed in each respective location with wing walls extending from the main net to the bank on either side. In some instances, a small gap (< 1

m) was left between the bank and the end of the wing wall to permit local wildlife (*i.e.* beavers and muskrat) to pass around the net. In instances where such wildlife entered the net, resulting damage to the net was sustained when the netting was chewed, precluding fish capture. Each fyke net was checked for fish daily, debris removed, and relocated a few meters up- or downstream depending on the amount of riverbed scouring (Figure 1).



Figure 1.—Daily cleaning and reset of Salt Slough fyke net.

California Department of Fish and Wildlife personnel captured salmon at the terminal end of irrigation canals using dip nets at six locations near Los Banos, CA: Delta Rd., Midway Rd., Hereford Rd., Deepwell Rd., Britto Rd., and Cozzi Ave.

A fin-clip was taken from each salmon captured for DNA analysis. Fish were sexed (males checked for presence of milt/females determined to be gravid or not), tagged (see “Tagging methods”), measured (nearest mm, fork and total length), checked for the presence of an adipose fin, overall condition recorded, and photographed. Fish were then placed in an oxygenated tank and transported upstream for release in the SJR at Camp Pashayan (river mile 243.2, near State Route 99) or retained for streamside spawning activities.

## Tagging methods

All fish captured were tagged using 3.18-cm (1.25-inch) Peterson disc tags (Floy Tag & Mfg., Inc., Seattle, WA). A set of tags were affixed below the dorsal fin rays, on either side of the fish, using a nickel pin inserted through the dorsal musculature (Figure 2). Each disc tag had a unique number and was used to identify fish after release. Three colors were used to mark fish, indicating the

month of capture. Yellow was used in October, green in November, and orange in December. Females were tagged with a solid-color tag. Males were marked with the same color tag, though half the tag was white to help with identification in post-release surveys (Figure 3).



Figure 2.—Salmon displaying Peterson disc tag, being placed into oxygenated transport tank.

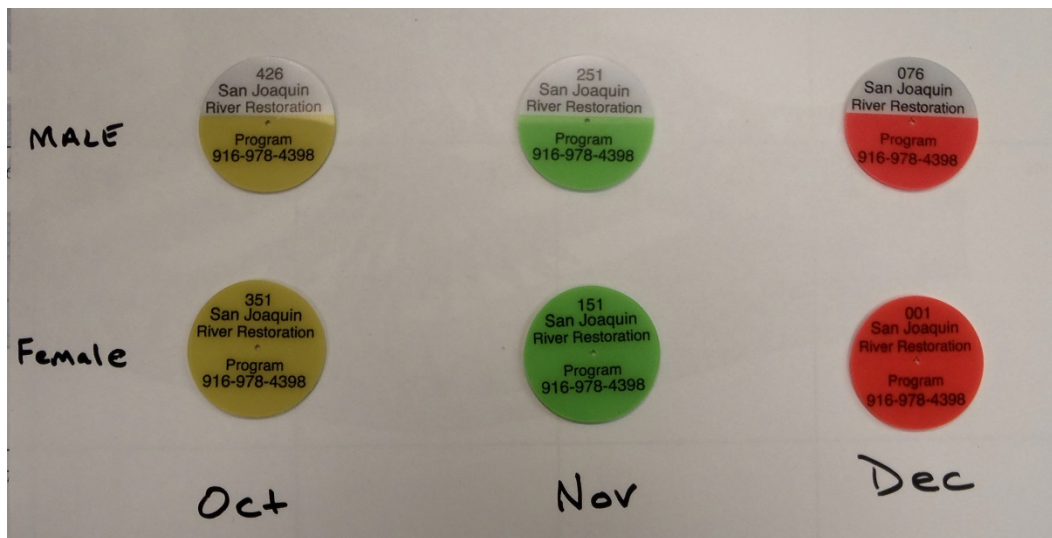


Figure 3.—Peterson disc tags used for identification of salmon by gender and month of capture.

In addition to the disc tags, fifty female salmon were also intragastrically implanted with an acoustic transmitter (V13, 69 kHz transmitter; VEMCO, Bedford, Nova Scotia, Canada), capable of transmitting a unique signal up to 120 days. A bolus gun (often used to dose large pills in livestock), coated in glycerin was used to place the transmitter in the salmon. These tags were used to locate salmon and redds in the river after release in Reach 1.

## Results

A total of 367 Chinook salmon were captured between October 1 and December 15, 2013 (Figures 4 – 6). Of the captured fish, 123 (33.5%) were female and 244 (66.5%) were male. The majority of fish (55.3%) were captured during the peak month of November (Figure 4). The ratio of females to males, though, increased from October (26.3%) and peaked in December (66.7%). The majority of fish were captured at the fyke net above Hills Ferry Barrier (33.8%) and with dip nets at the irrigation canal located near Midway Rd. (26.7%). The remaining 39.5% of fish were caught between the other 9 locations (Figure 5). Comparatively, the rate of capture was lower in October and began increasing in early November (Figure 6). Capture rates peaked in mid-November. All efforts concluded December 15, 2013 following removal of the HFB.

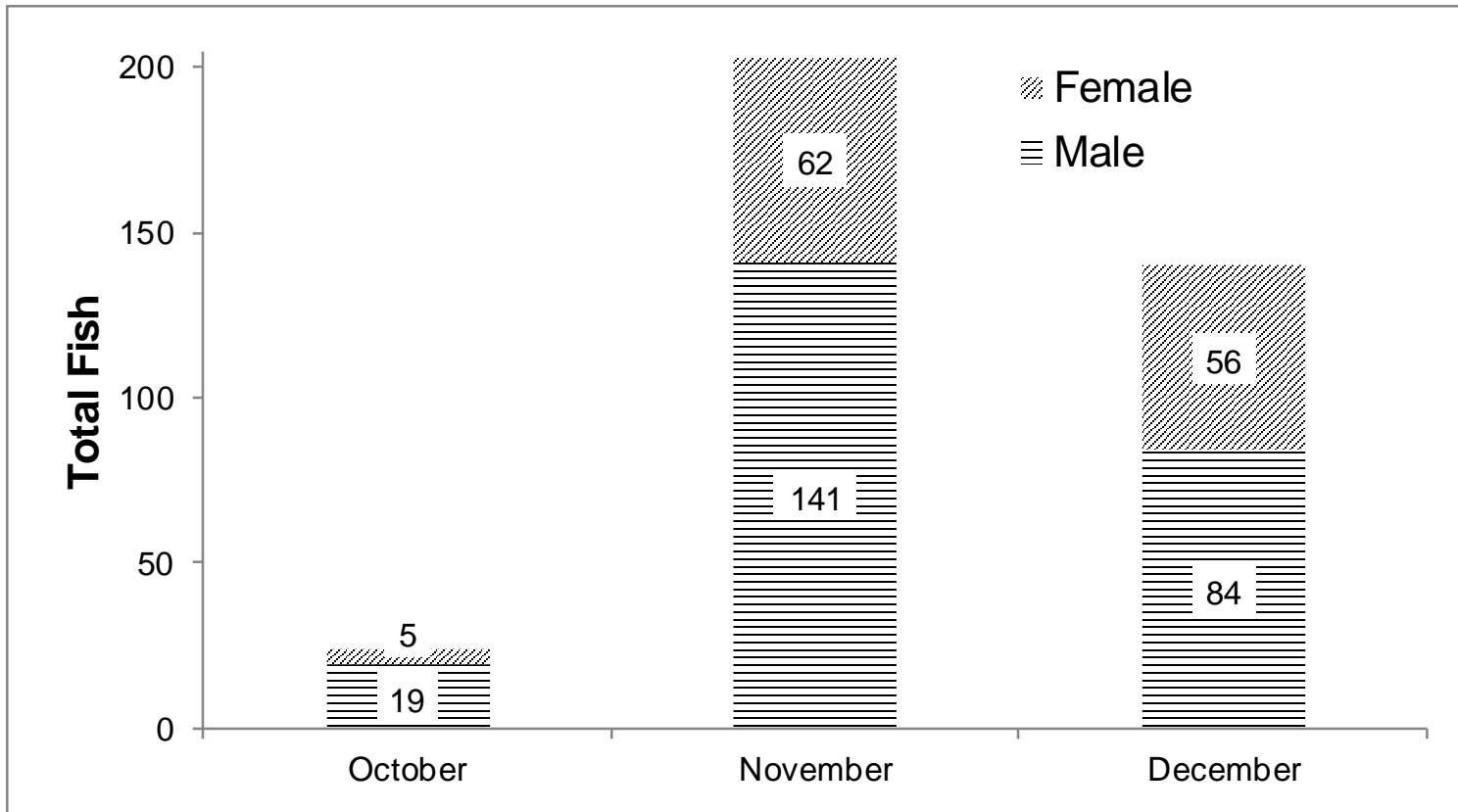


Figure 4.—Total Chinook salmon recovered, by month, during 2013 Trap and Haul.

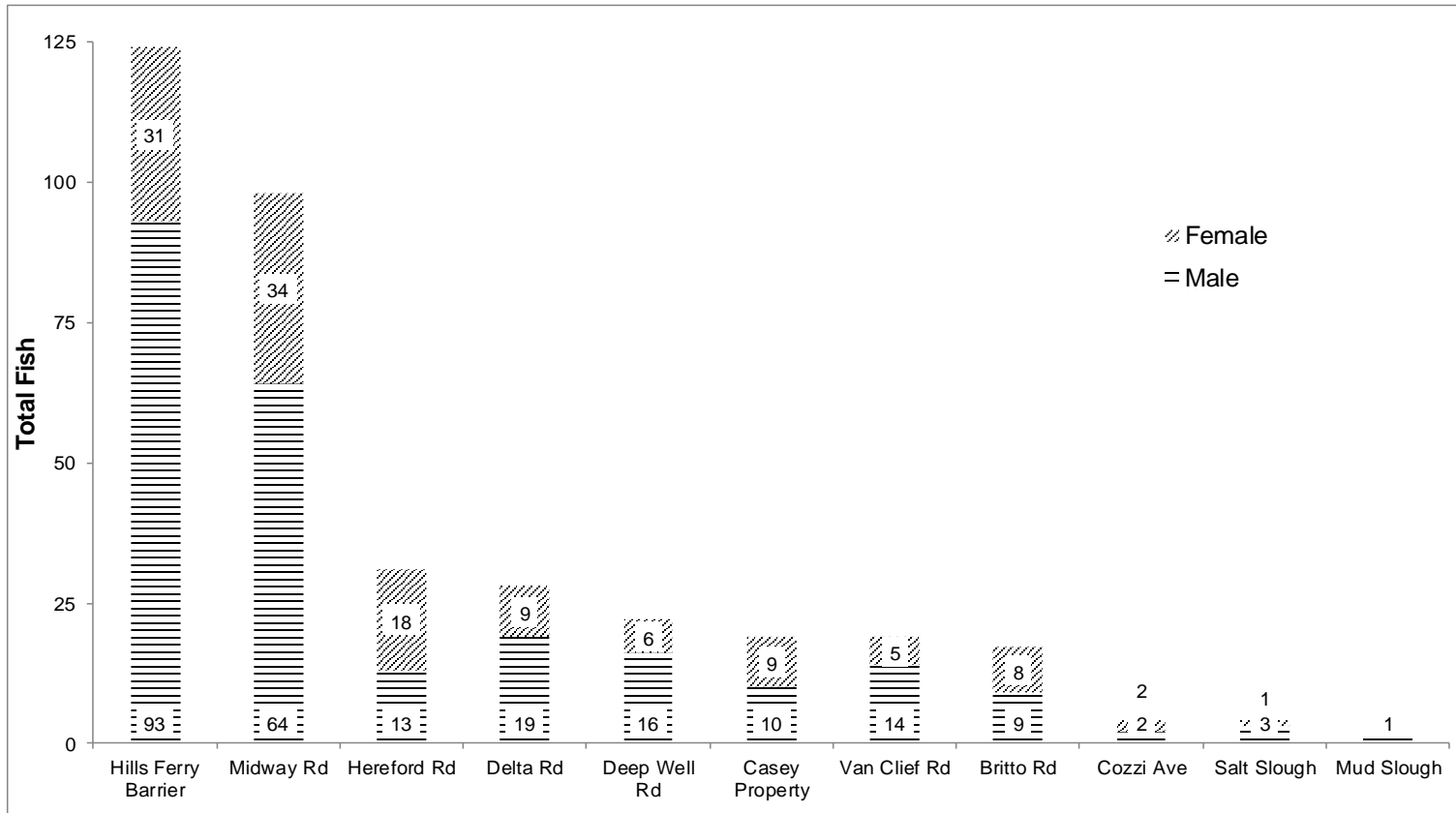


Figure 5.—Chinook salmon recovered at sampling locations during 2013 Trap and Haul.

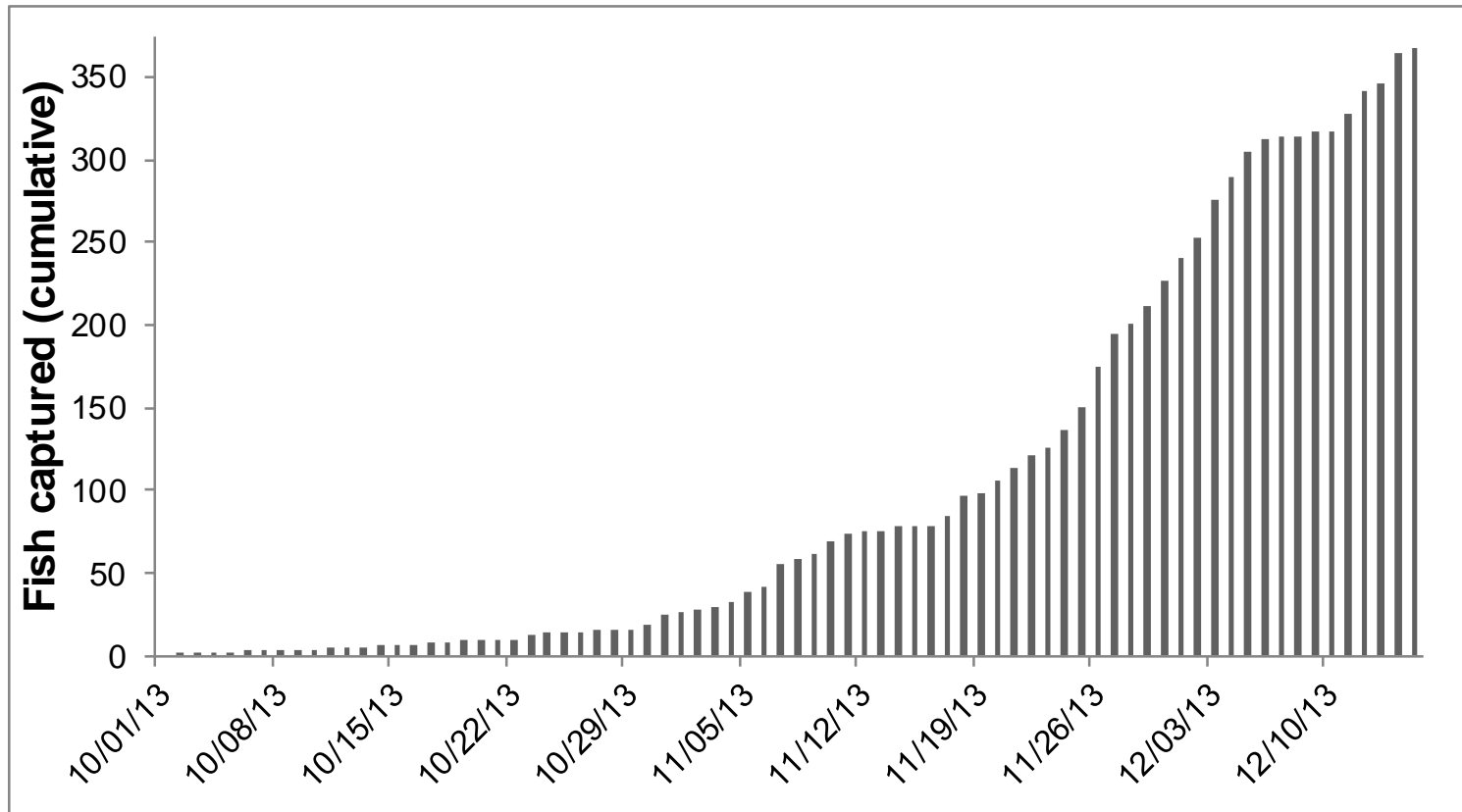


Figure 6.—Cumulative Chinook salmon recovered during 2013 Trap and Haul.



Table 1.-Individual fish data for 2013 Trap and Haul efforts.

2013 San Joaquin River Restoration Program Chinook Salmon Trap and Haul										
Date:	Gender:	Disk tag color:	Disk tag ID:	Acoustic tag ID:	Fork length (mm):	Total length (mm):	Adipose fin present?	Capture location:	Eggs/milt present:	Streamside spawned:
10/2/2013	female	Yellow	351	12238	611	658	yes	Hills Ferry Barrier	no	no
10/5/2013	female	Yellow	352	12239	616	666	yes	Hills Ferry Barrier	no	no
10/6/2013	male	Yellow/White	426	-	830	905	yes	Hills Ferry Barrier	no	no
10/11/2013	male	Yellow/White	427	-	820	950	yes	Hills Ferry Barrier	yes	no
10/11/2013	female	Yellow	353	12240	739	790	yes	Hills Ferry Barrier	no	no
10/14/2013	male	Yellow/White	428	-	515	557	yes	Hills Ferry Barrier	no	no
10/15/2013	male	Yellow/White	429	-	530	573	yes	Hills Ferry Barrier	no	no
10/17/2013	female	Yellow	354	12241	630	676	yes	Salt Slough	no	no
10/19/2013	male	Yellow/White	430	-	896	985	yes	Hills Ferry Barrier	no	no
10/20/2013	female	Yellow	355	12242	612	660	no	Hills Ferry Barrier	no	no
10/23/2013	male	Yellow/White	431	-	880	1010	yes	Hills Ferry Barrier	no	no
10/23/2013	male	Yellow/White	433	-	580	625	yes	Hills Ferry Barrier	yes	no
10/24/2013	male	Yellow/White	432	-	950	1020	yes	Hills Ferry Barrier	yes	no
10/24/2013	male	Yellow/White	434	-	616	667	yes	Hills Ferry Barrier	no	no
10/27/2013	male	Yellow/White	435	-	625	666	no	Hills Ferry Barrier	yes	no
10/28/2013	male	Yellow/White	436	-	608	655	yes	Hills Ferry Barrier	yes	no
10/30/2013	male	Yellow/White	437	-	895	940	no	Hills Ferry Barrier	yes	no
10/30/2013	male	Yellow/White	438	-	746	780	no	Hills Ferry Barrier	yes	no
10/30/2013	male	Yellow/White	439	-	810	872	yes	Hills Ferry Barrier	yes	no
10/31/2013	male	Yellow/White	440	-	900	955	yes	Hills Ferry Barrier	yes	no
10/31/2013	male	Yellow/White	441	-	845	890	no	Hills Ferry Barrier	yes	no
10/31/2013	male	Yellow/White	442	-	572	613	no	Hills Ferry Barrier	yes	no
10/31/2013	male	Yellow/White	443	-	830	872	yes	Hills Ferry Barrier	yes	no
10/31/2013	male	Yellow/White	444	-	865	910	yes	Hills Ferry Barrier	yes	no
11/1/2013	male	Green/White	251	-	628	677	no	Hills Ferry Barrier	yes	no
11/1/2013	male	Green/White	252	-	670	715	yes	Hills Ferry Barrier	yes	no
11/2/2013	male	Green/White	253	-	780	831	yes	Hills Ferry Barrier	yes	no
11/2/2013	male	Green/White	254	-	800	845	yes	Hills Ferry Barrier	yes	no
11/3/2013	male	Green/White	255	-	622	661	yes	Hills Ferry Barrier	yes	no
11/3/2013	male	Green/White	256	-	820	870	yes	Hills Ferry Barrier	yes	no
11/4/2013	male	Green/White	257	-	720	755	yes	Hills Ferry Barrier	yes	no
11/4/2013	female	Green	151	12271	830	890	yes	Britto Rd	no	no
11/5/2013	male	Green/White	258	-	613	654	yes	Hills Ferry Barrier	yes	no
11/5/2013	male	Green/White	259	-	840	890	yes	Hills Ferry Barrier	yes	yes
11/5/2013	male	Green/White	260	-	612	662	yes	Hills Ferry Barrier	yes	no
11/5/2013	male	Green/White	261	-	630	675	yes	Hills Ferry Barrier	yes	no
11/5/2013	female	Green	152	11243	880	942	yes	Hills Ferry Barrier	yes	yes
11/5/2013	male	Green/White	262	-	588	633	yes	Hills Ferry Barrier	yes	no
11/6/2013	male	Green/White	263	-	842	852	no	Hills Ferry Barrier	yes	no
11/6/2013	female	Green	153	12243	844	848	yes	Hills Ferry Barrier	yes	no
11/6/2013	male	Green/White	264	-	620	650	yes	Hills Ferry Barrier	yes	no
11/6/2013	female	Green	154	12244	775	840	no	Hills Ferry Barrier	no	no
11/7/2013	male	Green/White	265	-	872	915	yes	Hills Ferry Barrier	yes	no
11/7/2013	male	Green/White	266	-	570	619	yes	Hills Ferry Barrier	yes	no
11/7/2013	male	Green/White	267	-	530	576	yes	Hills Ferry Barrier	yes	no
11/7/2013	female	Green	156	12245	730	760	no	Britto Rd	no	no
11/7/2013	female	Green	157	12246	770	790	yes	Britto Rd	no	no
11/7/2013	male	Green/White	268	-	775	830	no	Britto Rd	yes	no
11/7/2013	female	Green	158	-	860	888	yes	Britto Rd	no	no
11/7/2013	male	Green/White	269	-	800	850	yes	Delta Rd	yes	no
11/7/2013	male	Green/White	270	-	560	580	yes	Delta Rd	yes	no
11/7/2013	male	Green/White	271	-	680	700	no	Delta Rd	yes	no
11/7/2013	male	Green/White	272	-	650	670	yes	Delta Rd	yes	no
11/7/2013	male	Green/White	273	-	670	710	yes	Delta Rd	yes	no
11/7/2013	female	Green	159	12247	790	820	no	Delta Rd	no	no



Table 1 (cont.)--Individual fish data for 2013 Trap and Haul efforts.

11/8/2013	male	Green/White	274	-	555	597	yes	Hills Ferry Barrier	yes	no
11/8/2013	female	Green	160	12248	815	875	yes	Hills Ferry Barrier	yes	no
11/8/2013	female	Green	161	12249	805	835	yes	Hills Ferry Barrier	yes	no
11/9/2013	female	Green	162	12250	760	810	yes	Casey	yes	no
11/9/2013	male	Green/White	275	-	597	645	yes	Casey	yes	no
11/9/2013	male	Green/White	276	-	850	940	yes	Hills Ferry Barrier	yes	no
11/10/2013	male	Green/White	277	-	535	579	yes	Casey	yes	no
11/10/2013	male	Green/White	278	-	590	637	no	Van Clief Rd	yes	no
11/10/2013	male	Green/White	279	-	640	688	yes	Hills Ferry Barrier	yes	no
11/10/2013	male	Green/White	280	-	590	637	no	Hills Ferry Barrier	yes	no
11/10/2013	male	Green/White	281	-	555	605	yes	Hills Ferry Barrier	yes	no
11/10/2013	female	Green	163	-	750	770	yes	Cozzi Rd	yes	yes
11/10/2013	female	Green	164	12251	780	820	yes	Cozzi Rd	yes	no
11/10/2013	male	Green/White	282	-	630	682	yes	Cozzi Rd	yes	yes
11/11/2013	male	Green/White	283	-	775	840	no	Casey	yes	no
11/11/2013	male	Green/White	284	-	636	686	no	Hills Ferry Barrier	yes	no
11/11/2013	female	Green	165	-	800	810	yes	Britto Rd	yes	yes
11/11/2013	female	Green	166	-	790	805	no	Britto Rd	yes	no
11/11/2013	male	Green/White	286	-	590	620	no	Britto Rd	yes	yes
11/12/2013	male	Green/White	285	-	550	598	yes	Van Clief Rd	yes	no
11/14/2013	male	Green/White	-	-	610	650	yes	Britto Rd	yes	no
11/14/2013	male	Green/White	-	-	570	600	no	Britto Rd	yes	no
11/14/2013	male	Green/White	-	-	800	830	yes	Britto Rd	yes	no
11/17/2013	male	Green/White	287	-	639	685	yes	Casey	yes	no
11/17/2013	male	Green/White	288	-	745	792	no	Casey	yes	no
11/17/2013	female	Green	167	12252	755	807	yes	Casey	yes	no
11/17/2013	female	Green	-	-	950	985	yes	Delta Rd	yes	yes
11/17/2013	male	Green/White	-	-	760	795	yes	Delta Rd	yes	yes
11/17/2013	female	Green	-	-	735	770	yes	Delta Rd	yes	no
11/17/2013	male	Green/White	-	-	850	880	yes	Delta Rd	yes	no
11/18/2013	female	Green	169	12254	785	835	yes	Casey	yes	no
11/18/2013	female	Green	168	12253	830	895	yes	Hills Ferry Barrier	no	no
11/18/2013	male	Green/White	289	-	612	666	yes	Hills Ferry Barrier	yes	no
11/18/2013	female	Green	170	12255	523	562	no	Hills Ferry Barrier	no	no
11/18/2013	male	Green/White	291	-	513	560	no	Hills Ferry Barrier	yes	no
11/18/2013	male	Green/White	-	-	650	680	no	Deep Well Rd	yes	no
11/18/2013	male	Green/White	-	-	680	700	no	Deep Well Rd	yes	no
11/18/2013	male	Green/White	-	-	700	720	yes	Deep Well Rd	yes	no
11/18/2013	male	Green/White	-	-	800	830	no	Deep Well Rd	yes	no
11/18/2013	male	Green/White	-	-	800	840	no	Deep Well Rd	yes	no
11/18/2013	male	Green/White	-	-	670	710	yes	Delta Rd	yes	no
11/19/2013	female	Green	171	12256	780	835	no	Delta Rd	yes	no
11/19/2013	female	Green	172	12257	691	795	no	Delta Rd	no	no
11/20/2013	male	Green/White	292	-	790	838	yes	Van Clief Rd	yes	no
11/20/2013	male	Green/White	290	-	605	667	no	Hills Ferry Barrier	yes	no
11/20/2013	female	Green	173	12258	745	785	yes	Hills Ferry Barrier	yes	no
11/20/2013	male	Green/White	293	-	890	952	no	Hills Ferry Barrier	yes	no
11/20/2013	male	Green/White	294	-	620	640	yes	Hills Ferry Barrier	yes	no
11/20/2013	male	Green/White	295	-	630	660	yes	Hills Ferry Barrier	yes	no
11/20/2013	male	Green/White	296	-	820	850	yes	Hills Ferry Barrier	yes	no
11/21/2013	male	Green/White	298	-	590	622	yes	Van Clief Rd	yes	no
11/21/2013	female	Green	174	12259	765	802	yes	Van Clief Rd	yes	no
11/21/2013	male	Green/White	297	-	617	668	no	Hills Ferry Barrier	yes	no
11/21/2013	male	Green/White	299	-	810	852	yes	Delta Rd	yes	no
11/21/2013	male	Green/White	300	-	800	810	yes	Delta Rd	yes	no
11/21/2013	male	Green/White	301	-	662	702	no	Delta Rd	yes	no
11/21/2013	female	Green	175	12260	750	780	yes	Deep Well Rd	yes	no
11/21/2013	female	Green	176	12261	620	663	yes	Midway Rd	yes	no
11/22/2013	female	Green	180	12265	870	924	no	Hills Ferry Barrier	yes	no

Table 1 (cont.)--Individual fish data for 2013 Trap and Haul efforts.

11/22/2013	female	Green	177	12262	758	791	yes	Casey	no	no
11/22/2013	female	Green	178	12263	787	818	yes	Casey	no	no
11/22/2013	male	Green/White	302	-	950	990	no	Casey	no	no
11/22/2013	male	Green/White	303	-	561	603	yes	Casey	yes	no
11/22/2013	female	Green	179	12264	713	765	no	Casey	no	no
11/22/2013	male	Green/White	304	-	555	596	no	Casey	yes	no
11/22/2013	male	Green/White	305	-	575	615	no	Midway Rd	yes	no
11/23/2013	male	Green/White	308	-	502	543	yes	Cozzi Rd	yes	no
11/23/2013	male	Green/White	307	-	540	572	yes	Britto Rd	yes	no
11/23/2013	male	Green/White	306	-	805	850	yes	Deep Well Rd	yes	no
11/23/2013	male	Green/White	309	-	799	851	yes	Deep Well Rd	yes	no
11/24/2013	female	Green	182	12267	791	840	yes	Hills Ferry Barrier	yes	no
11/24/2013	male	Green/White	312	-	650	695	yes	Hills Ferry Barrier	yes	no
11/24/2013	male	Green/White	314	-	780	870	yes	Hills Ferry Barrier	yes	no
11/24/2013	male	Green/White	315	-	640	690	yes	Hills Ferry Barrier	yes	no
11/24/2013	female	Green	183	12268	619	670	yes	Hills Ferry Barrier	no	no
11/24/2013	female	Green	184	12269	750	810	yes	Hills Ferry Barrier	no	no
11/24/2013	male	Green/White	313	-	770	820	yes	Hills Ferry Barrier	yes	no
11/24/2013	male	Green/White	310	-	657	717	yes	Van Clief Rd	yes	no
11/24/2013	male	Green/White	311	-	860	910	no	Midway Rd	yes	no
11/24/2013	female	Green	181	12266	740	770	yes	Delta Rd	yes	no
11/24/2013	male	-	-	-	650	680	yes	Midway Rd	yes	no
11/25/2013	male	Green/White	316	-	835	906	yes	Van Clief Rd	yes	no
11/25/2013	male	Green/White	317	-	880	920	no	Delta Rd	yes	no
11/25/2013	male	Green/White	318	-	669	680	yes	Delta Rd	yes	no
11/25/2013	male	Green/White	319	-	575	625	yes	Delta Rd	yes	no
11/25/2013	male	Green/White	320	-	650	693	no	Delta Rd	yes	no
11/25/2013	male	Green/White	321	-	910	960	no	Delta Rd	yes	no
11/25/2013	female	Green	185	12270	890	950	no	Delta Rd	no	no
11/25/2013	male	Green/White	322	-	627	672	yes	Deep Well Rd	yes	no
11/25/2013	male	Green/White	323	-	802	853	yes	Deep Well Rd	yes	no
11/25/2013	male	Green/White	324	-	628	678	yes	Deep Well Rd	yes	no
11/25/2013	male	Green/White	325	-	565	610	yes	Deep Well Rd	yes	no
11/25/2013	male	Green/White	326	-	578	625	yes	Midway Rd	yes	no
11/25/2013	male	Green/White	327	-	811	863	yes	Hills Ferry Barrier	yes	no
11/25/2013	male	Green/White	328	-	623	668	yes	Hills Ferry Barrier	yes	no
11/26/2013	female	Green	187	12274	775	832	yes	Van Clief Rd	no	no
11/26/2013	female	Green	186	12272	755	784	yes	Hills Ferry Barrier	yes	no
11/26/2013	male	Green/White	329	-	760	821	yes	Hills Ferry Barrier	yes	no
11/26/2013	male	Green/White	330	-	659	671	yes	Hills Ferry Barrier	yes	no
11/26/2013	female	Green	188	12273	770	820	no	Britto Rd	no	no
11/26/2013	female	Green	189	12275	810	862	yes	Deep Well Rd	no	no
11/26/2013	female	Green	190	12276	910	930	no	Deep Well Rd	no	no
11/26/2013	male	Green/White	331	-	780	835	yes	Britto Rd	yes	no
11/26/2013	female	Green	191	12277	740	780	yes	Midway Rd	no	no
11/26/2013	female	Green	192	12278	800	825	yes	Midway Rd	yes	no
11/26/2013	female	Green	193	12279	750	792	yes	Midway Rd	no	no
11/26/2013	female	Green	194	12280	745	770	yes	Midway Rd	no	no
11/26/2013	female	Green	195	12281	895	950	yes	Midway Rd	no	no
11/26/2013	male	-	-	-	730	840	-	Midway Rd	-	no
11/26/2013	male	-	-	-	1003	1100	-	Midway Rd	-	no
11/26/2013	male	-	-	-	880	910	-	Midway Rd	-	no
11/26/2013	male	-	-	-	750	760	-	Midway Rd	-	no
11/26/2013	male	-	-	-	600	630	-	Midway Rd	-	no
11/26/2013	male	-	-	-	610	625	-	Midway Rd	-	no
11/26/2013	male	-	-	-	480	500	-	Midway Rd	-	no
11/26/2013	male	-	-	-	580	600	-	Midway Rd	-	no
11/26/2013	male	-	-	-	560	590	-	Midway Rd	-	no
11/26/2013	male	-	-	-	506	540	-	Midway Rd	-	no

Table 1 (cont.)--Individual fish data for 2013 Trap and Haul efforts.

11/26/2013	male	-	-	-	820	880	-	Midway Rd	-	no
11/27/2013	male	Green/White	332	-	820	875	no	Delta Rd	yes	no
11/27/2013	female	Green	201	-	836	895	no	Delta Rd	yes	yes
11/27/2013	male	Green/White	333	-	905	955	yes	Midway Rd	yes	no
11/27/2013	male	Green/White	334	-	822	904	no	Midway Rd	yes	no
11/27/2013	male	Green/White	335	-	946	983	no	Midway Rd	yes	yes
11/27/2013	male	Green/White	336	-	782	825	yes	Midway Rd	yes	no
11/27/2013	female	Green	196	12282	770	830	yes	Midway Rd	no	no
11/27/2013	male	Green/White	337	-	712	763	yes	Midway Rd	yes	no
11/27/2013	male	Green/White	338	-	785	868	yes	Midway Rd	yes	no
11/27/2013	male	Green/White	339	-	810	876	yes	Midway Rd	yes	no
11/27/2013	male	Green/White	340	-	860	924	yes	Midway Rd	yes	no
11/27/2013	male	Green/White	341	-	810	866	no	Midway Rd	yes	no
11/27/2013	male	Green/White	342	-	980	1047	no	Midway Rd	yes	no
11/27/2013	female	Green	197	12283	840	865	no	Midway Rd	yes	no
11/27/2013	male	Green/White	343	-	605	650	yes	Midway Rd	yes	no
11/27/2013	male	Green/White	344	-	555	600	yes	Midway Rd	yes	no
11/27/2013	female	Green	198	12284	845	891	no	Hills Ferry Barrier	yes	no
11/27/2013	female	Green	199	12285	765	813	no	Hills Ferry Barrier	yes	no
11/27/2013	female	Green	200	12286	790	852	no	Hills Ferry Barrier	yes	no
11/27/2013	male	Green/White	345	-	570	610	yes	Hills Ferry Barrier	yes	no
11/27/2013	male	Green/White	346	-	860	934	no	Hills Ferry Barrier	yes	no
11/28/2013	male	Green/White	347	-	550	593	yes	Hills Ferry Barrier	yes	no
11/28/2013	male	Green/White	348	-	681	732	yes	Hills Ferry Barrier	yes	no
11/28/2013	male	Green/White	349	-	580	628	yes	Hills Ferry Barrier	yes	no
11/28/2013	male	Green/White	350	-	870	940	no	Hills Ferry Barrier	yes	no
11/28/2013	male	Green/White	501	-	583	665	no	Hills Ferry Barrier	yes	no
11/29/2013	male	Green/White	502	-	580	603	yes	Midway Rd	yes	no
11/29/2013	female	Green	202	-	810	870	yes	Midway Rd	yes	no
11/29/2013	male	Green/White	503	-	627	672	yes	Midway Rd	yes	no
11/29/2013	male	Green/White	504	-	800	870	yes	Hills Ferry Barrier	yes	no
11/29/2013	male	Green/White	505	-	810	860	yes	Hills Ferry Barrier	yes	no
11/29/2013	female	Green	203	12287	850	960	yes	Hills Ferry Barrier	yes	no
11/29/2013	female	Green	204	-	750	790	no	Hills Ferry Barrier	yes	no
11/29/2013	male	Green/white	506	-	770	830	no	Hills Ferry Barrier	yes	no
11/29/2013	female	Green	205	-	638	685	yes	Hills Ferry Barrier	yes	no
11/29/2013	male	Green/White	507	-	625	676	yes	Hills Ferry Barrier	yes	no
11/29/2013	male	Green/White	508	-	640	685	yes	Hills Ferry Barrier	yes	no
11/30/2013	male	Orange/White	76	-	663	712	yes	Delta Rd	yes	no
11/30/2013	female	Orange	1	-	880	960	no	Midway Rd	yes	no
11/30/2013	male	Orange/White	77	-	820	870	yes	Britto Rd	yes	no
11/30/2013	female	Orange	2	-	790	840	no	Britto Rd	yes	no
11/30/2013	male	Orange/White	78	-	573	618	yes	Britto Rd	yes	no
11/30/2013	male	Orange/White	79	-	600	632	no	Hereford Rd	yes	no
11/30/2013	male	Orange/White	80	-	770	820	yes	Hills Ferry Barrier	yes	no
11/30/2013	female	Orange	3	-	760	800	yes	Hills Ferry Barrier	yes	no
11/30/2013	female	Orange	4	-	730	768	yes	Hills Ferry Barrier	yes	no
11/30/2013	male	Orange/White	81	-	703	751	yes	Hills Ferry Barrier	yes	no
11/30/2013	female	Orange	5	-	780	830	yes	Hills Ferry Barrier	yes	no
11/30/2013	male	Orange/White	82	-	670	723	yes	Hills Ferry Barrier	yes	no
11/30/2013	male	Orange/White	83	-	578	622	no	Hills Ferry Barrier	no	no
11/30/2013	male	Orange/White	84	-	530	573	no	Hills Ferry Barrier	yes	no
11/30/2013	male	Orange/White	85	-	620	668	yes	Hills Ferry Barrier	yes	no
11/30/2013	female	Orange	6	-	830	895	no	Casey	yes	no
12/1/2013	male	Orange/White	86	-	770	820	yes	Casey	yes	no
12/1/2013	male	Orange/White	88	-	910	985	yes	Hills Ferry Barrier	yes	no
12/1/2013	male	Orange/White	89	-	910	980	yes	Hills Ferry Barrier	yes	no
12/1/2013	male	Orange/White	90	-	790	845	yes	Hills Ferry Barrier	yes	no
12/1/2013	male	Orange/White	91	-	830	895	yes	Hills Ferry Barrier	yes	no

Table 1 (cont.)--Individual fish data for 2013 Trap and Haul efforts.

12/1/2013	male	Orange/White	92	-	590	633	yes	Hills Ferry Barrier	yes	no
12/1/2013	male	Orange/White	93	-	750	790	yes	Hills Ferry Barrier	yes	no
12/1/2013	male	Orange/White	94	-	590	632	yes	Hills Ferry Barrier	yes	no
12/1/2013	male	Orange/White	95	-	584	628	yes	Hills Ferry Barrier	yes	no
12/1/2013	female	Orange	7	-	770	830	yes	Midway Rd	yes	no
12/1/2013	male	Orange/White	87	-	690	753	yes	Midway Rd	yes	no
12/1/2013	female	Orange	9	-	550	586	yes	Midway Rd	no	no
12/1/2013	female	Orange	8	-	695	738	yes	Hereford Rd	yes	no
12/2/2013	female	Orange	10	-	890	970	yes	Midway Rd	yes	no
12/2/2013	male	Orange/White	96	-	653	698	no	Midway Rd	yes	no
12/2/2013	female	Orange	11	-	760	805	yes	Midway Rd	yes	no
12/2/2013	female	Orange	12	-	840	900	no	Midway Rd	yes	no
12/2/2013	female	Orange	13	-	700	753	no	Midway Rd	yes	no
12/2/2013	female	Orange	14	-	760	810	yes	Midway Rd	yes	no
12/2/2013	female	Orange	15	-	750	783	yes	Midway Rd	yes	no
12/2/2013	female	Orange	16	-	770	820	no	Midway Rd	yes	no
12/2/2013	male	Orange/White	97	-	601	645	no	Midway Rd	yes	no
12/2/2013	male	Orange/White	98	-	620	665	yes	Hills Ferry Barrier	yes	no
12/2/2013	male	Orange/White	99	-	900	950	yes	Hills Ferry Barrier	yes	no
12/2/2013	male	Orange/White	100	-	590	631	no	Hills Ferry Barrier	yes	no
12/2/2013	female	Orange	17	-	530	570	no	Hills Ferry Barrier	no	no
12/3/2013	female	Orange	18	-	825	880	yes	Casey	yes	no
12/3/2013	male	Orange/White	110	-	886	945	yes	Hills Ferry Barrier	yes	yes
12/3/2013	female	Orange	23	-	830	885	no	Hills Ferry Barrier	yes	no
12/3/2013	female	Orange	24	-	810	840	yes	Hills Ferry Barrier	no	no
12/3/2013	male	Orange/White	111	-	540	580	yes	Hills Ferry Barrier	yes	no
12/3/2013	female	Orange	25	-	747	800	no	Hills Ferry Barrier	no	no
12/3/2013	male	Orange/White	112	-	630	657	no	Hills Ferry Barrier	yes	no
12/3/2013	female	Orange	26	-	585	619	yes	Hills Ferry Barrier	yes	no
12/3/2013	male	Orange/White	113	-	652	695	yes	Hills Ferry Barrier	yes	no
12/3/2013	male	Orange/White	101	-	630	672	yes	Midway Rd	yes	no
12/3/2013	female	Orange	19	-	800	842	yes	Midway Rd	yes	no
12/3/2013	male	Orange/White	102	-	930	975	yes	Midway Rd	yes	no
12/3/2013	male	Orange/White	103	-	616	657	yes	Midway Rd	yes	no
12/3/2013	female	Orange	20	-	813	880	no	Midway Rd	yes	yes
12/3/2013	male	Orange/White	104	-	830	890	yes	Midway Rd	yes	no
12/3/2013	male	Orange/White	105	-	802	850	yes	Midway Rd	yes	no
12/3/2013	male	Orange/White	106	-	600	645	yes	Midway Rd	yes	no
12/3/2013	female	Orange	21	-	750	820	no	Midway Rd	yes	no
12/3/2013	male	Orange/White	107	-	645	682	yes	Midway Rd	yes	no
12/3/2013	male	Orange/White	108	-	620	650	yes	Midway Rd	yes	no
12/3/2013	female	Orange	22	-	819	872	no	Midway Rd	yes	no
12/3/2013	male	Orange/White	109	-	605	650	yes	Midway Rd	yes	no
12/4/2013	male	Orange/White	114	-	610	654	yes	Salt Slough	yes	no
12/4/2013	female	Orange	27	-	760	803	yes	Van Clief Rd	yes	no
12/4/2013	male	Orange/White	115	-	674	720	yes	Casey	yes	no
12/4/2013	male	Orange/White	116	-	645	685	yes	Hills Ferry Barrier	yes	no
12/4/2013	female	Orange	28	-	575	575	yes	Delta Rd	yes	no
12/4/2013	male	Orange/White	117	-	573	622	yes	Midway Rd	yes	no
12/4/2013	female	Orange	29	-	750	801	no	Midway Rd	yes	no
12/4/2013	female	Orange	30	-	801	865	yes	Midway Rd	no	no
12/4/2013	male	Orange/White	118	-	870	931	yes	Hereford Rd	yes	no
12/4/2013	male	Orange/White	119	-	870	952	yes	Hereford Rd	yes	no
12/4/2013	male	Orange/White	120	-	842	900	yes	Hereford Rd	yes	no
12/4/2013	male	Orange/White	121	-	812	880	yes	Hereford Rd	yes	no
12/4/2013	female	Orange	31	-	820	855	yes	Hereford Rd	yes	no
12/4/2013	female	Orange	32	-	920	960	no	Hereford Rd	yes	no
12/5/2013	male	Orange/White	122	-	715	767	yes	Van Clief Rd	yes	no
12/5/2013	male	Orange/White	123	-	856	911	yes	Van Clief Rd	yes	no

Table 1 (cont.).--Individual fish data for 2013 Trap and Haul efforts.

12/5/2013	male	Orange/White	124	-	865	912	yes	Deep Well Rd	yes	no
12/5/2013	male	Orange/White	125	-	742	793	yes	Deep Well Rd	yes	no
12/5/2013	female	Orange	33	-	832	891	yes	Hereford Rd	yes	no
12/5/2013	male	Orange/White	126	-	807	856	no	Midway Rd	yes	no
12/5/2013	female	Orange	34	-	765	813	no	Deep Well Rd	yes	no
12/5/2013	male	Orange	127	-	850	902	yes	Midway Rd	yes	no
12/5/2013	female	Orange	35	-	778	802	yes	Hereford Rd	yes	no
12/5/2013	female	Orange	36	-	780	826	no	Hereford Rd	yes	no
12/5/2013	male	Orange/White	128	-	930	990	no	Midway Rd	yes	no
12/5/2013	male	Orange/White	129	-	730	790	yes	Hereford Rd	no	no
12/5/2013	female	Orange	37	-	720	761	no	Hereford Rd	no	no
12/5/2013	female	Orange	38	-	710	741	yes	Hereford Rd	yes	no
12/5/2013	female	Orange	39	-	800	850	yes	Hereford Rd	yes	no
12/5/2013	female	Orange	40	-	598	631	yes	Hereford Rd	yes	no
12/6/2013	male	Orange/White	130	-	840	890	yes	Deep Well Rd	yes	no
12/6/2013	female	Orange	41	-	890	905	yes	Hereford Rd	yes	no
12/6/2013	male	Orange/White	131	-	570	615	yes	Midway Rd	yes	no
12/6/2013	female	Orange	42	-	650	685	no	Hereford Rd	no	no
12/6/2013	female	Orange	43	-	750	790	yes	Hereford Rd	yes	no
12/6/2013	female	Orange	44	-	785	825	yes	Hereford Rd	yes	no
12/6/2013	male	Orange/White	132	-	580	615	yes	Deep Well Rd	yes	no
12/7/2013	male	Orange/White	133	-	735	787	yes	Van Clief Rd	yes	no
12/7/2013	female	Orange	45	-	897	975	yes	Casey	no	no
12/9/2013	female	Orange	46	-	831	892	no	Hereford Rd	yes	no
12/9/2013	male	Orange/White	134	-	825	883	yes	Hereford Rd	yes	no
12/9/2013	female	Orange	47	-	846	899	no	Hereford Rd	yes	no
12/11/2013	male	Orange/White	140	-	530	558	no	Mud Slough	yes	no
12/11/2013	male	Orange/White	135	-	658	710	yes	Deep Well Rd	yes	no
12/11/2013	female	Orange	48	-	595	663	no	Deep Well Rd	yes	no
12/11/2013	male	Orange/White	136	-	625	650	no	Midway Rd	yes	no
12/11/2013	female	Orange	49	12248	682	732	yes	Midway Rd	yes	no
12/11/2013	male	Orange/White	137	-	812	873	yes	Midway Rd	yes	no
12/11/2013	male	Orange/White	138	-	610	651	yes	Midway Rd	yes	no
12/11/2013	female	Orange	50	-	740	785	yes	Hereford Rd	no	no
12/11/2013	female	Orange	51	-	712	736	yes	Deep Well Rd	no	no
12/11/2013	male	Orange/White	139	-	730	785	yes	Hereford Rd	yes	no
12/12/2013	male	Orange/White	141	-	624	661	yes	Van Clief Rd	yes	no
12/12/2013	male	Orange/White	142	-	842	903	yes	Van Clief Rd	yes	no
12/12/2013	male	Orange/White	143	-	680	722	yes	Van Clief Rd	yes	no
12/12/2013	male	Orange/White	149	-	925	960	yes	Van Clief Rd	yes	no
12/12/2013	female	Orange	56	-	803	847	no	Van Clief Rd	yes	no
12/12/2013	male	Orange/White	144	-	825	883	yes	Midway Rd	yes	no
12/12/2013	male	Orange	145	-	819	869	yes	Midway Rd	yes	no
12/12/2013	male	Orange/White	146	-	805	835	yes	Midway Rd	yes	no
12/12/2013	female	Orange	52	-	841	865	no	Midway Rd	yes	no
12/12/2013	male	Orange/White	147	-	792	837	yes	Midway Rd	yes	no
12/12/2013	female	Orange	53	-	749	765	yes	Midway Rd	no	no
12/12/2013	female	Orange	54	-	760	810	yes	Midway Rd	yes	no
12/12/2013	female	Orange	55	-	740	790	yes	Midway Rd	yes	no
12/12/2013	male	Orange/White	148	-	807	843	yes	Midway Rd	yes	no
12/13/2013	male	Orange/White	445	-	856	905	no	Salt Slough	yes	no
12/13/2013	male	Orange/White	150	-	620	665	no	Hills Ferry Barrier	yes	no
12/13/2013	female	Orange	57	-	695	726	yes	Hereford Rd	no	no
12/13/2013	male	Orange/White	446	-	600	650	yes	Hereford Rd	yes	no
12/13/2013	male	Orange/White	447	-	755	780	no	Delta Rd	yes	no
12/14/2013	female	Orange	58	-	730	770	yes	Van Clief Rd	yes	no
12/14/2013	male	Orange/White	448	-	853	902	no	Hereford Rd	yes	no
12/14/2013	male	Orange/White	449	-	540	585	yes	Hereford Rd	yes	no
12/14/2013	male	Orange/White	450	-	819	881	yes	Hereford Rd	yes	no



Table 1 (cont.)--Individual fish data for 2013 Trap and Haul efforts.

12/14/2013	male	Orange/White	451	-	950	1001	yes	Hereford Rd	yes	no
12/14/2013	male	Orange/White	552	-	760	795	yes	Midway Rd	yes	no
12/14/2013	male	Orange/White	553	-	662	683	yes	Midway Rd	yes	no
12/14/2013	male	Orange/White	554	-	860	910	yes	Midway Rd	yes	no
12/14/2013	male	Orange/White	455	-	930	975	yes	Midway Rd	yes	no
12/14/2013	female	Orange	59	-	815	872	yes	Midway Rd	no	no
12/14/2013	female	Orange	60	-	801	835	yes	Midway Rd	yes	no
12/14/2013	male	Orange/White	456	-	555	589	yes	Midway Rd	yes	no
12/14/2013	male	Orange/White	457	-	760	810	yes	Midway Rd	yes	no
12/14/2013	male	Orange/White	458	-	760	795	yes	Midway Rd	yes	no
12/14/2013	female	Orange	61	-	675	722	yes	Midway Rd	yes	no
12/14/2013	male	Orange/White	459	-	755	792	yes	Midway Rd	yes	no
12/14/2013	male	Orange/White	460	-	784	838	yes	Midway Rd	yes	no
12/14/2013	female	Orange	62	-	770	820	yes	Midway Rd	yes	no
12/14/2013	male	Orange/White	461	-	635	670	no	Midway Rd	yes	no
12/15/2013	male	Orange/White	462	-	560	605	yes	Salt Slough	yes	no
12/15/2013	male	Orange/White	463	-	632	665	yes	Van Clief Rd	yes	no