

3.7 BIOLOGICAL RESOURCES

INTRODUCTION

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.

ENVIRONMENTAL SETTING

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.¹

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.² Typical natural communities and series will be described for each ecosystem type, as well as representative and special status species. Figure 3.7-1, included in the Figure Chapter at the end of this document, shows the general location of natural vegetation types that basically represent the variety of ecosystems within the SCAG. Figure 3.7-2, included in the Figure 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 SCAG region.

Mojave Desert Scrub Vegetation

The vast interior of Southern California is primarily desert, encompassing a diversity of habitats and wildlife species. The Mojave Desert covers much of San Bernardino County and extends west into northern Los Angeles County and south into northern Riverside County. It is generally higher in elevation than other regional deserts, and experiences regular winter frosts and occasional snows. Creosote bush scrub and a variety of saltbush vegetation primarily dominate the Mojave Desert. Joshua trees also cover large areas of the Mojave Desert, and are a

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

² Barbour, M. G. and Major, J. (Eds.). (1973). *Terrestrial vegetation of California* (pp. 4). City: John Wiley and Sons.



dominant species of Joshua Tree National Monument east of the San Bernardino Mountain range.

In pure stands, Mojave scrub habitat supports few birds, but 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.). Conspicuous birds include common ravens (*Corvus corax*), prairie falcons, American kestrels, Swainson's hawks, red-tailed hawks, great horned owls, and barn owls (*Tyto alba*).

Sonoran Desert Vegetation

The Sonoran Desert extends from southern San Bernardino and Riverside Counties to the Mexican border and is generally low-lying with infrequent winter frosts. Similar to the Mojave Desert, creosote bush scrub characterizes much of the Sonoran Desert. In addition, other characteristic plants found in the Sonoran Desert include ocotillo (*Fouquieria splendens*), cholla (*Opuntia* spp).

Migratory birds typically pass through in spring and fall, when conditions are ideal for their journeys. Resident birds, however, depend on desert habitats, and phainopeplas (*Phainopepla nitens*) and white-winged doves (*Zenaida asiatica*) forage on the berries of desert plants. Gambel's quail (*Callipepla gambeli*), black-throated sparrows (*Amphispiza bilineata*), Abert's towhees (*Pipilo aberti*), cactus wrens (*Campylorhynchus brunneicapillus*), LeConte's and Crissal thrashers (*Toxostoma lecontei* and *T. dorsale*), and sage sparrows (*Amphispiza belli*) forage for seeds in desert habitats. Roadrunners (*Geococcyx californianus*) catch small snakes, lizards, and insects.

Desert 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*).

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 tortoises (*Gopherus agassizii*), 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*), speckled rattlesnakes (*C. mitchellii*), Mojave rattlesnakes (*C. scutulatus*), and western diamondback rattlesnakes (*C. atrox*).



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.³ 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.

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*).

Montane and Subalpine Forests

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.

³ Barbour, M. G. & Johnson, A.. Beach and dune. In Barbour, M. G. & Major, J. (Eds.). *Terrestrial vegetation of California*. City: John Wiley and Sons.



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, 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 bottae umbratica*), white-eared pocket mice (*Perognathus alticola alticola*), northern goshawks (*Accipiter gentilis*), and California spotted owls (*Strix occidentalis*).

The Tecate cypress (*Cyprinus 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 (CNDDDB), and the Tecate cypress itself is a California Native Plant Society listed species.



Oak Woodlands and Hardwood Forests

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 coerulesens*), 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. Hardwood upland forest is also habitat for the Ojai fritillary (*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*), yellow-billed cuckoos, long-eared owls (*Asio otus*), willow flycatchers, 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 (=American) 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 beecheyi*), 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, 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 (*D. abramsii* var. *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 (*Scaphiopus hammondi*), Swainson's hawks (*Buteo swainsoni*), prairie falcons (*Falco mexicanus*), black-shouldered kites, golden eagles, 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.

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 wrentit (*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, Santa Susana tarplant (*Hemizonia minthornii*), Nevin's barberry, Lyon's pentachaeta (*Pentachaeta lyonii*), Parish's checkerbloom (*Sidalcea hickmanii* ssp. *parishii*), and crown beard (*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 (*Neduba 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 (*Cnemidophorus tigris multiscutatus*), orange-throated whiptail (*C. hyperthyrus*), agile (or Pacific) kangaroo rat (*Dipodomys agilis*), San Diego pocket mouse (*Perognathus fallax*), and California gnatcatcher (*Polioptila 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, and Nevin's barberry, occur in coastal sage scrub.

Wetlands

Wetlands include riparian areas, inland waters, and marine and estuarine environments. Each supports a diverse array of biological communities, described below. Figure 3.7-2 included in the Figure Chapter at the end of this document, displays the wetlands in the SCAG region identified in the National Wetlands Inventory. Table 3.7-1 provides information on the larger natural wetlands

Table 3.7-1: 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

Sources: California Resources Agency. (1997). Wetland Information. http://ceres.ca.gov/wetalnds/geo_info/so_cal/about_historical_maps.html. Accessed April 2003.

California Coastal Conservancy. (2003). Southern California Wetlands Recovery Project Information System. <http://eureka.regis.berkeley.edu/wrpinfor.html>. Accessed April 2003.



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.

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 3.7-2.

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: Information Center for the Environment. (2001). <http://endeavor.des.ucdavis.edu>. Accessed May 2003.

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). 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 sordidulus*), yellow warblers (*Dendroica petechia*), MacGillivray's warblers (*Oporomis tolmiei*), Wilson's warblers (*Wilsonia pusilla*), warbling vireos (*Vireo gilvus*), bushtits (*Psaltirparus 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, arroyo toads (*Bufo microscaphus californicus*) and southwestern pond turtles (*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 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 (*Eucylogobius newberryi*), and the southern coastal population of steelhead (*Onchorynchus mykiss*), and the Santa Ana sucker (*Catostomus santaanae*), all of which are on the Federal endangered species list.

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



CNDDDB. 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 are 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 (*Rorippa 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



butterweed (=San Bernardino ragwort, *Senecio bernardinus*). 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 (*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 beldingi*).

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 commonly found in 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 of the SCAG Region

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 3.7-3, 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 CNDDDB, 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 3.7-4, in the technical appendices, presents these communities, and the counties in which they have been reported. These locations are shown on Figure 3.7-3, included in the Figure Chapter at the end of this document.



Threats to Biological Resources in the SCAG Region

Major threats to biological resources in the SCAG region include habitat loss, fragmentation and degradation, encroachment of non-native species, water diversion and degradation, 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. The fragmentation of natural habitat 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.⁴

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.⁵ 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. Beyond increased urbanization and reduction of open space, additional threats to biological resources in the SCAG region include water diversions and degradation of wetland sites and encroachment of non-native species into riparian and spring areas, water developments, and off-road vehicle activity.

Protection of Biological Resources in the SCAG Region

Table 3.7-5, included in the technical appendices, presents a list of 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.

⁴ de Maynadier, P. G. & Hunter Jr, M. Road effects on amphibian movements in a forested landscape. *Natural Areas Journal*, 20(1), 56-65.

⁵ 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>.



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. The NCCP study area encompasses 6,000 square miles, including portions of Riverside, Los Angeles, Orange, and San Bernardino Counties. Each county has one or more subregional planning areas.⁶ Table 3.7-6 provides the status of NCCP programs in the SCAG region.

County	Plan	Lead Agency	Planning Area Covered	Plan Status
Los Angeles	Palos Verdes Peninsula Subregional Plan	City of Rancho Palos Verdes	15,000 acres	Final Plan development
Orange	Orange County Central-Coastal NCCP Subregional Plan	Orange County	209,000 acres	Plan approved July 1996
Orange	Orange County Southern Subregion	Orange County	91,000 acres	Developing Draft Plan
Orange	Orange County Northern Subregion	Orange County	see "Status"	4(d) permit issued to Chevron oil field abandonment; includes 28 acre preserve.
Riverside	Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP)	Coachella Valley Association of Governments	1,136,261 acres	Draft Plan/ Draft EIR/S due to be released.
Riverside	Western Riverside County Multiple Species Habitat Conservation Plan	Riverside County	1.2 million acres	Final Plan approved by County in July, 2003; FWS and DFG permits expected by the end of 2003.
San Bernardino	San Bernardino Valley-wide Multiple Species Habitat Conservation Plan	San Bernardino County	320,000 acres	The County is currently collecting data to determine habitat needs.

Sources: California Department of Fish and Game. (2003). *Status of NCCP Planning Efforts*. www.dfg.ca.gov/nccp/status.htm. Accessed June 2003.
 Pollak, Daniel. (2001). *The Future of Habitat Conservation? The NCCP Experience in Southern California*. Prepared at the request of Senator Byron D. Sher.

REGULATORY SETTING

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

Federal Agencies and Regulations

Council on Environmental Quality and U.S. Environmental Protection Agency

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.

⁶ California Department of Fish and Game. (2002, May 3). *Southern California coastal sage scrub NCCP region*. <http://www.dfg.ca.gov/nccp/cssreg.htm> Accessed August 2003.

U.S. Fish and Wildlife Service (USFWS)

USFWS is the implementing agency for the 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.⁷

"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 (USFS, USBLM, USFWS) accord some level of protection or management consideration to candidates, and when long-term planning efforts, such as HCPs, 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 the

FESA. Section 9 of FESA prohibits the "taking"⁸ 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.

U.S. Army Corps of Engineers

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.⁹ 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.

⁷ U.S. Fish and Wildlife Services Fact Sheet. (2002). "ESA basics." Washington, D.C.

⁸ "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."

⁹ 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.



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.

State Agencies and Regulations

California Department of Fish and Game (CDFG)

CDFG is required under the California Endangered Species Act (CESA), the California Native Plant Protection Act (NPPA), the CEQA, and the 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 15065a) 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, city and county in the coastal zone is required to prepare and submit a LCP 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; however, it provides a meaningful perspective on the effects of the 2004 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 in the CEQA Guidelines.

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 2004 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 2004 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 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 DFG or USFWS;
- Substantially and adversely affect any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by DFG or USFWS;
- Substantially and adversely affect federally protected wetlands as defined by Section 404 of the 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 2004 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 2004 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, 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 2004 RTP. Indirect, cumulative impacts due to the changes in population distribution expected to occur due to the 2004 RTP's transportation investments, and transportation and land use policies are also discussed.



All mitigation measures shall be included in project-level analysis as appropriate. The lead agency for each individual project in the Plan shall be responsible for ensuring adherence to the mitigation measures prior to construction. SCAG shall be provided with documentation of compliance with mitigation measures through SCAG’s monitoring efforts, including SCAG’s Intergovernmental Review Process.

Impact 3.7-1: Transportation projects included in the 2004 RTP on previously undisturbed land would potentially 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 (Figure 3.7-3 in the Figure Chapter at the end of this document). The CNDDDB system relies on reported sitings of sensitive species, and it is not a complete inventory of sensitive species habitat. The intersection of 2004 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 sitings are not included in Table 3.7-7. These point data are of varying reliability. Impacts associated with the intersection of 2004 RTP transportation projects and habitat (shown in Figure 3.7-1 and Table 3.7-8) are more conservative and lend a fuller picture of the potential impacts of the 2004 RTP projects. This analysis of transportation project intersection with natural vegetation and habitat is used to determine significance.

Table 3.7-7: Special Status Habitat and Communities Occurring Within 150 feet of a Freeway, Transit, or Freight Rail Project (acres)		
	2004 RTP (highways, transit and freight rail)	No Project
Special Status Plant Habitat	290	50
Special Status Animal Habitat	4,800	950
Special Status Natural Community	470	200

Source: SCAG Analysis. (2003). UCSB. (1999). GAP Analysis. (Best and most recent regional data available).

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. Addition of a lane would be expected to cause less disruption than an entirely new road, for example.

Transportation projects in the 2004 RTP that would intersect with special status species habitat known and reported by the CNDDDB are shown in Figure 3.7-3 in the Figure Chapter at the end of this document, and potential effects are summarized in Table 3.7-7. There are approximately 5,500 acres of special status plant habitat, animal habitat, and special status aquatic and



Table 3.7-8: Natural Vegetation Occurring Within 150 feet of a Freeway, Transit, or Freight Rail Project (acres)		
Vegetation Type	2004 RTP (highways, transit and freight rail)	No Project
Chaparral	3,100	700
Conifer Forests and Woodlands	400	200
Desert Dunes	-	-
Grassland	1,400	80
Hardwood Forests and Woodlands	-	-
Riparian Forest and Scrub	500	300
Scrub	10,000	2,000
Source: SCAG Analysis. (2003). UCSB. (1999). GAP Analysis. (Best and most recent regional data available).		

terrestrial communities that occur within 150 feet of the 2004 RTP freeway, transit, and freight rail projects.

For this assessment, if any measurable area of natural vegetation shown on Figure 3.7-1 was potentially displaced by a project, the impact to natural vegetation was considered significant. As Table 3.7-8 demonstrates, there are approximately 15,400 acres of natural vegetation in the SCAG region that occur within 150 feet of a freeway, transit, or freight rail project in the 2004 RTP. The distribution of potential effects by vegetation categories, as discussed above, is shown in Table 3.7-8.

Additional vegetated area would be impacted by Maglev, goods movement capacity enhancements, and arterial projects. The Maglev projects would eventually involve the construction of 275 route miles of elevated track, along with associated stations and other maintenance structures that could also potentially disrupt biological resources. The alignments of these projects are not developed to the point that analysis of the impacts to natural vegetation communities can be estimated directly. The Maglev potential alignments would encounter chaparral, conifer forests and woodlands, grasslands, riparian forest and scrub, and wetland habitats. The acreage of each of these vegetation types that would be affected would vary with the alignments chosen for each Maglev segment. SCAG expects the proposed goods movements enhancement projects to consist of approximately 140 center lane miles of new facilities. The precise routes, and the number and width of lanes is not yet determined. The CETAP corridors (described in 2.0 Project Description) would include additional route miles of unknown alignment and width, and arterial projects would involve the construction of 3,300 lane miles, though some of these lane miles may be achieved through re-striping and would not consume additional land. The effects of the Maglev, goods movement enhancement projects, and arterials would contribute to the overall significant impact. Site specific analyses would be necessary once the alignments for these projects are developed.

Site-specific analyses would be required to identify and minimize the potential impacts of each particular transportation and/or development project. However, overall, the 2004 RTP would

substantially affect vegetation communities and habitat, some of which is utilized by species of special status. This impact would be significant.

Mitigation Measures

MM 3.7-1.a: 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 3.7-1.b: 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 3.7-1.c: Individual transportation projects shall include offsite habitat enhancement or restoration to compensate for unavoidable habitat losses from the project site.

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**.

Impact 3.7-2: The 2004 RTP would potentially contribute to the fragmentation of existing habitat, decreasing habitat patch sizes, reducing habitat connectivity, and causing direct injury to wildlife. The 2004 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., roadkills). 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.¹⁰

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. The 2004 RTP would add approximately 6,700 lane miles to the regional transportation system (including freeways, arterials, HOV facilities and freeway connectors).¹¹ Assuming an average lane width of 12 feet and that all new lane miles would consume raw land, these lane miles would consume

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

¹¹ SCAG. (2003). Regional Demand Travel Model.



approximately 9,800 acres. However, some lane additions would utilize re-striping and minimize additional right-of-way such that the actual acreage affected is unknown but would likely be less than 9,800 acres.

The full implementation of the Maglev projects would involve the construction of 275 route miles. SCAG expects the proposed goods movement enhancement projects to consist of approximately 140 center lane miles of new facilities. The precise routes, and the number and width of lanes is not yet determined. The CETAP corridors (described in 2.0 Project Description) 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 3.7-9, below, provides the acreage of natural vegetation (and thus potential habitat) occurring within 0.25 miles from a 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 Figure 3.7-1 in the Figure Chapter at the end of this document (The Maglev, goods movement enhancement, and arterial project alignments are not shown, as they are not developed to the point of analysis. However they would contribute to the significant impact on habitat fragmentation.)

Table 3.7-9: Natural Vegetation Acreage Occurring Within 0.25 miles of a Freeway, Transit, or Freight Rail Project		
Vegetation Type	2004 RTP (highways, transit and freight rail)	No Project
Chaparral	20,400	6,600
Conifer Forests and Woodlands	3,300	1,700
Desert Dunes	-	-
Grassland	9,200	500
Hardwood Forests and Woodlands	100	100
Riparian Forest and Scrub	4,500	1,900
Scrub	80,100	16,400
Source: SCAG Analysis. (2003). UCSB. (1999). GAP Analysis. (Best and most recent regional data available).		



Mitigation Measures

MM 3.7-2a: Individual transportation projects included in the 2004 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 3.7-2b: Each transportation project shall provide wildlife crossings/access at locations useful and appropriate for the species of concern.

MM 3.7-2c: Individual transportation projects shall include analysis of wildlife corridors during project planning. Impacts to these corridors shall be avoided and/or minimized.

MM 3.7-2d: 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 MM 3.7-2d would increase the degree of habitat fragmentation. At a regional scale, the fragmentation of habitat due to the large scale of the 2004 RTP would not be fully avoided or mitigated. The impact would remain **significant**.

Impact 3.7-3: The 2004 RTP includes new transportation facilities that would potentially 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 3.7-9 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 2004 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.



The 2004 RTP would add approximately 6,700 lane miles to the regional transportation system (including freeways, arterials, HOV facilities and freeway connectors)¹² in Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties. The Maglev projects would involve the construction of 275 miles of elevated track. Transit routes (included in the calculation illustrated in Table 3.7-9) and their associated stations and other infrastructure would add to the affected acreage. The goods movement enhancement projects are expected to consist of 140 centerline miles. The CETAP corridors (described in 2.0 Project Description) would include additional route miles of unknown alignment and width. It is expected that these projects would contribute to the overall significant impact. The alignments of these projects are not developed to the point that analysis of the vegetation communities can be estimated directly. Site-specific analyses would be necessary once the alignments for these projects are developed.

Overall, the impact would be significant.

Mitigation Measures

MM 3.7-3a: Individual transportation projects shall minimize vehicular accessibility to areas beyond the actual transportation surface. This can be accomplished through fencing and signage.

MM 3.7-3b: Each project shall establish litter control programs in appropriate areas, such as trash receptacles at road turnouts and view points.

MM 3.7-3c: 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**.

Impact 3.7-4: The 2004 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

¹² *Ibid.*



hardening. Soil hardening often causes a longer-term change in species composition, with non-native invasive species often displacing more valuable native vegetation. Table 3.7-8 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.

The 2004 RTP would add approximately 6,700 lane miles to the regional transportation system (including freeways, arterials, HOV facilities and freeway connectors).¹³ The Maglev projects would involve the construction of 275 route miles, along with associated stations and other maintenance structures that could also potentially disrupt biological resources. The goods movement enhancement projects are expected to consist of 140 centerline miles. The CETAP corridors (described in 2.0 Project Description) would include additional route miles of unknown alignment and width. Construction of these lane miles would contribute to the impact described above.

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 3.7-7. 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 2004 RTP. However, at the regional scale, this impact would be significant.

Mitigation Measures

MM 3.7-4a: Each project shall be preceded by pre-construction monitoring to ensure no sensitive species' habitat would be unnecessarily destroyed. All discovered sensitive species habitat shall be avoided where feasible, or disturbance shall be minimized.

MM 3.7-4b: Each project shall schedule work to avoid critical life stages (e.g. nesting) of species of concern.

MM 3.7-4c: Each project shall fence and/or mark sensitive habitat to prevent unnecessary machinery or foot traffic during construction activities.

MM 3.7-4d: When removal and/or damage to sensitive species habitat is unavoidable during construction, each project shall replant any disturbed natural areas with appropriate native vegetation following the completion of construction activities.

¹³ *Ibid.*

Significance After Mitigation

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

Impact 3.7-5: The 2004 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 3.7-5a: 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.

MM 3.7-5b: Individual projects shall be scheduled to avoid construction during critical life stages or sensitive seasons (e.g. the nesting season).

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 3.7-3 above.

Impact 3.7-6: The 2004 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 3.7-8 estimates that approximately 520 acres of riparian forest and scrub occur within 150 feet of a freeway, transit, or freight rail project in the 2004 RTP. Impacts to water quality are discussed in Section 3.12 Water Resources.

Approximately 130 acres of NWI mapped wetlands occur within 150 feet of a freeway, transit or freight rail project included in the 2004 RTP (Table 3.7-10 below and Figure 3.7-2 in the map

Table 3.7-10: Wetland Acreage Occurring Within 150 feet of a Freeway, Transit, or Freight Rail Project	
2004 RTP (highways, transit and freight rail)	No Project
130	20
Source: SCAG Analysis. (2003). U.S. Fish and Wildlife Service. (1998). <i>National Wetlands Inventory</i> . (Most recent regional data available).	

section at the end of this document). 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 2004 RTP projects provides a good measure of the potential direct impacts.

Additional riparian habitat and wetlands would likely be impacted by the planned 275 miles of Maglev projects and the associated stations and maintenance buildings, arterial, and goods movement enhancement projects. SCAG expects the proposed goods movement enhancement projects to consist of approximately 140 center lane miles of new facilities. The precise routes, and the number and width of lanes is not yet determined. The CETAP corridors (described in 2.0 Project Description) would include additional route miles of unknown alignment and width, and arterial projects would involve the construction of 3,300 lane miles, though some of these lane miles may be achieved through re-striping and would not consume additional land. The alignments of these projects are not developed to the point that analysis of the impacts to these resources can be estimated directly. It is expected that the impacts due to Maglev, arterials, and the goods movement enhancement projects would contribute to the overall significant impact. Site specific analyses would be necessary once the alignments for these projects are developed.

Due to these potential results, the 2004 RTP would substantially affect riparian and wetland habitat. This impact would be **significant**.

Mitigation Measures

MM 3.7-6a: Construction through or adjacent to wetlands or riparian areas shall be avoided where feasible through route-planning.

MM 3.7-6b: 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 3.7-6c: 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 3.7-6d: 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 3.7-7: The 2004 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 3.7-7a: 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 3.7-7b: 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 3.7-8: Implementation of the 2004 RTP would not conflict with any provisions of an adopted Habitat Conservation Plan, 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 2004 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 2004 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**.

Cumulative Impacts

A cumulative impact consists of an impact which is created as a result of the combination of the 2004 RTP together with other projects causing related impacts.

Cumulative Impacts 3.7-9: Urbanization in the SCAG region will increase substantially by 2030. The 2004 RTP, by increasing mobility and including land-use-transportation measures, influences the pattern of this urbanization.

The 2004 RTP's influence on growth potentially contributes to following regional cumulatively considerable impacts (as described in Impacts 3.7-1 through 3.7-7 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 of impacts detailed in Impacts 3.7-1 through 3.7-8 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 2004 RTP, would be mitigated using the same measures detailed for Impacts 3.7-1 through 3.7-8, in addition to the following measure.

MM 3.7-9a: Future impacts to biological resources shall be minimized through cooperation, information sharing, and program development during the update of the Open Space and Conservation chapter of SCAG's *Regional Comprehensive Plan and Guide* and through SCAG's Energy and Environment Committee. SCAG shall consult with the resource agencies, such as U.S. Fish and Wildlife Service and California Department of Fish and Game during this update process.

Significance After Mitigation

The impacts to biological resources due to regional growth would be reduced through application of the mitigation measures; however, the 2004 RTP's accommodation of approximately 6 million people in the SCAG region by 2030 would contribute to cumulative impacts. Implementation of the 2004 RTP would have a cumulatively considerable contribution to urbanization, and, thus, the impact would remain **significant**.



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 3.7-7, 3.7-8, and 3.7-9, the No Project alternative is compared to the 2004 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 would be expected to be approximately the same as those of the 2004 RTP. Future urbanization of approximately the same magnitude as the Plan could be expected to impact natural vegetation and habitat, and other biological resources similarly. *The No Project alternative's cumulative impacts to biology would be approximately the same as those of the 2004 RTP.*



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