

Draft CVPIA Fiscal Year 2015 Annual Work Plan, Anadromous Fish Restoration Program, CVPIA Section 3406 (b)(1)

Responsible Entities:

Staff Name	Agency	Role
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The U. S. Fish and Wildlife Service (USFWS) and the Bureau of Reclamation (Reclamation) jointly implement the Anadromous Fish Restoration Program (AFRP), with the California Department of Fish and Wildlife (CDFW) acting as the lead state partner. The AFRP implements Section 3406 (b) (1) which directs and authorizes the Secretary of the Interior to:

(b) Fish and Wildlife Restoration Activities.--The Secretary, immediately upon the enactment of this title, shall operate the Central Valley Project to meet all obligations under state and federal law, including but not limited to the federal Endangered Species Act, 16 U.S.C. s 1531, et seq., and all decisions of the California State Water Resources Control Board establishing conditions on applicable licenses and permits for the project. The Secretary, in consultation with other State and Federal agencies, Indian tribes, and affected interests, is further authorized and directed to:

(1) Develop within three years of enactment and implement a program which makes all reasonable efforts to ensure that, by the year 2002, natural production of anadromous fish in Central Valley rivers and streams will be sustainable, on a long-term basis, at levels not less than twice the average levels attained during the period of 1967-1991; Provided, That this goal shall not apply to the San Joaquin River between Friant Dam and the Mendota Pool, for which a separate program is authorized under subsection 3406(c) of this title; Provided further, That the programs and activities authorized by this section shall, when fully implemented, be deemed to meet the mitigation, protection, restoration, and enhancement purposes established by subsection 3406(a) of this title; And provided further, That in the course of developing and implementing this program the Secretary shall make all reasonable efforts consistent with the requirements of this section

to address other identified adverse environmental impacts of the Central Valley Project not specifically enumerated in this section.

(A) This program shall give first priority to measures which protect and restore natural channel and riparian habitat values through habitat restoration actions, modifications to Central Valley Project operations, and implementation of the supporting measures mandated by this subsection; shall be reviewed and updated every five years; and shall describe how the Secretary intends to operate the Central Valley Project to meet the fish, wildlife, and habitat restoration goals and requirements set forth in this title and other project purposes.

(B) As needed to achieve the goals of this program, the Secretary is authorized and directed to modify Central Valley Project operations to provide flows of suitable quality, quantity, and timing to protect all life stages of anadromous fish, except that such flows shall be provided from the quantity of water dedicated to fish, wildlife, and habitat restoration purposes under paragraph (2) of this subsection; from the water supplies acquired pursuant to paragraph (3) of this subsection; and from other sources which do not conflict with fulfillment of the Secretary's remaining contractual obligations to provide Central Valley Project water for other authorized purposes. Instream flow needs for all Central Valley Project controlled streams and rivers shall be determined by the Secretary based on recommendations of the U.S. Fish and Wildlife Service after consultation with the California Department of Fish and Game.

(C) The Secretary shall cooperate with the State of California to ensure that, to the greatest degree practicable, the specific quantities of yield dedicated to and managed for fish and wildlife purposes under this title are credited against any additional obligations of the Central Valley Project which may be imposed by the State of California following enactment of this title, including but not limited to increased flow and reduced export obligations which may be imposed by the California State Water Resources Control Board in implementing San Francisco Bay/Sacramento-San Joaquin Delta Estuary standards pursuant to the review ordered by the California Court of Appeals in U.S. v. State Water Resources Control Board, 182 Cal.App.3rd 82 (1986), and that, to the greatest degree practicable, the programs and plans required by this title are developed and implemented in a way that avoids inconsistent or duplicative obligations from being imposed upon Central Valley Project water and power contractors.

(D) Costs associated with this paragraph shall be reimbursable pursuant to existing statutory and regulatory procedures.

Program Goals and Objectives for FY 2015:

CVPIA Section 3406 (b)(1) states that the goal of the AFRP is to "develop within three years of enactment and implement a program which makes all reasonable

efforts to ensure that, by the year 2002, natural production of anadromous fish in Central Valley rivers and streams will be sustainable, on a long-term basis, at levels not less than twice the average levels attained during the period of 1967-1991”.

The following programmatic objectives for the AFRP are defined by the Program’s Final Restoration Plan, which was developed subsequent to CVPIA’s passage to guide the implementation of actions and evaluations to meet the program’s goal:

1. Improve habitat for all life stages of anadromous fish through provision of flows of suitable quality, quantity, and timing, and improved physical habitat.
2. Improve survival rates by reducing or eliminating entrainment of juveniles at diversions.
3. Improve the opportunity for adult fish to reach their spawning habitats in a timely manner.
4. Collect fish population, health, and habitat data to facilitate evaluation of restoration actions.
5. Integrate habitat restoration efforts with harvest and hatchery management.
6. Involve partners in the implementation and evaluation of restoration actions.

Along with the programmatic objectives listed above, watershed specific actions and evaluations were developed in the Final Restoration Plan. To achieve the program’s goal and objectives, AFRP works to identify the most effective methods and means to achieve these actions and evaluations. Specific project proposals intended to address the actions and evaluations in watersheds throughout the CVP area are collectively prioritized by evaluating their ability to meet a wide variety of important factors related to the goals and objectives of AFRP. Successfully and efficiently implementing these efforts require working closely with partners and other entities involved in the management and restoration of anadromous fish species throughout the Central Valley. Beyond working with a wide variety of partners to develop and complete projects related to specific actions and evaluations, AFRP frequently partners with and contributes to planning and implementation projects with entities such as the Delta Stewardship Council (<http://deltacouncil.ca.gov>), Delta Science Program (<http://deltacouncil.ca.gov/science-program>), the Bay Delta Conservation Plan (<http://baydeltaconservationplan.com>), the California Department of Water Resources’ Fish Passage Improvement Program (<http://www.water.ca.gov/fishpassage/>), the San Joaquin River Restoration Program (www.restoresjr.net), the Interagency Ecological Program (<http://www.water.ca.gov/iep/>), and others.

Status of the Program:

Since 1997, AFRP has completed 67 actions and evaluations toward the

programmatic goal and objectives (Table A). Additionally, ongoing work occurred on an additional 42 actions and evaluations in FY 2013.

The CVPIA Program Activity Review (CPAR) identified 128 of the Restoration Plan's 289 actions and evaluations as high and medium priority actions that are "time certain" performance goals. Of the 128 actions in CPAR, forty-six (36%) have been completed and significant work is ongoing on thirty-eight (30%) additional actions (Table B). The remaining forty-four (34%) actions generally require substantial involvement from other CVPIA provisions and partners, do not fall exclusively under the purview of AFRP and work on these actions is still in the formative or initial planning stages. There are also annual or in perpetuity projects such as gravel augmentation (replacing gravel lost behind dams) and flow augmentation in the Restoration Plan that are reported under other provisions of the CVPIA such as the (b)(2), (b)(3), and (b)(13) programs.

The AFRP also documents its progress toward achieving its doubling goal targets by calculating anadromous fish natural production estimates that incorporate estimates of: in-river and hatchery escapement, ocean and in-stream harvest, and the proportion of hatchery returns that spawn in-river (methods and data sources related to the calculation of natural production estimates can be found in the Working paper on restoration needs, habitat restoration actions to double natural production of anadromous fish in the Central Valley of California, Volume 3, USFWS 1995). The Central Valley Chinook salmon (all races) estimate of natural production average from 1992-2012 was 398,585 fish which dropped below the 1967-1991 baseline average Chinook salmon production of 497,054 as a result of the low returns of fall run fish in 2012 that totaled 293,985 fish (Table C). The estimate of Average Chinook salmon natural production for the period 1992-2012 has exceeded the watershed doubling goal target on Clear Creek, Butte Creek, and Battle Creek and in 2012 the Mokelumne River observed high returns (12,484 naturally produced fish)(Table D). Substantial gains in fish populations have been observed where investment in flow and passage has occurred (Butte, Battle, and Clear Creeks). Clear Creek and the Mokelumne River have also had a substantial investment in habitat restoration. Winter-run natural production estimates had continued to trend upward since 1994 until the poor returns in the last six years (2007-2012). Spring-run natural production estimates have trended upwards since 1991, and production increased in 2012 to 30,522 naturally produced fish. Fall-run natural production estimate has decreased to the baseline levels due to the recent stock collapse observed in 2007-2010 though estimates have increased in some watersheds in 2012. Late fall-run production estimates had increased greatly since the low period (1993-1997) but continued to decline in 2012. Data on Chinook salmon doubling can be found in the Chinookprod file on the AFRP website (<http://www.fws.gov/stockton/afrp>) and is summarized in Tables C and D. Progress for the AFRP natural production targets for white and green sturgeon, American shad, and striped bass are reported under the (b)(16) provision in the CAMP annual report (<http://www.fws.gov/sacramento/fisheries/CAMP-Program/Documents->

Reports/Documents/2011_CAMP_annual_report.pdf). 2013 natural production estimates are still being calculated and are not yet reported but will be updated as soon as possible (expected by end of May 2014).

Table A. Summary of Progress Towards Completing 289 Final Restoration Plan Actions and Evaluations by Watershed, FY 1992-2012

Watershed	Total actions and evaluations in Final Restoration Plan	Actions and evaluations completed to date	Actions and evaluations addressed in 2013	% of actions and evaluations completed to date
American River	13	2	1	15
Antelope Creek	2	0	1	0
Battle Creek	12	8	3	67
Bear Creek	2	0		0
Bear River	8	0	1	0
Big Chico Creek	10	3		30
Butte Creek	39	32		82
Calaveras River	6	0	1	0
Central Valley-Wide	15	1	4	7
Clear Creek	7	5		71
Colusa Basin Drain	2	0		0
Cosumnes River	9	2	2	22
Cottonwood Creek	5	1	2	20
Cow Creek	4	0	2	0
Deer Creek	5	0	1	0
Elder Creek	2	0		0
Feather River	12	0	1	0
Merced River	8	0	4	0
Mill Creek	5	1	1	20
Miscellaneous Small Tributaries	1	0		0
Mokelumne River	13	1	1	8
Ocean	3	0		0
Paynes Creek	2	0		0
Upper Mainstem Sacramento River	22	8	2	36
Sacramento-San Joaquin Delta	29	0	4	0
Mainstem San Joaquin River	13	0	1	0
Stanislaus River	9	1	4	11
Stoney Creek	1	0		0
Thomes Creek	6	2		33
Tuolumne River	10	0	2	0
Yuba River	14	0	4	0
All Watersheds	289	67	42	23

Table B. Summary of Progress Towards 128 High and Medium Priority Time Certain Actions (53 Structural, 75 Non-Structural)

Watershed	53 Structural Actions		75 Non-structural Actions	
	Number of structural actions completed in FY 2013*	Number of structural actions completed since 1992	Number of non-structural actions completed in FY 2013*	Number of non-structural actions completed since 1992
American River		1		1
Battle Creek		3		2
Big Chico Creek		1		1
Butte Creek		13		17
Clear Creek		1		
Cosumnes River				1
Cottonwood Creek		1		
Mill Creek		1		
Stanislaus River				1
Thomes Creek				2
All Watersheds		21		25
* NOTE: Although structural or non-structural actions were not completed in FY 2013, work continued on 38 actions in 20 watersheds throughout the Central Valley.				

Table C. Yearly Estimates of Natural Production of Anadromous Fish and the Average Natural Production by Species within Central Valley River and Streams, 1992-2012

Year	Steelhead ^a	American Shad ^b	Striped Bass ^c	Green Sturgeon ^d	White Sturgeon ^e	Chinook Salmon Run			
						Fall	Late Fall	Winter	Spring
Baseline	6,546	2,129	1,252,259	983	5,571	374,049	34,192	54,439	34,374
Target	13,000	4,300	2,500,000	2,000	11,000	750,000	68,000	110,000	68,000
1992	4,086	2,010	777,293			192,117	27,778	3,167	4,463
1993		5,153	656,505	68	692	316,846	2,411	1,060	4,229
1994		1,318	599,770		6,392	382,650	1,063	505	7,811
1995		6,803				709,299	764	4,284	36,884
1996		4,260	1,043,239			485,160	453	2,160	6,309
1997		2,591		1,306	11,689	601,000	1,350	2,079	3,866
1998		4,134	1,356,412	470	8,971	272,337	83,027	5,680	49,676
1999		715				399,951	17,299	5,472	11,163
2000		764	1,591,419			658,688	19,933	2,657	11,643
2001		761		7,117	5,129	525,947	27,679	9,916	31,185
2002		1,914	945,878	1,690	2,775	537,843	56,588	9,195	31,626
2003		9,342	829,111			518,803	9,106	10,853	33,319
2004		947	1,312,452			507,252	21,277	14,812	28,674
2005		1,741	1,058,679	2,555	2,898	395,601	20,738	21,417	38,813
2006		2,303		3,144	6,991	227,677	15,575	19,680	14,487
2007		551	752,275	1,530	10,559	106,592	30,326	4,121	16,777
2008		271	1,116,062	1,330	6,257	39,236	4,806	2,555	11,619
2009		624	830,641	10,272	6,258	30,604	4,350	4,070	3,196
2010		683	696,159			120,464	5,860	1,534	3,222
2011		892	894,606			170,321	5,645	899	6,847
2012						293,985	5,539	3,900	30,522
Average	NA	2389	964,033	2,948	6,237	356,780	17,218	6,191	18,397
% of Goal	NA	56%	39%	147%	57%	48%	25%	5.6%	27%

a Insufficient data are available to estimate natural production of steelhead in the Central Valley other than upstream of Red Bluff Diversion Dam. Operational changes at Red Bluff Diversion Dam after 1994 preclude the ability to collect comparable post-baseline data for this taxon.

b Mid-water trawl index for young-of-the-year American shad in the Sacramento-San Joaquin River Delta and San Pablo and Suisun bays, 1992-2010.

c Estimated abundance of adult striped bass in the Central Valley's anadromous waters, 1992-2011. Estimates for 2007, 2008, 2009, 2010, and 2011 are preliminary and subject to change.

d Estimated abundance of green sturgeon >40 inches in total length, 1992-2009. Estimates for 2006, 2007, 2008, and 2009 are preliminary and subject to change.

e Estimated abundance of 15-year-old white sturgeon, 1992-2009. Estimates for 2006, 2007, 2008, and 2009 are preliminary and subject to change.

Table D. Average Natural Production Numbers in Each Watershed Compared to the AFRP Doubling Goal Targets, 1992-2012

Watershed	Species	Doubling Goal Target	1992-2012 Average Natural Production Numbers	Percent of Target
American River*	Fall-Run	160,000	104,751	65.5
Antelope Creek	Fall-Run	720	0	0
Battle Creek*	Fall-Run	10,000	17,610	176
Bear River	Fall-Run	450	N/A	N/A
Big Chico Creek	Fall-Run	800	N/A	N/A
Butte Creek	Fall-Run	1,500	2,251	150
Clear Creek	Fall-Run	7,100	10,663	150
Cosumnes River	Fall-Run	3,300	814	24.7
Cottonwood Creek	Fall-Run	5,900	1,950	33.0
Cow Creek	Fall-Run	4,600	1,876	40.8
Deer Creek	Fall-Run	1,500	865	57.7
Feather River*	Fall-Run	170,000	89,922	52.9
Merced River*	Fall-Run	18,000	6,517	36.2
Mill Creek	Fall-Run	4,200	1,838	43.8
Miscellaneous Creeks	Fall-Run	1,100	78	7.1
Mokelumne River*	Fall-Run	9,300	8,556	92.0
Paynes Creek	Fall-Run	330	N/A	N/A
Sacramento River	Fall-Run	230,000	70,485	30.6
Stanislaus River	Fall-Run	22,000	5,180	23.5
Tuolumne River	Fall-Run	38,000	6,634	17.5
Yuba River	Fall-Run	66,000	30,983	46.9
Central Valley Wide	Fall-Run	750,000	356,780	47.6
Battle Creek*	Late-fall-Run	550	677	123.1
Sacramento River	Late-fall-Run	68,000	17,367	25.5
Central Valley Wide	Late-fall-Run	68,000	17,218	25.3
Butte Creek	Spring-Run	2,000	14,525	726.2
Deer Creek	Spring-Run	6,500	1,984	30.5
Mill Creek	Spring-Run	4,400	1,204	27.4
Sacramento River	Spring-Run	59,000	684	1.2
Central Valley Wide	Spring-Run	68,000	18,397	27.0
Calaveras River	Winter-Run	2,200	0	0
Sacramento River*	Winter-Run	110,000	6,191	5.6

Central Valley Wide	Winter-Run	110,000	6,191	5.6
TOTAL	All races	990,000	398,585	40.3

For more information, see the following websites:

1. <http://www.fws.gov/stockton/afrp/>
2. <http://www.usbr.gov/mp/cvpia/>

References:

USFWS. 1995. Working paper on restoration needs, habitat restoration actions to double natural production of anadromous fish in the Central Valley of California, Volume 3, AFRP. [<http://www.fws.gov/stockton/afrp/workingpaper.cfm>].

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USBR and USFWS. 2008. Listen to the River: An Independent Review of the CVPIA Fisheries Program. Prepared under contract with Circlepoint for the U.S. Bureau of Reclamation and the U.S. Fish and Wildlife Service. Sacramento, CA. http://www.usbr.gov/mp/cvpia/docs_reports/indep_review/FisheriesReport12_12_08.pdf

USBR. 2009. Central Valley Project Improvement Act Program Activity Review Report. Sacramento, CA [http://www.usbr.gov/mp/cvpia/docs_reports/docs/2009_Final%20CPAR%20Report%208-25-09.pdf]

USFWS Stockton Office AFRP web page <http://www.fws.gov/stockton/afrp>