

# **Constant Fractional Marking/Tagging Program For Central Valley Fall-run Chinook Salmon**

**2010 Marking Season**



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This report contains an addendum developed by Douglas Threlhoff of the U.S. Fish and Wildlife Service, Comprehensive Assessment and Monitoring Program, Sacramento, California.

The addendum consists of tables on pages 43, 44, 45, 46, and 47 of this report. The tables on pages 43 - 47 provide a slightly different table format than the tables on pages 21, 28, 31, 38, and 42.

The tables on pages 43, 44, 45, 46, and 47 were developed by Braden Buttars of the Pacific States Marine Fisheries Commission.

## **Abstract**

The Central Valley Constant Fractional Marking/Tagging Program (CFM) was initiated in the spring of 2007. Planning studies indicated that the optimal marking/tagging rate for the Central Valley CFM program was 25% of the fall-run Chinook production releases. For each production release (fish released at the same time and location), the program therefore targeted marking with an adipose fin clip and coded-wire tagging a representative 25% of production releases of fall-run Chinook salmon from the Central Valley hatcheries in 2007, 2008, 2009, and 2010. The program was conducted at Coleman National Fish Hatchery, Feather River Hatchery, Feather River Hatchery Annex, Nimbus Hatchery, and Mokelumne River Hatchery in these years.

This report covers the fourth year of marking/tagging activities at the Central Valley hatcheries in the spring of 2010 (Brood Year 2009 fall-run Chinook). In the 2010 season, a greater percentage of the fall-run Chinook production was marked relative to the previous three seasons. In 2010, the Mokelumne River Hatchery produced fewer fish than the production goals; therefore, 100% of the production was coded-wire tagged and adipose fin-clipped. Feather River Hatchery and Nimbus Fish Hatchery also chose to perform 100% clip/tag on a few groups of their production fish. The program successfully processed 100% of the production releases of fall-run Chinook salmon through the automated marking trailers, a total of 28,040,548 fish. Of this total, approximately 31.86% were coded-wire tagged and adipose fin-clipped (a total of 8,933,647 fish).

## **Introduction**

In most years, over 32 million fall-run Chinook salmon are produced at five hatcheries in California's Central Valley, including Coleman National Fish Hatchery, Feather River Hatchery, Feather River Hatchery Annex, Nimbus Hatchery, and Mokelumne River Hatchery (Figure 1). Production from these hatcheries contributes to major sport and commercial fisheries in ocean and inland areas. Until 2007, only experimental releases of fall-run Chinook were externally marked and coded-wire tagged.

In 2004, the CALFED Ecosystem Restoration Program (ERP) funded a study to design a constant fractional marking/coded-wire tagging program for production releases of fall-run Chinook salmon from Central Valley hatcheries, with the goal of estimating in a statistically valid manner the relative contribution of hatchery production. The study recommended the implementation of a system-wide marking/tagging program for production releases.

In 2006, the ERP Program provided funding to begin implementation of the Central Valley Constant Fractional Marking (CFM) program. The initial contract provided funding to Pacific States Marine Fisheries Commission for the purchase of four automated tagging systems and the first two years of operating costs for marking/tagging production releases of fall-run Chinook salmon at the five major Central Valley hatcheries (in 2007 and 2008). This program is a cooperative effort of the California Department of Fish and Game, California Department of Water Resources, U.S. Fish and Wildlife Service, Pacific States Marine Fisheries Commission, U.S. Bureau of Reclamation, and East Bay Municipal Utility District. In 2009 and 2010, funding

to conduct tagging operations at each hatchery was provided by the following entities: Coleman National Fish Hatchery, U.S. Bureau of Reclamation; Feather River Fish Hatchery, California Department of Water Resources; Feather River Annex, California Department of Fish and Game; Mokelumne River Fish Hatchery, East Bay Municipal Utility District; and Nimbus Fish Hatchery, U.S. Bureau of Reclamation.

The CFM program will provide CALFED ERP and the participating agencies with specific information needed to evaluate Ecosystem Restoration Program Plan (ERPP) actions and goals related to improving conditions for Central Valley Chinook salmon.

The overall objectives of the program are:

1. To evaluate the contribution rates of hatchery fish to Central Valley Chinook salmon populations,
2. To evaluate the Central Valley propagation program's genetic and ecological effects on natural Chinook populations,
3. To estimate exploitation rates of hatchery and natural Central Valley Chinook salmon in ocean and inland fisheries,
4. To evaluate the success of restoration actions designed to increase natural production of Central Valley Chinook salmon,
5. To evaluate the relative impacts of water project operations on hatchery and naturally-produced Chinook salmon,
6. To evaluate the recovery of listed stocks of Chinook salmon.

This report covers the fourth year of marking/tagging activities at the Central Valley hatcheries in the spring of 2010 (Brood Year 2009 fall-run Chinook).

## **Methods**

The coded-wire tag/adipose fin clip is the method agreed to by the Pacific Salmon Treaty (1999) to monitor Chinook salmon in ocean fisheries along the Pacific Coast. It is a cost-effective method to apply a long-term mark that gives data on hatchery origin and release group, and provides for external identification of tagged fish. The coded-wire tag/adipose fin clip marking method has been used throughout the West Coast of North America since the 1970's. Currently, over 50 million Chinook and Coho salmon are coded-wire tagged each year. This Central Valley program is an integral part of this Coast-wide tagging program; tagged fish are recovered in ocean fisheries throughout the West Coast.

Four state-of-the-art automated tagging trailers were purchased for the program in late 2006 and early 2007 from Northwest Marine Technology. The trailers incorporated the latest advanced technology for marking and coded-wire tagging fish. The AutoFish System™ has the capacity to mark and implant coded-wire tags very rapidly without any use of anesthetic or human contact. These systems have been in use for many years in the Pacific Northwest, but the Central Valley trailers are the first to be purchased for use in California.

Planning studies indicated that the optimal marking/tagging rate for the Central Valley CFM program was 25% of the fall-run Chinook production releases. For each production release (fish released at the same time and location), the program therefore targeted marking/tagging a representative 25% in 2007, 2008, 2009, and 2010. In the 2010 tagging season, 100% of the BY2009 fall-run Chinook at Mokelumne River Fish Hatchery were coded-wire tagged and adipose fin-clipped to more closely monitor out-of-basin straying rates. Feather River Hatchery and Nimbus Fish Hatchery also chose to perform 100% clip/tag on a few groups of their production fish.

Coded-wire tags for the 2010 season were ordered from Northwest Marine Technology in November 2009. Tags used in the program were all 1.1 mm. standard size tags; no half tags were used.

The program was conducted at Coleman National Fish Hatchery, Feather River Hatchery, Feather River Hatchery Annex, Nimbus Hatchery, and Mokelumne River Hatchery (Figure 1). Fall-run Chinook coded-wire tagged and released for experimental purposes were not included in the program. The Merced River Hatchery therefore was not included in the program, as all the fall-run Chinook at this hatchery are released for experimental purposes, and were marked and coded-wire tagged using manual techniques in 2010.

The automated marking trailers have the ability to process fish that are a minimum length of 57 mm and a maximum length of 142 mm. With this in mind, timing at each facility was critical to maximize efficiency and productivity while meeting hatchery release deadlines. Double shifts were often used to maximize efficiency and output of the AutoFish Trailers. Trailers were moved as needed when fish at each hatchery reached the appropriate marking size. The marking season began the second week of February at the Feather River Annex in Thermalito and ended at Nimbus Fish Hatchery the second week of May. Marking of hatchery-produced salmon in 2010 therefore spanned a 14-week period.

Throughout the season, tag retention studies were conducted to determine actual marking/tagging rates for each coded-wire tag code. Approximately 800-900 marked/tagged fish per tag code were retained and held separately for a period of approximately 21 days following the completion of each tag code. For Coleman National Fish Hatchery, approximately 400 fish were held for retention purposes for each tag code. The lower number of fish held per tag code at this facility was determined with the assistance of USFWS personnel due to the large number of tag codes used (28). Study fish were sampled from throughout the tagging period for each tag code. Fish were electronically tested for tag retention at the end of the study period. For some smaller tag codes, tag retention studies were not feasible; for these tag groups, retention rates were extrapolated from larger groups tagged at the same hatchery during similar time periods.

Following the tagging season, coded-wire tag data were summarized for submission to the [Regional Mark Processing Center \(RMPC\)](#), operated by the Pacific States Marine Fisheries Commission. The RMPC provides regional coordination of salmon tagging and fin marking programs, and maintenance of coastwide databases for coded-wire tag releases, recoveries, and associated catch/sample information, in the Regional Mark Information System (RMIS).

Figure 2 summarizes the annual project work flow.

## Results

The program successfully processed 100% of the 2010 production releases of fall-run Chinook salmon from the Central Valley hatcheries. The technology allowed an accurate count of all production fish, and the marking/tagging of an exact percentage of those fish. The 25% target rate for marking/tagging was achieved for brood year 2009.

Tag retention studies indicated very high rates of tag/mark retention. Retention rates ranged as follows:

- Coleman National Fish Hatchery: 97.61 - 100% with an average of 99.62%\*
- Feather River Hatchery Annex: 99.75 – 100% with an average of 99.81%
- Feather River Hatchery: 99.00% - 99.77% with an average of 99.68%
- Mokelumne River Hatchery: 99.44% - 99.56% with average of 99.50%
- Nimbus Hatchery: 97.63% - 100.00% with an average of 99.23%

\* This retention data does not include information for the two tag codes that had issues with a net pen blowing over.

Daily tagging rates, tag codes, and results of retention studies are shown in Appendix Tables 1 – 5 for each of the hatcheries.

The program successfully processed 100% of the production releases of fall-run Chinook salmon through the automated marking trailers, a total of 28,040,548 fish. Of this total, approximately 31.86% were coded-wire tagged and adipose fin-clipped (a total of 8,933,647 fish).

During the 2010 season, a greater percentage of the fall-run Chinook production was marked relative to the previous three seasons. In 2010, the Mokelumne River Hatchery produced fewer fish than the production goals; therefore, 100% of the production was coded-wire tagged and adipose fin-clipped. Feather River Hatchery and Nimbus Fish Hatchery also chose to perform 100% clip/tag on a few groups of their production fish.

## **Discussion**

The CFM Program started the marking season the second week of February, 2010 and completed trailer operations the second week of May for a total of 14 weeks. The program started with five Trailer Operators, one of which left a month into the season. Another Trailer Operator only worked on trailer operations at Feather River Hatchery. Two Trailer Operators from Idaho spent a few weeks assisting with trailer operations in California. Five to six Trailer Assistants were also employed throughout the 14-week season.

The four AutoFish Trailers are now four years old and the annual maintenance costs are increasing. The program had two Flygt pumps fail during the same week; replacement pumps were purchased but this resulted in a delay in trailer operations at Feather River Fish Hatchery and Coleman National Fish Hatchery. A computer also failed and was replaced in the AutoFish Trailer at Mokelumne River Hatchery. We now have spare Flygt pumps for three of the four AutoFish Trailers so we should be better prepared in the event of pump failures in the future.

## Acknowledgements

The Constant Fractional Marking Program would not have existed or successfully completed the first four years of tagging without significant contributions from a number of people and agencies. I would like to thank the following individuals for their support, dedication and cooperation in this program:

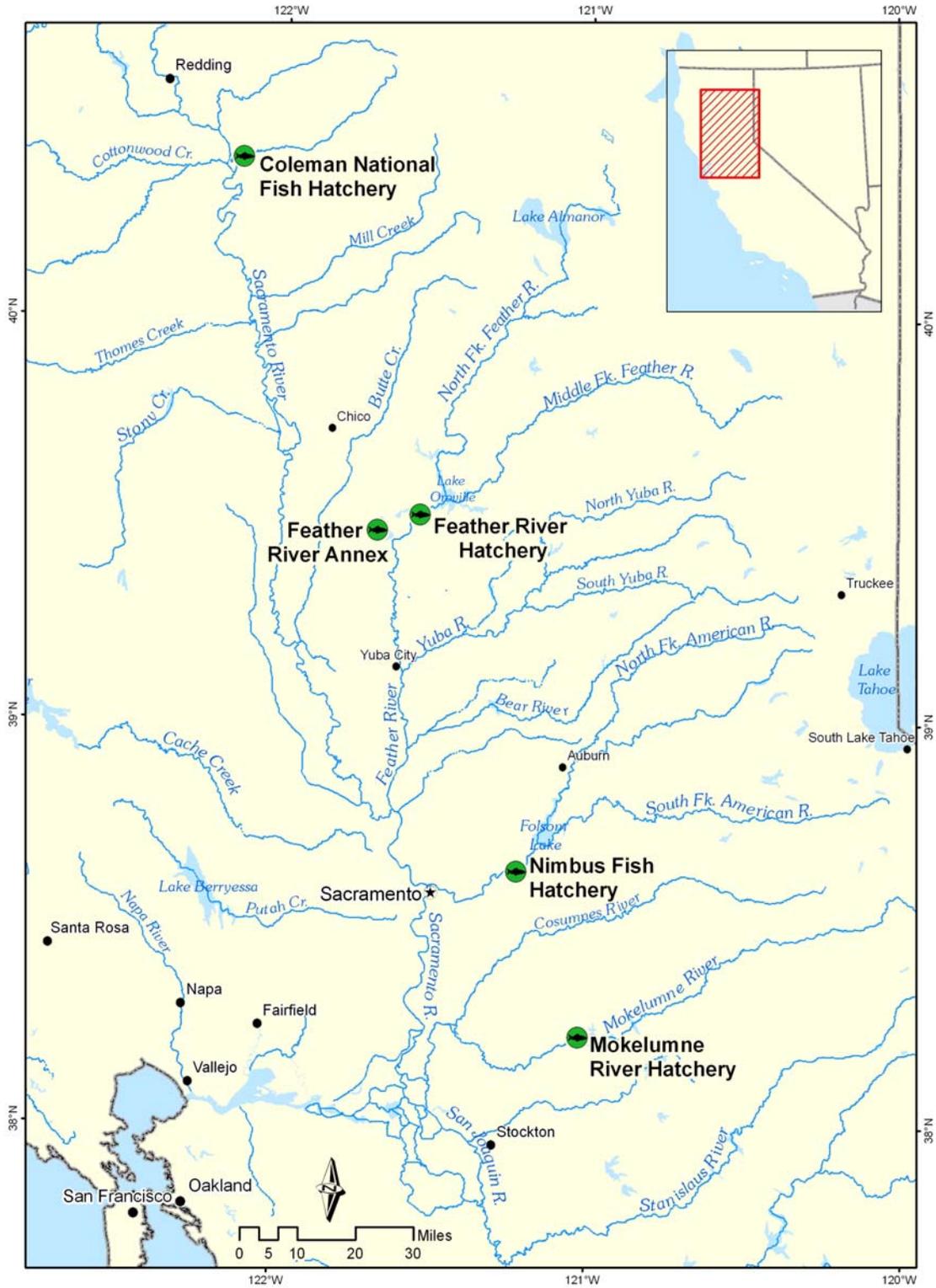
The IEP Central Valley Salmonid Project Work Team provided guidance over the years in the development of the project. Members included Jim Smith (USFWS), Russell Bellmer (CDFG), Kenneth Lentz (USBR retired), John Hannon (USBR), Rich Dixon (CDFG retired), Alice Low (CDFG), Brad Cavallo (formerly DWR), Pete Adams (NOAA Fisheries retired), Stan Allen (PSMFC) and Joseph Miyamoto (EBMUD).

Management, administration, problem solving, and the existence of this program would not have been possible without Alice Low, Tom Schroyer, and Dave Zezulak, California Department of Fish and Game (CDFG); Stan Allen and Amy Roberts, Pacific States Marine Fisheries Commission (PSMFC); and Kevin Niemela, U.S. Fish and Wildlife Service (USFWS).

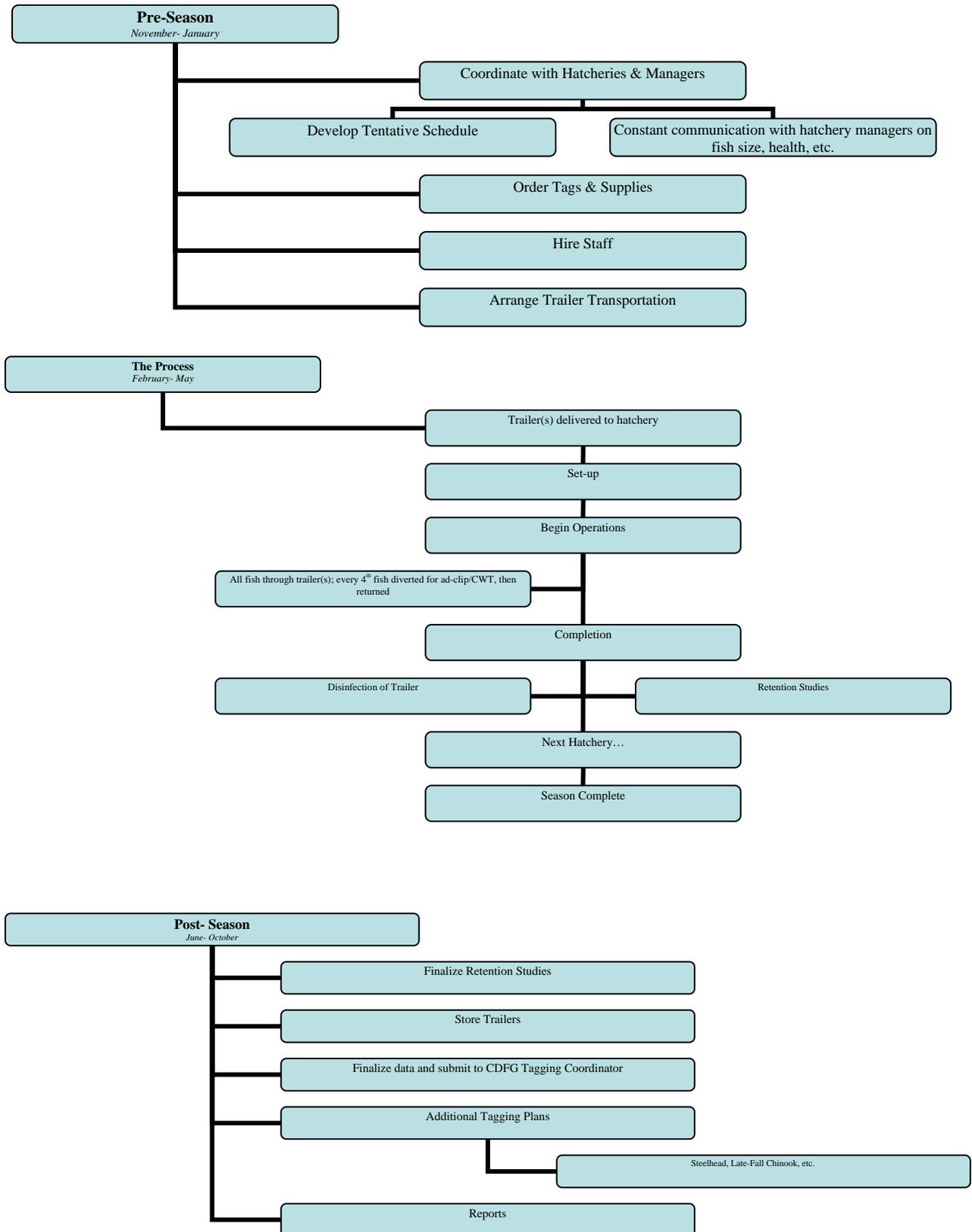
In particular, I want to thank the managers and staff working at the hatcheries we conduct the Constant Fractional Marking. Without your help, cooperation and support this program would not be possible. Your willingness to work with us in adjusting the agendas and scheduling is critical in meeting the goals of all of the facilities. Bob Anderson (CDFG - Mokelumne River Fish Hatchery), William Smith (CDFG - Mokelumne River Fish Hatchery), Kurtis Brown (USFWS - Coleman National Fish Hatchery), Anna Kastner (CDFG - Feather River Fish Hatchery), Allen Dill (CDFG - Feather River Fish Hatchery), Paula Hoover (CDFG - Nimbus Fish Hatchery), Bob Burks (CDFG - Nimbus Fish Hatchery) and their very professional hatchery staff did a significant amount of work to accommodate the trailers at their hatcheries, and made us feel welcome while we were on-site. I look forward to continuing to work with you all.

I also want to thank Ryan Revnak and Kevin Young (PSMFC) for their work on the data entry and the rest of the professional and hard working CFM Tagging crew that made this fourth season a success. They each spent many long days away from home to accomplish the goals of this very demanding program. Trailer Operators included Chad Dale (PSMFC), Charles Hanley (PSMFC), Casey Frantz (PSMFC), Travis House (PSMFC), Michael Mercer (formerly PSMFC), Ryan Revnak (PSMFC), and Kevin Young (PSMFC). Tagging Trailer Assistants included seasonal PSMFC staff members Nichole Clemente, Elizabeth Ferris, Cheryl Fullerton, Tracy Foreman, Renee Goss, and Amber Smith.

**Figure 1. Hatchery Locations: Central Valley Constant Fractional Marking Program (2010)**



**Figure 2. Constant Fractional Marking Program Annual Work Flow Summary**



# Appendix

# Coleman National Fish Hatchery



**Table 1a. Daily Tagging Rates at Coleman National Fish Hatchery**

Coleman National Fish Hatchery							
Tag Code: 05/51/79			size: 93k			Trailer # CA1	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/8/2010	1	1	52,396	-	157,620	-	210,016
3/9/2010	1	1	44,555	96,951	133,728	291,348	388,299
<b>Tag Code Totals:</b>			-	<b>96,951</b>	-	<b>291,348</b>	<b>388,299</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/80			size: 93k			Trailer # CA1	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/9/2010	2	2	36,348	-	109,152	-	145,500
3/10/2010	2	2	52,084	88,432	156,366	265,518	353,950
<b>Tag Code Totals:</b>			-	<b>88,432</b>	-	<b>265,518</b>	<b>353,950</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/81			size: 93k			Trailer # CA1	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/10/2010	3	3	19,794	-	59,406	-	79,200
3/11/2010	3	3	36,807	56,601	110,541	169,947	226,548
3/11/2010	3	3	38,978	95,579	116,988	286,935	382,514
<b>Tag Code Totals:</b>			-	<b>95,579</b>	-	<b>286,935</b>	<b>382,514</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/82			size: 93k			Trailer # CA1	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/12/2010	4	4	38,597	-	115,869	-	154,466
3/12/2010	4	4	35,750	74,347	107,310	223,179	297,526
3/15/2010	4	4	12,439	86,786	37,398	260,577	347,363
<b>Tag Code Totals:</b>			-	<b>86,786</b>	-	<b>260,577</b>	<b>347,363</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/83			size: 112k			Trailer # CA3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/8/2010	8	8	15,431	-	46,383	-	61,814
3/9/2010	8	8	78,832	94,263	236,544	282,927	377,190
3/10/2010	8	8	22,402	116,665	67,254	350,181	466,846
<b>Tag Code Totals:</b>			-	<b>116,665</b>	-	<b>350,181</b>	<b>466,846</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/84			size: 112k			Trailer # CA3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/10/2010	9	9	61,733	-	185,271	-	247,004
3/11/2010	9	9	53,615	115,348	160,902	346,173	461,521
<b>Tag Code Totals:</b>			-	<b>115,348</b>	-	<b>346,173</b>	<b>461,521</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/85			size: 112k			Trailer # CA3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/11/2010	10	10	1,338	-	4,014	-	5,352
3/12/2010	10	10	77,589	78,927	232,803	236,817	315,744
3/15/2010	10	10	29,548	108,475	88,692	325,509	433,984
<b>Tag Code Totals:</b>			-	<b>108,475</b>	-	<b>325,509</b>	<b>433,984</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/86			size: 112k			Trailer # CA3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/12/2010	11	11	28,339	-	85,101	-	113,440
3/16/2010	11	11	40,658	68,997	122,004	207,105	276,102
3/16/2010	11	11	36,904	105,901	110,748	317,853	423,754
<b>Tag Code Totals:</b>			-	<b>105,901</b>	-	<b>317,853</b>	<b>423,754</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/87			size: 112k			Trailer # CA1	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/15/2010	5	5	41,792	-	125,421	-	167,213
3/16/2010	5	5	43,055	84,847	129,222	254,643	339,490
3/16/2010	5	5	34,184	119,031	102,594	357,237	476,268
<b>Tag Code Totals:</b>			-	<b>119,031</b>	-	<b>357,237</b>	<b>476,268</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/88			size: 112k			Trailer # CA1	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/17/2010	6	6	40,127	-	120,471	-	160,598
3/17/2010	6	6	41,648	81,775	125,022	245,493	327,268
3/18/2010	6	6	36,545	118,320	109,707	355,200	473,520
<b>Tag Code Totals:</b>			-	<b>118,320</b>	-	<b>355,200</b>	<b>473,520</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/89			size: 112k			Trailer # CA1	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/18/2010	7	7	45,243	-	135,789	-	181,032
3/19/2010	7	7	67,241	112,484	201,885	337,674	450,158
<b>Tag Code Totals:</b>			-	<b>112,484</b>	-	<b>337,674</b>	<b>450,158</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/90			size: 110k			Trailer # CA3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/17/2010	15	15	42,950	-	128,970	-	171,920
3/18/2010	15	15	41,358	84,308	124,101	253,071	337,379
3/18/2010	15	15	16,761	101,069	50,286	303,357	404,426
<b>Tag Code Totals:</b>			-	<b>101,069</b>	-	<b>303,357</b>	<b>404,426</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/91			size: 110k			Trailer # CA3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/18/2010	16	16	10,275	-	30,858	-	41,133
3/19/2010	16	16	38,260	48,535	114,849	145,707	194,242
3/19/2010	16	16	17,321	65,856	52,026	197,733	263,589
3/22/2010	16	16	38,470	104,326	115,455	313,188	417,514
<b>Tag Code Totals:</b>			-	<b>104,326</b>	-	<b>313,188</b>	<b>417,514</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/92			size: 110k			Trailer # CA3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/23/2010	17	17	36,018	-	108,114	-	144,132
3/23/2010	17	17	36,929	72,947	110,862	218,976	291,923
3/24/2010	17	17	43,939	116,886	131,853	350,829	467,715
<b>Tag Code Totals:</b>			-	<b>116,886</b>	-	<b>350,829</b>	<b>467,715</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/93			size: 110k			Trailer # CA3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/24/2010	18	18	35,716	-	107,226	-	142,942
3/25/2010	18	18	44,153	79,869	132,498	239,724	319,593
3/25/2010	18	18	37,904	117,773	113,793	353,517	471,290
<b>Tag Code Totals:</b>			-	<b>117,773</b>	-	<b>353,517</b>	<b>471,290</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/94			size: 110k			Trailer # CA3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/26/2010	19	19	56,878	-	170,715	-	227,593
3/29/2010	19	19	54,485	111,363	163,545	334,260	445,623
3/30/2010	19	19	904	112,267	2,733	336,993	449,260
<b>Tag Code Totals:</b>			-	<b>112,267</b>	-	<b>336,993</b>	<b>449,260</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/95			size: 110k			Trailer # CA1	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/22/2010	22	22	20,107	-	60,429	-	80,536
3/23/2010	22	22	41,651	61,758	125,046	185,475	247,233
3/24/2010	22	22	40,667	102,425	122,067	307,542	409,967
3/25/2010	22	22	13,069	115,494	39,249	346,791	462,285
<b>Tag Code Totals:</b>			-	<b>115,494</b>	-	<b>346,791</b>	<b>462,285</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/96			size: 110k			Trailer # CA3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/7/2010	20	20	42,722	-	128,238	-	170,960
4/7/2010	20	20	38,634	81,356	115,959	244,197	325,553
4/8/2010	20	20	24,205	105,561	72,660	316,857	422,418
<b>Tag Code Totals:</b>			-	<b>105,561</b>	-	<b>316,857</b>	<b>422,418</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/97			size: 110k			Trailer # CA3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/5/2010	21	21	31,085	-	93,336	-	124,421
4/6/2010	21	21	39,762	70,847	119,430	212,766	283,613
4/6/2010	21	21	36,802	107,649	110,469	323,235	430,884
<b>Tag Code Totals:</b>			-	<b>107,649</b>	-	<b>323,235</b>	<b>430,884</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/98			size: 105k			Trailer # CA1	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/25/2010	23	23	14,697	-	44,139	-	58,836
3/26/2010	23	23	37,425	52,122	112,314	156,453	208,575
3/29/2010	23	23	27,720	79,842	83,196	239,649	319,491
3/30/2010	23	23	24,240	104,082	72,780	312,429	416,511
<b>Tag Code Totals:</b>			-	<b>104,082</b>	-	<b>312,429</b>	<b>416,511</b>

Coleman National Fish Hatchery							
Tag Code: 05/51/99			size: 105k			Trailer # CA1	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/30/2010	24	24	5,521	-	16,563	-	22,084
3/31/2010	24	24	43,313	48,834	129,963	146,526	195,360
4/1/2010	24	24	51,128	99,962	153,453	299,979	399,941
<b>Tag Code Totals:</b>			-	<b>99,962</b>	-	<b>299,979</b>	<b>399,941</b>

Coleman National Fish Hatchery							
Tag Code: 05/52/21			size: 105k			Trailer # CA1	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/2/2010	25	25	27,672	-	83,064	-	110,736
4/5/2010	25	25	42,764	70,436	128,361	211,425	281,861
4/5/2010	25	25	39,746	110,182	119,286	330,711	440,893
<b>Tag Code Totals:</b>			-	<b>110,182</b>	-	<b>330,711</b>	<b>440,893</b>

Coleman National Fish Hatchery							
Tag Code: 05/52/22			size: 105k			Trailer # CA1	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/6/2010	26	26	64,945	-	194,952	-	259,897
4/7/2010	26	26	45,987	110,932	138,072	333,024	443,956
<b>Tag Code Totals:</b>			-	<b>110,932</b>	-	<b>333,024</b>	<b>443,956</b>

Coleman National Fish Hatchery							
Tag Code: 05/52/23			size: 105k			Trailer # CA1	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/7/2010	27	27	26,844	-	80,628	-	107,472
4/8/2010	27	27	39,875	66,719	119,697	200,325	267,044
4/8/2010	27	27	35,046	101,765	105,219	305,544	407,309
<b>Tag Code Totals:</b>			-	<b>101,765</b>	-	<b>305,544</b>	<b>407,309</b>

Coleman National Fish Hatchery							
Tag Code: 05/52/24			size: 90k			Trailer # CA3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/30/2010	13	13	47,071	-	141,339	-	188,410
3/31/2010	13	13	47,897	94,968	143,742	285,081	380,049
<b>Tag Code Totals:</b>			-	<b>94,968</b>	-	<b>285,081</b>	<b>380,049</b>

Coleman National Fish Hatchery							
Tag Code: 05/52/25			size: 90k			Trailer # CA3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/31/2010	14	14	15,445	-	46,371	-	61,816
4/1/2010	14	14	75,304	90,749	225,966	272,337	363,086
<b>Tag Code Totals:</b>			-	<b>90,749</b>	-	<b>272,337</b>	<b>363,086</b>

Coleman National Fish Hatchery							
Tag Code: 05/52/26			size: 90k			Trailer # CA3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/2/2010	12	12	61,993	-	186,048	-	248,041
4/5/2010	12	12	27,999	89,992	84,102	270,150	360,142
<b>Tag Code Totals:</b>			-	<b>89,992</b>	-	<b>270,150</b>	<b>360,142</b>

Coleman National Fish Hatchery							
Tag Code: 05/52/27			size: 50k			Trailer # CA1	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/12/2010	28	28	34,481	-	103,551	-	138,032
4/13/2010	28	28	11,381	45,862	34,170	137,721	183,583
<b>Tag Code Totals:</b>			-	<b>45,862</b>	-	<b>137,721</b>	<b>183,583</b>

**Table 1b. Summary of hatchery tag codes and tag retention study**

<b>Coleman National Hatchery Summary</b>								
<b>Tag Code Size and Location</b>			<b>Tag Code Totals</b>			<b>Retention</b>		
<b>Tag Code</b>	<b>Tag Code Size</b>	<b>Raceway</b>	<b>Number Tagged</b>	<b>Number Untagged</b>	<b>Total Processed</b>	<b># of Fish</b>	<b>Days Held</b>	<b>% Retention</b>
05/51/79	93k	1	96,951	291,348	388,299	415	21***	99.05%
05/51/80	93k	2	88,432	265,518	353,950	388	21***	99.74%
05/51/81	93k	3	95,579	286,935	382,514	390	21***	99.49%
05/51/82	93k	4	86,786	260,577	347,363	401	21***	99.50%
05/51/83	112k	8	116,665	350,181	466,846	413	21***	99.76%
05/51/84	112k	9	115,348	346,173	461,521	198*	21***	98.88%
05/51/85	112k	10	108,475	325,509	433,984	386	21***	100%
05/51/86	112k	11	105,901	317,853	423,754	362	21***	100%
05/51/87	112k	5	119,031	357,237	476,268	384	21***	99.74%
05/51/88	112k	6	118,320	355,200	473,520	**	-	99.62%****
05/51/89	112k	7	112,484	337,674	450,158	399	21***	100%
05/51/90	110k	15	101,069	303,357	404,426	301	21***	98.69%
05/51/91	110k	16	104,326	313,188	417,514	400	21***	100%
05/51/92	110k	17	116,886	350,829	467,715	392	21***	100%
05/51/93	110k	18	117,773	353,517	471,290	388	21***	100%
05/51/94	110k	19	112,267	336,993	449,260	395	21***	99.75%
05/51/95	110k	22	115,494	346,791	462,285	286	21***	97.61%
05/51/96	110k	20	105,561	316,857	422,418	401	21***	99.75%
05/51/97	110k	21	107,649	323,235	430,884	398	21***	100%
05/51/98	105k	23	104,082	312,429	416,511	393	21***	100%
05/51/99	105k	24	99,962	299,979	399,941	396	21***	99.75%
05/52/21	105k	25	110,182	330,711	440,893	398	21***	99.50%
05/52/22	105k	26	110,932	333,024	443,956	419	21***	99.29%
05/52/23	105k	27	101,765	305,544	407,309	149	21***	100%
05/52/24	90k	13	94,968	285,081	380,049	388	21***	99.49%
05/52/25	90k	14	90,749	272,337	363,086	406	21***	100%
05/52/26	90k	12	89,992	270,150	360,142	400	21***	99.75%
05/52/27	50k	28	45,862	137,721	183,583	391	21***	98.74%
<b>Grand Total =</b>			<b>2,893,491</b>	<b>8,685,948</b>	<b>11,579,439</b>	<b>Avg % Retention =</b>		<b>99.62%</b>

\* This group had a problem with marked and unmarked fish getting in and out of the net pen so 800 fish were sampled and 198 of those were clipped and tagged.

\*\* The net pen blew over so no retention fish were held for this tag code.

\*\*\* Number of days held for retention fish was approximately 21 days. The USFWS crew checked fish one or two times per week so some groups would have been checked a day or two more or less than the 21 time period.

\*\*\*\* The tag retention percentage for this tag code is the average of all the other tag codes.

# Feather River Fish Hatchery



**Table 2a. Daily Tagging Rates at Feather River Hatchery**

Feather River							
Tag Code: 06/70/30			size: 5k			Trailer # CA4	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/23/2010	A4	A4	5,836	-	17,560	-	23,396
<b>Tag Code Totals:</b>			-	<b>5,836</b>	-	<b>17,560</b>	<b>23,396</b>

Feather River							
Tag Code: 06/70/31			size: 5k			Trailer # CA4	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/23/2010	A4	A4	5,835	-	17,559	-	23,394
<b>Tag Code Totals:</b>			-	<b>5,835</b>	-	<b>17,559</b>	<b>23,394</b>

Feather River							
Tag Code: 06/86/60			size: 50k			Trailer # CA4	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/22/2010	A4	A4	42,138	-	126,474	-	168,612
4/23/2010	A4	A4	11,755	53,893	35,205	161,679	215,572
<b>Tag Code Totals:</b>			-	<b>53,893</b>	-	<b>161,679</b>	<b>215,572</b>

Feather River							
100% AD/CWT TYEE Club							
Tag Code: 06/86/24			size: 40k			Trailer # CA4	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/29/2010	C3/2	C1	42,357	-	-	-	42,357
<b>Tag Code Totals:</b>			-	<b>42,357</b>	-	-	<b>42,357</b>

Feather River							
Tag Code: 06/86/54			size: 100k			Trailer # CA4	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/19/2010	B6	B2	43,431	-	130,356	-	173,787
4/20/2010	B6/A2	B2	14,462	57,893	43,401	173,757	<b>231,650</b>
4/20/2010	A2	B4	55,868	-	167,649	-	<b>223,517</b>
<b>Tag Code Totals:</b>			-	<b>113,761</b>	-	<b>341,406</b>	<b>455,167</b>

Feather River							
Tag Code: 06/86/69			size: 350k			Trailer # CA4	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/1/2010	F2	Chan 2	41,379	-	124,335	-	165,714
3/2/2010	F2	Chan 2	42,072	83,451	126,306	250,641	334,092
3/2/2010	F2	Chan 2	38,744	122,195	116,289	366,930	489,125
3/3/2010	F2/E2	Chan 2	39,247	161,442	117,816	484,746	646,188
3/3/2010	E2	Chan 2	33,101	194,543	99,348	584,094	778,637
3/4/2010	E2	Chan 2	33,243	227,786	103,113	687,207	914,993
3/4/2010	E2	Chan 2	25,438	253,224	76,383	763,590	1,016,814
3/5/2010	F4	Chan 2	31,266	284,490	93,858	857,448	1,141,938
3/5/2010	F4	Chan 2	26,120	310,610	78,426	935,874	1,246,484
3/10/2010	E4	Chan 2	35,524	346,134	106,644	1,042,518	1,388,652
3/10/2010	E4	Chan 2	21,734	367,868	65,253	1,107,771	1,475,639
3/11/2010	E2	Chan 2	5,068	372,936	15,207	1,122,978	1,495,914
3/11/2010	E2	Chan 2	23,091	396,027	69,333	1,192,311	1,588,338
<b>Tag Code Totals:</b>			-	<b>396,027</b>	-	<b>1,192,311</b>	<b>1,588,338</b>

Feather River							
Tag Code: 06/86/70			size: 350k			Trailer # CA4	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/15/2010	E2	Chan1	28,199	-	84,678	-	112,877
3/16/2010	E2	Chan1	69,424	97,623	208,509	293,187	390,810
3/17/2010	F2	Chan1	72,230	169,853	216,912	510,099	679,952
3/18/2010	F2	Chan1	46,364	216,217	139,491	649,590	865,807
3/19/2010	F2	Chan1	10,163	226,380	30,579	680,169	906,549
3/19/2010	D2	Chan1	5,201	231,581	15,603	695,772	927,353
3/19/2010	C2	Chan1	22,830	254,411	68,544	764,316	1,018,727
3/22/2010	C2	Chan1	27,179	281,590	81,636	845,952	1,127,542
3/23/2010	C2	Chan1	31,136	312,726	93,492	939,444	1,252,170
3/25/2010	C2/4	Chan1	47,890	360,616	143,727	1,083,171	1,443,787
3/26/2010	C3/4	Chan1	39,972	400,588	119,976	1,203,147	1,603,735
<b>Tag Code Totals:</b>			-	<b>400,588</b>	-	<b>1,203,147</b>	<b>1,603,735</b>

Feather River							
Tag Code: 06/86/71			size: 350k			Trailer # CA4	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/31/2010	C6/4	F2	59,453	-	178,437	-	237,890
4/1/2010	C6/4	F2	34,774	94,227	104,364	282,801	<b>377,028</b>
4/1/2010	C6/4	F4	17,412	-	52,257	-	69,669
4/2/2010	C6	F4	19,818	37,230	59,511	111,768	148,998
4/2/2010	D2	F4	29,440	66,670	88,356	200,124	266,794
4/5/2010	D2	F4	14,696	81,366	44,148	244,272	<b>325,638</b>
4/5/2010	D2	F6	45,607	-	136,851	-	182,458
4/6/2010	D2	F6	24,661	70,268	73,989	210,840	281,108
4/6/2010	D2	F6	5,060	75,328	15,183	226,023	<b>301,351</b>
4/6/2010	D4	E6	32,212	-	96,666	-	128,878
4/7/2010	D4	E6	43,324	75,536	130,038	226,704	<b>302,240</b>
4/7/2010	D4	E4	15,874	-	47,667	-	63,541
4/8/2010	D4/6	E4	51,660	67,534	155,055	202,722	<b>270,256</b>
<b>Tag Code Totals:</b>			-	<b>393,991</b>	-	<b>1,182,522</b>	<b>1,576,513</b>

Feather River							
Tag Code: 06/86/72			size: 350k			Trailer # CA4	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/9/2010	D4/6	C4	52,036	-	156,153	-	208,189
4/12/2010	D4/6	C4	28,854	80,890	86,649	242,802	<b>323,692</b>
4/12/2010	B2	C6	16,761	-	50,337	-	67,098
4/13/2010	B2	C6	58,528	75,289	175,722	226,059	<b>301,348</b>
4/13/2010	B2	D6	12,090	-	36,270	-	48,360
4/14/2010	B2/4	D6	63,131	75,221	189,432	225,702	<b>300,923</b>
4/14/2010	B4	D4	6,576	-	19,728	-	26,304
4/15/2010	B4	D4	68,844	75,420	206,610	226,338	<b>301,758</b>
4/15/2010	B4	D2	3,315	-	9,945	-	13,260
4/16/2010	B4/6	D2	66,393	69,708	199,296	209,241	278,949
4/19/2010	B6	D2	25,682	95,390	77,124	286,365	<b>381,755</b>
<b>Tag Code Totals:</b>			-	<b>402,210</b>	-	<b>1,207,266</b>	<b>1,609,476</b>

Feather River							
100% AD/CWT Monterey							
Tag Code: 06/86/75			Size: 110k			Trailer # CA4	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/29/2010	C3/4	C2	38,899	-	-	-	38,899
3/30/2010	C3/4	C2	84,489	123,388	-	-	123,388
<b>Tag Code Totals:</b>			-	<b>123,388</b>	-	-	<b>123,388</b>

Feather River							
Tag Code: 06/86/95			size: 80k			Trailer # CA4	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/21/2010	A4	A2	58,965	-	176,973	-	235,938
4/21/2010	A4	A2	1,000	59,965	3,000	179,973	239,938
4/22/2010	A4	A2	30,180	90,145	90,645	270,618	360,763
<b>Tag Code Totals:</b>			-	<b>90,145</b>	-	<b>270,618</b>	<b>360,763</b>

**Table 2b. Summary of hatchery tag codes and tag retention study**

<b>Feather River Hatchery Summary</b>								
<b>Tag Code Size and Location</b>			<b>Tag Code Totals</b>			<b>Retention</b>		
<b>Tag Code</b>	<b>Tag Code Size</b>	<b>Raceway</b>	<b>Number Tagged</b>	<b>Number Untagged</b>	<b>Total Processed</b>	<b># of Fish</b>	<b>Days Held</b>	<b>% Retention</b>
06/86/69	350K	Channel 2	396,027	1,192,311	1,588,338	800	24	99.75%
06/86/54	100K	Channel 1	113,761	341,406	455,167	445	20	99.77%
06/86/71	350K	E4,E6,F2,F4,F6	393,991	1,182,522	1,576,513	798	21	99.76%
06/86/72	350K	D2,D4,D6, C4,C6	402,210	1,207,266	1,609,476	820	21	99.76%
06/86/70	350K	E2,F2,D2,C2,C4	400,588	1,203,147	1,603,735	802	21	99.75%
06/86/75	110K	C2	123,388	-	123,388	250	25	99.20%
06/86/24	40K	C1	42,357	-	42,357	200	26	99.00%
06/86/30	5K	A4	5,836	17,560	23,396	-	-	99.68%*
06/86/95	80K	A2	90,145	270,618	360,763	-	-	99.68%*
06/86/31	5K	A4	5,835	17,559	23,394	-	-	99.68%*
06/86/60	50K	A4	53,893	161,679	215,572	-	-	99.68%*
<b>Tag Code Totals</b>			<b>2,028,031</b>	<b>5,594,068</b>	<b>7,622,099</b>	<b>Avg% Retention =</b>		<b>99.68%</b>

\* No retention fish held. Retention percentage based on the average of all other retention groups.

# Feather River Hatchery Annex



**Table 3a. Daily Tagging Rates at the Feather River Hatchery Annex**

Feather River Annex							
Tag Code: 06/86/67			size: 230k			Trailer # CA4	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
2/11/2010	C2	C6	206	-	729	-	935
2/12/2010	C2	C6	26,426	26,632	79,371	80,100	106,732
2/16/2010	C2	C2	57,014	-	171,216	-	228,230
2/17/2010	C2/4	C2	6,306	63,320	19,008	190,224	253,544
2/17/2010	C4	C4	33,665	-	101,052	-	134,717
2/17/2010	D2	D6	26,267	-	78,870	-	105,137
2/18/2010	D2/4	D2	37,795	-	113,505	-	151,300
2/18/2010	D4	D2	27,266	65,061	81,840	195,345	260,406
2/18/2010	D4	D4	3,514	-	10,545	-	14,059
2/19/2010	D4	D4	44,101	47,615	132,402	142,947	190,562
<b>Tag Code Totals:</b>			-	<b>262,560</b>	-	<b>788,538</b>	<b>1,051,098</b>

Feather River Annex							
Tag Code: 06/86/68			size: 230k			Trailer # CA4	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
2/19/2010	A2	A6	6,915	-	20,796	-	27,711
2/22/2010	A2	A6	19,536	26,451	58,722	79,518	105,969
2/22/2010	A2/4	A2	44,265	-	132,939	-	177,204
2/23/2010	A2/A4	A2	20,809	65,074	62,517	195,456	260,530
2/23/2010	A4	A4	38,831	-	116,568	-	155,399
2/24/2010	B2	B6	26,522	-	79,644	-	106,166
2/24/2010	B2/4	B2	40,688	-	122,244	-	162,932
2/25/2010	B4	B2	24,651	65,339	74,037	196,281	261,620
2/25/2010	B4	B4	38,704	-	116,199	-	154,903
<b>Tag Code Totals:</b>			<b>-</b>	<b>260,921</b>	<b>-</b>	<b>783,666</b>	<b>1,044,587</b>

**Table 3b. Summary of hatchery tag codes and tag retention studies**

Feather River Annex Summary								
Tag Code Size and Location			Tag Code Totals			Retention		
Tag Code	Tag Code Size	Raceway	Number Tagged	Number Untagged	Total Processed	# of Fish	Days Held	% Retention
06/86/67	230K	C2,C4,C6,D2,D4,D6	262,560	788,538	1,051,098	796	21	100%
06/86/68	230K	A2,A4,A6,B2, B4,B6	260,921	783,666	1,044,587	798	21	99.60%
<b>Grand Total =</b>			<b>523,481</b>	<b>1,572,204</b>	<b>2,095,658</b>	<b>Avg % Retention =</b>		<b>99.81%</b>

# Mokelumne River Hatchery



**Table 4a. Daily Tagging Rates at Mokelumne River Hatchery**

Mokelumne River Hatchery							
100% AD/CWT							
Tag Code: 06/86/13			size: 230k			Trailer # CA2	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/22/2010	B up	B low	22,954	-	-	-	22,954
3/23/2010	B up	B low	71,025	93,979	-	-	93,979
3/24/2010	B up	B low	58,287	152,266	-	-	152,266
3/25/2010	B up	B low	56,803	209,069	-	-	209,069
3/26/2010	B up	B low	12,997	222,066	-	-	222,066
<b>Tag Code Totals:</b>			-	<b>222,066</b>	-	-	<b>222,066</b>

Mokelumne River Hatchery							
100% AD/CWT							
Tag Code: 06/86/39			size: 350k			Trailer # CA2	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
3/29/2010	C up	C low	23,335	-	-	-	23,335
3/30/2010	C up	C low	62,368	85,703	-	-	85,703
3/31/2010	C up	C low	55,767	141,470	-	-	141,470
4/1/2010	C up	C low	54,590	196,060	-	-	196,060
4/2/2010	C up	C low	31,981	228,041	-	-	228,041
4/5/2010	C up	C low	48,154	276,195	-	-	276,195
4/6/2010	C up	C low	76,321	352,516	-	-	352,516
4/7/2010	C up	C low	35,647	388,163	-	-	388,163
<b>Tag Code Totals:</b>			-	<b>388,163</b>	-	-	<b>388,163</b>

Mokelumne River Hatchery							
100% AD/CWT							
Tag Code: 06/86/41			size: 250k			Trailer # CA2	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
5/4/2010	F	C	9,493	-	-	-	9,493
5/5/2010	F	C	89,697	99,190	-	-	99,190
5/6/2010	F	C	103,418	202,608	-	-	202,608
5/7/2010	F	C	75,167	277,775	-	-	277,775
5/10/2010	F	C	5,284	283,059	-	-	283,059
5/11/2010	F	C	2,717	285,776	-	-	285,776
5/12/2010	F	C	1,085	286,861	-	-	286,861
<b>Tag Code Totals:</b>			-	<b>286,861</b>	-	-	<b>286,861</b>

Mokelumne River Hatchery							
100% AD/CWT							
Tag Code: 06/86/64			size: 30k			Trailer # CA2	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
5/11/2010	F	C	1,974	-	-	-	1,974
5/12/2010	F	C	8,401	10,375	-	-	10,375
<b>Tag Code Totals:</b>			-	<b>10,375</b>	-	-	<b>10,375</b>

Mokelumne River Hatchery							
100% AD/CWT							
Tag Code: 08/86/73			size: 100k			Trailer # CA3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
5/7/2010	F	C	9,274	-	-	-	9,274
5/10/2010	F	C	38,071	47,345	-	-	47,345
5/11/2010	F	C	64,837	112,182	-	-	112,182
5/12/2010	F	C	2,836	115,018	-	-	115,018
<b>Tag Code Totals:</b>			-	<b>115,018</b>	-	-	<b>115,018</b>

Mokelumne River Hatchery							
100% AD/CWT							
Tag Code: 06/86/82			size: 90k			Trailer # CA2	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/7/2010	D up	D low	31,122	-	-	-	31,122
4/8/2010	D up	D low	68,759	99,881	-	-	99,881
<b>Tag Code Totals:</b>			-	<b>99,881</b>	-	-	<b>99,881</b>

Mokelumne River Hatchery							
100% AD/CWT							
Tag Code: 06/86/83			size: 90k			Trailer # CA2	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/15/2010	D up	D low	15,542	-	-	-	15,542
4/16/2010	D up	D low	37,151	52,693	-	-	52,693
4/19/2010	D up	D low	33,827	86,520	-	-	86,520
4/20/2010	D up	D low	11,792	98,312	-	-	98,312
<b>Tag Code Totals:</b>			-	<b>98,312</b>	-	-	<b>98,312</b>

Mokelumne River Hatchery							
100% AD/CWT							
Tag Code: 06/86/84			size: 90k			Trailer # CA2	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/14/2010	D up	D low	50,660	-	-	-	50,660
4/15/2010	D up	D low	48,696	99,356	-	-	99,356
<b>Tag Code Totals:</b>			-	<b>99,356</b>	-	-	<b>99,356</b>

Mokelumne River Hatchery							
100% AD/CWT							
Tag Code: 06/86/86			size: 90k			Trailer # CA2	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/28/2010	G	E	3,209	-	-	-	3,209
4/29/2010	G	E	86,544	89,753	-	-	89,753
4/30/2010	G	E	13,053	102,806	-	-	102,806
<b>Tag Code Totals:</b>			-	<b>102,806</b>	-	-	<b>102,806</b>

Mokelumne River Hatchery							
100% AD/CWT							
Tag Code: 06/86/87			size: 90k			Trailer # CA2	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/28/2010	G	E	26,720	-	-	-	26,720
4/28/2010	G	E	51,154	77,874	-	-	77,874
4/29/2010	G	E	23,407	101,281	-	-	101,281
5/3/2010	G	E	1,335	102,616	-	-	102,616
<b>Tag Code Totals:</b>			-	<b>102,616</b>	-	-	<b>102,616</b>

Mokelumne River Hatchery							
100% AD/CWT							
Tag Code: 06/86/88			size: 90k			Trailer # CA2	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/30/2010	G	E	60,578	-	-	-	60,578
5/3/2010	G	E	43,547	104,125	-	-	104,125
<b>Tag Code Totals:</b>			-	<b>104,125</b>	-	-	<b>104,125</b>

Mokelumne River Hatchery							
100% AD/CWT							
Tag Code: 06/86/66			size: 20k			Trailer # CA2	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
5/3/2010	G	E	3,739	-	-	-	3,739
<b>Tag Code Totals:</b>			-	<b>3,739</b>	-	-	<b>3,739</b>

Mokelumne River Hatchery							
100% AD/CWT							
Tag Code: 06/86/89			size: 90k			Trailer # CA2	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
5/3/2010	H	G	23,528	-	-	-	23,528
5/4/2010	H/F	G	75,795	99,323	-	-	99,323
<b>Tag Code Totals:</b>			-	<b>99,323</b>	-	-	<b>99,323</b>

Mokelumne River Hatchery							
100% AD/CWT							
Tag Code: 06/87/08			size: 350k			Trailer # CA2	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/20/2010	D up	D low	29,287	-	-	-	29,287
4/21/2010	E/D up	D low	56,718	86,005	-	-	86,005
4/22/2010	E up	D low	58,372	144,377	-	-	144,377
4/23/2010	E up	D low	32,165	176,542	-	-	176,542
4/26/2010	E up	D low	26,814	203,356	-	-	203,356
4/26/2010	E up	D low	15,379	218,735	-	-	218,735
4/26/2010	E up	D low	38,120	256,855	-	-	256,855
4/27/2010	E up	D low	61,533	318,388	-	-	318,388
4/27/2010	E/F	D low	55,784	374,172	-	-	374,172
4/28/2010	F	D low	22,872	397,044	-	-	397,044
<b>Tag Code Totals:</b>			-	<b>397,044</b>	-	-	<b>397,044</b>

**Table 4b. Summary of hatchery tag codes and tag retention studies**

Tag Code Size and Location			Retention				
Tag Code	Size	Raceway	Tagged	Total	# of Fish	Days Held	% Retention
06/86/13	230K	B low	222,066	222,066	900	24	99.56%
06/86/39	350K	C low	388,163	388,163	900	13	99.44%
06/86/41	250K	C	286,861	286,861	900	21	100%
06/86/64	30K	C	10,375	10,375	900	21	100%
06/86/73	100K	C	115,018	115,018	900	21	100%
06/86/82	90K	D low	99,881	99,881	*	-	99.89%
06/86/83	90K	D low	98,312	98,312	*	-	99.89%
06/86/84	90K	D low	99,356	99,356	*	-	99.89%
06/86/86	90K	E	102,806	102,806	900	21	100%
06/86/87	90K	E	102,616	102,616	900	21	100%
06/86/88	90K	E	104,125	104,125	900	21	100%
06/86/66	20K	E	3,739	3,739	900	21	100%
06/86/89	90K	G	99,323	99,323	*	-	99.89%
06/86/08	350K	D low	397,044	397,044	900	21	100%
<b>Grand Total =</b>			<b>2,129,685</b>	<b>2,129,685</b>	<b>Avg % Retention =</b>		<b>99.89%</b>

\* No retention fish held. Retention percentage based on the average of all other retention groups.

# Nimbus Hatchery



**Table 5a. Daily Tagging Rates at Nimbus Hatchery**

Nimbus Fish Hatchery							
Tag Code: 06/86/58			size: 70k			Trailer # CA3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
5/7/2010	F2	F1	2,846	-	8,538	-	11,384
5/10/2010	F2	F1	61,906	64,752	185,763	194,301	259,053
5/11/2010	F2	F1	3,690	68,442	11,082	205,383	273,825
<b>Tag Code Totals:</b>			-	<b>68,442</b>	-	<b>205,383</b>	<b>273,825</b>

Nimbus Fish Hatchery							
Tag Code: 06/86/77			size: 350k			Trailer # CA3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/12/2010	A2	A1	61,094	-	183,369	-	244,463
4/13/2010	A2/4	A1/2	43,314	104,408	130,002	313,371	417,779
4/13/2010	A4	A2	40,808	145,216	122,475	435,846	581,062
4/14/2010	A4	A2	49,761	194,977	149,310	585,156	780,133
4/14/2010	B2	B1	30,295	-	90,948	-	121,243
4/15/2010	B2	B1	45,149	75,444	135,495	226,443	301,887
4/15/2010	B2/4	B1	46,583	122,027	139,809	366,252	488,279
4/16/2010	B4	B2	41,273	163,300	123,855	490,107	653,407
4/16/2010	B4	B2	34,610	197,910	103,890	593,997	791,907
<b>Tag Code Totals:</b>			-	<b>392,887</b>	-	<b>1,179,153</b>	<b>1,572,040</b>

Nimbus Fish Hatchery							
Tag Code: 06/86/78			size: 350k			Trailer # CA3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/19/2010	C2	C1	36,363	-	109,173	-	145,536
4/19/2010	C2	C1	44,742	81,105	134,259	243,432	324,537
4/20/2010	C4	C1/2	40,968	122,073	122,970	366,402	488,475
4/20/2010	C4	C1/2	41,739	163,812	125,289	491,691	655,503
4/21/2010	C4	C2	34,523	198,335	103,617	595,308	793,643
4/21/2010	D2	D1	43,134	-	129,447	-	172,581
4/22/2010	D4	D1/2	45,352	88,486	136,116	265,563	354,049
4/22/2010	D4	D1/2	44,843	133,329	134,577	400,140	533,469
4/23/2010	D4	D1/2	11,895	145,224	35,721	435,861	581,085
<b>Tag Code Totals:</b>			-	<b>343,559</b>	-	<b>1,031,169</b>	<b>1,374,728</b>

Nimbus Fish Hatchery							
100% AD/CWT							
Tag Code: 06/86/79			size: 245k			Trailer # CA#3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
5/11/2010	F3 low	F3 up	76,429	-	-	-	76,429
5/12/2010	F3 low	F3 up	112,223	188,652	-	-	188,652
5/13/2010	F3 low	F3 up	68,045	256,697	-	-	256,697
5/13/2010	F3 low	F3 up	17,862	274,559	-	-	274,559
<b>Tag Code Totals:</b>			-	<b>274,559</b>	-	-	<b>274,559</b>

Nimbus Fish Hatchery							
Tag Code: 06/86/80			size: 245k			Trailer # CA3	
Tagging Date	Raceway prior to tagging	Raceway following tagging	Daily Tag Total	Cumulative Tag Total	Daily Untagged Total	Cumulative Untagged Total	Raceway Total
4/27/2010	E2	E1	15,860	-	47,628	-	63,488
4/28/2010	E2	E1	40,433	56,293	121,344	168,972	225,265
4/29/2010	E2/3	E1	44,560	100,853	133,737	302,709	403,562
4/30/2010	E3	E1	31,969	132,822	95,970	398,679	531,501
5/3/2010	E3	E1	21,179	154,001	63,585	462,264	616,265
5/4/2010	E3	E1	32,570	186,571	97,782	560,046	746,617
5/5/2010	E3	E1	20,401	206,972	61,281	621,327	828,299
5/5/2010	F2	F1	7,523	-	22,569	-	30,092
5/6/2010	F2	F1	38,740	46,263	116,298	138,867	185,130
5/7/2010	F2	F1	26,248	72,511	78,780	217,647	290,158
<b>Tag Code Totals:</b>			<b>-</b>	<b>279,483</b>	<b>-</b>	<b>838,974</b>	<b>1,118,457</b>

**Table 5b. Summary of hatchery tag codes and tag retention studies**

Nimbus Fish Hatchery Summary								
Tag Code Size and Location			Tag Code Totals			Retention calculations		
Tag Code	Size	Raceway	Tagged	Passed	Total	# of Fish	Days Held	% Retention
06/86/78	350K	C1,C2,D1,D2	343,559	1,031,169	1,374,728	802	21	99.88%
06/86/77	350K	A1,A2,B1,B2	392,887	1,179,153	1,572,040	796	21	99.12%
06/86/80	245K	E1,F1	279,483	838,974	1,118,457	808	19	100.00%
06/86/58	70K	F1	68,442	205,383	273,825	800	22	99.63%
06/86/79	245K*	F3 up	274,559	-	274,559	845	21	97.63%**
<b>Grand Total =</b>			<b>1,358,930</b>	<b>3,254,679</b>	<b>4,613,609</b>	<b>Avg % Retention =</b>		<b>99.23%</b>

\* 100% Mark and Tag

\*\* 100% mark/tag group. Hatchery screen in raceway set improperly and unprocessed fish passed into pond with processed fish.

**Table 1b. Summary of hatchery tag codes and tag retention study**

Coleman National Hatchery Summary										
Tag Code Size and Location			Tag Code Totals			Retention				
Tag Code	Tag Code Size	Raceway	Number Tagged	Number Untagged	Total Processed	# of Fish Held	Days Held	% Retention	# Retaining Tag	Calculated untagged
05/51/79	93k	1	96,951	291,348	388,299	415	21***	99.04%	96,020	292,279
05/51/80	93k	2	88,432	265,518	353,950	388	21***	99.74%	88,202	265,748
05/51/81	93k	3	95,579	286,935	382,514	390	21***	99.49%	95,092	287,422
05/51/82	93k	4	86,786	260,577	347,363	401	21***	99.50%	86,352	261,011
05/51/83	112k	8	116,665	350,181	466,846	413	21***	99.75%	116,373	350,473
05/51/84	112k	9	115,348	346,173	461,521	198*	21***	99.00%	114,195	347,326
05/51/85	112k	10	108,475	325,509	433,984	386	21***	100%	108,475	325,509
05/51/86	112k	11	105,901	317,853	423,754	362	21***	100%	105,901	317,853
05/51/87	112k	5	119,031	357,237	476,268	384	21***	99.74%	118,722	357,546
05/51/88	112k	6	118,320	355,200	473,520	**	21***	99.60%****	117,847	355,673
05/51/89	112k	7	112,484	337,674	450,158	399	21***	100%	112,484	337,674
05/51/90	110k	15	101,069	303,357	404,426	301	21***	98.67%	99,725	304,701
05/51/91	110k	16	104,326	313,188	417,514	400	21***	100%	104,326	313,188
05/51/92	110k	17	116,886	350,829	467,715	392	21***	100%	116,886	350,829
05/51/93	110k	18	117,773	353,517	471,290	388	21***	100%	117,773	353,517
05/51/94	110k	19	112,267	336,993	449,260	395	21***	99.75%	111,986	337,274
05/51/95	110k	22	115,494	346,791	462,285	286	21***	97.55%	112,664	349,621
05/51/96	110k	20	105,561	316,857	422,418	401	21***	99.75%	105,297	317,121
05/51/97	110k	21	107,649	323,235	430,884	398	21***	100%	107,649	323,235
05/51/98	105k	23	104,082	312,429	416,511	393	21***	100%	104,082	312,429
05/51/99	105k	24	99,962	299,979	399,941	396	21***	99.75%	99,712	300,229
05/52/21	105k	25	110,182	330,711	440,893	398	21***	99.50%	109,631	331,262
05/52/22	105k	26	110,932	333,024	443,956	419	21***	99.28%	110,133	333,823
05/52/23	105k	27	101,765	305,544	407,309	149	21***	100%	101,765	305,544
05/52/24	90k	13	94,968	285,081	380,049	388	21***	99.48%	94,474	285,575
05/52/25	90k	14	90,749	272,337	363,086	406	21***	100%	90,749	272,337
05/52/26	90k	12	89,992	270,150	360,142	400	21***	99.75%	89,767	270,375
05/52/27	50k	28	45,862	137,721	183,583	391	21***	98.72%	45,275	138,308
<b>Grand Total = 11,579,439</b>			<b>2,893,491</b>	<b>8,685,948</b>	<b>11,579,439</b>	<b>Avg %</b>				
						<b>Retention =</b>		<b>99.60%</b>	<b>2,881,557</b>	<b>8,697,882</b>
* This group had a problem with marked fish getting in and out of the net pen so 800 fish were sampled and 198 of those were clipped and tagged.										
** The net pen blew over so no retention fish were held.										
*** Number of days held for retention fish was approximately 21 days. The USFWS crew checked fish one or two times per week so some groups would have been checked a day or two more or less than the 21 time period.										
**** The tag retention percentage for this tag code is the average of all the other tag codes.										

**Table 2b. Summary of hatchery tag codes and tag retention study**

Feather River Hatchery Summary										
Tag Code Size and Location			Tag Code Totals			Retention Calculations				
Tag Code	Size	Raceway	Number Tagged	Number Untagged	Total Processed	# of Fish Held	Days Held	% Retention	# Retaining Tag	Calculated Untagged
06/86/69	350K	Channel 2	396,027	1,192,311	1,588,338	800	24	99.75%	395,037	1,193,301
06/86/54	100K	Channel 1	113,761	341,406	455,167	445	20	99.77%	113,499	341,668
06/86/71	350K	E4,E6,F2,F4,F6	393,991	1,182,522	1,576,513	798	21	99.76%	393,045	1,183,468
06/86/72	350K	D2,D4,D6,C4,C6	402,210	1,207,266	1,609,476	820	21	99.76%	401,245	1,208,231
06/86/70	350K	E2,F2,D2,C2,C4	400,588	1,203,147	1,603,735	802	21	99.75%	399,587	1,204,148
06/86/75	110K	C2	123,388	-	123,388	250	25	99.18%	122,376	1,012
06/86/24	40K	C1	42,357	-	42,357	200	26	99.00%	41,933	424
06/86/30	5K	A4	5,836	17,560	23,396	*	-	99.56%	5,810	17,586
06/86/95	80K	A2	90,145	270,618	360,763	*	-	99.56%	89,748	271,015
06/86/31	5	A4	5,835	17,559	23,394	*	-	99.56%	5,809	17,585
06/86/60	50K	A4	53,893	161,679	215,572	*	-	99.56%	53,656	161,916
<b>Grand Total = 7,203,992</b>			<b>2,028,031</b>	<b>5,594,068</b>	<b>7,622,099</b>	<b>Avg % Retention =</b>		<b>99.56%</b>	<b>2,021,746</b>	<b>5,600,353</b>
* No retention fish held. Numbers are an average of the first seven groups.										

**Table 3b. Summary of hatchery tag codes and tag retention study**

<b>Feather River Annex Summary</b>										
<b>Tag Code Size and Location</b>			<b>Tag Code Totals</b>			<b>Retention</b>				
<b>Tag Code</b>	<b>Size</b>	<b>Raceway</b>	<b>Total Tagged</b>	<b>Total Untagged</b>	<b>Total Processed</b>	<b># of Fish Held</b>	<b>Days Held</b>	<b>% Retention</b>	<b># Retaining Tag</b>	<b>Calculated Untagged</b>
06/86/68	230K	C2,C4,D2,D4	260,921	783,666	1,044,587	798	21	99.62%	259,940	784,647
06/86/67	230K	A2, A4, B2, B4	262,560	788,538	1,051,098	796	21	100.00%	262,560	788,538
<b>Grand Total =</b>			<b>523,481</b>	<b>1,572,204</b>	<b>2,095,685</b>	<b>Avg % Retention =</b>		<b>99.81%</b>	<b>522,500</b>	<b>1,573,185</b>

**Table 4b. Summary of hatchery tag codes and tag retention study**

<b>Mokelumne River Hatchery Summary</b>								
<b>100% Mark and Tag</b>								
<b>Tag Code Size and Location</b>			<b>Tag Code Totals</b>	<b>Retention calculations</b>				
<b>Tag Code</b>	<b>Size</b>	<b>Raceway</b>	<b>Number Tagged</b>	<b># of Fish Held</b>	<b>Days Held</b>	<b>% Retention</b>	<b># Retaining tag</b>	<b>Calculated untagged</b>
06/86/13	23K	B low	222,066	900	24	99.56%	221,089	977
06/86/39	350K	C low	388,163	900	13	99.44%	385,989	2,174
06/86/41	250K	C	286,861	900	21	100.00%	286,861	0
06/86/64	30K	C	10,375	900	21	100.00%	10,375	0
06/86/73	100K	C	115,018	900	21	100.00%	115,018	0
06/86/82	90K	D low	99,881	*	-	99.90%	99,781	100
06/86/83	90K	D low	98,312	*	-	99.90%	98,214	98
06/86/84	90K	D low	99,356	*	-	99.90%	99,257	99
06/86/86	90K	E	102,806	900	21	100.00%	102,806	0
06/86/87	90K	E	102,616	900	21	100.00%	102,616	0
06/86/88	90K	E	104,125	900	21	100.00%	104,125	0
06/86/66	20K	E	3,739	900	21	100.00%	3,739	0
08/86/89	90K	G	99,323	*	-	99.90%	99,224	99
06/87/08	350K	D low	397,044	900	21	100.00%	397,044	0
<b>Grand Total = 2,129,685</b>			<b>2,129,685</b>	<b>Avg %</b>		<b>99.90%</b>	<b>2,126,137</b>	<b>3,548</b>
				<b>Retention =</b>				

\* No retention fish held. Retention percentage is based on the average of the rest of the retention groups.

**Table 5b. Summary of hatchery tag codes and tag retention study**

<b>Nimbus Fish Hatchery Summary</b>										
<b>Tag Code Size and Location</b>			<b>Tag Code Totals</b>			<b>Retention Calculations</b>				
<b>Tag Code</b>	<b>Size</b>	<b>Raceway</b>	<b>Number Tagged</b>	<b>Number Untagged</b>	<b>Total Processed</b>	<b># of Fish Held</b>	<b>Days Held</b>	<b>% Retention</b>	<b># Retaining Tag</b>	<b>Calculated Untagged</b>
06/86/78	350K	C1,C2,D1,D2	343,559	1,031,169	1,374,728	802	21	99.88%	343,147	1,031,581
06/86/77	350K	A1,A2,B1,B2	392,887	1,179,153	1,572,040	796	21	99.12%	389,430	1,182,610
06/86/80	245K	E1,F1	279,483	838,974	1,118,457	808	19	100.00%	279,483	838,974
06/86/58	70K	F1	68,442	205,383	273,825	800	22	99.63%	68,189	205,636
06/86/79	245K*	F3	274,559	0	274,559	845	21	97.63%**	268,052	6,507
<b>Grand Total = 250,996</b>			<b>1,358,930</b>	<b>3,254,679</b>	<b>4,613,609</b>	<b>Avg %</b>		<b>99.23%</b>		
						<b>Retention =</b>			<b>1,348,300</b>	<b>3,265,309</b>

\* 100% Mark and Tag

\*\* 100% mark/tag group. Hatchery screen in raceway set improperly and unprocessed fish passed into pond with processed fish.