

CALFED

**DRAFT TECHNICAL REPORT
ENVIRONMENTAL CONSEQUENCES**

**SUPPLEMENT TO
VEGETATION & WILDLIFE RESOURCES**

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SUPPLEMENT TO VEGETATION & WILDLIFE RESOURCES

The following information supplements the Vegetation & Wildlife Environmental Consequences Technical Report.

ASSESSMENT METHODS

Area of Natural Plant Communities

Changes in the areal extent of natural plant communities were assessed for each of the alternatives and described in acreage lost or gained. A modified Holland system was used to identify and describe the plant communities according to vegetation type, their component plant species, and associated wildlife species. Plant communities include seasonal wetlands, saline emergent wetlands, freshwater emergent wetlands, grassland, chaparral, valley foothill riparian, montane riparian, valley foothill hardwood, montane hardwood, and mixed conifer forest. Agricultural areas were analyzed separately.

Vegetation data based on a geographic information system (GIS) were used to assess impacts. GIS data included:

- DFG's Central Valley Wetland and Riparian GIS (modified from Ducks Unlimited data), Version 1.0 (July 1997);
- National Wetland Inventory (NWI) GIS data, Version 1.0;
- California Gap Analysis GIS data (University of California at Santa Barbara, Department of Geography, 1996 draft);
- Wildlife-Habitat Relationships (WHR) digital data; and
- California Department of Water Resources (DWR) Land Use GIS data (Crop Mapping Program, Delta 1991 data).

Published reports also were used, including the:

- Central Valley Project Improvement Act (CVPIA) Programmatic Environmental Impact Statement (PEIS) Vegetation and Wildlife Technical Appendix (Reclamation 1997),
- Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the Interim South Delta Program (Entrix and Resource Insights 1996), and
- Draft EIS/EIR for the Delta Wetlands Project (Jones & Stokes Associates 1995).

Approximate impact areas of storage and conveyance facilities in the Delta were digitized where facility designs were described. Affected plant community categories, either agricultural or nonagricultural, and their approximated acreages were determined using DFG's Central Valley Wetland and Riparian GIS, Version 1.0 (July 1997). For comparative purposes, canals or pipeline alignments were assumed to be 200 feet wide throughout, and impacts were calculated as one-tenth of an approximate 2,000-foot corridor. Approximate acreage ranges were presented only because specific locations and attributes of projects were not available.

The GIS data sources differ in mapping methodology, nominal mapping scale, minimum mapping unit area, date of acquisition, and land-cover classification. The listed data sources were compared and evaluated for their applicability. For assessment of storage and conveyance impacts in the Delta Region, DFG's Central Valley Wetland and Riparian GIS was deemed most appropriate, because it was the most recent mapping effort with consistent coverage of the Delta Region and surrounding areas, and because the mapping methods emphasized wetland and riparian plant communities. An accuracy assessment for these data by DFG was in progress at the time that assessments were made.

The narrow and linear nature of most wetland and riparian vegetation in the Delta Region causes these habitat types to be seriously under represented in most regional-scale GIS datasets, aggravates rectification errors, and limits reliability of impact assessments using overlay analysis. Impacts on natural plant community types were analyzed jointly, rather than for plant community types separately, and ranges of acreages rather than exact acreage impact estimates were obtained, because locations of potential conveyance facilities were known only in concept or approximately. The impact ranges for conveyance and storage impacts are presented in this programmatic document for comparative purposes only. Project-level impacts should be assessed using more precise methods and more detailed data sources.

Acreages of potential conveyance and storage facilities outside the Delta could not be calculated, because no specific locations were identified. Approximate locations of proposed storage and conveyance facilities in the Sacramento River and San Joaquin River regions were examined using the California Gap Analysis GIS vegetation data to obtain a range of potentially affected plant communities. Impacts on potentially affected plant communities were compared qualitatively.

Potentially affected common wildlife species associated with affected plant communities shown in Table S-1 in the technical report were obtained using the WHR database.

Quality of Natural Plant Communities

The quality of natural plant communities directly affects the associated plants and wildlife found in, or dependent on, the affected community. The quality of the community may be related to such variables as diversity of species present, vigor of the independent species populations, size of the community, and spatial relationship of the community to other communities.

The quality of an existing plant community was considered to be affected if an alternative could result in changing the extent of the hydrology necessary to support a community, or the abundance of competitive non-native plant species. Other proposed CALFED actions also could affect the quality of natural plant communities, but these actions were not described in sufficient detail in alternative descriptions to assess impacts.

Determining exact measurable changes in the variables that affect the quality of communities requires specific information on current conditions and estimated projected changes. Although most project features were defined in terms of type, size, and function, specific locations were not available at this programmatic level of analysis. Therefore, potential impacts quality were described generally.

Area of Agricultural Lands

Due to the large-scale conversion of native communities to urban and agricultural land uses, some wildlife species have adapted to using agricultural lands for some life requirements. The value of agricultural lands for associated wildlife largely depends on the type of agricultural land use, associated land use practices, and cropping patterns.

Impacts on agricultural lands were based on DFG's Central Valley Wetland and Riparian GIS in order to be compatible with the assessment of impacts on natural plant communities. Results of preliminary analyses using these data were compared to results of preliminary analyses using the DWR land use GIS data mapped in 1991. These analyses resulted in somewhat different results, probably because of different methods of data acquisition and differences in land-cover classification criteria. These differences did not affect the pattern of differences among alternatives or the conclusions of the assessment. Only approximate ranges of acreages are presented, because locations of potential conveyance facilities are known only in concept.

Published reports also were used, including the:

- CVPIA PEIS Vegetation and Wildlife Technical Appendix,
- Draft EIS/EIR for the Interim South Delta Program (Entrix and Resource Insights 1996), and
- Draft EIS/EIR for the Delta Wetlands Project (Jones & Stokes Associates 1995).

Potentially affected common wildlife species associated with affected agricultural cover types were derived from review of the WHR database.

Habitat Patterns

Changes in habitat patterns may affect some wildlife species by creating or obstructing potential movement corridors that enhance a species' ability to migrate and exchange genes among populations. Generally accepted principles of island biogeography (McArthur and Wilson 1967) hold that large, contiguous patches of habitat are conducive to population stability, while smaller fragmented habitat patches increase the probability of population extinction in an area. Changes in habitat pattern also could affect species that depend on more than one habitat type if the distance among the required habitats changes. Habitat pattern was considered to be affected if an alternative could result in a substantial change in the pattern of habitats from No Action Alternative conditions.

This assessment was conducted for species or species groups sensitive to changes in habitat pattern.

Number of Known Special-Status Species or Communities

Impacts of CALFED actions on special-status species and their critical habitats, on rare natural communities, and on significant natural areas may result from the direct loss or reduction in numbers of individuals in a local area. Most special-status species occur in distinct areas or in very small discrete sites, such as for some plants. Because the location of specific alternative features in relation to specific special-status species could not be determined, a broad approach to impacts was taken.

The following assessment tools were used to evaluate impacts of the alternatives on special-status species and on areas with critical habitat designation:

- Natural Heritage Division's Natural Diversity Data Base (NDDDB) RAREFIND,
- California Native Plant Society's (CNPS's) Electronic Inventory of Rare and Endangered Vascular Plants of California (1994),
- the CVPIA PEIS Vegetation and Wildlife Technical Appendix, and
- Literature reviews.

Approximate impact footprints corresponding to proposed alternative features were generated using a GIS and the NDDDB. A list of special-status plant and animal species potentially occurring within these footprints was produced.

The habitat requirements of each species, as defined in the literature (RAREFIND and CNPS's electronic inventory), were used to evaluate the effect of changes resulting from alternative features on these special-status species. For each species, an identification was made of potential benefits, potentially significant adverse impacts, or no potentially significant impacts. Potentially significant adverse impacts were described further, and mitigation measures were presented that would minimize or eliminate these adverse impacts (see "Mitigation Strategies" in the technical report).

It was assumed that the distribution and abundance of special-status species was proportional to the amount and quality of habitat available. Assessment of impacts was based on the potential of an alternative to affect a special-status species, its critical habitat, or its range.

Area and Quality of Habitat Occupied by Special-Status Species

Impacts on specific plant communities that support special-status species were assessed by determining which plant communities previously identified as being affected provided the habitat subtypes required by special-status species, based on published descriptions of the habitat subtypes (Sawyer and Keeler-Wolf 1995).

Similarly, changes in the quality of habitat occupied by special-status species were based on an assessment of the effect of CALFED actions on the quality of plant communities previously identified as being affected. The effects of CALFED actions on those components of the habitat subtypes that affected the particular special-status species under consideration were assessed qualitatively.

Species-habitat relationships and range information were obtained from the following sources:

- CNPS inventory digital files (Skinner and Pavlik 1994),
- NDDB digital files (RAREFIND) and GIS,
- the Federal Register, and
- the CVPIA PEIS Vegetation and Wildlife Technical Appendix.

Impacts on habitat subtypes required by special-status species were assessed based on the likelihood that the subtypes would fall in a potentially affected area.

Area and Quality of Special-Status Plant Communities

Special-status plant communities are subtypes of wetlands, riparian habitats, and other communities that are considered rare by DFG. Impacts on large-scale wetland and riparian communities were considered. Other vegetation subtypes that could not be considered using large-scale tools, including vernal pools, sycamore riparian woodlands, and others, were considered separately.

Information to assess impacts on the area and quality of special-status vegetative communities was obtained from the following sources:

- NDDB GIS data files,
- CNPS Series Description of Vegetation (Sawyer and Keeler-Wolf 1995),
- U.S. Fish and Wildlife Service vernal pool GIS data (May 1997),
- the CVPIA PEIS Vegetation and Wildlife Technical Appendix, and
- interviews with experts.

Changes in areas of special-status communities were assessed using the NDDB GIS data and other data sources. Changes in the quality of special-status communities were assessed based on an analysis of changes in environmental factors that determine the reproduction and growth of plant species constituting the affected communities.

VEGETATION & WILDLIFE

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