

## 3.3 Biological Resources

This section describes the existing ecosystems, sensitive species and communities that inhabit the SCAG region and discusses current threats and protection efforts for these biological resources. Furthermore, this section identifies expected impacts of implementation of the RTP on these resources, includes mitigation measures for the impacts, and evaluates the residual impacts.

The SCAG region includes a rich assemblage of biological resources supported by a variety of elevation, landform, soil and rock types, and climate zones. This varied landscape contains a high diversity and abundance of species, including relatively recently-evolved species and localized habitats with species that occur only in southern California.<sup>1</sup>

### Environmental Setting

#### Ecosystems in the SCAG Region

An ecosystem is the dynamic complex of plant and animal communities and their associated non-living environment. The exceptionally diverse plant and animal communities of the SCAG region call for a broad approach to their description. Habitat categories appropriate for this scale of diversity will be used here, generally following Barbour and Major's (1977) description of major vegetation types as well as, vegetation and habitat descriptions from Mayer and Laudenslayer (1988) and *California Wildlife: Conservation Challenges* from California Department of Fish and Game (CDFG), 2007. Typical natural communities and series will be described for each ecosystem type, as well as representative and special status species. **Map 3.3-1**, included in the Map Chapter at the end of this document, shows the general location of natural vegetation types that represent the variety of ecosystems within the SCAG region. **Map 3.3-2**, included in the Map Chapter at the end of this document, shows the general location of National Wetland Inventory wetlands in the SCAG region. The following is a description of each of these ecosystems within the region.

#### ***Desert Shrub and Woodland***

The vast interior of Southern California is primarily desert, divided into two major regions – the Colorado Desert Region and the Mojave Desert Region. Both regions encompass a diversity of habitats and wildlife species.

#### ***Colorado Desert Scrub Vegetation***

The Colorado Desert extends from southern San Bernardino and eastern Riverside Counties to Imperial County and ending at the Mexican border. It encompasses approximately 7 million acres

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<sup>1</sup> Munz, P.A. (1974). *A flora of southern California* (pp. 1086). Berkeley, CA: University of California Press.

and is part of the larger Sonoran Desert that extends into Arizona. The region is bordered by the Peninsular mountain range in the west and the Colorado River in the east. The majority of the region lies at a relatively low elevation, below 1,000 feet, with the lowest point found in the Salton Trough at 275 feet below sea level. The Colorado Desert experiences two rainy seasons per year (winter and late summer) and infrequent winter frosts. Creosote bush scrub habitat characterizes much of the Colorado Desert along with alkali desert scrub, desert succulent scrub, and desert wash vegetation. Species found in the region include creosote bush (*Larrea tridentata*), ocotillo (*Fouquieria splendens*), cholla (*Opuntia* spp.), yucca spp., desert agave (*Agave deserti*), mesquite (*Prosopis* spp.), catclaw acacia (*Acacia gregii*), and shrubby saltbushes (*Atriplex* spp.). Rare plants found in the region include Orcutt's woody aster (*Xylorhiza orcutti*), Orocopia sage (*Salvia graetae*), Coachella Valley milk vetch (*Astragalus lentiginosus coachellae*), and crown of thorns (*Euphorbia milii*).

Desert fan palm oases are rare ecological communities found only in the Colorado Desert. These oases attract large numbers of birds entering California from the southeast. Especially important oases in the SCAG region include Palm Springs, Cottonwood Spring, and Thousand Palms Oasis in Riverside County and Morongo Valley, Twenty-nine Palms, Box "S" Spring, Old Woman Spring, and Saratoga Springs in San Bernardino County. These oasis habitats attract breeding populations of several species that are not commonly found west of central Arizona, including vermilion flycatchers (*Pyrocephalus rubinus*), brown-crested flycatchers (*Myiarchus tyrannulus*), Lucy's warblers (*Vermivora lucida*), and summer tanagers (*Pyrranga rubra*).

Resident birds of the Colorado Desert region include Gambel's quail (*Callipepla gambeli*), black-throated sparrows (*Amphispiza bilineata*), Abert's towhees (*Pipilo aberti*), cactus wrens (*Campylorhynchus brunneicapillus*), Crissal thrashers (*Toxostoma dorsale*), phainopeplas (*Phainopepla nitens*), white-winged doves (*Zenaida asiatica*), and roadrunners (*Geococcyx californianus*).

Aside from a few species of toads along the Colorado River, amphibians are rare or absent from the deserts in the SCAG region. In contrast, a diverse array of reptiles occur in these desert habitats. Typical species include desert night lizards (*Xantusia vigilis*), chuckwallas (*Sauromalus obesus*), desert iguanas (*Dipsosaurus draconoides*), zebra-tailed lizards (*Uma* spp.), leopard lizards (*Gambelia wislizenii*), collared lizards (*Crotaphytus collaris*), sidewinders (*Crotalus cerastes*), Mojave rattlesnakes (*C. scutulatus*), and western diamondback rattlesnakes (*C. atrox*). Other common desert vertebrates include mule deer (*Odocoileus Hemionus*), bobcat (*Lynx rufus*), desert kangaroo rat (*Dipodomys deserti*), and black-tailed jackrabbit (*Lepus californicus*).

Some special status vertebrates found in desert scrub habitat include the desert tortoise (*Gopherus agassizii*), Bell's sage sparrow (*Amphispiza belli*), silvery legless lizard (*Anniella pulchra pulchra*), Palm Springs round-tailed ground squirrel (*Spermophilus tereticaudus chlorus*), and Peninsular bighorn sheep (*Ovis Canadensis nelsoni dps*). The desert slender salamander (*Batrachoseps major aridus*), Palm Springs pocket mouse (*Perognathus longimembris bangsi*), Coachella valley fringe-toed lizard (*Uma inornata*), and Sandstone night lizard (*Xantusia gracilis*) are special status species endemic to the Colorado Desert Region.

There are 15 invertebrate taxa (see appendix) found in the Colorado Desert Region that are special status species, 8 of which are endemic to the region.

### **Mojave Desert Scrub Vegetation**

The Mojave Desert covers much of San Bernardino County and extends west into northern Los Angeles County and south into portions of northern Riverside County. It lies in the rain shadow of the southern Sierra Nevada and Southern California's Transverse and Peninsular Ranges, is generally higher in elevation than other regional deserts, and experiences regular winter frosts and occasional snows. Much of the Mojave Desert vegetation and wildlife is similar to that of the Colorado Desert. Creosote bush scrub and a variety of saltbush vegetation primarily dominate the Mojave Desert. Other common habitats include desert wash, alkali scrub, and Joshua tree scrub. Joshua trees (*Yucca brevifolia*) cover large areas of the Mojave Desert and are a dominant species of Joshua Tree National Monument east of the San Bernardino Mountain range. Some plants commonly found in Joshua tree habitat include Mojave yucca (*Y. schidegera*), Nevada ephedra (*Ephedra nevadensis*), California buckwheat (*Eriogonum fasciculatum* ssp.), Cooper goldenbush (*Ericameria cooperi*), big galleta (*Pleuraphis rigida*), and desert needlegrass (*Achnatherum speciosum*). Rare plant species endemic to this region include ash-gray Indian paint brush (*Castilleja cinerea*), Parish's daisy (*Erigeron parishii*), Cushenbury milk-vetch (*Astragalus albens*), and Cushenbury buckwheat (*Eriogonum ovalifolium* var. *vineum*).

In pure stands, Mojave scrub habitat produces large numbers of seeds that provide large numbers of small mammals with their primary food source. These mammals include ground squirrels (*Spermophilus* spp. and *Ammospermophilus* spp.), kangaroo rats (*Dipodomys* spp.), deer mice (*Peromyscus* spp.), wood rats (*Neotoma lepida*) and kangaroo mice (*Microdipidops* spp.). Desert oases used by migrating birds can also be found in this region. Conspicuous birds include common ravens (*Corvus corax*), prairie falcons (*Falco mexicanus*), American kestrels (*Falco sparverius*), barn owls (*Tyto alba*), quail, and mourning doves (*Zenaida macroura*).

Some special status invertebrates endemic to the Mojave desert include Inyo California towhee (*Pipilo crissalis eremophilus*), Amargosa vole (*Microtus californicus scirpensis*), Mojave tui chub (*Gila bicolor mohavensis*), Panamint kangaroo rat (*Dipodomys panamintinus panamintinus*), Saratoga springs pupfish (*Cyprinodon nevadensis nevadensis*), black toad (*Bufo exsul*), and Eagle Mountain scrub jay (*Aphelocoma californica cana*).

### **Dunes**

#### **Beach and Dune (Coastal and Interior)**

Beach and dune environments are relatively uncommon along the California coast; beach and dune occupies less than one-fourth of the coastline.<sup>2</sup> Within the SCAG region, substantial beach and dune environments are found only near Ventura and Los Angeles. The largest remaining area is the El Segundo Dunes, just north of the Los Angeles Airport.

<sup>2</sup> Barbour, M. G. & Johnson, A.. Beach and dune. In Barbour, M. G. & Major, J. (Eds.). *Terrestrial vegetation of California*. City: John Wiley and Sons.

Dune environments occur in desert areas where wind causes sand accumulation. Like beach dunes, desert dunes are uncommon in the SCAG region. The largest and most spectacular desert dunes are at the Kelso Dunes, the Barchan Dunes near the Salton Sea, and the dunes near Thousand Palms.

Beach and dune vegetation is generally low in plant cover and species richness. Most plant species in this habitat are perennials, usually prostrate plants adapted to an unstable, shifting substrate. The farther from the beach itself (or, in the case of desert dunes, the farther from the sand-bearing prevailing winds), the more stable the dunes and their vegetation become. Typical vegetation series in beach dunes are the sand-verbena-beach bursage (*Abronia* spp.-*Ambrosia chamissonis*) series and dune lupine-goldenbush (*Lupinus chamissonis*-*Isocoma menziesii*) series. In disturbed areas, the iceplant (*Carpobrotus* spp., *Mesembryanthemum* spp., and *Malephora crocea*) series may be found. In desert dunes, typical vegetation is the desert sand-verbena (*Abronia villosa*) series.

Although few vertebrate species are endemic to beach and dune habitats, there are a number of insects and other invertebrates found only in sand ecosystems. These species include the Globose dune beetle (*Coelus globosus*) and the El Segundo blue butterfly (*Euphilotes battoides allyni*) in the coastal dunes and Hardy's dune beetle (*Anomala hardyorum*) in the desert dunes. Coastal beaches protected from human disturbance provide seasonal nesting habitats for California least terns (*Sterna antillarum browni*) and western snowy plovers (*Charadrius alexandrius nivosus*).

### **Conifer Forests and Woodlands**

The montane and subalpine vegetation in the SCAG region consists of conifer-dominated forests and woodland. These generally occur at elevations of 3,000 feet or more in the Transverse and Peninsular Ranges. At the lower elevations, Coulter pine forms an open woodland with canyon live oak, black oak (*Quercus kelloggii*), ponderosa pine and Jeffrey pine. At somewhat higher elevations, yellow (ponderosa and Jeffrey) pine forest dominate. Farther upslope, upper montane conifer forests are present, consisting of white fir and sugar pine, followed by mountain juniper (*Juniperus occidentalis* ssp. *australis*) woodland on open slopes and ridges and lodgepole pine (*Pinus contorta*) forest on flats and gentle slopes. The highest elevation forests are dominated by limber pine. These forests are found at the highest elevations of the San Bernardino Mountains. The actual elevation range of each forest type is dependent on other site factors, such as precipitation, moisture-holding capability of the soil, slope and aspect.

There are no true alpine areas within the highest mountains of the Transverse Range; that is, no areas that are climatically unable to support high-elevation conifer species. However, there are some treeless areas of talus, meadow, and exfoliating rock. Alpine vegetation is found in the talus and scree of Mt. San Geronio. Such vegetation includes several species of sedge, rush, and various perennial herbs.

No state or federally listed species occur in the alpine barren and rock habitat. One special status plant species, Sierra podistera (*Podistera nevadensis*), is known from this habitat in the

mountains of San Bernardino County, although it is currently believed to be extirpated there. A few special status wildlife species can be found in alpine barrens and rocky, talus slopes of the SCAG region including bighorn sheep (*Ovis canadensis*).

Conifer forests offer multi-layered vegetation that provides foraging, nesting, and roosting substrates for a diversity of wildlife species. Many species, including neotropical migrant bird species, use the bark, branches, and foliage of these forests, including Great horned owls (*Bubo virginiana*), hairy woodpeckers, pileated woodpeckers (*Drycopus pileatus*), olive-sided flycatchers (*Contopus borealis*), western wood pewees (*C. sordidulus*), Steller's jays (*Cyanocitta stelleri*), brown creepers (*Certhia americana*), white-breasted nuthatches (*Sitta carolinensis*), golden-crowned kinglets (*Regulus satrapa*), solitary vireos, yellow-rumped warblers, western tanagers, black-headed grosbeaks, and purple finches (*Carpodacus purpureus*). Black bears (*Ursus americanus*) and black-tailed deer also frequent these forests.

Special status plant species of coniferous forests and woodlands include the Peirson's spring beauty (*Claytonia lanceolata* var. *peirsonii*), Mexican flannelbush (*Fremontodendron mexicanum*), Tahquitz ivesia (*Ivesia callida*), San Bernardino Mountains bladderpod (*Lesquerella kingii* ssp. *bernardina*), Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*), Hidden Lake bluecurls (*Trichostema austromontanum* ssp. *compactum*), Munz's onion (*Allium munzii*), Bear Valley sandwort (*Arenaria ursina*), Cushenbury milk vetch (*Astragalus albens*), Parish's daisy (*Erigeron parishii*), Cushenbury buckwheat (*Eriogonum ovalifolium* var. *vineum*), and Cushenbury oxytheca (*Oxytheca parishii* var. *goodmaniana*).

Special status wildlife species associated with conifer forests of the SCAG region include southern rubber boas (*Charina (bottai) umbratica*), and white-eared pocket mice (*Perognathus alticolus alticolus*).

The Tecate cypress (*Cypressus forbesii*), is a fire-adapted conifer species found only on low fertility soils. This species grows in several stands in the SCAG region in the vicinity of Sierra Peak in Orange County. Tecate cypress forest is considered a special status natural community by the California Natural Diversity Database (CNDDB), and the Tecate cypress itself is a California Native Plant Society listed species.

### **Hardwood Forests and Woodlands**

Oak-dominated woodlands and forests are found at low- to mid-elevations of the Transverse and Peninsular Ranges. Canyon live oak (*Quercus chrysolepis*) forms forests with Coulter pine (*Pinus coulteri*), bigcone-fir (*Pseudotsuga macrocarpa*), Douglas-fir (*P. menziesii*), and interior live oak (*Quercus wislizenii*) on the higher and inner slopes of the mountains, as well as forming riparian forests along seasonal streams. Coast live oak woodland forms on more coastal slopes, while Engelmann oak (*Q. engelmannii*) woodland and valley oak (*Q. lobata*) woodland grow on deeper alluvial slopes and valleys. California walnut (*Juglans californica*) is found associated with coast live oak, usually on north slopes, and in some places becomes the dominant species. Woodland consists of trees with an understory of grasses and herbs. Introduced grasses dominate the understory, although in some cases native bunchgrasses may be present.

The CDFG recognizes valley oak woodland, Engelmann oak woodland, and California walnut woodland as sensitive woodland communities in the SCAG region. These communities have shown a dramatic decline due to urban and agricultural development in this century. Hardwood upland forests are found on higher, moister sites than oak woodlands and are distinguished from woodlands by a higher tree density. Walnut forests found on the south side of the San Gabriel Mountains to the Santa Ana Mountains, mainland cherry forest historically found in Los Angeles County, island cherry (*Prunus ilicifolia* ssp. *lyonii*) forest and island ironwood (*Lyonothamnus floribundus*) forest found on the Channel Islands are considered sensitive natural communities.

Hardwood woodlands and forests of the SCAG region are especially attractive to wildlife because they provide important forage and cover for a large number of ground, shrub, and tree nesting raptors. Woodpeckers excavate nest holes in live and dead oaks, and these cavities are subsequently used by other cavity-nesting species, such as American kestrels (*Falco sparverius*), western screech owls (*Otus kennecottii*), tree swallows (*Tachycineta bicolor*), ash-throated flycatchers (*Myiarchus cinerascens*), white-breasted nuthatches, plain titmice, and western bluebirds (*Sialia mexicana*). Oak acorns provide an important food source for many species including scrub jays (*Aphelocoma coerulescens*), western gray squirrels, and black-tailed deer (*Odocoileus hemionus*).

Oak foliage and bark attract insects that are important to the diet of birds such as white-breasted nuthatches, plain titmice, Bewick's wrens (*Thryomanes bewickii*), ruby-crowned kinglets (*Regulus calendula*), American robins (*Turdus migratorius*), solitary vireos (*Vireo solitarius*), Hutton's vireos (*V. huttoni*), warbling vireos (*V. gilvus*), orange-crowned warblers (*Vermivora celata*), Nashville warblers (*V. ruficapilla*), yellow-rumped warblers (*Dendroica coronata*), black-throated gray warblers (*D. nigrescens*), western tanagers (*Piranga ludoviciana*), black-headed grosbeaks, fox sparrows (*Passerella iliaca*), northern orioles (*Icterus galbula*), and house finches (*Carpodacus mexicanus*).

The grassland understories of oak woodlands offer foraging habitat and cover for Pacific treefrogs (*Pseudacris* (= *Hyla*) *regilla*), western fence lizards (*Sceloporus occidentalis*), California quail (*Callipepla californica*), northern flickers (*Colaptes aureus*), black-tailed hares (*Lepus californicus*), deer mice (*Peromyscus maniculatus*), gray fox, and black-tailed deer (*Odocoileus hemionus*).

Hardwood woodland is habitat for several special status plant species, including Orcutt's brodiaea (*Brodiaea orcuttii*), Laguna Beach dudleya (*Dudleya stolonifera*), Mexican flannelbush (*Fremontodendron mexicanum*), heart-leaved pitcher sage (*Lepechinia cardiophylla*) and Nevin's barberry (*Berberis nevinii*). Hardwood upland forest is also habitat for the Ojai fritillaria (*Fritillaria ojaiensis*).

Special status wildlife that frequent hardwood forests and woodlands of the SCAG region include San Diego mountain kingsnakes (*Lampropeltis zonata pulchra*), Cooper's hawks (*Accipiter cooperii*), golden eagles (*Aquila chrysaetos*), western yellow-billed cuckoos (*Coccyzus americanus occidentalis*), long-eared owls (*Asio otus*), southwestern willow flycatchers

(*Empidonax traillii extimus*), brown-crested flycatchers (*Myiarchus tyrannulus*), and Santa Catalina shrews (*Sorex inornatus willetti*).

### **Grasslands**

Grasslands of the SCAG region historically occurred in the deep soils of the larger valleys and coastal plains. These were prime development areas and the native grasslands have been largely eliminated. The remaining grasslands tend to be found in steeper, more rocky or remote parts of the SCAG region. The following describes the vegetation and wildlife found in grassland areas, as well as the special status species found.

Introduced annual grasses dominate the grasslands in the SCAG region. In areas that are relatively undisturbed, a significant portion of the vegetation may consist of native perennial bunch grasses, including members of the genera needlegrass (*Nassella*, *Stipa*), melic (*Melica*), Junegrass (*Koeleria*), and muhly (*Muhlenbergia*). The composition and structure of the grasslands in prehistoric times cannot be known with certainty, because so many non-native herbs and grasses have become dominant in the grasslands of today. The California annual grassland series is common in the lower elevation grasslands of the coastal areas. At higher elevations in the Transverse and Peninsular Ranges, perennial grasses are more abundant, including the purple needlegrass (*Nassella (=Stipa) pulchra*), foothill needlegrass (*N. lepida*), and nodding needlegrass (*N. cernua*) series, as well as the one-sided bluegrass (*Poa secunda*) series. Valley needlegrass grassland is a special status community that occurs at scattered locations throughout the western part of the SCAG region.

Because grasslands have been greatly reduced in extent, remaining grasslands offer important habitat for raptors, such as golden eagles, northern harriers (*Circus cyaneus*), and black-shouldered kites (*Elanus caeruleus*). Turkey vultures (*Cathartes aura*), red-tailed hawks (*Buteo jamaicensis*), Say's phoebes (*Sayornis saya*), western kingbirds (*Tyrannis verticalis*), water pipits (*Anthus spinoletta*), horned larks (*Eremophila alpestris*), American crows (*Corvus brachyrhynchos*), lark sparrows (*Chondestes grammacus*), western meadowlarks (*Sturnella neglecta*), black-tailed hares, California ground squirrels (*Spermophilus beechyi*), and black-tailed deer) are typical wildlife observed in grasslands.

Special status plant species that occur in specialized habitat within grasslands include Munz's onion (*Allium munzii*), San Diego ambrosia (*Ambrosia pumila*), Braunton's milk-vetch (*Astragalus brauntonii*), thread-leaved brodiaea (*Brodiaea filifolia*), Orcutt's brodiaea (*Brodiaea orcuttii*), many-stemmed dudleya (*Dudleya multicaulis*), Conejo dudleya (*Dudleya parva*), Conejo buckwheat (*Eriogonum crocatum*), Orcutt's linanthus (*Linanthus orcuttii*), and Lyon's pentachaeta (*Pentachaeta lyonii*). Most of these species also occur in communities other than grassland and are restricted to specific soil types, hydrologic regimes, elevation range and geographic distribution.

A variety of special status wildlife species occur in grassland habitats of the SCAG region, including western spadefoot toads (*Spea hammondi*), Swainson's hawks (*Buteo swainsoni*), prairie falcons (*Falco mexicanus*), white-tailed kites (*Elanus leucurus*), golden eagles (*Aquila*

*chrysaetos*), burrowing owls (*Athene cunicularia*), Los Angeles pocket mice (*Perognathus longimembris brevinasus*), Stephen's kangaroo rats (*Dipodomys stephensi*), and the Palos Verde blue (*Glaucopsyche lygdamus palosverdesensis*) and Quino checkerspot (*Euphydryas editha quino*) butterflies.

## **Scrub (Shrub)**

### **California Chaparral**

Chaparral is a fire-adapted community of evergreen shrubs, often with small, thickened or leathery leaves. Chaparral is found at middle elevations in the foothills of the Transverse and Peninsular Ranges, often on steep or rocky sites. Deeper soils and lower elevations tend to support grasslands or sage scrub, while higher elevations with cooler temperatures and more rainfall tend to support woodlands.

One of the most common chaparral plant species is chamise (*Adenostoma fasciculatum*); other important shrubs include scrub oak (*Quercus berberidifolia*), manzanitas (*Arctostaphylos* spp.), and ceanothus (*Ceanothus* spp.) species. The chamise series, as well as a number of series in which chamise is co-dominant with bigberry manzanita (*A. glauca*), black sage (*Salvia mellifera*), cupleaf ceanothus (*Ceanothus greggii*), hoaryleaf ceanothus (*C. crassifolius*), white sage (*S. apiana*), and Eastwood manzanita (*A. glandulosa*), are common vegetation series found in chaparral within the SCAG region. The scrub oak series, red shank (*Adenostoma sparsifolium*) series, interior live oak (*Q. wislizenii*) series, and chaparral whitethorn (*C. leucodermis*) series are also common in chaparral. Although chaparral covers a large portion of the SCAG region, none of the chaparral community types are considered sensitive by the CDFG.

Chaparral provides dense cover for a variety of shrub-dependent wildlife species. The wren-tit (*Chamaea fasciata*) is a bird found primarily in the chaparral belt of California. Other species often associated with chaparral habitats in the SCAG region include California quail, Anna's hummingbirds, bushtits, Bewick's wrens, northern mockingbirds (*Mimus polyglottos*), California thrashers (*Toxostoma redivivum*), orange-crowned warblers, rufous-sided towhees, California towhees, white-crowned sparrows (*Zonotrichia albicollis*), golden-crowned sparrows (*Z. atricapilla*), and lesser goldfinches (*Carduelis psaltria*). Western fence lizards, southern alligator lizards (*Gerrhonotus multicarinatus*), western rattlesnakes (*Crotalus viridis*), and black-tailed deer also frequent chaparral habitats. Chaparral provides habitat for several special status plant species that usually occur in openings among the shrubs and often on uncommon soils or parent materials. The endangered slender-horned spineflower (*Dodecahema leptoceras*) occurs in chaparral, as well as in coastal sage scrub. Other special status plant species occurring in chaparral include summer holly (*Comarostaphylos diversifolia* ssp. *diversifolia*), dune larkspur (*Delphinium parryi* ssp. *blochmaniae*), Santa Monica Mountains dudleya (*Dudleya cymosa* ssp. *ovatifolia*), San Gabriel Mountains dudleya (*D. densiflora*), Laguna Beach dudleya (*D. stolonifera*), Conejo buckwheat (*Eriogonum crocatum*), Mexican flannelbush (*Fremontodendron mexicanum*), Santa Susana tarplant (*Deinandra minthornii*), Nevin's barberry (*Berberis nevinii*), Lyon's pentachaeta (*Pentachaeta lyonii*), Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*), and crownbeard (*Verbesina dissita*).

Few special status wildlife species exclusively require chaparral habitats. The CNDDDB lists only the desert monkey grasshopper (*Psychomastix deserticola*) and the Santa Monica shieldback katydid (*Aglaothorax longipennis*) as sensitive species occurring in this habitat.

### **Southern Coastal Scrub**

Coastal sage scrub is a drought-deciduous Mediterranean climate community characterized by soft-leaved, shallow-rooted shrubs. It once covered more than 4,000 square miles in Southern California. As a result of urban and agricultural development, more than 80 percent of this habitat has been eliminated and many of plants and wildlife associated with this community have experienced similar declines. Dominant species include California sagebrush (*Artemisia californica californica*), California buckwheat (*Eriogonum fasciculatum*), beavertail cactus (*Opuntia* spp.) and black sage (*Salvia mellifera*). The CNDDDB lists three sensitive coastal scrub communities for the SCAG region: southern coastal bluff scrub at localized points along the coast, maritime succulent scrub which occurs on San Clemente and Catalina Islands, and riversidian alluvial fan sage scrub.

The San Diego horned lizard (*Phrynosoma coronatum blainvillei*), coastal western whiptail (*Aspidoscelis tigris stejnegeri*), orange-throated whiptail (*Aspidoscelis (=Cnemidophorus) hyperythra*), San Bernardino kangaroo rat (*Dipodomys merriami parvus*), northwestern San Diego pocket mouse (*Chaetodipus (=perognathus) fallax fallax*), and California gnatcatcher (*Polioptila californica californica*) occur nearly exclusively in coastal sage scrub. The largest assemblage of special status wildlife species in the SCAG region is mapped within coastal sage scrub habitats. In addition to these dependent species, coastal sage scrub also provides habitat for a number of more widespread species that are adapted to chaparral and desert scrub habitats. Several special status plant species, such as the Santa Ana River woollystar (*Eriastrum densifolium* ssp. *sanctorum*), slender-horned spineflower (*Dodecahema leptoceras*), Munz's onion (*Allium munzii*), several dudleya species (*Dudleya* spp.), Santa Susana tarplant (*Deinandra minthornii*), and Nevin's barberry (*Berberis nevinii*), occur in coastal sage scrub.

### **Wetlands**

Generally, wetlands are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface. Wetlands vary widely because of regional and local differences in soils, topography, climate, hydrology, water chemistry, vegetation, and other factors, including human disturbance (EPA, 2006). Wetlands include riparian areas, inland waters, and marine and estuarine environments. Each supports a diverse array of biological communities, described below. **Map 3.3-2** included in the Map Chapter at the end of this document, displays the wetlands in the SCAG region identified in the National Wetlands Inventory. **Table 3.3-1** provides information on the larger natural wetlands in the SCAG region. This chapter focuses on the habitats and species that occur in these water bodies. The Water Resources chapter discusses the characteristics of these surface waters.

**TABLE 3.3-1  
 NATURAL WETLANDS**

Wetland	Counties Where Located	Protected and Enhanced Area Size, if any	# of known Special Status Species
Aliso Creek Wetlands	OR, RIV, SBD	1 acre protected, 3 acres enhanced	unknown
Anaheim Bay	OR, RIV, SBD		unknown
Bolsa Chica Wetlands	LA	880 acres protected	12
Ballona Lagoon	LA	16.3 acres enhanced	4
Ballona Creek Wetlands	LA	86 acres protected	10
BSA	SBD	118 acres protected	unknown
Calvary Chapel	SBD	100 acres protected	unknown
Colorado Desert District	SBD, IMP, RIV	146 acres enhanced	unknown
Colorado Lagoon	LA	14 acres protected	unknown
Deep Creek	SBD	300 acres protected	unknown
Emma Wood State Beach	VEN	5 acres enhanced	unknown
Hellman Ranch Wetlands	ORA	3.4 acres protected	10
Henrietta Marsh	LA	5 acres enhanced	unknown
Hidden Valley Wildlife Area	RIV	70 acres enhanced	unknown
Huntington Beach Wetlands	OR		9
Imperial Wildlife Area	IMP	325 acres enhanced	unknown
Klondike Canyon PV	LA	160 acres enhanced	unknown
Laguna Lakes	OR	30 acres restored; 3 acres enhanced	6
Lombardi	SBD	102 acres protected	unknown
Los Angeles River	LA		3
Los Cerritos Wetlands	LA	16 acres protected	6
Malibu Lagoon	LA	33 acres protected	8
McGrath Lake	VEN		3
Mugu Lagoon	VEN	2,000 acres protected	33
Mystic Lake	RIV	175 acres protected	unknown
Ormond Beach Wetlands	VEN		12
Picacho State Rec Area	IMP	20 acres enhanced	unknown
San Joaquin Marsh	OR		14
San Juan Creek	OR		1
Santa Ana River Mouth	OR		17
San Jacinto Wildlife Area	RIV	360 acres enhanced	unknown
Santa Clara River Estuary	VEN		8
Santa Margarita River/Lagoon	RIV, SDG	250 acres protected; 600 acres restored	20
Topanga Lagoon	LA		0
Trancas Lagoon	LA		0
Upper Newport Bay	OR	757 acres protected	6
Ventura River Estuary	VEN	110 acres enhanced	10

SOURCE: California Resources Agency. (1998). Southern California Wetlands Inventory. [http://ceres.ca.gov/wetlands/geo\\_info/so\\_cal.html](http://ceres.ca.gov/wetlands/geo_info/so_cal.html). Accessed November 2007.

California Coastal Conservancy. (2003). Southern California Wetlands Recovery Project. [http://www.scwrp.org/work\\_plan.htm](http://www.scwrp.org/work_plan.htm). Accessed November 2007.



### **Interior Wetlands**

Interior wetlands include lakes, wet meadows, freshwater and alkali marshes, alkali meadows, freshwater and alkali seeps, vernal pools, and alkali playas. By their nature, these habitats are uncommon in the arid, summer-dry SCAG region, and most are considered special status by CNDDB. The larger and fresher the water feature, the more development pressure it has likely experienced.

Wet meadows occur on permanently moist soil and are dominated by perennial grasses, sedges (*Carex* spp.), and rushes (*Juncus* spp.). In the SCAG region, they are most common at higher elevations. Alkali marshes, meadows, and seeps are characterized by plant species adapted to relatively high concentrations of salts. They typically occur in poorly drained areas with relatively high evaporation. Alkali meadows occur on moist soil affected by salts and are dominated by perennial grasses and sedges. Alkali marshes occasionally occur along the Colorado River in eastern Riverside and Imperial Counties. Alkali seeps are scattered throughout desert regions. Alkali playas occur in the desert areas on poorly drained soils with high salinity or alkalinity, often with a high water table and salt crusts on the surface. Some of the common vegetation series represented in these habitats are saltgrass series, sedge series, bulrush (*Scirpus* spp.), cattail (*Typha* spp.), and spikerush (*Eleocharis* spp.) series. Alkali seeps, southern coastal salt marshes, cismontane alkali marshes, and transmontane alkali marshes are recognized as special status communities by CDFG.

Vernal pools are a special example of interior wetlands. They are seasonal freshwater pools that form in depressions over an impermeable soil layer (claypan or hardpan) or parent material. Annual species with low cover and a short life cycle primarily comprise the vegetation in vernal pools. The vernal pools of the Santa Rosa Plateau are isolated from other areas of California in the Central Valley and San Diego County, and they support a distinctive flora with a number of endemic species. Special status invertebrates found in Riverside County vernal pools include the vernal pool fairy shrimp (*Branchinecta lynchi*) and the Riverside fairy shrimp (*Streptocephalus woottoni*).

Interior lakes that are especially important to wildlife in the SCAG region include Silverwood Lake, Lake Arrowhead, Big Bear Lake, and Baldwin Lake in the San Bernardino Mountains, and Lake Hemet in the San Jacinto Mountains. There a number of lakes, including Lake Matthews, Lake Skinner and the Prado Basin in western Riverside County, which serve primarily as reservoirs of potable water, or for flood control, water conservation or emergency storage, but which also support numerous species of wildlife. The open water, mudflats, and emergent vegetation associated with these aquatic habitats are of great importance to birds and other wildlife.

The Salton Sea in Imperial County is by far the largest aquatic habitat in the SCAG region and attracts water birds that are otherwise rare or entirely absent in Southern California. The lakeshore of the sea is largely barren, but extensive marshes exist at the mouths of the Whitewater River at the north end, the New and Alamo Rivers at the south end, and Salt Creek at the eastern shoreline. Finney and Ramer Lakes near the southeast corner of the Salton Sea also provide extensive wetland habitats that attract a variety of wildlife species.

Freshwater marshes are habitat for several special status species, including the endangered marsh sandwort (*Arenaria paludicola*) and Gambel's water cress (*Nasturtium gambelii*). Localized alkali meadows with unusual soil or water characteristics are habitat for a number of special status plants, including slender-petaled thelypodium (*Thelypodium stenopetalum*), silver-haired ivesia (*Ivesia argyrocoma*), Baldwin Lake linanthus (*Linanthus killipii*), and San Bernardino ragwort (*Packera bernardina*). Plants associated with alkaline meadows in the desert areas include alkali mariposa lily (*Calochortus striatus*), Tecopa bird's-beak (*Cordylanthus tecopensis*), and Parish's alkali grass (*Puccinellia parishii*).

Special status wildlife associated with freshwater marshes of the SCAG region include California red-legged frogs (*Rana aurora draytonii*), southwestern pond turtles (*Actinemys (=Clemmys) marmorata pallida*), great blue herons (*Ardea herodias*), great egrets (*A. alba*), and bald eagles (*Haliaeetus leucocephalus*). Freshwater marshes along the Colorado River support the endangered Yuma clapper rail (*Rallus longirostris yumanensis*).

### **Coastal Salt Marsh and Estuaries**

Coastal wetlands include estuarine and salt marsh wetland communities subject to tidal influence. In the SCAG region, some of the largest estuaries and salt marshes are the Santa Clara River estuary and Mugu Lagoon in Ventura County, Malibu Lagoon and Ballona wetlands in Los Angeles County, and Seal Beach marshes, Bolsa Chica Lagoon, and Upper Newport Bay in Orange County.

Vegetation in coastal salt marsh is generally emergent herbaceous perennial species. The dominant plants all have features that allow them to live in saline soils and to absorb water despite its dissolved salts. Typical vegetation series in coastal salt marsh includes the cordgrass (*Spartina foliosa*) series, in the areas of deepest inundation, pickleweed (*Salicornia* spp.) series in areas flooded frequently but at less depth, and saltgrass series (*Distichlis spicata*) in marginally flooded areas that accumulate salts through evaporation.

Southern California's extensive mainland and island coastal areas include some of the richest habitats for marine birds and mammals in North America. The ocean waters, lagoons, beaches, bays, estuaries, saltwater marshes, and tidal flats provide habitat for an abundance of seabirds, shorebirds, wading birds, and waterfowl. Typical birds of rocky coasts include double-crested (*Phalacrocorax auritus*) and pelagic cormorants (*P. pelagicus*), black oystercatchers (*Haematopus bachmani*), black turnstones (*Arenaria melanocephala*), wandering tattlers (*Heteroscelus incanus*), and surfbirds (*Aphriza virgata*). Sandy beaches experience heavy human use, but undisturbed areas attract marbled godwits (*Limosa fedoa*), sanderlings (*Calidris alba*), and special status species, such as western snowy plovers and California least terns.

Several special status plants species occur in southern coastal salt marsh, including the endangered salt marsh bird's-beak (*Cordylanthus maritimus* ssp. *maritimus*), recorded in eight locations in Ventura and Los Angeles Counties. Coastal salt marshes support the endangered light-footed clapper rails (*Rallus longirostris levipes*) and Belding's savannah sparrows (*Passerculus sandwichensis beldingii*).

### Riparian Habitats

Riparian plant communities are tree or shrub-dominated communities that occur along streams and rivers. Historically, the most well-developed riparian vegetation occurred on the largest coastal streams, such as the Santa Clara, Los Angeles, Santa Ana, San Gabriel and Santa Margarita Rivers. Typical dominant species in the forests, woodlands and scrubs along these rivers are Fremont cottonwood (*Populus fremontii*), California sycamore (*Platanus racemosa*), various species of willow (*Salix* spp.), coast live oak (*Quercus agrifolia*), canyon live oak (*Q. chrysolepis*) and white alder (*Alnus rhombifolia*). Vegetation series represented in riparian vegetation of the SCAG region include Fremont cottonwood, arroyo willow (*S. lasiolepis*), black willow (*S. gooddingii*), Hooker willow (*S. hookeriana*), red willow (*S. laevigata*), and mixed willow, as well as coast live oak and canyon live oak series. The characteristics of the major coastal rivers in the SCAG region are provided in **Table 3.3-2**.

Desert riparian vegetation occurs along permanent streams, intermittent streams, desert washes, permanent springs, and alkali sinks. Desert riparian vegetation includes Mojave riparian forests, Sonoran cottonwood-willow riparian forest, mesquite (*Prosopis glandulosa* and *P. pubescens*) bosque, desert dry wash woodland, and desert fan palm oasis woodland (mesquite series, fan palm series, arroyo willow, narrowleaf willow (*Salix exigua*), and Fremont cottonwood series).

**TABLE 3.3-2  
CHARACTERISTICS OF MAJOR COASTAL RIVERS**

River	Watershed Area (acres)	Natural Waterway Miles	% River in Protected Lands	# Stream Crossings	# Special Status Species	# Dams
Santa Barbara Coastal	240,720	633	1%	951	23	11
Santa Clara	1,032,302	2,624	21%	2,649	26	8
Los Angeles	534,420	801	0%	1,440	20	51
San Gabriel	453,960	828	19%	1,405	20	26
Santa Ana	1,082,540	2,033	3%	2,916	73	52
Santa Margarita	473,562	1,033	5%	1,488	45	9
San Luis Rey	495,650	961	2%	1,311	44	18

SOURCE: California Resources Agency and Information Center for the Environment. (1997). California Rivers Assessment (CARA) - ICE. <http://endeavor.des.ucdavis.edu/newcara/>. Accessed November 2007.

Where the riparian habitat has been degraded, either through alteration of the hydrology or direct disturbance to the vegetation, the non-native tamarisk (*Tamarix* spp.; in tamarisk series) is often dominant. Most remaining high-quality desert riparian vegetation is considered special status by the CDFG. Major desert riparian systems occur along the Amargosa, Mojave and Colorado Rivers.

Riparian habitats support the densest and most diverse wildlife communities in Southern California. The diversity of plant species, multi-layered vegetation, and perennial water provides a variety of foods and microhabitat conditions for wildlife. Mature willows, oaks, sycamores, and

other riparian trees provide high-quality nesting habitat for wildlife, such as raptors. Cavity-nesting wildlife, such as the Nuttall's woodpeckers (*Picoides nuttalli*), downy woodpeckers (*Picoides pubescens*), northern flickers (*Colaptes auratus*), plain titmice (*Parus inornatus*), white-breasted nuthatches (*Sitta carolinensis*), bats, and western gray squirrels (*Sciurus griseus*) require mature stands of trees. California grape (*Vitis californicus*) vines, blackberries (*Rubus* spp.), elderberries (*Sambucus* spp.), and oaks (*Quercus* spp.) produce important fall and winter foods for birds and mammals. Common wildlife species that depend on the nectar, fruits and seeds of riparian plants include Anna's hummingbirds (*Calyptes anna*), black-headed grosbeaks (*Pheucticus melanocephalus*), rufous-sided towhees (*Pipilo erythrophthalmus*), California towhees (*Pipilo fuscus*), raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*), and gray foxes (*Urocyon cinereoargenteus*).

Riparian vegetation supports an abundance of insect prey that feed on foliage and stems during the growing season. These insects, in turn, support a high density of migratory and resident birds, including the Pacific-slope flycatchers (*Empidonax difficilis*), western wood pewees (*Contopus sordidulatus*), yellow warblers (*Dendroica petechia*), MacGillivray's warblers (*Oporomis tolmiei*), Wilson's warblers (*Wilsonia pusilla*), warbling vireos (*Vireo gilvus*), bushtits (*Psaltriparus minimus*), and house wrens (*Troglodytes aedon*).

Special status plant species of riparian habitats include Nevin's barberry (*Berberis nevinii*), Davidson's bush mallow (*Malacothamnus davidsonii*), triple-ribbed milkvetch (*Astragalus tricarinatus*), short-joint beavertail (*Opuntia basilaris* var. *brachyclada*) and Parish's gooseberry (*Ribes divaricatum* var. *parishii*).

Some birds typical of riparian habitats such as willow flycatchers (*Empidonax traillii*), least Bell's vireos (*Vireo bellii pusillus*), and yellow-billed cuckoos have been eliminated from most of their historical range in Southern California. Riparian habitats in the SCAG region support small populations of special status wildlife species such as least Bell's vireos (*Vireo bellii pusillus*), southwestern willow flycatchers (*Empidonax traillii extimus*), yellow warblers (*Dendroica petechia brewsteri*), arroyo toads (*Bufo californicus*) and southwestern pond turtles (*Actinemys* (=Clemmys) *marmorata pallida*).

The ephemeral and semiarid nature of the rivers of the SCAG region have not supported an abundance of native fishes, and many native fishes found in the SCAG region are currently of endangered or threatened status because of habitat losses and water quality degradation. Native fishes commonly found in the rivers of the SCAG region are probably limited to the speckled dace (*Rhinichthys osculus*), and the staghorn sculpins (*Leptocottus armatus*). Less common are special status fishes found in rivers of the SCAG region. These include the threespine unarmored stickleback (*Gasterosteus aculeatus*), the tidewater goby (*Eucyclogobius newberryi*), the Mohave tui chub (*Gila bicolor mohavensis*), bonytail (*Gila elegans*), the Colorado squawfish, (*Ptychocheilus lucius*), the desert pupfish (*Cyprinodon macularius*), the southern coastal population of steelhead (*Onchorynchus mykiss*), the razorback sucker (*Xyrauchen texanus*) and the Santa Ana sucker (*Catostomus santaanae*), all of which are on the Federal threatened/endangered species list.

### **Coastal Marine Resources**

The coastal waters of Southern California are extremely rich in fisheries and other marine resources. Not only is the ecosystem diverse, with 144 families and over 500 species of fishes reported, but it is also very productive. Fish families prominent in the SCAG coastal waters include 23 species of viviparous perches (Embiotocidae), more than 60 species of sea basses (Sebastes), about 60 species of sculpin (Cottidae), over 20 species of flounder (Pleuronectidae), five species of salmon (Salmonidae), and various rockfishes (Scorpaenidae) and other small bottom fishes (Stichaeidae, Blenniidae, Clinidae).

Coastal waters in Southern California also support a rich assemblage of sea mammals. Pinnepeds include the California sea lion (*Zalophus californicus*), the Federally endangered Guadalupe fur seal (*Arctocephalus townsendi*), and the stellar sea lion (*Eumetopius jubatus*). Cetacan residents of Southern California coastal waters include at least 18 species of whales and dolphins, many of which are federally endangered. Prominent among those are the Gray whales (*Eschrichtius robustus*) which migrate through the area to coastal birthing and rearing lagoons in Baja California.

Kelp forest, rock-bottom, and shallow sand-bottom communities are the predominant near-shore habitats in Southern California. Several marine species of special status are dependent on kelp forests. These include the Federally Endangered brown pelican (*Pelecanus occidentalis*), gray whale (*Eschrichtius robustus*) and the sea otter (*Enhydra lutris*).

### **Special Status Species and Natural Communities**

A number of species known to occur in the SCAG region are accorded “special status” because of their recognized rarity or vulnerability to habitat loss or population decline. Federal and/or State endangered species listings provide specific protection for some of these species. To meet conservation objectives, state agencies, local jurisdictions, and other organizations apply designations, such as “rare” or “sensitive” to species that have been formally listed as threatened or endangered. These species are referred to collectively as “special status species.”

Table BIO-1, in the technical appendices, lists by county, the scientific and common name and protection status for special status species found within the SCAG area. The lists contain several hundred species—plants, fish, amphibians, reptiles, mammals, birds, mollusks, insects and crustaceans. Site-specific information on each of these species is maintained by the CNDDB, including the population size, habitat quality and extent, threats, and when last observed.

The Natural Heritage Division of CDFG identifies special status natural communities. These communities include both those that are naturally rare and those that have been greatly diminished through changes in land use. The CDFG tracks 135 special status natural communities in pursuit of their mandate to seek the long-term perpetuation of the areas in which these communities occur. In some cases, the areas have been established as protected reserves.

The CNDDDB reports forty-five special status natural communities in the six-county SCAG region. Table BIO-2, in the technical appendices, presents these communities, and the counties in which they have been reported. These locations are shown on **Map 3.3-3**, included in the Map Chapter at the end of this document.

### ***Threats to Biological Resources in the SCAG Region***

Major threats to biological resources in the SCAG region (described below) include habitat loss, fragmentation and degradation, increased urbanization, water diversion projects, encroachment of non-native, invasive species, and other human activities, such as off-road vehicle activity.

Residential and agricultural development in the region has reduced open space and substantially limited the range of most of the natural communities. Natural habitat fragmentation caused by urbanization creates isolated "islands" of vegetation that may not provide sufficient area to support sustainable populations and can adversely impact genetic and species diversity. Habitat divided into islands, rather than continuous natural habitat, presents multiple problems to resident animals, including increased predation and direct mortality when attempting to move across developed areas, especially roads.<sup>3</sup>

Within California some 95 percent of the state's historic wetlands have been converted to other land uses. An estimated 5 million acres of wetlands were present in California in the 1780s; by the 1980s the acreage of wetlands in California were reduced to only 450,000 acres.<sup>4</sup> The loss of wetlands has been more pronounced in the SCAG region, because of the intense development experienced by all wetlands along the South Coast, and the relative scarcity of surface waters.

Water management activities such as the operation of dams and diversions, development and operation of irrigation canal systems, and extraction of groundwater disrupt natural aquatic and riparian habitat. These types of habitat support diverse ecological communities, including many special status species. Alterations in freshwater flows result in the loss of natural riverine habitat, disruption of fish migration routes, and the loss of many native species.

The deliberate or accidental introduction of non-native plant species which can out compete native plant species for light, water, and soil results in habitat loss and degradation and creates unsuitable habitat for many native animal species. Changes to native habitat also bring altered fire regimes that can have unforeseen impacts on human settlements. Invasive animal and insect species can disrupt local ecosystems and bring diseases that native species have no defense against.

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<sup>3</sup> de Maynadier, P. G. & Hunter Jr, M. Road effects on amphibian movements in a forested landscape. *Natural Areas Journal*, 20(1), 56-65.

<sup>4</sup> Dahl, T.E. (1990). *Wetlands losses in the United States 1790's to 1980's*. Washington, DC: United States Department of the Interior, Fish and Wildlife Service. Retrieved, August 28, 2003, from Northern Prairie Wildlife Research Center Web site: <http://www.npwrc.usgs.gov/resource/othrdata/wetloss/wetloss.htm>.

Other wildlife stressors include excessive livestock grazing in sensitive plant communities, recreational pressures on wildlife habitat, and the loss and degradation of dune habitats through disruption of sand transport processes and inappropriate off-road vehicle use.<sup>5</sup>

### ***Protection of Biological Resources in the SCAG Region***

Table BIO-3, included in the technical appendix, presents a list of protected areas and agencies that administer the protected areas that provide large, un-fragmented natural habitats within the SCAG region. It should be noted that different ownership and designations of each area by the various agencies affords differing levels of protection. Some agencies protect the land for its natural value and recreational uses only, other agencies are more permissive in uses of the land, allowing activities such as grazing, forestry, or off-road vehicle use.

A variety of regional planning efforts have been undertaken in the SCAG region to more efficiently and effectively achieve the purposes of the state and federal endangered species legislation. In addition to the traditional project-by-project approach to compliance, the federal Endangered Species Act includes a provision for permitting incidental take of listed species on private lands when a Habitat Conservation Plan (HCP) identifying the anticipated impacts of specific projects and implementing appropriate conservation measures is prepared and approved.

The Natural Community Conservation Planning Program (NCCP), established by the California Resources Agency under the Natural Community Conservation Planning Act of 1991, is a voluntary, collaborative effort between local landowners, jurisdictions and the State of California. The program provides protection and identifies mitigation areas to offset future impacts to coastal scrub habitat and conserve the California gnatcatcher. The NCCP pilot program area encompasses 3,840,000 acres (6,000 square miles), including portions of Riverside, Los Angeles, Orange, and San Bernardino Counties. Each county has one or more subregional planning areas.<sup>6</sup> In recent years, NCCPs have extended beyond the boundaries of the original pilot area into Imperial County, the rest of Riverside County, and other parts of the state. **Table 3.3-3** provides the status of NCCP programs in the SCAG region.

## **Regulatory Setting**

The following federal and state regulations affect biological resources. The regulations are organized by the agency that implements them.

<sup>5</sup> California Department of Fish and Game. (2007). *California Wildlife: Conservation Challenges*. <http://www.dfg.ca.gov/habitats/WDP/report.htm> Accessed May 2007

<sup>6</sup> California Department of Fish and Game. (2007). *Natural Community Conservation Planning - Southern California coastal sage scrub NCCP region*. <http://www.dfg.ca.gov/habcon/nccp/index.html> Accessed November 2007.

**TABLE 3.3-3  
 NATURAL COMMUNITIES CONSERVATION PLANS**

County	Plan	Lead Agency	Planning Area Covered (acres)	Area set aside for reserve/ preserve (acres)	Plan Status
Imperial	Imperial Valley Natural Community Conservation Plan and Habitat Conservation Plan	Imperial Irrigation District	500,000	Under development	Developing Draft Plan – NCCP agreement signed Feb 2006
Los Angeles	Palos Verdes Peninsula Subregional Plan	City of Rancho Palos Verdes	8,661	1,507	Final Plan approved August 2004 by city council – awaiting permits.
Orange	Orange County Central-Coastal NCCP/HCP Subregional Plan	Orange County	209,000	37,380	Plan approved July 1996. Plan is being implemented.
Orange	Orange County Southern Subregion HCP <sup>a</sup>	Orange County	91,000	11,950	Final Plan approved by Board of Supervisors in November 2006. Permits issued January 2007.
Riverside	Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP)	Coachella Valley Association of Governments	1,136,261	747,600	Final Plan Development – released for comment May 2007.
Riverside	Western Riverside County Multiple Species Habitat Conservation Plan	Riverside County	1.2 million	500,000	Final Plan approved by County in July, 2003. FWS and DFG approved in June 2004. Permits issued June 2004.

SOURCE: California Department of Fish and Game. (2007). *Status of NCCP Planning Efforts*. [www.dfg.ca.gov/habcon/nccp/status.htm](http://www.dfg.ca.gov/habcon/nccp/status.htm). Accessed November 2007.

Daniel. (2001). *The Future of Habitat Conservation? The NCCP Experience in Southern California*. Prepared at the request of Senator Byron D. Sher.

<sup>a</sup> Plan is a combination HCP, special area management plan, and master streambed alteration agreement. Final plan does not meet NCCP standards and any state listed species take will be permitted under California Endangered Species Act.

## Federal Agencies and Regulations

### ***Council on Environmental Quality (CEQ) and U.S. Environmental Protection Agency (US EPA)***

NEPA mandates that the federal government shall give appropriate consideration to potential adverse environmental impacts of their major actions, including impacts to biological resources. The Council on Environmental Quality oversees NEPA, and the EPA carries out administrative aspects of the NEPA process.

### ***United States Fish and Wildlife Service (USFWS)***

USFWS is the implementing agency for the Federal Endangered Species Act (FESA). The FESA provides protection for animal and plant species that are currently in danger of extinction

(endangered) and species that may become so in the foreseeable future (threatened), and it provides a means to conserve the ecosystems of these species.<sup>7</sup>

“Candidate” species are taxa that USFWS is considering for listing as endangered and threatened, but which have yet to be the subject of a proposed rule, and they are afforded no protection under the FESA. However most federal agencies with resource management responsibilities (United States Forest Service, United States Bureau of Land Management, USFWS) accord some level of protection or management consideration to candidates, and when long-term planning efforts, such as Habitat Conservation Plans, are established, candidate species are often included because they could become listed during the lifetime of the plan. Such policies are not mandatory under the FESA.

Section 7 of this Act requires federal departments and agencies to consult with the USFWS to ensure that actions they authorize, fund, or carry out will not jeopardize species listed under FESA. Section 9 of FESA prohibits the “taking”<sup>8</sup> of listed species, including inadvertent harm, harassment, collection, or significant habitat modification, except by authorized permit. USFWS implements a number of other regulatory acts that affect biological resources. These include: The Migratory Bird Treaty Act, an international treaty for the conservation and management of bird species which may migrate through more than one country; the Federal Bald Eagle Protection Act of 1940, intended to protect individual bald eagles and their nests and eggs from willful damage or injury.

### ***United States Army Corps of Engineers (USACE)***

The USACE regulates activities in navigable waterways, wetlands and the ocean through various regulations. USACE have regulatory authority over the dumping of trash and sewage and are responsible for permitting dredge and fill in wetlands. A major aspect of the regulatory program is determining which areas qualify for protection as wetlands.<sup>9</sup> Wetlands are defined as those areas that are inundated or saturated by surface or ground water frequently enough to support vegetation typically adapted for life in saturated soil conditions.

The USACE is also responsible for granting permits to implement the Marine Protection, Research and Sanctuaries Act of 1972. This Act regulates the transportation of dredged materials into ocean waters, and it allowed for establishment of Marine Sanctuaries, such as the Channel Islands National Marine Sanctuary.

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<sup>7</sup> U.S. Fish and Wildlife Services Fact Sheet. (2002). “*ESA basics*.” Washington, D.C.

<sup>8</sup> “Take” is defined by Federal Regulation Code 17.3 (1975) as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. The term “harm” is defined as an act or omission which actually injures or kills wildlife, including acts which annoy it to such an extent as to significantly disrupt essential behavioral patterns, which include, but are not limited to, breeding, feeding, sheltering, or significant environmental modification or degradation of critical habitat that results in these effects.”

<sup>9</sup> United States Army Corps of Engineers. (2002, September 24). *Wetlands and waterways regulation and permitting*. <http://www.usace.army.mil/public.html#Regulatory> Accessed August 2003.

## **State Agencies and Regulations**

### ***California Department of Fish and Game (CDFG)***

CDFG is required under the California Endangered Species Act (CESA), California Native Plant Protection Act (NPPA), CEQA, and Natural Community Conservation Planning Act (NCCPPA) to conserve species through listing, habitat acquisition and protection. The CDFG is also responsible for review of local land use planning, multi-species conservation planning, stewardship, recovery, research, and education.

CEQA includes the policy of the state to "prevent the elimination of fish or wildlife species due to man's activities, ensure that fish and wildlife populations do not drop below self-perpetuating levels, and preserve for future generations representations of all plant and animal communities." CEQA directs agencies to consult with the CDFG on any project the agency initiates that is not statutorily or categorically exempt from CEQA. CEQA Guidelines(Section 15065(a)) declare that impacts to rare, threatened or endangered plants or animals are significant, and impacts to other species may be considered significant by the lead agency, depending on the applicability of other laws (e.g., Migratory Bird Treaty Act) and the discretion of the agency.

CDFG is authorized to enter into Streambed Alteration Agreements with applicants that propose a project that would obstruct the flow or alter the bed, channel, or bank of a river or stream, including intermittent and ephemeral streams, where there is a fish or wildlife resource. Streambed Alteration Agreements usually include measures designed to protect biological resources.

### ***California Coastal Commission (CCC)***

The CCC manages protection of biological resources through a permitting process for all projects in the coastal zone. The coastal zone generally extends three miles seaward and about 1,000 yards inland. In particularly important and generally undeveloped areas where there can be considerable impact on the coastline from inland development, the coastal zone extends to a maximum of 5 miles inland from mean high tide line. In developed urban areas, the coastal zone extends substantially less than 1,000 yards inland. In order to carry out the policies of the Coastal Act, a city and county in the coastal zone is required to prepare and submit a Land Conservation Plan for the portion of its jurisdiction within the coastal zone to the CCC for certification.

Through the Coastal Act, the CCC has unusually broad authority to regulate development in the Coastal Zone. A permit is required for any projects that might change the intensity of land use in the Coastal Zone including projects that would require a building or grading permit from the city or county, major vegetation clearing, or subdividing. The CCC considers net effects on rare and endangered species, and whether the project would substantially change any of the existing biological resources, including biodiversity.

## Methodology

This section summarizes the methodology used to evaluate the expected impacts of implementation of the proposed Plan on biological resources.

### ***Comparison with the No Project***

The analysis of biological resources includes a comparison between the expected future conditions with the proposed Plan and the expected future conditions if no Plan were adopted. This evaluation is not included in the determination of the significance of impacts (which is based on a comparison to existing conditions); however, it provides a meaningful perspective on the effects of the 2008 RTP.

### ***Determination of Significance***

The impact assessment for biological resources focuses on significant effects the proposed Plan and associated growth would likely have on biological resources contained within the SCAG region. The methodology for determining the significance of these impacts compares a regional-level analysis of the future Plan conditions to the existing biological resources, as required under the CEQA Guidelines.

SCAG's Geographic Information System (GIS) was used to identify projects and associated growth that may cause a significant effect on biological resources. Specifically, using GIS spatial data, potential regional-level adverse effects were identified by overlaying 2008 RTP projects upon the distribution and locations of known biological resources, including natural vegetation, wetlands and water resources, and special status species and communities. GIS analysis calculated the acreage or extent of biological resources occurring within 150 feet and 0.25 miles of either side of freeway, transit and freight rail projects included in the 2008 RTP. The 150 foot zone was used for more precise impacts, such as the conversion of vegetation types. The 0.25 mile zone on either side of the transportation projects was used to capture the effects that extend beyond the road itself, including changes in light, temperature, noise, fire regime, risk of predation and spread of invasive species.

The impacts-analysis identifies direct intersection between proposed Plan projects and existing biological resources and identifies the potential cumulative impact of the transportation projects and associated growth on habitat loss, degradation, and fragmentation. The analysis also includes a review of adopted habitat conservation plans to identify potential conflicts with their provisions.

### ***Significance Criteria***

A significant impact is defined as "a substantial or potentially substantial, adverse change in the environment" (CEQA § 21068). The proposed Plan would have a significant impact on biological resources if implementation were to:

- Substantially reduce the habitat of a fish or wildlife species;

- Cause a fish or wildlife population to drop below self-sustaining levels;
- Threaten to eliminate a plant or animal community;
- Restrict the range of a rare or endangered plant or animal;
- Substantially and adversely affect, either directly or through habitat modification, any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by CDFG or USFWS;
- Substantially and adversely affect any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFG or USFWS;
- Substantially and adversely affect federally protected wetlands as defined by Section 404 of the Clean Water Act (CWA), including, but not limited to, marsh and vernal pool, through direct removal, filling, hydrologic interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with provisions of an adopted HCP, Natural Community Conservation Plan; or
- Cause a cumulatively considerable adverse effect on regional biological resources.

## Impacts and Mitigation Measures

Implementation of the 2008 RTP would adversely affect biological resources. Expected significant impacts include disturbance and removal of natural vegetation that may be utilized by sensitive species, habitat fragmentation and the associated decrease in habitat quality, litter, trampling, light pollution and road noise in previously undisturbed natural areas, displacement of riparian and wetland habitat, and siltation of streams and other water bodies during construction. Cumulatively, the increased urban development anticipated by the Plan would result in similar cumulative impacts.

Two basic types of impacts would potentially occur from transportation projects identified in the 2008 RTP. These include short-term construction related impacts, and long-term or permanent displacement or offsite impacts from new facilities.

Whenever a project is located near project-specific biological resources of concern or within habitats capable of supporting such resources (see Table 3.3-4), a biological resources evaluation would need to be conducted and project-specific impacts with appropriate feasible mitigation measures identified.

Below are descriptions of the types of direct impacts foreseeable from new transportation projects proposed in the 2008 RTP. Indirect, cumulative impacts due to the changes in population distribution expected to occur due to the 2008 RTP's transportation investments, and transportation and land use policies are also discussed.

All mitigation measures should be included in project-level analysis as appropriate. The project proponent or local jurisdiction shall be responsible for ensuring adherence to the mitigation measures prior to construction. For regionally significant projects SCAG shall be provided with documentation of compliance with mitigation measures through its Intergovernmental Review Process in which all regionally significant projects, plans, and programs must be consistent with regional plans and policies.

**Impact 3.3-1: Transportation projects included in the 2008 RTP on previously undisturbed land could displace natural vegetation, and thus habitat, some of which is utilized by sensitive species in the SCAG region.**

The significance of this impact would relate to the extent, and type of natural vegetation displaced. It is assumed that any areas of natural vegetation contain potentially significant biological value.

Impacts to sensitive species would not be expected to be limited to those mapped by the CNDDDB (Map 3.3-3 in the Map Chapter at the end of this document). The CNDDDB system relies on reported sightings of sensitive species, and it is not a complete inventory of sensitive species habitat. The intersection of 2008 RTP projects with these known habitat occurrences is provided as additional information. Intersections with point data that are included in CNDDDB and that are based on individual species sightings are not included in **Table 3.3-4**. These point data are of varying reliability. Impacts associated with the intersection of 2008 RTP transportation projects and habitat (shown in **Map 3.3-1**) are more conservative and lend a fuller picture of the potential impacts of the 2008 RTP projects. This analysis of transportation project intersection with natural vegetation and habitat is used to determine significance.

The site-specific significance of projects would include the relative scarcity and importance to other valuable biological resources. Additionally, the nature of the site specific transportation project would affect the size of the disruption. The addition of a lane would be expected to cause less disruption than an entirely new road, for example. Transportation projects in the 2008 RTP that would intersect with special status species habitat known and reported by the CNDDDB are shown in **Map 3.3-3** in the Map Chapter at the end of this document, and potential effects are summarized in **Table 3.3-5**. There are approximately 47,500 acres of special status plant habitat, animal habitat, and special status aquatic and terrestrial communities that occur within 150 feet of the 2008 RTP freeway, transit, and freight rail projects, and about 32,200 acres within 150 feet of projects within the No Project Alternative. If no additional projects were built no special status plant and animal habitat would be impacted.

**TABLE 3.3-4  
LISTED & KEY SPECIAL-STATUS PLANT SPECIES OCCURRENCE BY HABITAT & COUNTY**

Mitigation Number	Individual Listed And Special-Status Plant Species	Natural Habitats									County				
		Coastal Marine Resources	Conifer Forests And Woodlands	Desert Shrub And Woodland	Dunes (Beach And Dune-Coastal And Interior)	Grasslands	Hardwood Forests And Woodlands	Riparian	Scrub (Chaparral And Coastal Scrub)	Wetlands And Streams Or Rivers	IMPERIAL	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO
	Munz's onion <i>Allium munzii</i>		X			X	X		X				X		X
	San Diego ambrosia <i>Ambrosia pumila</i>					X			X				X		
	Hoffman's rock cress <i>Arabis hoffmannii</i>								X						X
	Marsh sandwort <i>Arenaria paludicola</i>									X	X		X	X	
	Big Bear valley sandwort <i>Arenaria ursina</i>		X							X				X	
	Cushenbury milk-vetch <i>Astragalus albens</i>		X	X			X							X	
	Braunton's milk-vetch <i>Astragalus brauntonii</i>		X			X			X					X	
	Lane mountain milk-vetch <i>Astragalus jaegerianus</i>			X										X	
	Coachella Valley milk-vetch <i>Astragalus lentiginosus</i> var. <i>coachellae</i>			X									X		
	Peirson's milk-vetch <i>Astragalus magdalenae</i> var. <i>personii</i>				X						X				

**TABLE 3.3-4 (Continued)**  
**LISTED & KEY SPECIAL-STATUS PLANT SPECIES OCCURRENCE BY HABITAT & COUNTY**

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	Ventura marsh milk-vetch <i>Astragalus pyncnostachyus var. lanosissimus</i>				X						X		X			X	
	Coastal Dunes milk-vetch <i>Astragalus tener var. titi</i>				X						X		X				
	Trask's milk-vetch <i>Astragalus traskiae</i>				X					X						X	
	Triple-ribbed milk-vetch <i>Astragalus tricarinatus</i>			X					X				X	X			
	San Jacinto Valley crownscale <i>Atriplex coronata var. notatior</i>						X			X	X			X			
	Nevin's barberry <i>Berberis nevinii</i>						X	X	X			X		X	X		
	Island barberry <i>Berberis pinnata ssp. insularis</i>		X				X		X							X	
	Thread-leaved brodiaea <i>Brodiaea filifolia</i>					X	X		X	X		X	X	X	X		
	Ash-gray Indian paintbrush <i>Castilleja cinerea</i>		X	X											X		

**TABLE 3.3-4 (Continued)**  
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	Mt. Gleason Indian paintbrush <i>Castilleja gleasonii</i>		X									X				
	San Clemente Island Indian paintbrush <i>Castilleja grisea</i>				X				X			X				
	Vail lake ceanothus <i>Ceanothus ophiochilus</i>								X				X			
	Catalina Island mountain-mahogany <i>Cercocarpus traskiae</i>								X			X				
	San Fernando Valley spineflower <i>Chorizanthe parryi</i> var. <i>fernandina</i>								X			X	X			X
	Salt marsh bird's-beak <i>Cordylanthus maritimus</i> ssp. <i>maritimus</i>								X	X		X	X	X	X	X
	Wiggin's croton <i>Croton wigginsii</i>			X	X						X					
	Santa Susana tarplant <i>Deinandra minthornii</i>								X			X			X	
	Mojave tarplant <i>Deinandra mohavensis</i>							X	X				X	X		
	Cuyamaca larkspur <i>Delphinium hesperium</i> ssp. <i>cuyamacae</i>		X										X			
	San Clemente Island larkspur <i>Delphinium variegatum</i> ssp. <i>kinkiense</i>					X						X				

**TABLE 3.3-4 (Continued)**  
**LISTED & KEY SPECIAL-STATUS PLANT SPECIES OCCURRENCE BY HABITAT & COUNTY**

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	Beach spectaclepod <i>Dithyrea maritima</i>				X					X			X			X
	Slender-horned spineflower <i>Dodecahema leptoceras</i>									X			X	X	X	X
	Agoura hills dudleya <i>Dudleya cymosa</i> ssp. <i>agourensis</i>						X			X			X			X
	Marcescent dudleya <i>Dudleya cymosa</i> ssp. <i>marcescens</i>									X			X			X
	Santa Monica Mountains dudleya <i>Dudleya cymosa</i> ssp. <i>ovatifolia</i>									X		X				
	Conejo dudleya <i>Dudleya parva</i>					X				X						X
	Laguna Beach dudleya <i>Dudleya stolonifera</i>					X	X			X			X			
	Verity's dudleya <i>Dudleya verityi</i>						X			X						X
	Santa Ana River woollystar <i>Eriastrum densifolium</i> ssp. <i>sanctorum</i>									X			X	X	X	
	Parish's daisy <i>Erigeron parishii</i>		X	X									X	X		
	Conejo buckwheat <i>Eriogonum crocatum</i>					X				X						X

**TABLE 3.3-4 (Continued)**  
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Mitigation Number	Individual Listed And Special-Status Plant Species	Natural Habitats									County					
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	San Nicolas Island buckwheat <i>Eriogonum grande</i> var. <i>timorum</i>				X					X						X
	Southern mountain buckwheat <i>Eriogonum kennedyi</i> var. <i>austrorontanum</i>		X												X	
	Cushenbury buckwheat <i>Eriogonum ovalifolium</i> var. <i>vineum</i>		X	X											X	
	Thorne's buckwheat <i>Eriogonum thornei</i>		X												X	
	San Diego button celery <i>Eryngium aristulatum</i> var. <i>parishii</i>					X			X	X	X				X	
	San Clemente Island bedstraw <i>Galium catalinense</i> ssp. <i>acrispum</i>					X						X				
	Island rush-rose <i>Helianthemum greenei</i>		X						X			X				
	Algodones Dune's sunflower <i>Helianthus niveus</i> ssp. <i>tephrodes</i>			X							X					
	Tahquitz ivesia <i>Ivesia callida</i>		X										X			
	San Bernardino Mountains bladderpod <i>Lesquerella kingii</i> ssp. <i>bernardina</i>		X											X		
	Parish's meadowfoam <i>Limnanthes gracilis</i> ssp. <i>parishii</i>									X			X			

**TABLE 3.3-4 (Continued)**  
**LISTED & KEY SPECIAL-STATUS PLANT SPECIES OCCURRENCE BY HABITAT & COUNTY**

Mitigation Number	Individual Listed And Special-Status Plant Species	Natural Habitats									County				
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	San Clemente Island woodland star <i>Lithophragma maximum</i>				X				X		X				
	San Clemente Island bird's-foot trefoil <i>Lotus argophyllus</i> var. <i>adsurgens</i>				X				X		X				
	San Clemente Island lotus <i>Lotus dendroideus</i> var. <i>traskiae</i>				X	X			X		X				
	San Clemente Island bush mallow <i>Malacothamnus clementinus</i>					X		X			X				
	Island malacothrix <i>Malacothrix squalida</i>				X		X		X						X
	Gambel's water cress <i>Nasturtium gambelii</i>									X					X
	Spreading navarretia <i>Navarretia fossalis</i>								X	X	X		X		
	California orcutt grass <i>Orcuttia californica</i>									X	X		X		X
	Cushenbury Oxytheca <i>Oxytheca parishii</i> var. <i>goodmaniana</i>		X											X	
	Lyon's pentachaeta <i>Pentachaeta lyonii</i>					X			X		X				X
	San Bernardino blue grass <i>Poa atropurpurea</i>					X				X				X	

**TABLE 3.3-4 (Continued)  
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	Santa Cruz island rock cress <i>Sibara fillifolia</i>							X			X				
	Bird-foot checkerbloom <i>Sidalcea pedata</i>				X				X					X	
	California dandelion <i>Taraxacum californicum</i>				X									X	
	Slender-petaled thelypodium <i>Thelypodium stenopetalum</i>								X					X	
	Hidden lake bluecurls <i>Trichostema austromontanum ssp. compactum</i>	X											X		
	Crownbeard <i>Verbesina dissita</i>							X				X			
	Southwestern pond turtle <i>Actinemys marmorata pallida</i>						X		X		X	X	X	X	X
	Cooper's hawk <i>Accipiter cooperii</i>					X	X			X	X	X	X	X	X
	Tricolored blackbird <i>Agelaius tricolor</i>						X		X		X	X	X	X	X
	Southern California rufous crowned sparrow <i>Aimophila ruficeps canescens</i>							X			X	X	X	X	X
	California tiger salamander <i>Ambystoma californiense</i>				X	X	X		X				X		

**TABLE 3.3-4 (Continued)**  
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	Nelson's antelope squirrel <i>Ammospermophilus nelsoni</i>			X				X	X	X		X			
	San Clemente sage sparrow <i>Amphispiza belli clementeae</i>			X					X			X			
	Golden Eagle <i>Aquila chrysaetos</i>		X	X		X	X		X			X	X	X	X
	Burrowing owl <i>Athene cunicularia</i>			X		X	X		X		X	X	X	X	X
	Desert slender salamander <i>Batrachoseps major aridus</i>		X	X			X						X		
	Vernal pool fairy shrimp <i>Branchinecta lynchi</i>							X		X			X		X
	San Diego fairy shrimp <i>Branchinecta sandiegonensis</i>					X				X		X			
	Ferruginous hawk <i>Buteo regalis</i>		X	X		X			X			X	X	X	X
	Swainson's hawk <i>Buteo swainsoni</i>					X		X				X		X	
	Arroyo Toad <i>Bufo californicus</i>			X				X	X	X		X	X	X	X
	Santa Ana sucker <i>Catostomus santaanae</i>									X		X	X	X	X

**TABLE 3.3-4 (Continued)**  
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	Western snowy plover <i>Charadrius alexandrinus rivosus</i>	X			X			X				X	X	X	X	X
	Southern rubber boa <i>Charina (bottai) umbratica</i>		X					X		X			X	X		
	Western yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i>		X					X		X	X	X	X	X	X	X
	Gilded flicker <i>Colaptes chrysoides</i>			X				X			X		X			
	Barefoot banded gecko <i>Coleonyx switaki</i>			X						X						
	Desert pupfish <i>Cyprinodon macularius</i>							X		X		X	X	X	X	X
	Amargosa pupfish <i>Cyprinodon nevadensis amargosae</i>									X		X	X	X	X	X
	Saratoga springs pupfish <i>Cyprinodon nevadensis nevadensis</i>									X		X	X	X	X	X
	San Bernardino Merriam kangaroo rat <i>Dipodomys merriami parvus</i>		X	X					X				X	X		
	Stephen's kangaroo rat <i>Dipodomys stephensi</i>					X			X				X	X		
	Southwestern willow flycatcher <i>Empidonax traillii extimus</i>					X		X			X	X	X	X	X	

**TABLE 3.3-4 (Continued)**  
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	Tidewater goby <i>Eucyclogobius newberryi</i>							X				X	X	X	X	X
	California mastiff bat <i>Eumops perotis californicus</i>		X	X		X			X		X	X	X	X	X	X
	El Segundo blue butterfly <i>Euphilotes battoides allyni</i>				X						X					
	Quino checkerspot butterfly <i>Euphydryas editha quino</i>				X				X				X			
	Prairie falcon <i>Falco mexicanus</i>			X		X			X		X	X		X	X	X
	American peregrine falcon <i>Falco peregrinus anatum</i>			X						X		X				
	Blunt-nosed leopard lizard <i>Gambelia sila</i>			X		X			X							X
	Unarmored threespine stickleback <i>Gasterosteus aculeatus williamsoni</i>								X		X		X	X	X	X
	Mohave tui chub <i>Gila bicolor mohavensis</i>			X					X		X		X	X	X	X
	Bonytail <i>Gila elegans</i>								X		X		X	X	X	X
	Arroyo chub <i>Gila orcutti</i>									X		X	X	X	X	X

**TABLE 3.3-4 (Continued)  
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	Palos Verdes blue butterfly <i>Glaucopsyche lygdamus palosverdesensis</i>				X	X				X			X			
	Desert tortoise <i>Gopherus agassizii</i>			X								X	X		X	X
	California condor <i>Gymnogyps californianus</i>		X			X	X			X			X			X
	Bald Eagle <i>Haliaeetus leucocephalus</i>	X	X				X				X		X		X	X
	Yellow-breasted chat <i>Icteria virens</i>							X	X			X	X	X	X	X
	San Clemente loggerhead shrike <i>Lanius ludovicianus meamsi</i>		X	X			X	X					X			
	Hoary bat <i>Lasiurus cinereus</i>		X	X			X					X	X	X	X	X
	California black rail <i>Laterallus jamaicensis coturniculus</i>										X		X	X		
	California leaf-nosed bat <i>Macrotus californicus</i>			X					X				X	X	X	X
	Gila woodpecker <i>Melanerpes uropygialis</i>			X					X				X		X	
	Elf Owl <i>Micrathene whitneyi</i>			X		X			X				X		X	

**TABLE 3.3-4 (Continued)**  
**LISTED & KEY SPECIAL-STATUS PLANT SPECIES OCCURRENCE BY HABITAT & COUNTY**

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	Yuma myotis <i>Myotis yumanensis</i>										X	X	X	X	X	
	San Diego desert woodrat <i>Neotoma lepida intermedia</i>		X				X					X	X	X	X	X
	Pocketed free-tailed bat <i>Nyctinomops femorasaccus</i>			X			X	X			X	X	X	X	X	
	Southern steelhead <i>Oncorhynchus mykiss irideus</i>	X						X		X		X	X	X	X	X
	Peninsular bighorn sheep <i>Ovis Canadensis nelsoni</i>			X				X	X		X			X		
	Belding's savannah sparrow <i>Passerculus sandwichensis beldingi</i>			X		X		X		X		X	X			X
	California brown pelican <i>Pelecanus occidentalis californicus</i>	X														X
	Pacific pocket mouse <i>Perognathus longimembris pacificus</i>		X	X		X			X			X	X			
	Coast (San Diego) horned lizard <i>Phrynosoma coronatum blainvillii</i>			X		X			X			X	X	X	X	X
	Coastal California gnatcatcher <i>Polioptila californica californica</i>								X			X	X	X	X	X
	Colorado squawfish <i>Ptychocheilus lucius</i>							X		X		X	X	X	X	X

**TABLE 3.3-4 (Continued)  
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	Light-footed clapper rail <i>Rallus longirostris levipes</i>							X		X			X			X
	Yuma clapper rail <i>Rallus longirostris yumanensis</i>							X		X	X			X	X	
	California red-legged frog <i>Rana aurora draytonii</i>							X		X		X		X	X	X
	Mountain yellow-legged frog <i>Rana mucosa</i>						X	X		X		X		X	X	X
	Delhi sands flower-loving fly <i>Rhaphiomidas terminatus abdominalis</i>			X	X								X	X		
	Mohave ground squirrel <i>Spermophilus mohavensis</i>			X		X			X			X			X	
	California least tern <i>Sterna antillarum browni</i>	X			X							X	X			X
	Riverside fairy shrimp <i>Streptocephalus woottoni</i>					X		X		X			X	X		X
	American badger <i>Taxidea taxus</i>		X			X	X		X		X	X	X	X	X	X
	Two-striped garter snake <i>Thamnophis hammondi</i>	X						X		X		X	X	X	X	X
	Coachella Valley fringe-toed lizard <i>Uma inornata</i>			X	X								X			

**TABLE 3.3-4 (Continued)**  
**LISTED & KEY SPECIAL-STATUS PLANT SPECIES OCCURRENCE BY HABITAT & COUNTY**

Mitigation Number	Individual Listed And Special-Status Plant Species	Natural Habitats									County					
		Coastal Marine Resources	Conifer Forests And Woodlands	Desert Shrub And Woodland	Dunes (Beach And Dune-Coastal And Interior)	Grasslands	Hardwood Forests And Woodlands	Riparian	Scrub (Chaparral And Coastal Scrub)	Wetlands And Streams Or Rivers	IMPERIAL	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO	VENTURA
	Island fox <i>Urocyon littoralis</i>	X							X			X				X
	Arizona Bell's vireo <i>Vireo bellii arizonae</i>							X		X	X	X	X	X	X	X
	Least Bell's vireo <i>Vireo bellii pusilus</i>							X		X						
	Island night lizard <i>Xantusia riversiana</i>	X			X		X		X			X				X
	Razorback sucker <i>Xyrauchen texanus</i>							X		X		X	X	X	X	X

SOURCE: Southern California Association of Governments, 2008 Regional Transportation Plan



**TABLE 3.3-5  
 SPECIAL STATUS HABITAT AND COMMUNITIES OCCURRING WITHIN 150 FEET OF A FREEWAY,  
 TRANSIT, OR FREIGHT RAIL PROJECT (ACRES)**

	2008 RTP (highways, transit and freight rail)	No Project
Special Status Plant Habitat	22,592	15,357
Special Status Animal Habitat	24,225	16,388
Special Status Terrestrial Communities	619	436
Special Status Aquatic Communities	92	30

SOURCE: SCAG Analysis. (2007).

**TABLE 3.3-6  
 NATURAL VEGETATION OCCURRING WITHIN 150 FEET OF A FREEWAY,  
 TRANSIT, OR FREIGHT RAIL PROJECT (ACRES)**

Vegetation Type	2008 RTP (acres affected)	No Project (acres affected)
Hardwood Forest and Woodlands	158	62
Conifer Forests and Woodlands	1,544	503
Desert Shrub and Woodlands	142	37
Grassland/Herbaceous	1,012	417
Shrub/Chaparral	4,731	726
Wetland	7	2
Total Acreage	7,594	1,747

SOURCE: SCAG Analysis. (2007).  
 California Department of Forestry and Fire Protection and U.S. Forest Service Fire (2007) for the Fire and Resource Assessment Program (FRAP), updated by Technology Associates.

For this assessment, if any measurable area of natural vegetation shown on **Map 3.3-1** was potentially displaced by a project, the impact to natural vegetation was considered significant. As **Table 3.3-6** demonstrates, there are approximately 7,594 acres of natural vegetation in the SCAG region that occur within 150 feet of a freeway, transit, or freight rail project in the 2008 RTP. The distribution of potential effects by vegetation categories, as discussed above, is shown in **Table 3.3-6**.

Site-specific analyses would be required to identify and minimize the potential impacts of each particular transportation and/or development project. However, overall, the 2008 RTP would substantially affect vegetation communities and habitat, some of which is utilized by species of special status. This impact would be significant.

All mitigation measures should be included in project-level analysis as appropriate. The project proponent or local jurisdiction shall be responsible for ensuring adherence to the mitigation measures prior to construction. For regionally significant projects SCAG shall be provided with documentation of compliance with mitigation measures through its Intergovernmental Review Process in which all regionally significant projects, plans, and programs must be consistent with regional plans and policies.

### Mitigation Measures

- MM BIO-1:** Each transportation project shall assess displacement of habitat due to removal of native vegetation during route planning. Routes shall be planned in order to avoid and/or minimize removal of native vegetation.
- MM BIO-2:** When avoidance of native vegetation removal is not possible, each transportation project shall replant disturbed areas with commensurate native vegetation of high habitat value adjacent to the project (i.e. as opposed to ornamental vegetation with relatively less habitat value).
- MM BIO-3:** Individual transportation projects shall include offsite habitat enhancement or restoration to compensate for unavoidable habitat losses from the project site.
- MM BIO-4:** Pre-construction special status species surveys shall be conducted by a qualified biologist to verify presence or absence of species at risk. Species surveys should occur during the portion of the species' life cycle where the species is most likely to be identified within the appropriate habitat. In all cases, impacts on special status species and/or their habitat shall be avoided during construction to the extent feasible.
- MM BIO-5:** A Worker Awareness Program (environmental education) shall be developed and implemented to inform project workers of their responsibilities in regards to avoiding and minimizing impacts on sensitive biological resources.
- MM BIO-6:** An Environmental Inspector shall be appointed to serve as a contact for issues that may arise concerning implementation of mitigation measures, and to document and report on adherence to these measures.
- MM BIO-7:** A qualified wetland scientist shall review construction drawings as part of each project-specific environmental analysis to determine whether wetlands will be impacted, and if necessary perform a formal wetland delineation. Appropriate state and federal permits shall be obtained, but each project EIR will contain language clearly stating the provisions of such permits, including avoidance measures, restoration procedures, and in the case of permanent impacts compensatory creation or enhancement measures to ensure a no net loss of wetland extent or function and values.
- MM BIO-8:** Sensitive habitats (native vegetative communities identified as rare and/or sensitive by the CDFG) and special-status plant species (including vernal pools) impacted by projects shall be restored and augmented, if impacts are temporary, at a 1.1:1 ratio (compensation acres to impacted acres). Permanent impacts shall be compensated for by creating or restoring habitats at a 3:1 ratio as close as possible to the site of the impact.

**MM BIO-9:** When work is conducted in identified sensitive habitat areas and/or areas of intact native vegetation, construction protocols shall require the salvage of perennial plants and the salvage and stockpile of topsoil (the surface material from 6 to 12 inches deep) and shall be used in restoring native vegetation to all areas of temporary disturbance within the project area.

**MM BIO-10:** If specific project area trees are designated as “Landmark Trees” or “Heritage Trees”, then approval for removals shall be obtained through the appropriate entity, and appropriate mitigation measures shall be developed at that time, to ensure that the trees are replaced. Due to the close proximity of these areas to sensitive wildlife habitats, all mitigation trees will use only locally-collected native species.

**MM BIO-11:** Suitable habitat for listed vernal pool crustaceans shall be avoided to the extent feasible. If infeasible, impacts shall be mitigated in accordance with the Programmatic Biological Opinion (PBO) for vernal pool invertebrates, issued by the USFWS Sacramento Field Office in 1995. Surveys shall be conducted, with USFWS approval, in accordance with the 1996 *Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods*, to establish whether or not listed invertebrates are present.

Mitigation for occupied habitat impacted is likely to be compensatory off-site acquisition or protection of similar habitats at a ratio of 3:1 (compensation acres to that impacted) or other similar ratio with the approval of the USFWS.

**MM BIO-12:** Projects within the range and within suitable habitat for the arroyo toad shall conduct surveys, with USFWS approval, in accordance with the 1999 USFWS *Survey Protocol For The Arroyo Toad*, to establish whether or not the species is present. If species is determined present then the following applies:

Mitigation for occupied habitat impacted is likely to be compensatory off-site acquisition or protection of similar habitats at a ratio of 3:1 (compensation acres to that impacted)) or other similar ratio with the approval of the USFWS and/or CDFG).

**MM BIO-13:** Projects within the range and within suitable habitat for the blunt-nosed leopard lizard shall conduct surveys, with USFWS approval, in accordance with the 2004 CDFG *Approved Survey Methodology For The Blunt-Nosed Leopard Lizard*, to establish whether or not the species is present. If species is determined present then the following applies:

Mitigation for occupied habitat impacted is likely to be compensatory off-site acquisition or protection of similar habitats at a ratio of 3:1 (compensation acres to that impacted) or other similar ratio with the approval of the USFWS and/or CDFG). No direct taking of the blunt-nosed leopard lizard shall occur as this is a CDFG fully

protected species with no regulatory mechanism to authorize direct taking (killing) of individuals.

**MM BIO-14:** Projects within the range and within suitable habitat for the California red-legged frog shall implement the measures detailed in the Programmatic Biological Opinion (PBO) for construction impacts to the red-legged frog that was issued by the USFWS (Federal Register 1999) to the USACE. The measures listed below are taken largely from the PBO and, if applied to the western pond turtle as well as the frog, would be adequate as standard mitigation for both species. A similar level of effort for survey protocol can also be applied to the Mountain yellow-legged frog, with adjustments to its climate, habitat, and breeding requirements.

- The name and credentials of a biologist qualified to act as a construction monitor will be submitted to USFWS for approval at least 15 days prior to commencement of work;
- The USFWS-approved biologist shall survey the site two weeks prior to the onset of work activities and immediately prior to commencing work. If red-legged frog adults, tadpoles, or eggs are found, the approved biologist shall contact USFWS to determine whether relocating any life stages is appropriate;
- The USFWS-approved biologist shall ensure that the introduction or spread of invasive exotic plant species is avoided to the maximum extent possible, by removing weeds from areas of exposed bare soil within the construction zone where construction occurs in riparian vegetation.
- The number and size of access routes, staging areas, and total area of activity shall be limited to the minimum necessary to achieve the project goal;
- If work sites require dewatering, the intakes shall be screened with a maximum mesh sizes of 5 millimeters;
- The USFWS-approved biologist shall permanently remove and destroy from within the project area any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent practicable.

**MM BIO-15:** Projects within the range and within suitable habitat for the California tiger salamander shall conduct surveys, with USFWS approval, in accordance with the 2003 USFWS *Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander*, to establish whether or not the species is present. In addition to measures described for the California red-legged frog, which would also serve to protect the California tiger salamander, the following measures shall be implemented to further minimize adverse effects to the California tiger salamander.

- A pre-construction survey shall be conducted at each site to identify suitable pond and upland burrow aestivation areas. As feasible within the context of the work area, aestivation areas shall be temporarily fenced and avoided.
- At locations where upland aestivation habitat is identified and cannot be avoided, aestivation burrows shall be excavated by hand prior to construction and individual animals moved to natural burrows or artificial burrows constructed of PVC pipe within 0.25 miles of the construction site as approved by the USFWS.
- To ensure compliance with these measures and minimize California tiger salamander take, a qualified biological monitor shall be present during all new site disturbance construction activities (vegetation removal, clearing, grubbing, grading) at locations with suitable upland aestivation habitat.
- Impacts on breeding ponds shall be avoided until the ponds have dried.
- Upon approval by the USFWS, preconstruction surveys to salvage and relocate individual California tiger salamanders shall include installation of drift fences and pitfall traps within construction sites to identify and relocate animals. Following removal of individuals, construction areas shall be fenced with temporary exclusionary silt fencing.
- Temporary impacts on upland aestivation habitat shall be restored to grassland habitat.
- Mitigation for occupied habitat permanently impacted is likely to be compensatory off-site acquisition or protection of similar habitats at a ratio of 3:1 (compensation acres to that impacted) or other similar ratio with the approval of the USFWS and/or CDFG).

**MM BIO-16:** Projects within the range and within suitable habitat for the Coachella Valley fringe-toed lizard shall conduct surveys, with USFWS/CDFG approval, in accordance with the CDFG *Protocol for Determining Coachella Valley Fringe-Toed Lizard (CVFTL) Presence*, to establish whether or not the species is present. The measures listed below are taken largely from the CDFG protocol recommendations and would be adequate as standard mitigation for this species. If the species is determined present then the following applies:

Mitigation for occupied habitat impacted is likely to be compensatory off-site acquisition or protection of similar habitats at a ratio of 3:1 (compensation acres to that impacted) or other similar ratio with the approval of the USFWS and/or CDFG).

**MM BIO-17:** Projects within the range and within suitable habitat for the desert tortoise shall conduct surveys, with USFWS approval, in accordance with the 1992 USFWS *Field Survey Protocol For Any Federal Action That May Occur Within The Range*

*Of The Desert Tortoise*, to establish whether or not the species is present. If the species is determined present then the following applies:

- Upon approval by the USFWS, preconstruction surveys of project impact areas shall be required to salvage and relocate individual desert tortoise out of harms. Following removal of individuals, construction areas shall be fenced with temporary exclusionary silt fencing.

Mitigation for occupied habitat impacted is likely to be compensatory acquisition of mitigation credits or off-site acquisition or protection of similar habitats at a ratio of 3:1 (compensation acres to that impacted) or other similar ratio with the approval of the USFWS and/or CDFG).

**MM BIO-18:** The two-striped garter snake is not formally listed but considered a special-status species worthy of measures to avoid and minimize impacts to the extent feasible. Projects within the range and within suitable habitat for the two-striped garter snake shall conduct surveys in accordance with the best professional judgment of a qualified biologist. Preconstruction surveys of project impact areas shall be required to salvage and relocate individual two-striped garter snakes out of harms. Following removal of individuals, construction areas shall be fenced with temporary exclusionary silt fencing.

**MM BIO-19:** To avoid disrupting nesting Swainson's hawks, construction activities at known nesting locations shall occur between September and March outside the nesting season (nesting typically occurs from March 1 through September 1). Alternatively, if construction activities take place during the nesting season, a qualified biologist shall conduct a pre-construction survey no more than two weeks before the start of construction for any given milepost and report whether or not there are nesting Swainson's hawks within 500 feet of any project (assuming available authorized access). If there are nesting Swainson's hawks present within the 500-foot buffer areas, construction will be delayed until the CDFG has been consulted to determine suitable avoidance measures. A potential avoidance measure may include delaying all construction activity within 500 feet of an active Swainson's hawk nest until the adult and/or young of the year are no longer reliant on the nest site for survival as determined by a qualified biologist.

**MM BIO-20:** No more than two weeks before construction in any given milepost, a survey for burrows and burrowing owls shall be conducted by a qualified biologist within 500 feet of the project (assuming available authorized access). The survey will conform to the protocol described by the California Burrowing Owl Consortium (1993) which includes up to four surveys on different dates if there are suitable burrows present.

If occupied burrowing owl dens are found within the survey area, a determination shall be made by a qualified biologist in consultation with CDFG whether or not project work will impact the occupied burrows or disrupt reproductive behavior.

- If it is determined that construction will not impact occupied burrows or disrupt breeding behavior, construction will proceed without any restriction or mitigation measures.
- If it is determined that construction will impact occupied burrows during August through February, the subject owls will be passively relocated from the occupied burrow(s) using one-way doors. There shall be at least two unoccupied burrows suitable for burrowing owls within 300 feet of the occupied burrow before one-way doors are installed. Artificial burrows shall be in place at least one-week before one-way doors are installed on occupied burrows. One-way doors will be in place for a minimum of 48 hours before burrows are excavated.
- If it is determined that construction will physically impact occupied burrows or disrupt reproductive behavior during the nesting season (March through July) then avoidance is the only mitigation available. Construction shall be delayed within 300 feet of occupied burrows until it is determined that the subject owls are not nesting or until a qualified biologist determines that juvenile owls are self-sufficient or are no longer reliant on the natal burrow as their primary source of shelter and survival.

**MM BIO-21:** When working within 100 feet of salt or brackish marshland presence for the California black rail, California clapper rail, and Yuma clapper rail shall be assumed for either species during the period February 1- August 31 and construction shall be scheduled to begin no earlier than September 1 and end no later than January 31 to avoid potential impact on reproduction.

**MM BIO-22:** Projects within the range and within suitable habitat for the coastal California gnatcatcher shall conduct surveys, with USFWS approval, in accordance with the 1997 USFWS *Coastal California Gnatcatcher Presence/Absence Survey Guidelines*, to establish whether or not the species is present. If the species is determined present then the following applies:

To avoid disrupting nesting coastal California gnatcatchers, construction activities at known nesting locations shall occur between September and March outside the nesting season (nesting typically occurs from March 1 through September 1). Alternatively, if construction activities take place during the nesting season, a qualified biologist shall conduct a pre-construction survey no more than two weeks before the start of construction for any given milepost and report whether or not there are nesting coastal California gnatcatchers within 500 feet of any project (assuming available authorized access). If there are nesting coastal California gnatcatchers present within the 500-foot buffer areas, construction will be delayed until the USFWS and/or CDFG has been consulted to determine suitable avoidance measures. A potential avoidance measure may include delaying all construction activity within 500 feet of an active coastal California gnatcatchers

nest until the adults and/or young of the year are no longer reliant on the nest site for survival as determined by a qualified biologist.

Mitigation for occupied habitat impacted is likely to be compensatory off-site acquisition or protection of similar habitats at a ratio of 3:1 (compensation acres to that impacted) or other similar ratio with the approval of the USFWS and/or CDFG).

**MM BIO-23:** Projects within the range and within suitable habitat for the least Bell's vireo shall conduct surveys, with USFWS approval, in accordance with the 2001 USFWS *Least Bell's Vireo Survey Guidelines*, to establish whether or not the species is present. If the species is determined present then the following applies:

To avoid disrupting nesting least Bell's vireo, construction activities at known nesting locations shall occur between September and March outside the nesting season (nesting typically occurs from March 1 through September 1). Alternatively, if construction activities take place during the nesting season, a qualified biologist shall conduct a pre-construction survey no more than two weeks before the start of construction for any given milepost and report whether or not there are nesting least Bell's vireo within 500 feet of any project (assuming available authorized access). If there are nesting least Bell's vireo present within the 500-foot buffer areas, construction will be delayed until the CDFG has been consulted to determine suitable avoidance measures. A potential avoidance measure may include delaying all construction activity within 500 feet of an active least Bell's vireo nest until the adults and/or young of the year are no longer reliant on the nest site for survival as determined by a qualified biologist.

Mitigation for occupied habitat impacted is likely to be compensatory off-site acquisition or protection of similar habitats at a ratio of 3:1 (compensation acres to that impacted or other similar ratio with the approval of the USFWS and/or CDFG).

**MM BIO-24:** Projects within the range and within suitable habitat for the southwestern willow flycatcher shall conduct surveys, with USFWS approval, in accordance with the 2000 USFWS *Southwestern Willow Flycatcher Protocol Survey Guidelines (Revision 2000)*, to establish whether or not the species is present. If the species is determined present then the following applies:

To avoid disrupting nesting southwestern willow flycatcher, construction activities at known nesting locations shall occur between September and March outside the nesting season (nesting typically occurs from March 1 through September 15). Alternatively, if construction activities take place during the nesting season, a qualified biologist shall conduct a pre-construction survey no more than two weeks before the start of construction for any given milepost and report whether or not there are nesting southwestern willow flycatcher within 500 feet of any project (assuming available authorized access). If there are nesting southwestern willow flycatchers present within the 500-foot buffer areas, construction will be delayed



until the CDFG has been consulted to determine suitable avoidance measures. A potential avoidance measure may include delaying all construction activity within 500 feet of an active southwestern willow flycatcher nest until the adults and/or young of the year are no longer reliant on the nest site for survival as determined by a qualified biologist.

Mitigation for occupied habitat impacted is likely to be compensatory off-site acquisition or protection of similar habitats at a ratio of 3:1 (compensation acres to that impacted) or other similar ratio with the approval of the USFWS and/or CDFG).

**MM BIO-25:** Trees with unoccupied raptor nests (large stick nests or cavities) shall only be removed prior to March 1, or following the nesting season.

A survey to identify active raptor nests shall be conducted by a qualified biologist no more than two weeks before the start of construction at project sites from March 1 through July 30. Active raptor nests shall be located within 500 feet of the project to the extent feasible and assuming available authorized access.

- If an active raptor nest is found within 500 feet of the project a determination shall be made by a qualified biologist in consultation with CDFG whether or not project construction work will impact the active nest or disrupt reproductive behavior.
- If it is determined that construction will not impact an active nest or disrupt breeding behavior, construction will proceed without any restriction or mitigation measure. If it is determined that construction will impact an active raptor nest or disrupt reproductive behavior then avoidance is the only mitigation available. Construction shall be delayed within 300 feet of such a nest, or as determined by CDFG, until the adults and/or young of the year are no longer reliant on the nest site for survival as determined by a qualified biologist.

#### **Significance after Mitigation**

Although many measures can be employed to minimize the impacts to habitat due to vegetation removal, for a regional plan of this scale, the impact remains **significant**.

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**Impact 3.3-2: The 2008 RTP would potentially contribute to the fragmentation of existing habitat, decreasing habitat patch sizes, reducing habitat connectivity, and causing direct injury to wildlife. The 2008 RTP includes new transportation corridors that may form barriers to animal migration or foraging routes.**

Wildlife-roadway interactions often injure or kill wildlife (i.e., road kill). Additionally, the direct effects of road building and widening provide a barrier between existing habitat patches in the

SCAG region, serving to isolate habitat into smaller patches and thereby reduce their quality, especially for species with large home ranges.<sup>10</sup>

Where the barrier is effective, such disturbances can lead to further ecological disruptions from influenced prey-predator interactions and species alterations. The linear nature of transportation projects increases the potential extent and significance of this effect. Compared to today the RTP and committed projects included in the No Project condition would result in the following additional center lane miles of facilities: 78 freeway, 52 toll, 706 arterials/collectors and 325 HOV. Of this total, the 2008 RTP alone would add the following center lane miles of facilities: 48 freeway, 37 Toll, 348 arterials/collectors and 194 HOV.

The full implementation of the HSRT projects would involve the construction of 269 route miles. The CETAP corridors would include additional route miles of unknown alignment and width. Along with transit routes, these projects and the associated stations and other maintenance structures could also potentially disrupt biological resources.

Where entirely new roadways would be constructed, there would be a high potential for a significant barrier effect. Conversely, where the project involves only an addition of lanes to an existing roadway, the barrier impact would likely not be significant because the existing roadway has already formed a barrier and the new lanes would slightly increase the existing barrier effect.

**Table 3.3-7**, below, provides the acreage of natural vegetation (and thus potential habitat) occurring within 0.25 miles from a 2008 RTP highway, transit or freight rail project. A much smaller area would actually be affected. The 0.25 mile zone on either side of the transportation projects was used to capture the effects that extend beyond the road itself, including changes in light, temperature, noise, fire regime, risk of predation and spread of invasive species. The intersections of regional transportation projects and vegetation communities are shown in **Map 3.3-1** in the Figure Chapter at the end of this document.

**TABLE 3.3-7  
NATURAL VEGETATION OCCURRING WITHIN 0.25 MILES OF A FREEWAY,  
TRANSIT, OR FREIGHT RAIL PROJECT (ACRES)**

Vegetation Type	2008 RTP (acres affected)	No Project (acres affected)
Hardwood Forest and Woodlands	1,939	62
Conifer Forests and Woodlands	1,184	768
Desert Shrub and Woodlands	42,286	9,443
Grassland/Herbaceous	9,127	5,320
Shrub/Chaparral	15,868	7,507
Wetland	81	25
Total Acreage	70,704	23,174

SOURCE: SCAG Analysis. (2007). California Department of Forestry and Fire Protection and U.S. Forest Service Fire (2007) for the Fire and Resource Assessment Program (FRAP), updated by Technology Associates.

<sup>10</sup> Frankham, R., J.D. Ballou and D.A. Briscoe, (2002). *Introduction to conservation genetics*. Cambridge University Press. Cambridge, MA.

### **Mitigation Measures**

- MM BIO-26:** Individual transportation projects included in the 2008 RTP shall conduct site-specific analyses of opportunities to preserve or improve habitat linkages with areas on and off-site. Mitigation banking (opportunities to purchase, maintain, and/or restore offsite habitat) is one opportunity that project proponents and jurisdictions may pursue.
- MM BIO-27:** Each transportation project shall provide wildlife crossings/access at locations useful and appropriate for the species of concern.
- MM BIO-28:** Individual transportation projects shall include analysis of wildlife corridors during project planning. Impacts to these corridors shall be avoided and/or minimized.
- MM BIO-29:** Each transportation project included in the Plan shall use wildlife fencing where appropriate to minimize the probability of wildlife injury due to direct interaction between wildlife and roads. Inclusion of this mitigation measure shall be considered on a case-by-case basis, as use of wildlife fencing could further increase the effects of habitat fragmentation and isolation for many species.

### **Significance after Mitigation**

Route planning to minimize habitat fragmentation impacts, wildlife crossings, on- and off-site habitat restoration and linkages would all reduce the impacts of habitat fragmentation, isolation, and direct injury to wildlife due to transportation projects. For some species, implementation of mitigation measures could also increase the degree of habitat fragmentation. At a regional scale, the fragmentation of habitat due to the large scale of the 2008 RTP would not be fully avoided or mitigated. The impact would remain **significant**.

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**Impact 3.3-3: The 2008 RTP includes new transportation facilities that could increase near-road human disturbances such as litter, trampling, light pollution and road noise in previously relatively inaccessible and undisturbed natural areas.**

Many wild animals are negatively affected by such disturbances and will avoid or vacate areas where these factors become prevalent. Such losses might shift species abundance favoring more tolerable species over more sensitive species near well-used roadways. Often the more tolerable species is a non-native pest species and the species that vacate are more desirable native species. In some cases, the animals affected are of special concern.

Table 3.3-7 provides estimates of the extent of potential increases in near-road human disturbances from the distribution and extent of proposed transportation facilities in naturally vegetated lands. These acreage calculations represent the amount of each vegetation community that occurs within 0.25 miles of a 2008 RTP project. A much smaller area would

actually be affected. The 0.25 mile zone on either side of the transportation projects was used to capture the effects that extend beyond the road itself, including changes in light, temperature, noise, fire regime, risk of predation and spread of invasive species.

Compared to today the RTP and committed projects included in the No Project condition would result in the following additional center lane miles of facilities: 78 freeway, 52 toll, 706 arterials/collectors and 325 HOV. Of this total, the 2008 RTP alone would add the following center lane miles of facilities: 48 freeway, 37 Toll, 348 arterials/collectors and 194 HOV.

Site-specific analyses would be necessary once the alignments for these projects are developed.

Overall, the impact would be significant.

### **Mitigation Measures**

**MM BIO-30:** Individual transportation projects shall minimize vehicular accessibility to areas beyond the actual transportation surface. This can be accomplished through fencing and signage.

**MM BIO-31:** Each project shall establish litter control programs in appropriate areas, such as trash receptacles at road turnouts and view points.

**MM BIO-32:** Each project shall use road noise minimization methods, such as brush and tree planting, at heavy noise-producing transportation areas that might affect wildlife. Native vegetation should be used.

### **Significance after Mitigation**

In many cases, the mitigation measures outlined above would avoid or minimize impacts to wildlife. However, at the regional scale, additional transportation projects would increase wildlife disturbance and the impact would remain **significant**.

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**Impact 3.3-4: The 2008 RTP projects would potentially damage natural vegetation and other habitat components as a result of trampling or off-road machinery during the construction phases for these projects. Direct fatalities to wildlife would also potentially occur.**

Trampling or driving over areas with native vegetation can not only destroy existing vegetation and cause short-term disruptions to associated wildlife uses, but it can also result in soil hardening. Soil hardening often causes a longer-term change in species composition, with non-native invasive species often displacing more valuable native vegetation. Table 3.3-6 provides estimates of the natural vegetation occurring within 150 feet of a freeway, transit or freight rail project. Unmitigated, construction equipment has the potential to directly kill wildlife.

Compared to today the RTP and committed projects included in the No project condition would result in the following additional center lane miles of facilities: 78 freeway, 52 toll, 706 arterials/collectors and 325 HOV. Of this total, the RTP alone would add the following center lane miles of facilities: 48 freeway, 37 Toll, 348 arterials/collectors and 194 HOV.

Construction activities are more likely to have significant effects with greater duration or if occurring over a large area of natural vegetation. These effects are also more likely to be significant when the disruption affects habitat of special status species. Soil hardening and vegetation losses can also increase erosion, causing the siltation effects described in Impact 3.3-7. Timing of the activity would also be important in situations where a critical life stage of an animal is affected (e.g., bird nesting).

Site specific analysis would be required to identify and minimize this impact for each individual project included in the 2008 RTP. However, at the regional scale, this impact would be significant.

#### **Mitigation Measures**

- MM BIO-33:** Each project shall be preceded by pre-construction monitoring to ensure no sensitive species' habitat would be unnecessarily destroyed (also see **BIO-4** through **BIO-10**). All discovered sensitive species habitat shall be avoided where feasible, or disturbance shall be minimized.
- MM BIO-34:** Each project shall schedule work to avoid critical life stages (e.g. nesting) of species of concern.
- MM BIO-35:** Each project shall fence and/or mark sensitive habitat to prevent unnecessary machinery or foot traffic during construction activities.
- MM BIO-36:** When removal and/or damage to sensitive species habitat are unavoidable during construction, each project shall replant any disturbed natural areas with appropriate native vegetation following the completion of construction activities. In the case of permanent losses to sensitive species habitat, mitigation shall also follow the offsite habitat compensation guidance (also see **BIO-4** through **BIO-25**).

#### **Significance after Mitigation**

Full implementation of each of these mitigation measures would avoid and/or minimize the construction impacts to **less than significant** levels.

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**Impact 3.3-5: The 2008 RTP projects would potentially create noise, smoke, lights and/or other disturbances to biological resources during construction phases for these projects.**

Construction activities have the potential to negatively affect animal behavior that may result in harm to an individual or population (e.g., causing a nesting failure of a sensitive bird). If the animal is a special status species, and the effect is likely, the potential for a significant impact is increased. Project-level potential impacts and appropriate mitigation measures would need to be identified on a project-by-project basis. At the regional programmatic level, this would be a significant impact.

### **Mitigation Measures**

**MM BIO-37:** Individual projects shall avoid and/or minimize construction activities that have the potential to expose species to noise, smoke, or other disturbances. Pre-construction surveys shall be conducted as appropriate to determine the presence of any species that would need to be protected from such an impact (see **BIO-4** through **BIO-10**).

**MM BIO-38:** Individual projects shall be scheduled to avoid construction during critical life stages or sensitive seasons (e.g. the nesting season; see **BIO-25**, and **BIO-11** through **BIO-24**).

### **Significance after Mitigation**

Avoidance and minimization of impacts during construction, with special consideration for critical life stages and seasons of special status species would not reduce this impact to less than significant. The impact remains **significant**.

The operational impacts associated with transportation projects (i.e. those impacts not limited to the period of construction) are discussed in Impact 3.3-3 above.

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### **Impact 3.3-6: The 2008 RTP includes projects that would potentially displace riparian or wetland habitat.**

The significance of this impact would depend on the amount and kind of habitat removed. Removal of large riparian trees, for example, can especially reduce stream shading and increase temperatures. Removal of riparian shrubs or grasses can increase erosion and cause siltation impacts discussed below. Removal of aquatic vegetation such as rushes, cattails, or sedges can remove valuable aquatic food sources, spawning or cover habitat, and decrease the water resource's ability to recycle nutrients. Table 3.3-6 estimates that approximately 7 acres of wetland occur within 150 feet of a freeway, transit, or freight rail projects in the 2008 RTP. **Table 3.3-8** (using a different source of information) estimates that 300 acres of wetland are located within 150 feet of RTP projects. Impacts to water quality are discussed in Section 3.12 Water Resources.

Approximately 300 acres of National Wetlands Inventory (NWI) mapped wetlands occur within 150 feet of a freeway, transit or freight rail project included in the 2008 RTP (**Table 3.3-8** below and **Map 3.3-2** in the map section at the end of this document).

**TABLE 3.3-8  
WETLAND ACREAGE OCCURRING WITHIN 150 FEET OF A FREEWAY,  
TRANSIT, OR FREIGHT RAIL PROJECT**

2008 RTP (highways, transit and freight rail)	No Project
300	74

SOURCE: SCAG Analysis. (2007).  
U.S. Fish and Wildlife Service. Division of Habitat and Resource Conservation (2007). *National Wetlands Inventory*. (Most recent regional data available).

Some small-scale wetlands, such as vernal pools, that are not included on the NWI map could also occur near planned transportation projects. Lane additions achieved through re-striping would have significantly less or no impact compared to lane additions and new roadways. At the regional level, the area of wetlands adjacent to 2008 RTP projects provides a good measure of the potential direct impacts.

Due to these potential results, the 2008 RTP would substantially affect riparian and wetland habitat. This impact would be **significant**.

#### **Mitigation Measures**

**MM BIO-39:** Construction through or adjacent to wetlands or riparian areas shall be avoided where feasible through route-planning.

**MM BIO-40:** Each transportation project shall avoid removal of wetland or riparian vegetation. Specific vegetation that is not to be removed shall be so marked during construction. Riparian vegetation removal shall be minimized.

**MM BIO-41:** Each transportation project shall replace any disturbed wetland, riparian or aquatic habitat, either on-site or at a suitable off-site location at ratios to ensure no net loss.

**MM BIO-42:** When individual projects include unavoidable losses of riparian or aquatic habitat, adjacent or nearby riparian or aquatic habitat shall be enhanced (e.g. through removal of non-native invasive wetland species and replacement with more ecologically valuable native species).

#### **Significance after Mitigation**

The impact to wetlands and riparian areas would remain **significant**.

**Impact 3.3-7: The 2008 RTP would potentially increase siltation of streams and other water resources from exposures of erodible soils during construction activities.**

Excessive siltation can significantly degrade habitat for fish and other aquatic organisms. Heavy sediment deposition can bury slow-moving or sessile bottom-dwelling organisms, fish eggs and larval forms of many aquatic organisms. These losses are not only of direct concern, but also represent a loss of food sources for larger fishes and other organisms, such as birds and mammals, that are not directly affected by sediments. Increased sediment can also decrease light penetration for aquatic plant production and increase water temperature from greater insulation. Higher water temperatures can affect aquatic organisms through direct stress of temperature-sensitive organisms (e.g., steelhead require cold water streams), and by increasing nitrate productivity which can exacerbate eutrophication if the sediments contain or are accompanied by excessive nutrients (i.e., algal blooms).

The degree of this impact would depend on several factors including the following:

- *Length of occurrence.* The longer the period of sedimentation, the greater the potential for significance.
- *Timing of occurrence.* The effect would be of greater significance during particularly sensitive times of year, such as during fish spawning seasons when the eggs and larvae which are particularly sensitive to siltation would be present; and,
- *Significance of Resource.* The effect would be of greater significance where a special status species might be affected, such as near a steelhead spawning stream.

This impact would be significant.

**Mitigation Measures**

**MM BIO-43:** Individual projects near water resources shall implement Best Management Practices (BMPs) at construction sites to minimize erosion and sediment transport from the area. BMPs include encouraging growth of vegetation in disturbed areas, using straw bales or other silt-catching devices, and using settling basins to minimize soil transport. A more detailed description of BMPs is provided in Section 3.12 Water Resources.

**MM BIO-44:** Individual projects shall schedule construction activities to avoid sensitive times for biological resources (e.g. steelhead spawning periods during the winter and spring) and to avoid the rainy season when erosion and sediment transport is increased.

**Significance after Mitigation**

Full implementation of each of these mitigation measures would not avoid the siltation impacts. The impact remains **significant**.



**Impact 3.3-8: Implementation of the 2008 RTP would not conflict with any provisions of an adopted Habitat Conservation Plan or Natural Community Conservation Plan (NCCP).**

Planned projects in Riverside County are included as “Covered Activities” in the adopted Riverside County Multiple Species Habitat Conservation Plan. The adopted Natural Community Conservation Plans in Orange County are not in conflict with any of the projects included in the 2008 RTP, including the extension of SR-241 which is accounted for in the Southern Orange County NCCP conceptual reserve design alternatives (not yet adopted). The impact is less than significant.

**Mitigation Measures**

The 2008 RTP is not in conflict with any adopted Habitat Conservation Plan or Natural Communities Conservation Plan. No mitigation measures are necessary.

**Significance after Mitigation**

The impact is less than significant.

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**Cumulative Impacts 3.3-9: Urbanization in the SCAG region will increase substantially by 2035. The 2008 RTP, by increasing mobility and including land-use-transportation measures, influences the pattern of this urbanization.**

The 2008 RTP’s influence on growth potentially contributes to following regional cumulatively considerable impacts (as described in Impacts 3.3-1 through 3.3-7 above):

- displacement of natural vegetation,
- damage to sensitive species habitat,
- habitat fragmentation,
- impacts to riparian and wetland habitats,
- construction and operational disturbances, and
- siltation.

The amount of new urbanized acreage (consuming previously vacant land) would be on the order of hundreds of thousands of acres. This degree of urban development is reasonably foreseeable; however, to assign this future development to precise locations would be speculative, such that it cannot be estimated which natural vegetation communities would be affected. Despite the inability to predict the acreage of each habitat type that may be affected, it is reasonable to expect that this future urban development would contribute to the same types (although on a larger scale) of impacts detailed in Impacts 3.3-1 through 3.3-8 above.

These indirect impacts on biological resources are associated with population, employment, and household growth forecast by SCAG, and they are considered a significant cumulative impact.

### **Mitigation Measures**

The cumulative impacts to biological resources, due to the forecast urban development associated with the 2008 RTP, would be mitigated using the same measures detailed for Impacts 3.3-1 through 3.3-8, in addition to the following measure.

**MM BIO-45:** Future impacts to biological resources shall be minimized through cooperation, information sharing, and program development as part of SCAG's regional planning efforts. SCAG shall consult with the resource agencies, such as USFSW and CDFG. [

### **Significance after Mitigation**

The impacts to biological resources due to regional growth would be reduced through application of the mitigation measures; however, the 2008 RTP's accommodation of approximately 5.14 million people in the SCAG region by 2035 would contribute to cumulative impacts. Implementation of the 2008 RTP would have a cumulatively considerable contribution to urbanization, and, thus, the impact would remain **significant**.

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## **Comparison with the No Project**

In the No Project alternative, the population of the SCAG region grows by 6 million people, however no regional transportation investments are made above the existing programmed projects. The population distribution follows past trends, uninfluenced by additional transportation investments.

### ***Direct Impacts***

Under the No Project alternative, there would be no new transportation projects (beyond those projects that would occur regardless of adoption of the Plan) intersecting sensitive communities, known locations or habitats of special status species, riparian habitats or wetlands in the region. In **Tables 3.3-7**, and **3.3-8**, the No Project alternative is compared to the 2008 Plan impacts.

*The proposed Plan's transportation-related impacts to biological resources would be greater than the No Project alternative.*

### ***Cumulative Impacts***

The No Project alternative's cumulative impacts to biological resources due to urban development could be expected to be greater than those of the 2008 RTP because of the increased

consumption of vacant, open space/recreation and agricultural lands (655,000 acres compared to 200,000 acres under the Plan).

*The No Project alternative's cumulative impacts to biology would be greater than those of the 2008 RTP.*

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