CALFED Ecosystem Restoration Program (ERP)

The goal of the Ecosystem Restoration Program is to improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species.

Photo by CA Dept. of Water Resources

CALFED BAY-DELTA PROGRAM

NOAA

RESOURCES AGENCY CALIFORNIA DEPARTMENT FISH & GAME

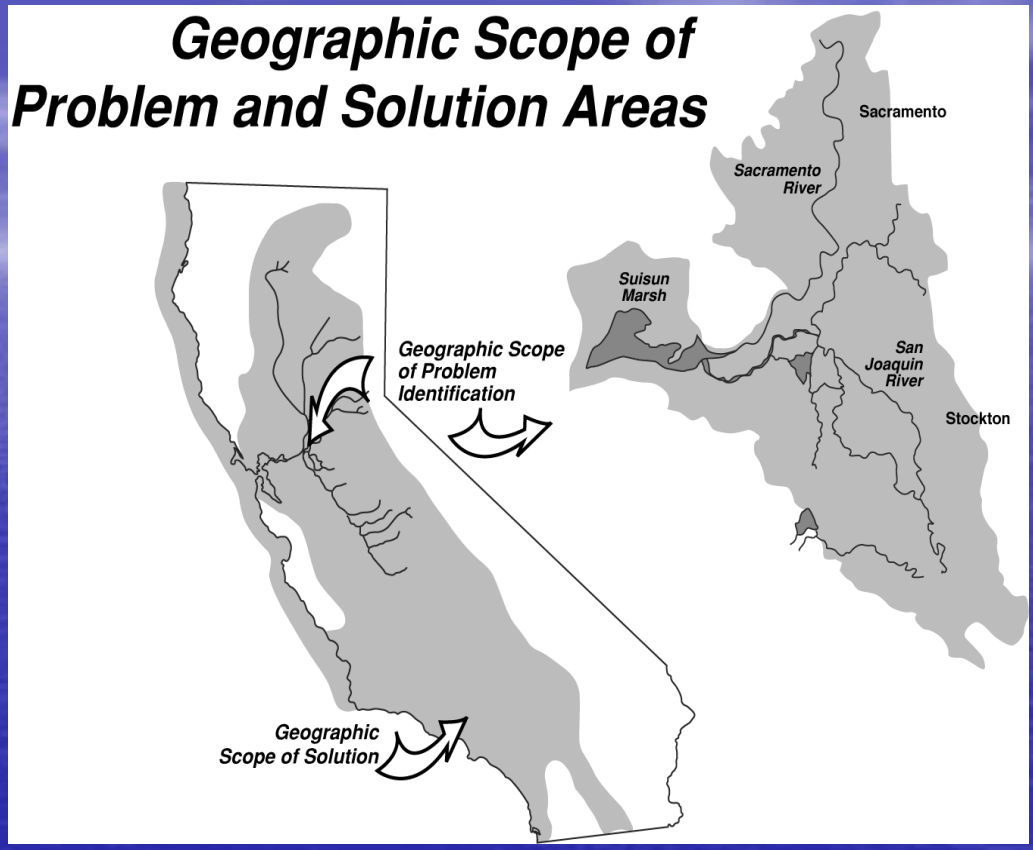
U.S. FISH & WILDLIFE SERVICE

ERP Problem Area

- Sacramento-San Joaquin Delta and east-side tributaries
- Suisun Marsh and North SF Bay
- Sacramento River Basin
- San Joaquin River Basin

ERP Solution Area

- All of the Central Valley
- San Pablo and San Francisco Bays
- Near shore Pacific Ocean
- Watersheds that receive water from or contribute water to the Bay Delta System



Picture by the CALFED Bay-Delta Program

Ecological Challenges

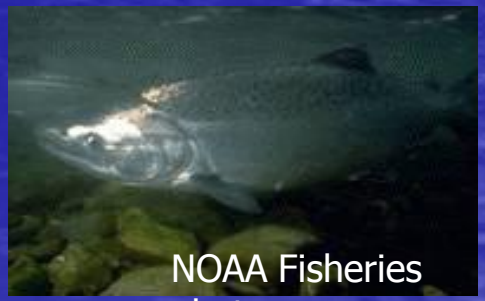
- Estuary has lost 95% of natural communities
- Several pelagic fish species showing precipitous population declines since 2000
- Poor ecological health of the estuary has imperiled reliability of water supply for human uses
- How to restore ecological function to an estuary that has been so drastically altered by human manipulation (reclamation) and invasive species
- How to manage for "drivers of change", including sea level rise, regional climate change, seismicity, and new invasive species

Photo by CA Dept. of Fish & Game

Endangered Species

- Delta smelt (Biological Opinion issued by USFWS in 2005 and amended 2008).
- Green sturgeon listed threatened (2006)
- Chinook salmon, winter-run (Biological Opinion issued by NOAA-Fisheries 2009).

USFWS photo



NOAA Fisheries photo

Goals & Objectives

- Achieve recovery of at-risk species dependent on the Delta and Suisun Bay
- Rehabilitate natural processes in the estuary and watershed
- Maintain and/or enhance populations of selected species for sustainable harvest
- Protect and/or restore functional habitat types in the estuary and its watershed
- Prevent the establishment of additional non-native invasive species
- Improve and/or maintain water and sediment quality conditions

Photo by CA Dept. of Fish and Game

Formulation of System Plan

- Restore **ecological processes** and functions throughout the system, which
- Support the creation and creation of **habitats**, while
- Reducing the impacts of **stressors** in the system, to
- Aid in the recovery of native **species**

Interagency and Stakeholder Involvement

- CDFG, USFWS, and NOAA Fisheries – leadership ("ERP Implementing Agencies")

- Involvement includes 21 State and Federal Agencies

Authorization and Funding

- Cost of implementing OCAP BO is estimated to be $200-300 Million over 10 years.
- Annual funding (CALFED ERP Program Element)
  - FY 05: $82 M ($47 M State; $35 M Federal)
  - FY 06: $63 M ($27 M State; $38 M Federal)
  - FY 07: $211 M ($190 M State; $21 M Federal)
  - FY 08: $191 M ($168 M State; $23 M Federal)
  - FY 09: $85 M ($61 M State; $24 M Federal)
  - --FY 10: $227M ($31M State; $196M Federal)
  - --FY 11: $124M ($49M State; $76M Federal) (projected)
- Majority of funding to land and water acquisitions and habitat construction

Monitoring and Adaptive Management

- Directed to use Operations Criteria And Plan Biological Opinion for delta smelt and NOAA Biological Opinion for anadromous fish.
- Comprehensive Science Program established; creation of Standing Science Panel underway.
- Species monitoring effected via interagency programs.

Lessons Learned

- The system has changed so drastically that it is unrealistic to expect restoration of past conditions to yield the benefits managers seek.
- Improvement in ecological conditions in the Delta will depend heavily upon flow augmentation from upstream reservoirs, as well as new facilities to convey water for human uses around, rather than through, the estuary.
- Greater effort should be made to incorporate resilience to such systemwide changes as sea level rise and climate change into long term restoration planning.

Program Challenges

- Future changes to the estuary from sea level rise, regional climate change (change in freshwater flow regime), seismicity (flooding of subsided islands) – implications for ecological processes, habitats, stressors, and species
- Allocation of costs to beneficiaries based on reliability of water supply, and beneficiary willingness to pay up-front costs
- Exploration of alternative species conservation actions, in case augmented flows and habitat creation don't improve populations.

Photo by CA Dept. of Fish & Game

Success to Date

- 4 Diversion Dams have been removed, improving salmonid passage and spawning
- A total of 10 large diversions (> 250 cfs) and 13 small diversions (< 250) have been screened, reducing salmonid entrainment.
- ~ 65,000 acres of land acquired from willing sellers in either fee-title or easement
- ~ 16,000 acres of enhancement/restoration

Recent Developments

Pelagic Organism Decline

State of California lists the longfin smelt as threatened 6/2009