

Attachment 6

Approach and Focus for Implementing the Central Valley Project Improvement Act 1999-2004

**Excerpted from
*Six-Year Plan and Budget
for Implementing the
Central Valley Project Improvement Act
Fiscal Years 1999-2004 (dated June 1999)***

Basic Approach and Focus of Plan

Approach: The Fish and Wildlife Service (Service) and the Bureau of Reclamation (Reclamation) work very closely and collaboratively in implementing the CVPIA's many specific provisions. This cooperative relationship formed the foundation for development of this six-year plan and budget and will continue to be reflected in Interior's work to implement the CVPIA. The basic procedural objectives which Interior has identified to guide its efforts are:

Achieve the stated goals and specific requirements of the CVPIA.

Implement the provisions of the CVPIA in a manner providing the greatest public benefit, consistent with its purposes.

Work to minimize possible adverse impacts to affected interests.

Coordinate and integrate CVPIA implementation with related or similar non-CVPIA efforts.

Develop partnerships with others in implementing actions to achieve CVPIA goals.

Fully involve the public and stakeholders in the implementation process.

Use the funds available in the most efficient and cost-effective manner.

Interior is striving to implement the CVPIA in a purposeful, proactive manner, addressing first those things that are most important, that are most urgent, or that will provide the greatest biological benefit. To do this, biological "focus areas" guide efforts over the short term (3-6 years). These focus areas consider three parameters: (1) the species of greatest concern, (2) the factors most influencing these fish and wildlife populations, and (3) the geographic areas or habitats critical to these populations.

Interior is channeling a major portion of its efforts where the three parameters overlap. Some programs cannot proceed exclusively in this fashion, however. For example, authority, funding, or information may be inadequate to implement a particular action immediately, even if it has a high priority. In some cases, deadlines or sunset provisions in the CVPIA may influence the budget and implementation schedule for certain measures, irrespective of the measure's inherent priority ranking. And finally, financial considerations must be taken into account, such as cost efficiencies realized by continuing rather than interrupting ongoing projects, and the availability of cost-sharing partners.

The CVPIA established three fish and wildlife restoration goals requiring focus and action by the Secretary:

Make all reasonable efforts to at least double natural production of anadromous fish

Provide water supplies to Central Valley refuges and other migratory

waterfowl habitats

Mitigate for other identified adverse fish and wildlife impacts of the CVP. Each required action in the CVPIA is related to others because together they are designed to collectively mitigate for CVP impacts and to enhance fish and wildlife resources. To achieve both the procedural and fish and wildlife restoration objectives, Interior is using an implementation approach consisting of two components--one based on biological principles, and the other based on nonbiological principles which emphasize administrative efficiency, partnerships, and public involvement.

Biological Principles :

Priority for implementation of CVPIA measures will be based primarily on biological benefits to be derived and on the technical feasibility and readiness of the measure for implementation.

Natural habitat components and the restoration of ecosystem function and viability will be emphasized in the planning and implementation of fish and wildlife provisions of the CVPIA. With this emphasis, it is expected that actions will provide benefits to a greater variety of organisms over a broad geographical area and promote enhancement and stability of a self-sustaining ecosystem.

Ecosystem factors that are known to constrain or limit key populations of fish and wildlife will be addressed first. This requires focusing on Central Valley fish and wildlife problems "holistically" and on sequencing activities to first address any limiting factors. For example, if mortality of outmigration juvenile salmon is the key factor limiting population abundance, that factor should be addressed before more juveniles are produced (when they would be subjected to the same limiting outmigration mortality).

Consistent with the above three principles and within statutory constraints, primary emphasis will be given to sections and provisions of the CVPIA which are of greatest utility in solving the most important fish and wildlife problems in the Central Valley.

Consistent with the need to address as many limiting or constraining factors within the ecosystem as possible, Interior expects to develop packages or projects in geographic areas or watersheds in order to maximize potential benefits.

Non-biological Principles:

Deadlines and sunset provisions of the CVPIA will influence the implementation schedules and budget requests for certain measures, irrespective of a measure's biological priority ranking.

The Service and Reclamation will seek additional sources of funds to facilitate implementation of CVPIA measures and the attainment of its goals. Although the Restoration Fund will remain the primary funding source, funds will also be requested in agency budgets to expedite implementation of key provisions. Assistance from other agencies or funding sources will also be sought. However, if

requested funding from agency budgets or other sources does not materialize, Restoration Funds will be applied based on priority of the proposed action.

To the extent possible, partnerships with others will be developed to help implement provisions of the CVPIA. Partners can bring expertise, financial resources, or additional authority that can greatly facilitate efforts. However, the interests and priorities of prospective partners may not coincide precisely with CVPIA priorities, so partnerships may therefore influence implementation of CVPIA measures. The benefits of such partnerships will be balanced against any associated limits or delays these partnerships might cause in implementing priority CVPIA measures.

Extensive coordination with related non-CVPIA programs will make efficient use of scarce resources and avoid overlap of efforts. For example, the very close coordination and partnering with the CALFED program will continue. This program was initiated in December 1994 as part of the Bay/Delta Accord to supplement the establishment and implementation of water quality objectives for the estuary by improving habitat conditions for fish and wildlife both within and upstream of the estuary. Coordination also continues with CDFG's efforts to restore salmon and steelhead populations, ensuring optimal use of limited funds available to each agency.

Maximum flexibility will be maintained in the allocation of Restoration Funds in order to accommodate unanticipated opportunities and changing conditions or circumstances. This is especially important since limited authority currently exists to implement some programs and measures without relying, in large part, on the authority of others or on the willingness of potential partners. Provisions of the CVPIA that will be most opportunistic and require the greatest budgetary flexibility include the acquisition of supplemental water supplies, land retirement, and the screening of unscreened or inadequately screened diversions.

Whenever opportunities exist, implementation of CVPIA programs and measures will be expedited by streamlining regulatory and environmental compliance processes. For example, maximum use will be made of general permits whenever compliance with Section 404 of the Clean Water Act is likely to be required. Programmatic environmental documents will also be used to the greatest extent possible to cover multiple actions of the same or similar sort.

Partnerships and Public Involvement: The Service and Reclamation believe that implementing the CVPIA through partnerships will be the most effective means for success. Voluntary collaborations to achieve mutual goals and objectives will accelerate accomplishments, increase available resources, reduce duplication, encourage innovative solutions, improve communication, and increase public involvement and support through shared authority and ownership of restoration actions.

Public support is both a product and a prerequisite of partnerships. Public support for an action will facilitate implementation and attract partners for future actions. The Service and Reclamation will seek opportunities for the public to assist in planning and implementing CVPIA restoration actions.

There are two levels of public involvement for CVPIA implementation. The first level is programmatic and involves planning a comprehensive program. At this level, all areas of the Central Valley are included. The second level is action-specific and involves implementing specific measures in individual watersheds.

Cooperation through partnerships is very important to the success of the CVPIA in restoring fish and wildlife resources throughout the Central Valley. CVPIA implementation is (and will continue to be) coordinated with existing and ongoing restoration efforts such as the State's efforts to restore salmon and steelhead populations, the State Water Resource Control Board's Water Quality Control Plan, and the CALFED Bay-Delta Program process striving to find long-term solutions in the Delta. At a more local level, the Mill Creek Watershed and Deer Creek Conservancies are good examples of local watershed partnerships successfully working in the Central Valley.

The Service and Reclamation encourage potential partners to enter into cooperative relationships to implement appropriate CVPIA measures. Through various mechanisms, they can provide funds and services to these partners, allowing for the completion of preapproved restoration actions. The CVPIA [Section 3407(e)] provides the Secretary the flexibility to use several mechanisms for funding non-Federal entities:

If the Secretary determines that the State of California or an agency or subdivision thereof, an Indian tribe, or a non-profit entity concerned with restoration, protection, or enhancement of fish, wildlife, habitat, or environmental values is able to assist in implementing any action authorized by this title in an efficient, timely, and cost effective manner, the Secretary is authorized to provide funding to such entity on such terms and conditions as he deems necessary to assist in implementing the identified action.

State agencies: Agencies of the State of California, such as the CDFG and CDWR, SWRCB, Reclamation Board, and others, are willing to assist in implementing many restoration actions. Where applicable, the Service and Reclamation will enter into procurement arrangements including cost-share agreements, memoranda of understanding, grants, and cooperative agreements with State agencies to assist in implementation of the CVPIA.

Local agencies and groups: Watershed conservancies, conservation groups, water districts, non-profit entities, and individual property owners can help implement restoration actions. Agreements can be reached with these groups or funds and CVPIA services can be directed to them through memoranda of understanding, grants, cooperative agreements, and challenge cost-sharing. In areas with local support but no watershed conservation group, the Service and Reclamation may provide funds and assistance in forming one. Information on forming and supporting local watershed conservation groups is contained in the *California Coordinated Resource Management and Planning Handbook* (1990).

Native American tribes: The United States holds many assets in trust for Native American tribes or individuals. The Secretary serves as trustee for these assets, as defined by treaties, Executive orders, statutes, regulations, and court decisions. Within the CVP service area, the Hoopa Valley Tribe has resource co-management

responsibility for its natural resources. The Tribal Fisheries Department staff has expertise in fisheries management and restoration, hydrology, and channel and floodplain maintenance flows in the Trinity River.

Considerations for Ranking Specific Actions: To assist in ranking specific actions and assigning priorities for measures within a specific program focus, Interior established a list of biological, implementation, and economic considerations (Table 1). These considerations are used to supplement agency judgement and public input in developing priorities, budgets, and implementation schedules.

Table 1. Considerations for Ranking Specific Actions for the CVPIA

<p>A. <u>Biological Resource Considerations</u></p> <p>Magnitude of Benefits to Biological Resources: Programs/projects with the greatest biological benefit and which address major limiting/constraining factors will generally receive the highest priority.</p> <p>Benefits to Special-Status Species: Programs/projects which benefit species of special concern will generally be a higher priority than those which do not.</p> <p>Ecosystem or Multiple Species Benefits: Programs/projects which have ecosystem, community, or multiple-species benefits will generally be a higher priority than those with only site-specific or single-species benefits.</p> <p>Protection/Restoration of Natural Habitats and Habitat Values: Programs/projects that restore and/or protect natural habitats or habitat values will generally be a higher priority than those that do not.</p> <p>Long-term Benefits: Programs/projects which have continuing or long-term benefits will generally be a higher priority than those which provide only one-time or short-term benefits.</p> <p>Immediate Benefits: Programs/projects which result in immediate biological benefits will generally be a higher priority than those which have delayed biological benefits.</p> <p>Effectiveness: Programs/projects that are expected to be biologically effective will generally be a higher priority than those whose effectiveness is questionable.</p> <p>Permanence and “Mitigability” of Adverse Impacts: Programs/projects for which adverse environmental impacts are reversible and mitigable will generally be a higher priority than those with irreversible or unmitigable adverse impacts.</p> <p>Studies/Investigations: Studies will generally receive a lower priority than implementation actions unless the study is a necessary precursor to an implementation action.</p> <p>B. <u>Implementation Considerations</u></p> <p>Continuing/Ongoing Efforts: Programs/projects that are continuing or ongoing will generally be a higher priority than new starts.</p> <p>Technical Feasibility: Programs/projects which can be implemented using proven and existing technology will generally be a higher priority than those which rely on unproven or experimental technology.</p> <p>Timeliness: Programs/projects which can be implemented in a timely fashion will generally be a higher priority than those where protracted delays are anticipated.</p> <p>Partnerships/Opportunities: Availability of cost-sharing funds, and opportunities to implement programs/projects in partnership with other agencies or organizations should be considered when developing priorities. Those with willing partners will generally have a higher priority.</p> <p>“Implementability”: Legal, regulatory, or technical obstacles to implementation should be considered when establishing priorities.</p> <p>Public Support: The degree of public support for a project or a proposal should be considered in establishing priorities.</p> <p>Compatibility: Programs/projects which are compatible with other programs or projects, are part of an integrated program, or which have synergistic effects with ongoing programs will generally be given a higher priority than those that do not or which conflict with ongoing programs. Interdependence and sequencing will be a prime consideration in establishing priorities or scheduling activities.</p> <p>C. <u>Economic Considerations</u></p> <p>Economic Effects: Programs/projects that have positive economic effects will generally be a higher priority than those which have negative economic effects.</p> <p>Project Costs: The total cost, cost effectiveness, and ongoing (O&M) costs should be</p>

considered when developing priorities. Programs/projects with a greater cost effectiveness will generally be a higher priority than those with lower cost effectiveness.

Impact to Water Supply: Programs/projects which benefit or have less adverse impact on water supply for project purposes will generally be a higher priority than those which adversely affect water supply.

Impact to Water Quality: Programs/projects which benefit water quality for all uses will generally be a higher priority than those which do not.

Impact to Power: Programs/projects which benefit or have less adverse impact on project power generation will generally be a higher priority than those which adversely affect power generation.

Immediate Benefits: Programs/projects which have immediate benefits to water supplies and/or power generation will generally be a higher priority than projects which have only delayed benefits.

Focus: Implementation of the CVPIA for FY 1999-2004 focuses on species and habitats determined to have the highest biological priority at this time and believed to contribute most to achieving fish and wildlife restoration goals as outlined below in the section on approach. Background information about how CVPIA programs are selected and how priorities are set is also detailed in this section.

Anadromous fish species have experienced major impacts in the Central Valley of California, most significantly in the Sacramento-San Joaquin River Delta (Delta). For these species, this plan focuses on fixing flow, temperature, habitat, predator, and diversion-related problems with an emphasis on the Delta. The focus for Central Valley refuges and other waterfowl habitat is on providing Level 2 and appropriate Level 4 water supplies, two-thirds of the water supplies necessary for San Joaquin Basin Action Plan lands, and incentives which will encourage farmers to flood fields for waterfowl. The focus for other fish, wildlife, and habitats is on restoring, protecting, and better managing significantly affected habitats, including those necessary for special-status species within the Central Valley.

Focus for Anadromous Fish Species: Since settlement of California's Central Valley in the mid-1800's, populations of native anadromous fishes have declined dramatically, with some stocks on the verge of extinction. Many factors contributed to this decline, including hydraulic mining; ocean and freshwater harvest; water quality degradation; the introduction of exotic fish species; construction of dams, dikes and levees; water diversions; and river and stream channelization.

Table 2 shows status and trend information for various species and races of anadromous fish addressed in the CVPIA. The species are not listed in order of priority; however, efforts focus first on those species in greatest decline or in greatest danger of extirpation over all or part of their range in the Central Valley. This approach will be reevaluated, allowing for adaptive management as status and conditions change.

Table 3 identifies specific limiting factors (also called stressors), in estimated order of significance, affecting anadromous fish species in the Central Valley of California as determined by the Service. This list, while not all-inclusive, represents what the Service believes to be major problems influencing populations and critical habitats of various species and races of anadromous fish in the Central Valley today. Table 3 takes into

account improvements in habitat and project operations that have been accomplished to date. Of course, not all factors influence all species all of the time throughout their range in the Central Valley. Therefore, the intent is to capture the relative significance of various factors to each species and race and then to summarize that information in an overall ranking for anadromous fishes as a group.

Based on species of greatest concern at this time, an assessment of factors limiting natural production of those species, and an emphasis on those geographic areas where the greatest number of species and factors can be addressed concurrently, the areas listed below will be the focus for the next 5 years. This focus describes how and where Interior hopes to concentrate the most significant portion of its efforts for FY 1999 through 2004. Priorities among anadromous fish species and races will be reevaluated throughout implementation of the CVPIA.

The Delta is among the highest priority focus areas because of its highly altered and degraded condition. All species and races of anadromous fish migrate through the Delta as adults moving to upstream spawning areas and as juveniles on their way to the San Francisco Bay and open ocean. Also, juveniles of many anadromous species rear in the Delta. The 1994 Bay-Delta Accord¹ provided improvement for some species and races of anadromous fish, but not all. Steelhead, and spring-run and San Joaquin fall-run chinook salmon, in particular, remain in urgent need of additional protections.

Another primary focus of FY 1999-2004 is restoration actions for Sacramento River basin spring-run chinook salmon (proposed for Federal listing as endangered) and steelhead (federally listed as threatened). Emphasis will be on the acquisition of additional instream flows; riparian and shaded riverine aquatic habitat restoration, primarily on tributaries; improved access to upstream habitat; and reduction of losses at diversions, especially on the mainstem (below Red Bluff) and tributaries of the Sacramento River and the Yuba River. Tributaries to the upper Sacramento River with the potential for sustaining natural production and promoting genetic diversity for these species include Clear, Battle, Antelope, Mill, Deer, Big Chico, and Butte Creeks. The American River will also be emphasized, because it provides habitat for steelhead as well as several other anadromous species.

¹ 1994 result of the Principles of Agreement on Bay-Delta Standards process.

Table 2. Anadromous Fish Status and Trends²

Species or Race	Geographic Extent				Status and Trends (1967-1991)
	SRB	SJRB	Bay/Delta	Delta Tributaries	
Sacramento fall-run chinook salmon (Proposed Federal Threatened)	X		X	X	Annual fluctuation between 100,000 and 300,000 adults.
San Joaquin fall-run chinook salmon (Proposed Federal Threatened)		X	X		High annual fluctuation between 900 and 77,000 adults.
Late Fall-run chinook salmon (Proposed Federal Threatened)	X	O	X		75-80% losses, high annual fluctuation between 7,000 and 35,000 adults.
Winter-run chinook salmon (Federal Endangered)	X		X	O	Over 90% decline, current population below 500 adults annually.
Spring-run chinook salmon (Proposed Federal Endangered)	X		X		Low population and high degree of annual fluctuation between 770 and 28,000 adults.
Steelhead (Federal Threatened in Central Valley)	X	O	X	O	80-90% losses, annual fluctuation between 3,500 and 25,000 adults.
Striped bass	X	O	X		60-70% decline, annual fluctuation between 680,000 and 1.7 million adults.
White Sturgeon	X	X	X		60-70% losses, annual fluctuation between 20,000 and 100,000 adults.
Green Sturgeon (Federal Species of Concern)	X	O	X		Continuous low annual occurrence between 500 and 1,000 adults.
American shad	X	O	X	O	Over a 50% decline from peak abundance during the period.

SRB = Sacramento River Basin

SJRB = San Joaquin River Basin

Bay/Delta = San Francisco Bay and Sacramento-San Joaquin River Delta area

Delta Tributaries = Calaveras, Mokelumne, and Cosumnes rivers

X= Indicates primary occurrence

O= Indicates minor or potential occurrence

² Source - *Central Valley Anadromous Fish Annual Run-Size, Harvest, and Population Estimates, 1967 Through 1991*, CDFG, August, 1994 Revision

Table 3. Anadromous Fish Limiting Factor Importance

Anadromous Fish Limiting Factors (in current estimated order of significance) ^{1/}	Limiting Factor Significance by Species and/or Race									Summary Rating of Factors ^{2/}
	SJFCS	SFCS	LFCS	WRCS	SRCS	ST	SG	SB	AS	
Delta Conditions - Delta inflow, outflow, export pumping, water temperature and quality, residence time, and flushing characteristics have all been modified.	H	H	H	H	H	H	H	H	H	High
Instream Flows and Temperatures - Frequency, magnitude, and timing of flows, upstream of the Delta, have been greatly modified (includes flow fluctuations).	H	H	M	M	H	H	H	H	H	High
Quality of Accessible Stream Channel and Riparian Habitat - Diminished quality limits capability of available habitat to meet essential species needs such as spawning, rearing, feeding, predator avoidance, etc.	H	H	H	H	H	H	M	M	M	High
Blockage of or Reduced Access to Suitable Habitat - Quantity of available habitat has been greatly reduced by blockages and access to remaining habitats are restricted by the lack of, or inoperative fish ladders, low flows, etc.	H	H	H	H	H	H	H	M	M	High
Availability of Data on Which to Base Fisheries Management Decisions - Essential for planning and implementation.	M	M	M	M	H	H	H	M	H	Moderate
Unscreened or Inadequately Screened Diversions - Causes entrainment, impingement, and losses from handling fish at facilities.	M	H	M	M	M	M	?	M	M	Moderate
Spawning Gravel Availability/Suitability - Further limits anadromous fish production capabilities.	M	M	M	M	M	M	?	NA	NA	Moderate
Pollution/Water Quality - Degraded water quality (including toxics, sedimentation, turbidity, etc.) affects all species.	H	M	M	M	M	M	H	M	M	Moderate
Poaching/Excessive Sport and Commercial Harvest - Harvest and escapement goals need to be carefully balanced to support legitimate consumptive uses and population restoration efforts.	M	L	L	L	M	L	M	L	L	Low
Excessive Predation - Increased predation, due to alteration of habitat conditions and/or adverse management practices, upsets natural predator/prey relationships.	M	L	L	L	L	L	?	L	L	Low
Introduction/Presence of Nuisance Exotic Species - Compete with native fish species for food, cover, spawning substrate and other biological functions.	L	L	L	L	L	L	L	L	L	Low
Disease - Potency tends to increase as species resistance is reduced due to stress caused by other limiting factors.	L	L	L	L	L	L	L	L	L	Low

^{1/} = Assumes all existing Biological Opinions are in place

^{2/} = Determined by USFWS

H = Highly significant limiting factor for species and/or race
M = Moderately significant limiting factor for species and/or race

L = Low significance as limiting factor for species and/or race

NA = Not Applicable

? = Unknown

SFCS = Sacramento Basin fall-run chinook salmon

SJFCS = San Joaquin Basin fall-run chinook salmon

LFCS = late fall-run chinook salmon

SRCS = spring-run chinook salmon

WRCS = winter-run chinook salmon

ST = steelhead

SG = sturgeon (white and green)

SB = striped bass

AS = American shad

Winter-run chinook salmon (federally listed as endangered), although already afforded protection under the Endangered Species Act, have not shown substantial progress towards recovery. When possible, measures additional to those required by the Endangered Species Act will be applied. Actions will continue or increase as appropriate and will focus on providing additional flows when necessary, modification of facility operations, improvement of instream temperatures, reductions in diversion, and the restoration of spawning habitat.

FY 1999-20004 actions will also emphasize San Joaquin River basin fall-run chinook salmon. Central Valley fall-run chinook salmon have been proposed for Federal listing as threatened, and the San Joaquin population is particularly worrisome. As indicated, population levels fluctuate dramatically and have been at extremely low levels for many years. Good adult returns appear significantly correlated to high springtime flows for outmigrating juveniles down the mainstem and through the Delta 2½ years prior. Restoration actions will focus on providing additional flows on tributaries to the mainstem and past the Delta pumps; restoration of river and tributary channels, spawning gravels and riparian cover; and the elimination of predator ponds on tributaries.

Focus Central Valley Refuges and Other Waterfowl Habitats: Central Valley wetlands have declined more than 90 percent from historic levels (Table 4). Waterfowl and other wetland-dependent species, including many listed species, have been noticeably affected, prompting inclusion of wetland restoration measures in the CVPIA to deal with the long-term problems of an insufficient habitat base and inadequate water supplies for remaining Central Valley wetlands. Additional water will allow wetland managers to dramatically expand and enhance wetland habitat.

The primary focus will be to provide the requisite firm water supplies through long-term contractual agreements to Central Valley National Wildlife Refuges, State Wildlife Management Areas, the Grasslands Resource Conservation District, and the San Joaquin Basin Action Plan lands and to develop or acquire the conveyance capacity necessary to deliver those supplies. Full supplies to the areas are authorized to be provided by October 2002.

In addition, the intent is to maximize, consistent with priorities and other demands on CVPIA funds, the acreage of additional wetland habitats that can be achieved by providing incentives to farmers to keep agricultural fields flooded in winter for waterfowl purposes. This program will expire by the year 2002 unless otherwise reauthorized and funded, and the objective is to achieve the maximum potential benefit for the resource while authority still exists.

Focus for Other Fish, Wildlife and Associated Habitats: The Central Valley contains some of the most varied natural habitats and highest biodiversity in North America. Many of these resources have been severely reduced or degraded by human settlement, population growth, and economic development. With the development of the Federal and State water projects, thousands of acres of upland, wetland, and riparian habitats were inundated by construction of major reservoirs; wetland, riparian, and aquatic habitats downstream of reservoirs were affected by associated changes in timing and extent of riverflows; and additional upland and seasonal wetland habitats were converted to agricultural, municipal, and industrial uses as a result of additional water

made available by these projects. Fish and wildlife species native to the Central Valley ecosystem are greatly dependent on native habitats for meeting their biological needs. As the extent of these native habitats have declined over the years, so have the extent of native fish and wildlife dependent on them. Because of this connection, native habitat trends can be used as an indicator of associated species well-being for estimating species trends. It can also be reasonably assumed that protection and restoration of these habitats will benefit dependent native species.

Table 4. Habitat and Representative Species Associated with Construction and Operation of the Central Valley Project

Priority Habitats	Geographic Extent	Estimated Habitat Trends ^{1/} and Representative Species, Including Special-Status Species
s Hardwood Woodland	Central Valley to 9,000 feet, and Central Coast from sea level to 5,000 feet where soil types allow the formation of a tree layer dominated by oaks. Typically found in sloped areas, valleys, raised stream benches and terraces with shallow, moderately to excessively drained soils.	Habitat losses associated with CVP construction and deliveries have occurred at various locations. Although the majority of the losses occurred prior to construction of the CVP, significant local losses have occurred both within the Central Valley and in the Central Coast since 1940. Many upland species like deer, bear, and the California quail frequent this habitat. Hardwoods are essential for many special-status species including the Shasta salamander, Bohart's blue (butterfly), and the Greenhorn adobe-lily.
Chaparral	Central Valley and Central Coast areas from 3,000 to 10,000 feet generally on north facing slopes where soil type and hydrology allow for the presence of woody, often hard-leaved shrubs.	Over 50% decline in some areas. For example, El Dorado County, receiving some of its water supply from the CVP, has experienced rapid urbanization and related losses in chaparral and associated habitats. This has resulted in the listing of several plant species including Stebbins' morning glory, Pine Hill ceanothus, Pine Hill flannel bush, El Dorado bedstraw, and Layne's butterweed.
Riparian	Central Valley and Central Coast areas from sea level to 8,000 feet associated with water sources and containing various tree and shrub species.	Over 90% decline compared to historic levels with additional losses in quantity and quality over the last 50 years. CVP impacts were estimated to have occurred as a result of facility construction and modification of flow patterns below dams. Riparian habitats are one of the most productive areas for migratory bird species. Riparian-endemic special-status species include the western yellow-billed cuckoo, southwestern willow flycatcher, and riparian brush rabbit.
Desert Alkali Scrub	Limited to the southern and western part of the San Joaquin Valley where historic soil condition in remaining relatively unimpacted sites, allow for its continued existence.	Decreased by as much as 68% compared to historic levels, of which 240,000 acres may have been lost since the 1940's. Many historic sites for this habitat are now converted to agriculture and/or urban development, partially a result of CVP water deliveries. Essential for many special-status species including the San Joaquin kit fox, kangaroo rats (spps.), and the blunt-nosed leopard lizard.
s Grassland	Central Valley and Central Coast areas from sea level to about 3,900 feet within flat plains to gently rolling foothills. These areas contain a much different vegetation composition than during historic conditions. ^{2/}	Decreased by over 50% from historic levels. Within the Central Valley, nearly 2,000,000 acres have been lost since the 1940's within areas receiving CVP water. Grassland dependent species include, the coyote, badger, and migratory birds such as the western meadowlark. Special-status species include the Aleutian Canada goose, San Joaquin kit fox, and California tiger salamander.
Wetlands	Central Valley and Central Coast areas from sea level to areas above 5,900 feet where soils are saturated or at least periodically flooded.	Over 90% loss from historic levels with an estimated 400,000 acre loss since the 1940's within areas receiving CVP deliveries. Wetland dependent species include waterfowl, shorebirds, and a host of mammals like the racoon. Representative special-status species include the giant garter snake, California red-legged frog, tricolored blackbird, and the salt marsh harvest mouse.
Pools Vernal	Central Valley-wide in areas with an impervious substrate insuring a perchable water table. Typically located in grassland areas.	Due to agricultural and development practices Central Valley-wide, several associated plant and invertebrate species have been federally listed, including several species of fairy shrimps, the vernal pool tadpole shrimp, and Sacramento Orcutt grass.
Central Valley Aquatic Habitats	Central Valley and Central Coast areas from sea level to the top of watersheds.	By actions including the construction and operation of the CVP, the natural hydrology of the Central Valley and Central Coast areas has been profoundly changed. These changes have resulted in the alteration of estuarine habitat hydrology and productivity; while impacts to riverine habitats include the inundation and adverse modification of hundreds of river miles, and the loss of access for many species to thousands of river miles. Aquatic habitat-dependant species include resident fishes, the beaver, river otter, and American dipper. Special-status species inhabiting these areas include the bald eagle, Shasta crayfish and delta smelt.

(^{1/}) = Source of trend estimations:

GIS evaluations using digitized Wieslander (1945) 1:1,000,000 scale maps compared to GAP Program digital information from 1990 LANDSAT Thematic Mapper satellite imagery (approx. 1:100,000 scale).

Existing literature - Frayer et al. 1989; Katibah 1984; Central Valley Habitat Joint Venture 1990; various CDFG documents.

(^{2/}) = Today, most existing grassland areas in California's Central Valley consist primarily of nonnative grass species (greater than 99%). Less than 1% of remaining grassland areas in the Central Valley contain enough native grass species, in aggregate, to be labeled either valley sacaton or valley needlegrass grasslands within publicly released and available GAP Program digital data (GAP, 1996).

Table 4 shows estimates of loss of native habitats in areas associated with CVP construction, operation, and delivery of water to service areas³. The table is not intended to suggest that the CVP caused these losses, but rather to identify those habitat types and losses to which it is believed the CVP has contributed. These habitats were determined to be priorities as a result of their significant reductions, fragmentation, and the existence of associated special-status species⁴. An analysis of existing databases indicate that approximately 187 special-status species occur in these habitat types within and adjacent to the areas directly affected by construction and operation of the CVP and areas receiving CVP water supplies. Another 640 species are considered species of concern.⁵ These numbers help to demonstrate magnitude of the ecosystem-level problems and needs in Central Valley and central coast areas. Without efforts to address the current trend, such as those provided by the CVPIA, additional species will undoubtedly be added to the special-status list.

The initial focus of the Habitat Restoration Program [3406 (b)(1) "other"] is based on the Service's ranking of habitats and species of concern; assessment of factors limiting native fish, wildlife, and associated habitats; and geographic areas where those habitats, species, and factors converge to the greatest degree. Priorities for species and habitat will be reevaluated throughout implementation of the CVPIA.

Habitats known or believed to have experienced the greatest percentage decline in quantity and quality since construction of the CVP, and whose impacts can be attributed at least partially to its construction and operation⁶, are a focus for the Habitat Restoration Program. These habitats include riparian, alkali desert scrub, wetlands (including vernal pools), chaparral (including El Dorado County gabbro soil habitats), hardwood woodlands, grasslands, and aquatic habitats.

Populations of native species affected by the CVP and not specifically addressed in other portions of section 3406 of the CVPIA, will be addressed in the Habitat Restoration Program. Initial focus is on federally listed, proposed, or candidate species; other unlisted species of special concern including resident fish and migratory birds; and other native wildlife species associated with the habitat types

³ CVP service areas currently include the Central Valley and areas of the central coast of California.

⁴ "Special-status species" are those species federally listed, proposed for listing, or candidates for listing under the Endangered Species Act of 1973, and/or those listed as threatened or endangered by the State of California.

⁵ For this purpose, "species of concern" are those species formerly considered category 2 or category 3 candidates for listing under the Endangered Species Act; those identified but not listed as threatened or endangered under the California Endangered Species Act; plant species in severe decline as identified by the California Native Plant Society Database; and certain migratory bird species identified as being in severe decline by the California Natural Diversity Database.

⁶ Based on direct and indirect losses of habitat from CVP facility construction and operation, and the associated expansion of irrigation.

listed above.

Additional CVPIA Provisional Benefits: In addition to the three biological areas of emphasis described above, other actions under Section 3406(b), 3408(h), and other sections of the CVPIA will further enhance habitat for fish and wildlife resources, including endangered species. As habitat and diversity improve, the overall quality of the entire ecosystem will benefit.