# Section 3406 (b)(1)

# Anadromous Fish Restoration

**Ramon Martin**

**U.S. Fish and Wildlife Service**

Photo: USBR

Photo: USFWS

# Background


- The Central Valley Project Improvement Act (CVPIA) was signed into law in 1992.

- The CVPIA directs the Secretary of the Interior to develop and implement a program that makes all reasonable efforts to double natural production of anadromous fish in Central Valley rivers and streams.

- The Final Restoration Plan (FRP) identified 289 actions to be implemented by the Program that would help achieve the Act's anadromous fish doubling goal.

- The impacts of this programmatic-level Restoration Plan were analyzed in the CVPIA Programmatic Environmental Impact Statement and the Record of Decision was signed in 2001.

- The FRP focused on 26 watersheds, Misc. creeks, westside tributaries, and the Delta.

# Introduction

## (b)(1) Program Goal

- "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(Section 3406(b)(1) of the CVPIA)."
- AFRP Chinook Salmon Natural Production Targets

| | |
|---|---|
| Central Valley | 990,000 |
| Fall Run | 750,000 |
| Late-Fall Run | 68,000 |
| Spring Run | 68,000 |
| Winter Run | 110,000 |

Photo: EBMUD

# Introduction

## (b)(1) Program Goal

- AFRP Anadromous Fish Production Targets

| | |
|---|---|
| Steelhead | 13,000 |
| Green sturgeon | 1,966 |
| White sturgeon | 11,142 |
| Striped Bass | 2,500,000 |
| American shad | 4,300 |

GREEN STURGEON (Adult and Juvenile)

WHITE STURGEON (Adult and Juvenile)

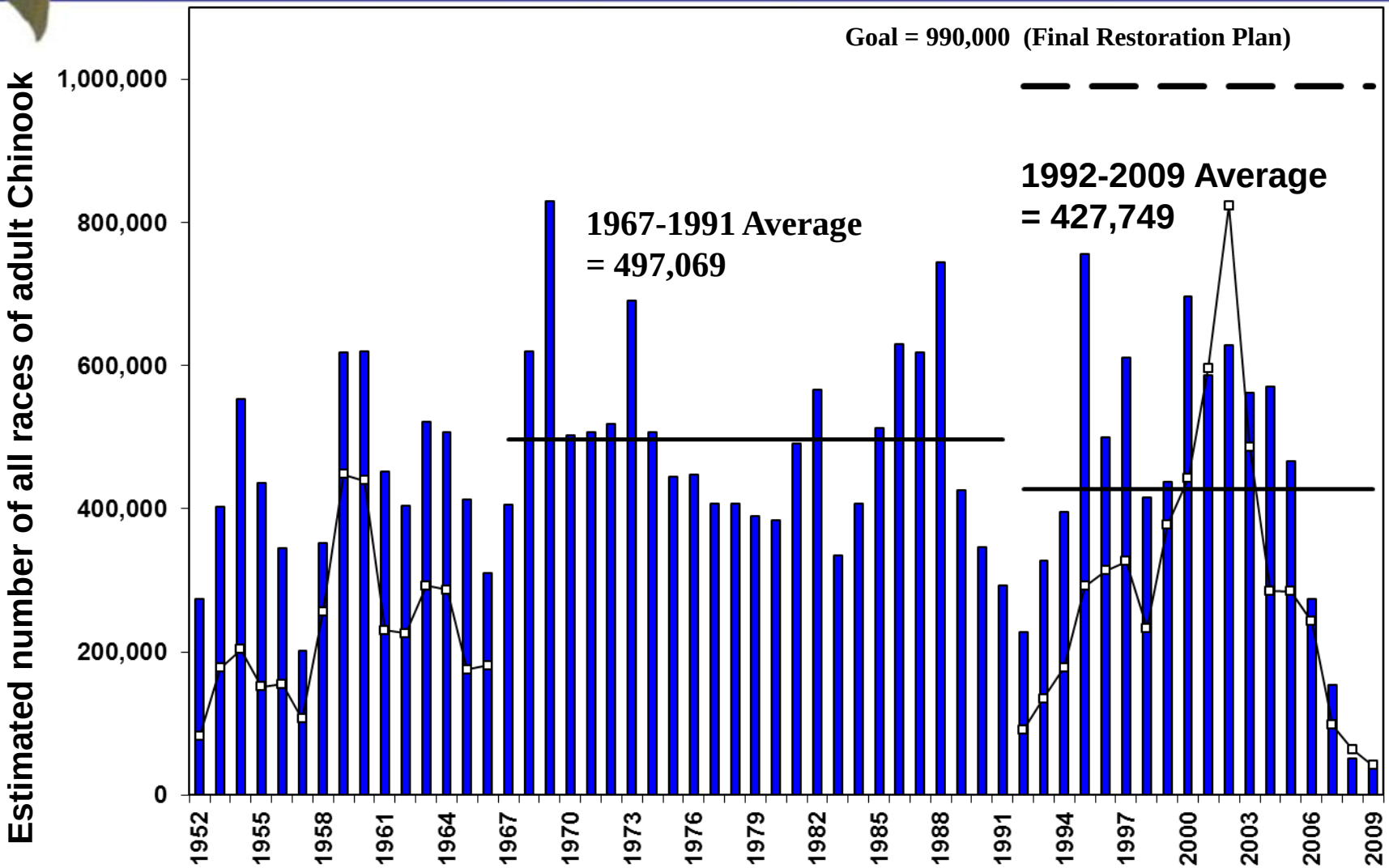
- Additional information on AFRP production targets and estimates can be found in the 2010 CAMP Annual Report

http://www.fws.gov/sacramento/camp/camp_documents_and_projects.htm

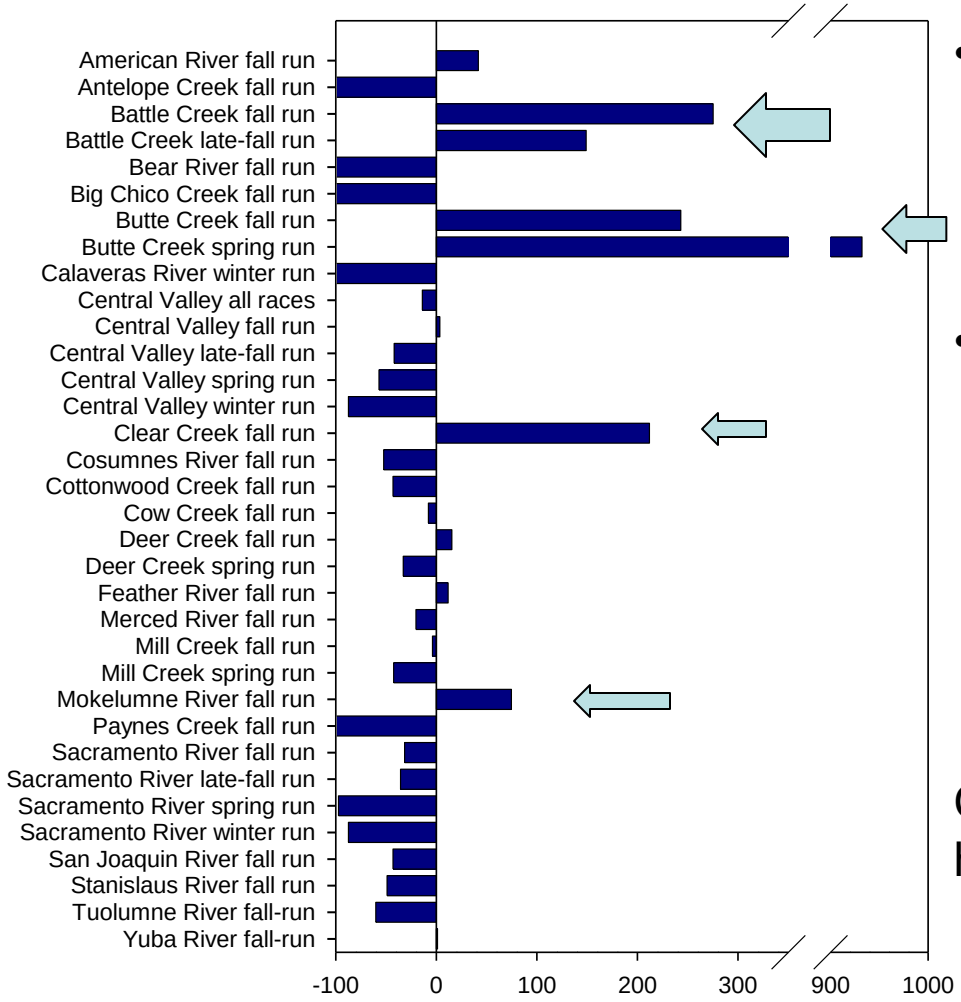
# (b)(1) Objectives

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

# Chinook Salmon Production



# Chinook Salmon Production




- The percent of natural production during the doubling period (1992-2009) in relation to the baseline period (1967-1991).
- The doubling goal for Chinook salmon production for the period of 1992-2009 has been exceeded on Clear, Butte, and Battle creeks and has been nearly met on the Mokelumne River.

Chinook Salmon Natural Production:
http://www.fws.gov/stockton/afrp/index.cfm

# (b)(1) Program Status

## AFRP CPAR Accomplishments

- **Total of 128 High and Medium Priority Actions from the Final Restoration Plan.**
- **Of the 128 Actions, 75 are Non-structural Actions with Endpoints of which 25 (33%) have been completed to date.**
- **Of the 128 Actions, 53 are Structural Actions with Endpoints of which 20 (38%) have been completed to date.**
- **Forty-five (35%) total AFRP time certain actions have been completed to date.**

# (b)(1) Habitat Restoration

## FY 2010 Accomplishments

### 1. Yuba River Hammon Bar Restoration

- A pre-project assessment was completed for 3.5 miles of the lower Yuba River for riparian habitat restoration targeting juvenile Chinook salmon and steelhead (Evaluation 4).

### 2. American River Spawning and Rearing Habitat Restoration Project

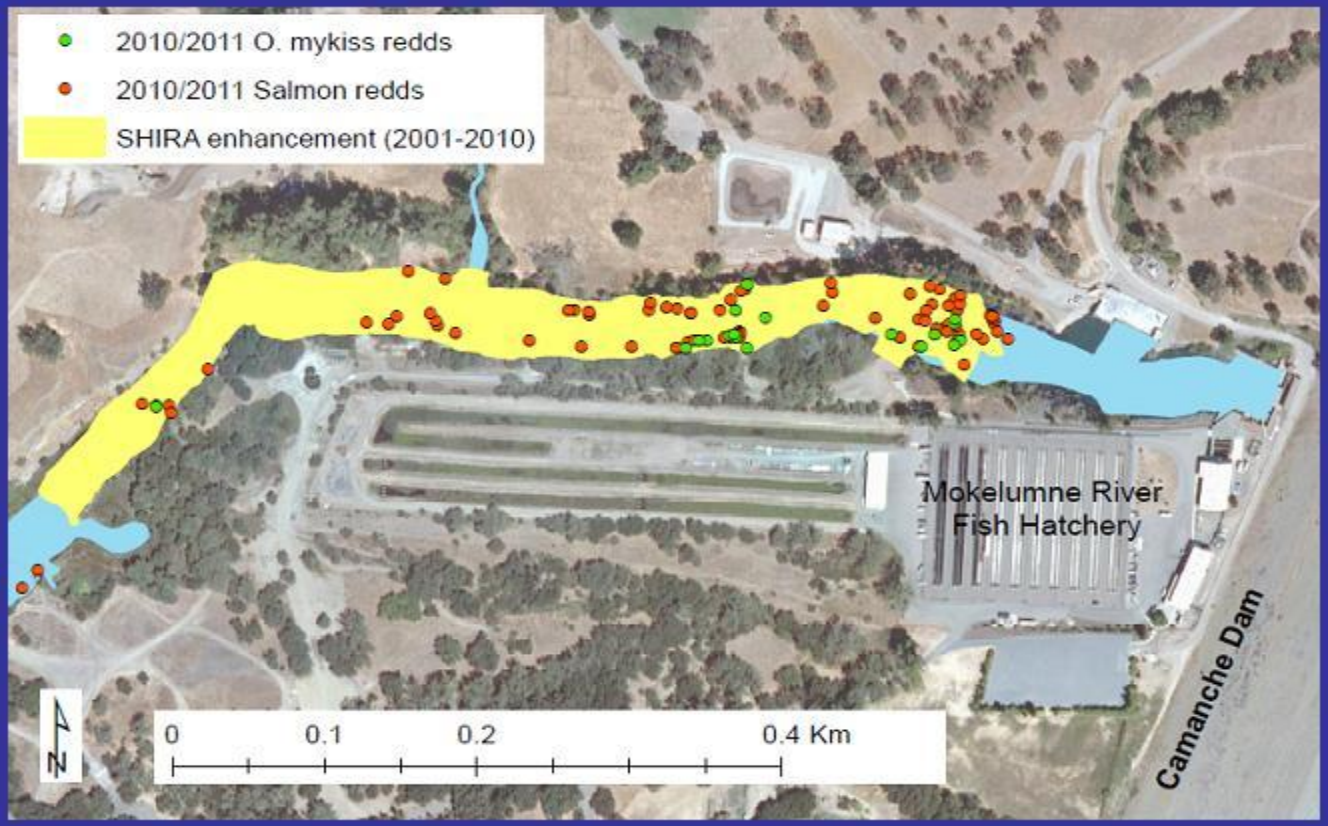
- Environmental Compliance Documents and Permits were completed
- Restored a dewatered side-channel ¼ mile long and enhanced an existing gravel bar with 5,000 $yds^3$ (Action 5).

### 3. Mokelumne River Spawning Habitat

- Purchased and placed 4,166 $yds^3$ of coarse sediment to improve natural production of Chinook salmon and steelhead at several spawning sites (Actions 2 and 7).

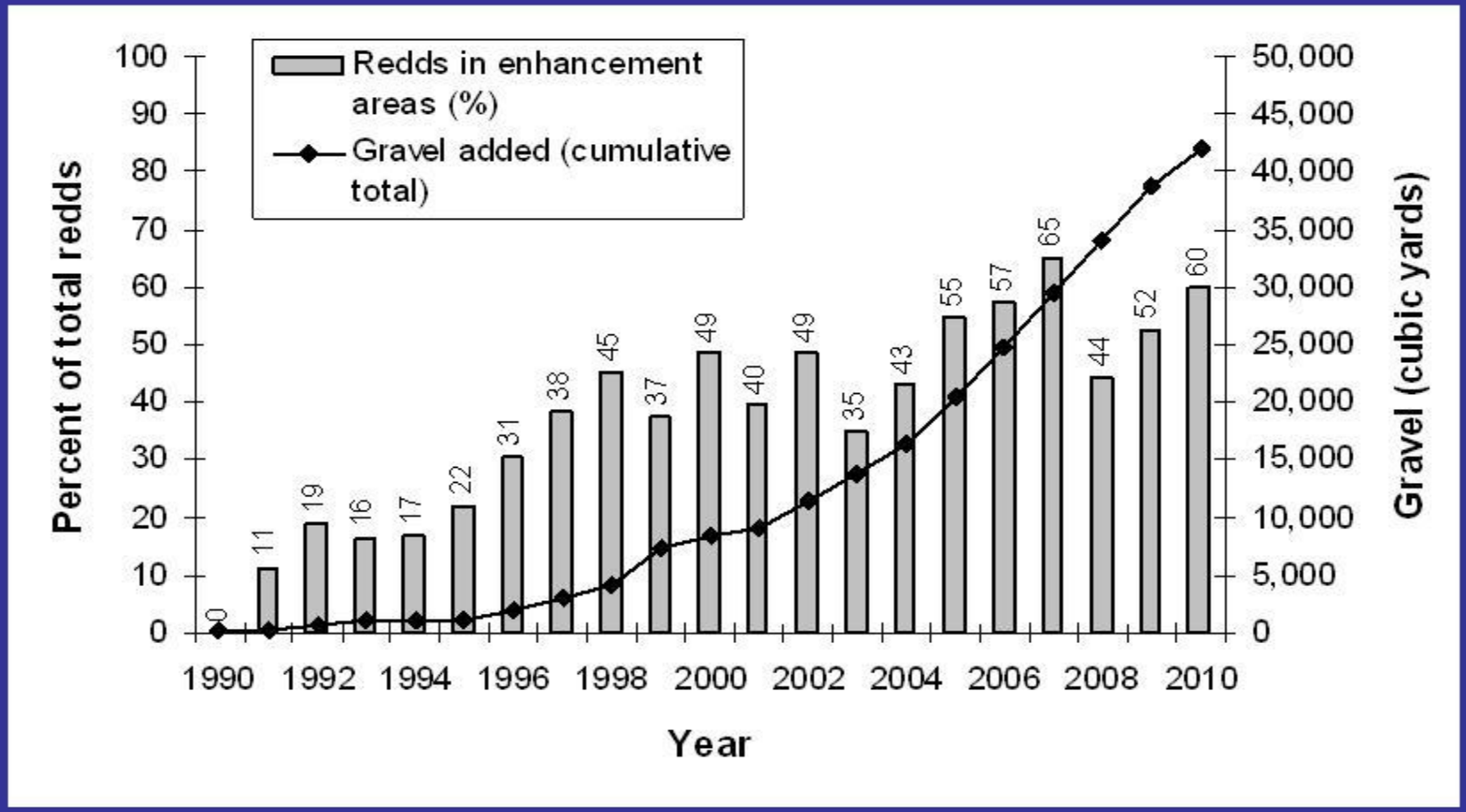
American River Spawning and Rearing Habitat Restoration Project

# 2010/2011 salmonid redds found in SHIRA project area




- 70 of 314 salmon redds (22.3% of all salmon redds)
- 18 of 39 *O. mykiss* redds (46.2% of all O. mykiss redds)

# Salmon redds in gravel enhancement sites (since 1990)



# (b)(1) Habitat Restoration

## FY 2010 Accomplishments (cont'd)

### 4. Merced River Ranch Floodplain Restoration

- Environmental Compliance Documents and Permits were completed
- Added 12,000 $yds^3$ of coarse sediment for spawning (Action 3)

# (b)(1) Habitat Restoration

## FY 2010 Accomplishments (cont'd)

### 5. Stanislaus River Floodplain Restoration

- Environmental Compliance Documents and Permits were initiated
- The Lancaster Road Project will restore 640 feet of riparian side-channel habitat (Scheduled for 2011) for fall run Chinook and steelhead (Action 2).
- The Honolulu Bar Project will restore 2.5 acres of riparian floodplain, add 8,100 $yds^3$ of spawning gravel, and restore 485 feet of side-channel habitat (Scheduled for 2011) for fall run Chinook and steelhead (Action 2).

### 6. Tuolumne River Bobcat Flat

- Environmental Compliance Documents and Permits were completed
- Phase 2 funds an ongoing project that will excavate 48,500 $yds^3$ of gravel and restore up to 11 acres of floodplain and 1.6 miles of fall run Chinook salmon and steelhead spawning and rearing habitat (Action 2).

# (b)(1) Fish Screens

## FY 2010 Accomplishments

1. Antelope Creek Juvenile Fish Passage Improvement Project at Edwards Diversion Dam (Action 1).
    - Feasibility study completed, environmental documents and permits initiated, and designs were developed.

2. Lower Butte Creek Project, Phase III Consolidated Action Summary Report was reviewed and finalized (Evaluations 6 and 8).
    - Report posted at: http://www.fws.gov/stockton/afrp/index.cfm

# (b)(1) Fish Passage

## FY 2010 Accomplishments

1. Antelope Creek Tehama Wildlife Area Road Crossing Project (Action 1)
   - Construction designs completed and environmental compliance documents initiated.
   - Once completed (≈2011) it will improve passage to 13 miles of spawning and holding habitat for spring run Chinook salmon.
   - Addresses Action I.3.5 in NMFS OCAP BO
2. Big Chico Creek Iron Canyon Fish Ladder (Action 2)
   - Environmental compliance documents and permits were completed in 2010.
   - This project will provide access to an estimated 8 miles of quality spring run Chinook salmon habitat

Antelope Creek Tehama Wildlife Area Road Crossing

# (b)(1) Fish Passage

## FY 2010 Accomplishments (cont'd)

3. Cottonwood Creek Anderson-Cottonwood Irrigation District (ACID) Siphon Project (Action 2)
   - Construction designs, environmental compliance documents, and permits were completed.
   - Once completed (FY2011) it will improve passage to 30 miles of spawning habitat for fall Chinook, spring Chinook salmon and steelhead.
4. Cow Creek Millville Diversion Dam Fish Passage Project (Action 3)
   - Environmental compliance documents and permits for a boulder weir fishway were initiated in 2010.
   - This project will provide access to an estimated 10 miles of fall run Chinook salmon and steelhead habitat.

# (b)(1) Fish Passage

Cottonwood Creek ACID Siphon Fish Barrier

# (b)(1) Fish Passage

## FY 2010 Accomplishments (cont'd)

5. Calaveras River Passage Improvement Project (Action 3)
   - Final designs and permits for the Budiselich Flashboard Dam boulder weir retrofit were completed.
   - Final designs for the Caprini and California Traction Railroad crossings were also completed.
   - This project will restore access to about 10 miles of habitat for salmon and steelhead.

# (b)(1) Fish Passage

## FY 2010 Accomplishments (cont'd)

6. Cosumnes River Passage Improvement Project (Evaluation 2)
   - Restored access to 10 miles of habitat for fall run Chinook salmon

Rooney Dam (Before)

Rooney Dam (After)

# (b)(1) Monitoring

Habitat Restoration Monitoring

- project specific
- evaluates restoration actions success (i.e. redd counts, snorkel surveys, environmental parameters, etc.)

Demonstration Projects

- showcases new technologies or methodology through evaluations studies
- short term (1 to 3 years)

# (b)(1) Monitoring

## Monitoring Equipment

- AFRP attempts to cost share operational costs of equipment or turn over monitoring to other agencies or groups via MOU or Letter of Agreements. We then utilize monitoring data to assist with program evaluation and identification of future restoration activity needs.

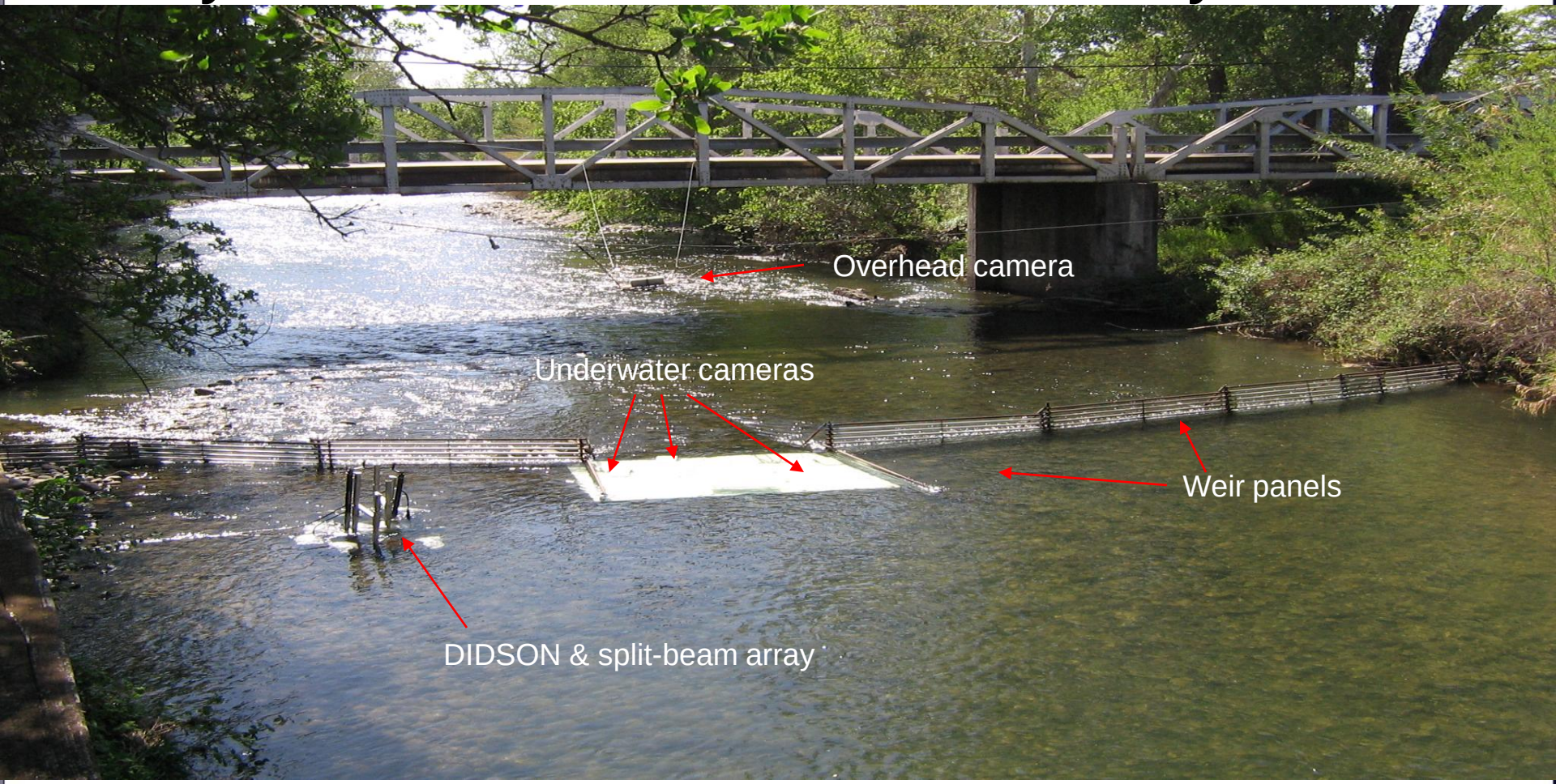
# (b)(1) Monitoring

## Fish Counting Video Weir

Acquire accurate escapement estimates of adult fall-run Chinook salmon on the Bear, Cottonwood, and Cow creeks

# (b)(1) Monitoring

## Hydroacoustics DIDSON & DTx Systems



# (b)(1) Monitoring

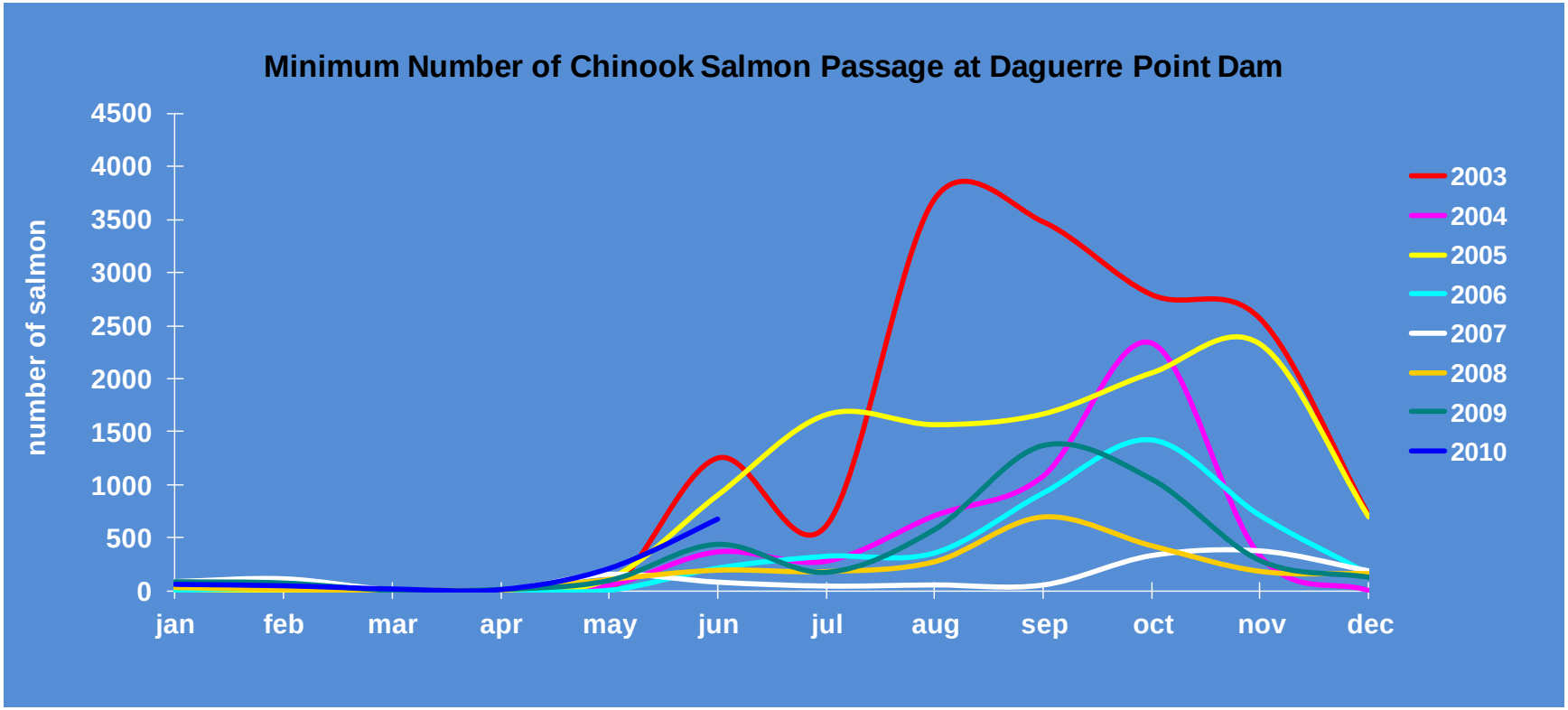
## VAKI Riverwatcher Fish Counting System

- **Currently have two AFRP VAKI Fish Counting Systems being operated by CDFG at the Yuba River Daguerre Point Dam and a fish counting weir with a VAKI system in the Stanislaus River operated by Tri-Dam.**

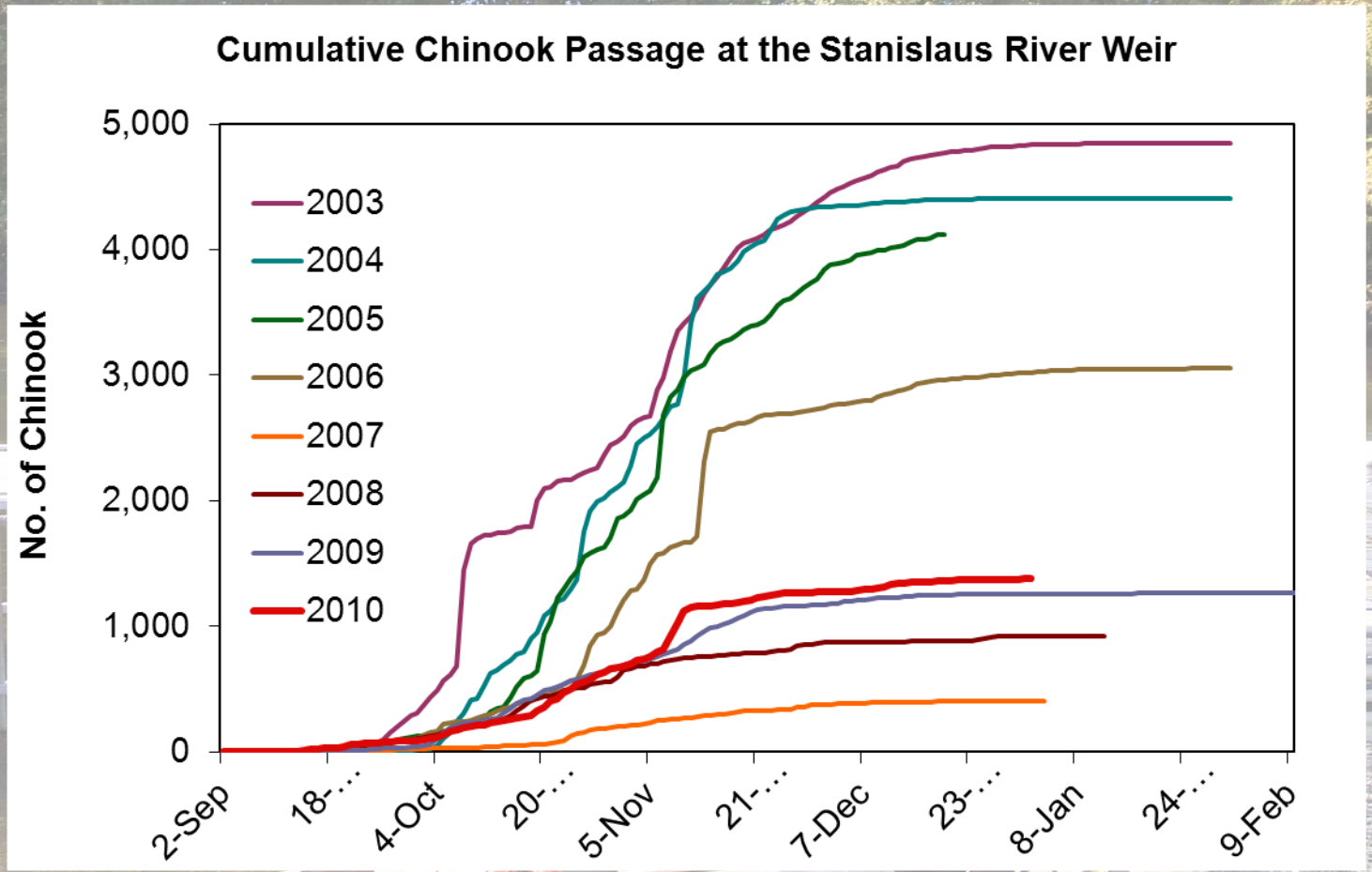
Yuba River Daguerre Point Dam Monitoring

Stanislaus River Fish Counting Weir

# (b)(1) Monitoring Results

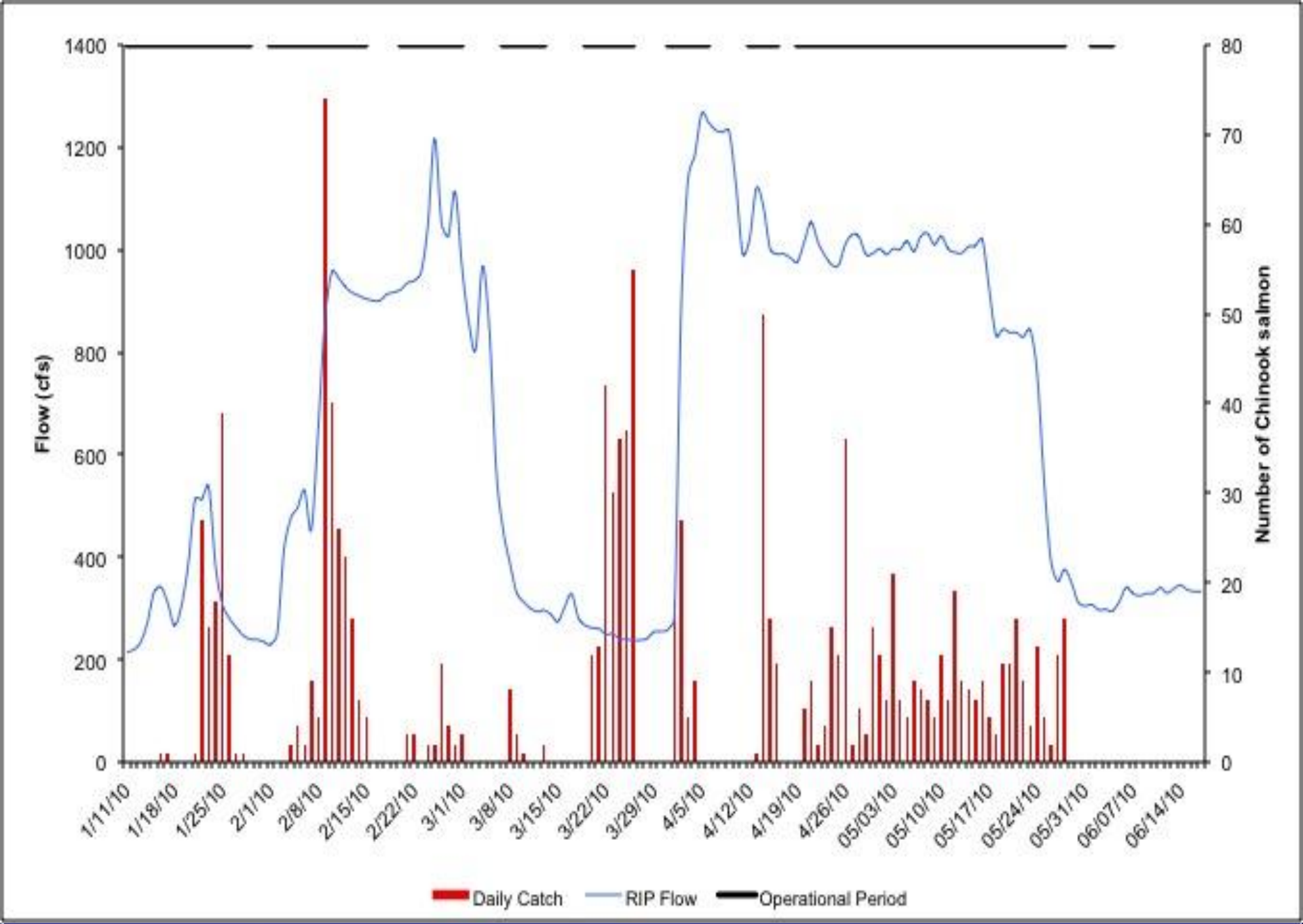


# (b)(1) Monitoring Results



# Juvenile Salmonid Monitoring

- Objectives
  - Estimate total juvenile production for:
    - Fall Chinook Salmon
    - Steelhead
  - Evaluate annual reproductive success of salmonids
  - Provide information to guide AFRP restoration efforts and evaluate program performance.
  - Monitoring Requirement for the OCAP BO




**Stanislaus River Juvenile Salmonid Monitoring at Caswell RST**

# FY10 (b)(1) Monitoring Projects

- Identify sturgeon spawning habitat and use in the Feather and Yuba rivers with sonic telemetry (Evaluations 5 and 7).
- Identify sturgeon spawning habitat and use in the San Joaquin River system (Evaluation 4)

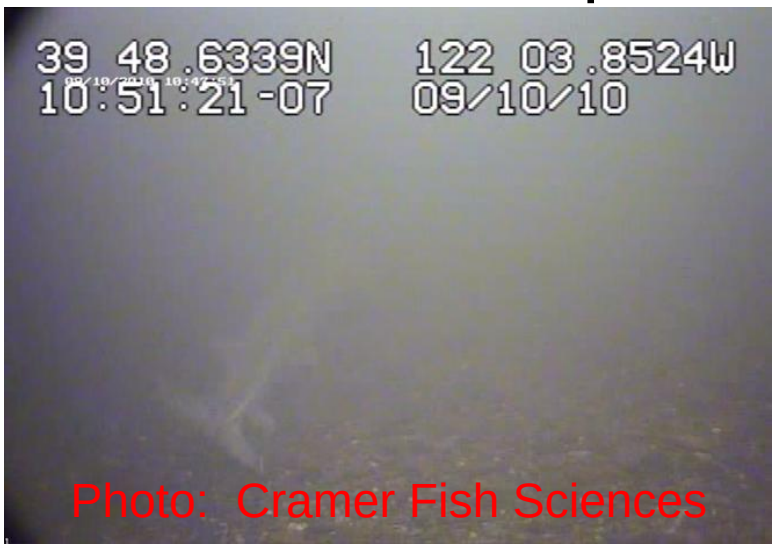


Photo: Cramer Fish Sciences


Photo: Jim Inman

# FY11 (b)(1) Performance Targets

- 7 Habitat Assessments encompassing over 39,060 acres of riparian habitat and 128 miles of stream
- 6 Population Assessments, Studies, and Evaluations
- Fund 8 Restoration Projects that will provide 178,000 tons of spawning gravel, restore 379 acres of floodplain habitat and 10.4 stream miles
- 1 Fish Passage Project that will restore access to 43 miles of habitat

| | |
|---|---|
| **Total FY11 AFRP Funding** | **$6.070 million** |
| Structural Actions with Endpoints | 4 |
| Non-structural Actions with Endpoints | 7 |

# Questions?