APPENDIX A

SENSITIVE SPECIES WITH POTENTIAL TO OCCUR WITHIN TECOLOTE CANYON NATURAL PARK

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SENSITIVE PLANT SPECIES KNOWN OR WITH POTENTIAL TO OCCUR IN TECOLOTE CANYON FOR WHICH NO SPECIFIC MSCP MANAGEMENT DIRECTIVES HAVE BEEN ADOPTED

Subarea Plant Status: *CS=MSCP Covered; NC=Not MSCP Covered; NE=Not Eva!.*

Subarea Plan Status	*Scientific Name* Common Name	Status *	CNPS		NDDBRank		TCNP NRMP Area Notes
			List	R-E-D Code	Global	CA	
NE	*Adolphia californica* California adolphia	--/--	2	1-3-1	G3G4	S3.1	Low to moderate potential to occur. Habitat is clay soils on south-facing slopes in chaparral and coastal sage scrub. Would likely have been observed if present.
NE	*Artemisia palmeri* San Diego sagewort	--/--	4	1-2-1	G3	S3.2	Observed in several locations in the Park. Mapped locations (Figure 19; HELIX 2004, Tierra 2004, Dudek 2003a and Earth Tech 2003). Likely underestimate of extent within Park.
NC	*Chorizanthe orcuttiana* Orcutt's spineflower	FE/SE	1B	3-3-3	G1	SI.1	Low potential to occur. Only one site is known to be extant. This species occurs in coastal chaparral openings in chamise with a distinctive loose sandy substrate (Reiser 2001).
NC	*Bahiopsis laciniata* San Diego County viguiera	--/--	4	1-2-1	G4	S3.2	Observed the eastern and southern portions of the Park (Figure 19; HELIX 2004, Earth Tech 2003 and Tecolote Canyon CAC 1982).
NE	*Comarostaphylis diversifolia* ssp. *diversifolia* Summer holly	--/--	1B	2-2-2	G3?T2	S2.2	Moderate potential to occur. Reported to the CNDDB in the1980s approximately two-thirds mile east of Interstate 805 and one- quarter mile south of San Clemente Canyon (CNDDB 2005).
NE	*Harpagonella palmeri* Palmer's grapplinghook	--1--	4	1-2-1	G4	S3.2	Low potential to occur. Occurs in clay soils in chaparral, coastal sage scrub and grassland.

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NC	*Juncus acutus* ssp. *leopoldii* Southwestern spiny rush	--/--	4	1-2-1	G5T5	S3.2	Observed in the main drainage in the southern portion of the Park (Figure 19; HELIX 2004).
NC	*Quercus dumosa* Nuttall's scrub oak	--/--	1B	2-3-2	G2	SI.1	Observed scattered throughout the northern two-thirds of the Park (Figure 19; HELIX 2004, Tierra 2004, Dudek 2003b and Tecolote Canyon CAC 1982).

*A listing and explanation of status codes are provided at the end of Appendix A.

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SENSITIVE ANIMAL SPECIES KNOWN OR WITH POTENTIAL TO OCCUR IN TECOLOTE CANYON FOR WHICH NO SPECIFIC MSCP MANAGEMENT DIRECTIVES HAVE BEEN ADOPTED

Subarea Plant Status: *CS=MSCP Covered; NC=Not MSCP Covered; NE=Not Eva!.*

Subarea Plan Status	*Scientific Name* Common Name	Status *	TCNP NRMP Area Notes
NC	*Lycaena hermes* Hermes copper	FSC/--	Low potential to occur in the Park. Current range for the species is east of Interstate 15.
NE	*Scaphiopus hammondii* Western spadefoot	--/CSC	Low potential to occur in the Park. May be found in coastal sage scrub, chaparral and grasslands habitats but is most common in grasslands with vernal pools.
NE	*Salvadora hexalepis virgultea* Coast patch-nosed snake	--/CSC	Moderate potential to occur in the Park. Occurs in desert scrub, coastal chaparral, washes, sandy flats and rocky areas. It is a generalist in its diet and probably preys on anything it can overpower including small mammals, lizards and the eggs of lizards and snakes.
NE	*Lichanura trivirgata roseofusca* Coastal rosy boa	--/CSC	Moderate potential to occur in the Park. Occurs in rocky chaparral-covered hillsides in coastal areas and in canyons. May occur in oak woodlands if they intermix with scrub or chaparral habitats.
NE	*Eumeces skiltonianus interparietalis* Coronado skink	--/CSC	Moderate potential to occur in Park. Occurs in a variety of habitats ranging from coastal sage, chaparral, oak woodlands, pinon-juniper and riparian woodlands to pine forests, but within these associations it is often restricted to the more mesic pockets.
NE	*Crotalus exsul* Red diamond rattlesnake	--/CSC	High potential to occur in the Park. Associated with heavy brush with large rocks or boulders in Coastal Sage Scrub and Chaparral habitats.
NE	*Anniella nigra argentea* Silvery legless lizard	--/CSC	Observed in the park (Battle, pers. comm.) Found primarily in areas with friable soils, some moisture content and some vegetative cover with leaf litter.
NE	*Thamnophis hammondii* Two-striped garter snake	--/CSC	High potential to occur in the Park. Associated with wetland habitats such as streams, creeks and pools, especially with rocky beds and bordered by willows, ponds, lakes, wetlands and vernal pools. It also occurs in mixed oak, oak woodlands and chaparral.

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cs	*Falco peregrinus anatum* American peregrine falcon	--/SE	Observed in the Park (Figure 20; Helix 2004). Occurs in grasslands and scrublands, cliffs, steep terrain and sometimes urban areas. Tecolote Canyon is most likely a foraging area for the species.
NE	*Amphispiza belli belli* Bell's sage sparrow	FSC/CSC	Moderate potential to occur in the Park. An uncommon to fairly common but localized resident breeder in dry chaparral and coastal sage scrub along the coastal lowlands, inland valleys and in the lower foothills of local mountains.
cs	*Buteo regalis* Ferruginous hawk	FSC/CSC	Low potential to occur in the Park. Occurs in open dry country, requiring large, open tracts of grasslands, sparse shrub or desert habitats with elevated structures for nesting.
NC	*Ammodramus savannarum* Grasshopper sparrow	--/--	Low potential to occur in the Park. Occurs in grasslands, requiring thick cover with a variety of grasses and forbs with scattered shrubs for singing perches.
NE	*Lanius ludovicianus* Loggerhead shrike	FSC/CSC	Observed in the Park (Figure 20; Helix 2004). Forages over open ground within areas of short vegetation, pastures with fence rows, old orchards, mowed roadsides, cemeteries, golf courses, riparian areas, open woodland, agricultural fields, desert washes, desert scrub, grassland, broken chaparral and beach with scattered shrubs.
NE	*Falco mexicanus* Prairie falcon	--/CSC	Documented in 1982 Master Plan (Tecolote Canyon CAC 1982). Habitat includes annual and perennial grasslands, savannahs, rangeland, some agricultural fields and scrub areas where there are cliffs or bluffs for nest sites.
NE	*Accipiter striatus* Sharp-shinned hawk	--/CSC	Observed in Park (Dudek 2003). Breeds in young coniferous forests; hunts in uses openings at the edges of woodlands. Sharp- shinned hawks are most common in southern California in winter.
CS	*Sialia mexicana* Western bluebird	--/--	High potential to occur in the Park. Common in coniferous and oak woodland in the inland valleys, foothills and mountains of San Diego County, but has been increasing occurrence near the coast.

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Subarea Plan Status	*Scientific Name* Common Name	Status*	TCNP NRMP Area Notes
NE	*Elanus leucurus* White-tailed kite	--/Fully protected	Documented in 1982 Master Plan (Tecolote Canyon CAC 1982) Inhabits low elevation, open grasslands, savannah-like habitats, agricultural areas, wetlands and oak woodlands. Riparian areas adjacent to open areas are also used.
NE	*Icteria virens* Yellow-breasted chat	--/CSC	Observed in the Park (Figure 28; HELIX 2004; City 2013). Occurs in riparian scrub and woodlands.
NE	*Dendroica petechia brewsteri* Yellow warbler	--/CSC	Observed in the Park (Figure 28; HELIX 2004, City 2013). Occurs in riparian scrub and woodlands.
NC	*Eumops perotis californicus* California mastiff bat	--/CSC	Low potential to occur in the Park. Occurs in open semi-arid to arid habitats such as deciduous woodlands, coastal scrub, grasslands, chaparral and urban environments. It prefers extensive open areas with abundant roost locations such as crevices in rock outcrops and buildings.
NE	*Chaetodipus californicus femoralis* Dulzura California pocket mouse	FSC/CSC	Moderate potential to occur in the Park. Occupies coastal scrub, chaparral and grassland and is probably attracted to the grass-chaparral edge.
NE	*Chaetodipus falax falax* Northwestern San Diego pocket mouse	--/CSC	High potential to occur in the Park. Occupies coastal sage scrub, sage scrub/grassland and chaparral communities. It generally exhibits a strong affinity for moderately gravelly and rocky.
NC	*Perognathus longimembris pacificus* Pacific pocket mouse	FE/CSC	Low potential to occur in the Park. Occurs on fine-grained, sandy or gravelly substrates in coastal strand, coastal dunes, river alluvium and coastal sage scrub growing on marine terraces within approximately 2.4 miles inland of the Pacific Ocean.
NE	*Atrozous pallidus* Pallid bat	--/CSC	Moderate potential to occur in the Park. Occupies grasslands, shrublands, woodlands and forests; prefers rocky outcrops, cliffs and crevices with access to open habitats for foraging.

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NE	*Lepus californicus bennettii* San Diego black-tailed jackrabbit	FSC/CSC	Observed in the Park (HELIX 2004). Occurs in open habitats including coastal sage scrub, chaparral, grasslands, croplands, and open, disturbed areas if there is at least some shrub cover present.
NE	*Neotoma lepida intermedia* San Diego desert woodrat	--/CSC	High potential to occur in the Park. No way to determine the species based on the nest structure (dusky-footed woodrat *Neotoma fuscipes)* occurs in the Park) . Desert woodrats are found in a variety of shrub and desert habitats primarily associated with rock outcroppings, boulders, cacti or areas of dense

*A listing and explanation of status codes are provided at the end of Appendix A.

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EXPLANATION OF STATUS CODES FOR PLANT AND ANIMAL SPECIES

U.S. FISH AND WILDLIFE SERVICE FE

	Federally listed endangered
FT	Federally listed threatened
FSC	Federal species of concern

CALIFORNIA DEPARTMENT OF FISH AND GAME SE

	State listed endangered
ST	State listed threatened
CSC	California species of special concern
Fully protected	Fully protected species may not be taken or possessed without a permit from the Fish and Game Commission and/or the California Department of Fish and Game.

CALIFORNIA NATIVE PLANT SOCIETY (CNPS) CODES

LISTS

1A = Presumed extinct.

1B = Rare, threatened, or endangered in California and elsewhere. Eligible for state listing.

2 = Rare, threatened, or endangered in California but more common elsewhere. Eligible for state listing.

3 = Distribution, endangerment, ecology, and/or taxonomic information needed. Some eligible for state listing.

4 = A watch list for species of limited distribution. Needs monitoring for changes in population status. Few (if any) eligible for state listing.

R-E-D CODE

R (Rarity)

1 = Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time.

2 = Distributed in a limited number of occurrences, Occasionally more if each occurrence is small.

3 = Distributed in one to several highly restricted occurrences, or present in such small numbers that it is seldom reported.

E (Endangerment)

1 = Not endangered

2 = Endangered in a portion of its range

3 = Endangered throughout its range

D (Distribution)

1 = More or less widespread outside California

2 = Rare outside California

3 = Endemic to California

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Natural Diversity Database Rank

Global

Species or Natural Community Level

The global rank (G-rank) is a reflection of the overall condition of an element throughout its global range.

G1 = Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals OR less than 2,000 acres.

G2 = 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres.

G3 = 21-80 EOs OR 3,000-10,000 individuals OR 10,000-50,000 acres.

G4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern;

i.e., there is some threat, or somewhat narrow habitat.

G5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world

Subspecies level

Subspecies receive a T-rank attached to the G-rank. With the subspecies, the G-rank reflects the condition of the entire species, whereas the T-rank reflects the global situation of just the subspecies or variety.

State Ranking

The state rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank.

SI = Less than 6 viable EOs OR less than 1,000 individuals OR less than 2,000 acres

S1.1 = very threatened
S1.2 = threatened
S1.3 = no current threats known

S2 = 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres

S2.1 = very threatened
S2.2 = threatened
S2.3 = no current threats known

S3 = 21-80 EOs or 3,000-10,000 individuals OR 10,000-50,000 acres

S3.1 = very threatened
S3.2 = threatened

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S3.3 = no current threats known

S4 = Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern; i.e. there is some threat, or somewhat narrow habitat.

SS = Demonstrably secure to ineradicable in California. NO THREAT RANK.

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APPENDIX B

PLANT AND ANIMAL SPECIES OBSERVED WIHITN TECOLOTE CANYON NATURAL PARK

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PLANT SPECIES OBSERVED IN THE TCNP NRMP AREA

SCIENTIFIC NAME	COMMON NAME*
DICOTS	
Aizoaceae- Carpet-weed Family	
Carpobrotus edulis	hottentot-fig*
Delosperma vinaceum	iceplant*
Malephora crocea	croceum iceplant*
Mesembryanthemum crystallinum	crystalline iceplant*
Mesembryanthemum nodiflorum	slender-leaved iceplant*
Mesembryanthemum sp.	iceplant*
Anacardiaceae - Sumac Family	
Malosma laurina	laurel sumac
Rhus integrifolia	lemonadeberry
Rhus ovata	sugar bush
Schinus molle	Peruvian pepper tree*
Schinus terebinthifolius	Brazilian pepper tree*
Toxicodendron diversilobum	poison oak
Apiaceae- Carrot Family	
Apiastrum angustifolium	mock parsley
Apium graveolens	Celery*
Conium maculatum	common poison hemlock*
Foeniculum vulgare	fennel*
Apocynaceae- Dogbane Family	
Nerium oleander	oleander*
Vinca major	greater periwinkle*
Araliaceae- Ginseng Family	
Hedera helix	English ivy*
Asclepiadaceae- Milkweed Family	
Asclepias californica	California milkweed
Asteraceae - Sunflower Family	
Ambrosia acanthicarpa	annual bur-sage
Ambrosia confertiflora	weak-leaf burbush
Ambrosia psilostachya	western ragweed
Artemisia californica	California sagebrush

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Artemisia douglasiana	mugwort
Artemisia palmeri	San Diego sagewortt
Baccharis pilularis	coyote brush
Baccharis salicifolia	mule fat
Baccharis sarothroides	broom baccharis
Bahiopsis laciniata	San Diego sunflower†
Carduus pycnocephalus	Italian thistle*
Centaurea melitensis	Tocalote*
Chaenactis glabriuscula var. *glabriuscula*	yellow pincushion
Cirsium vulgare	bull thistle*
Corethrogyne filaginifolia	California aster
Cotula australis	Australian brass buttons*
Cotula coronopifolia	Africa brass buttons*
Deinandra [Hemizonia] fasciculata	fascicled tarplant
Encelia californica	California encelia
Erigeron bonariensis	flax-leaf fleabane*
Erigeron canadensis	horseweed*
Eriophyllum confertiflorum	golden-yarrow
Glebionis coronaria	garland*
Gutierrezia californica	California matchweed
Hazardia squarrosa var. *grindelioides*	saw-toothed goldenbush
Hedypnois cretica	Crete hedynopsis*
Helminthotheca echioides	bristly ox-tongue*
Heterotheca grandiflora	telegraph weed
Hypochaeris glabra	smooth cat's-ear*
Isocoma menziesii var. *menziesii [Haplopappus venetus]*	San Diego goldenbush
Isocoma menziesii var. *vernonioides*	coastal goldenbush
Lactuca serriola	wild lettuce*
Layia platyglossa	tidy-tips
Lessingia glandulifera	valley lessingia
Logfia sp.	Filago
Matricaria discoidea	pineapple weed*
Osmadenia tenella	osmandenia
Palafoxia arida var. *arida*	Spanish-needle
Pluchea odorata	Salt marsh fleabane
Pseudognaphalium biolettii	bicolor cudweed
Pseudognaphalium californicum	California everlasting
Pseudognaphalium canescens ssp. microcephalum	White everlasting
Pseudognaphalium luteoalbum	everlasting*
Pseudognaphalium sp.	cudweed
Psilocarphus brevissimus var. *brevissimus*	dwarf wooly-heads

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Psilocarphus tenellus	slender wooly-heads
Senecio vulgaris	common groundsel*
Silybum marianum	milk thistle*
Solidago velutina ssp. californica	California goldenrod
Sonchus arvensis	perennial sow thistle*
Sonchus asper	prickly sow thistle*
Sonchus oleraceus	common sow thistle*
Stephanomeria sp.	stephanomeria
Stephanomeria virgata	virgate wreath plant
Taraxacum officinale	common dandelion*
Xanthium strumarium	cocklebur

Boraginaceae - Borage Family

Amsinckia menziesii	rancher's fiddleneck
Cryptantha intermedia	nievitas
Cryptantha muricata	cryptantha
Echium candicans	Pride of Madeira*
Heliotropium curassavicum	salt heliotrope
Plagiobothrys collinus var. *californicus*	popcorn flower
	San Diego popcorn flower
Plagiobothrys collinus var. *gracilis*	G

Brassicaceae- Mustard Family

Alyssum sp.	alyssum*
Brassica nigra	black mustard*
Brassica rapa	field mustard*
Brassica sp.	mustard*
Hirschfeldia incana	perennial mustard*
Lepidium lasiocarpum	sand peppergrass
Lepidium nitidum	shining peppergrass
Lobularia maritima	sweet alyssum*
Raphanus sativus	wild radish*
Nasturtium officinale	water cress
Sisymbrium altissimum	tumble mustard*
Sisymbrium irio	London rocket*

Cactaceae- Cactus Family

Cylindropuntia prolifera	coastal cholla
Cylindropuntia sp.	cholla
Ferocactus viridescens	San Diego barrel cactus†
Opuntia ficus-indica	Indian-fig*
Opuntia littoralis	coastal prickly pear
Opuntia occidentalis	prickly pear

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Callitrichaceae -Water Starwort Family

Callitriche marginata	long-stalk water-starwort

Capparaceae - Caper Family

Peritoma arborea	bladderpod

Caprifoliaceae- Honeysuckle Family

Lonicera subspicata	southern honeysuckle
Lonicera subspicata var. *denudata*	San Diego honeysuckle
Sambucus mexicana	blue elderberry

Caryophyllaceae - Pink Family

Cardionema ramosissimum	tread-lightly
Silene gallica	common catchfky*

Chenopodiaceae - Goosefoot Family

Atriplex semibaccata	Australian saltbush*
Atriplex sp.	saltbush
Chenopodium album	pigweed*
Chenopodium californicum	California pigweed*
Chenopodium murale	ettle-leaf goosefoot*
Salsola tragus	Russian thistle*

Cistaceae- Rock-rose Family

Helianthemum scoparium	peak rush rose

Convolvulaceae - Morning-glory family

Calystegia macrostegia	morning-glory
Convolvulus arvensis	bindweed*

Crassulaceae - Stonecrop Family

Aeonium arboreum	aeonium*
Crassula aquatica	water pygmy weed
Crassula ovata	jade plant*
Dudleya edulis	ladies-fingers
Dudleya pulverulenta	chalk everlasting

Cucurbitaceae - Gourd Family

Cucurbita palmata	coyote melon
Marah macrocarpa	wild cucumber
Crassula connata	pygmy weed

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Cuscutaceae- Dodder Family

Cuscuta sp.	dodder

Dipsacaceae- Teasel Family

Dipsacus fullonum	wild teasel*
Dipsacus sativus	Fuller's teasel*
Dipsacus sp.	teasel*

Ericaceae- Heath Family

Xylococcus bicolor	mission manzanita

Euphorbiaceae - Spurge Family

Chamaesyce albomarginata	rattlesnake spurge
Chamaesyce maculata	spotted spurge
Chamaesyce polycarpa [Euphorbia polycarpa]	desert sand mat*
Croton californicus	croton
Croton setigerus	dove weed
Euphorbia crenulata	Chinese caps
Euphorbia peplus	petty spurge*
Ricinus communis	castor bean*

Fabaceae- Legume Family

Acacia baileyana	Cootamunda wattle*
Acacia longifolia	golden wattle*
Acacia sp.	acacia*
Acmispon glaber var. glaber	coastal deerweed
Acmispon strigosus	Bishop's lotus
Astragalus sp.	raffleweed, locoweed
Astragalus trichopodus	ocean locoweed
Lathyrus latifolius	perennial sweet pea*
Lathyrus sp.	pea*
Lupinus bicolor	miniature lupine
Lupinus sp.	lupine
Lupinus succulentus	arroyo lupine
Medicago polymorpha	bur-clover*
Medicago sativa	alfalfa*
Melilotus albus	white sweetclover*
Melilotus indicus	Indian sweetclover*
Melilotus sp.	sweetclover*
Robinia idahoensis	Idaho locust*
Trifolium fragiferum	strawberry clover*
Trifolium willdenovii	tomcat clover

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Fagaceae- Beech Family

Quercus agrifolia var. *agrifolia*	coast live oak
Quercus berberidifolia	scrub oak
Quercus dumosa	Nuttall's scrub oak †
Quercus sp.	oak

Gentianaceae- Gentian Family

Zeltnera venusta	canchalagua

Geraniaceae- Geranium Family

Erodium botrys	long-beak filaree*
Erodium cicutarium	red-stem filaree*
Erodium moschatum	green-stem filaree*
Geranium molle	dove-foot geranium*
Geranium sp.	geranium*

Grossulariaceae- Currant Family

Ribes sp.	gooseberry
Ribes speciosum	fuschia-flowered gooseberry

Hamamelidaceae- Witch-hazel Family

Liquidambar sp.	sweetgum*

Hydrophyllaceae - Waterleaf Family

Eriodictyon crassifolium	felt-leaved yerba santa
Eucrypta chrysanthemifolia var. *chrysanthemifolia*	common eucrypta
Phacelia tanacetifolia	wild canterbury-bells

Hypericaceae- St. John's Wort Family

Hypericum canariense	Canary Island hypericum*

Lamiaceae- Mint Family

Marrubium vulgare	horehound*
Pogogyne abramsii	San Diego mesa mint†
Salvia apiana	white sage
Salvia mellifera	black sage

Malvaceae - Mallow Family

Malacothamnus densiflorus	bush mallow
Malacothamnus fasciculatus	chaparral mallow
Malva nicaeensis	bull mallow*
Malva parviflora	cheeseweed*

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Sidalcea malviflora ssp. sparsifolia	checker-bloom
Sphaeralcea ambigua	apricot mallow
Montiaceae – Miner's Lettuce Family	
Cistanthe maritima	seaside cistanthe†
Moraceae- Mulberry Family	
Ficus sp.	ficus*
Myoporaceae- Myoporum Family	
Myoporum laetum	myoporum*
Myrtaceae - Myrtle Family	
Eucalyptus globulus	blue gum*
Eucalyptus sp.	eucalyptus*
Eugenia aggregata	cherry of the Rio Grande*
Nyctaginaceae- Four O'Clock Family	
Bougainvillea spectabilis	bougainvillea*
Mirabilis laevis var. crassifolia	wishbone bush
Oleaceae - Olive Family	
Fraxinus uhdei	evergreen ash*
Fraxinus sp.	ash*
Olea europaea	olive*
Onagraceae- Evening Primrose Family	
Camissoniopsis bistorta	California sun cup
Eulobus californicus	false mustard
Camissonia sp.	sun cup
Epilobium canum ssp. *Canum*	California fuchsia
Oenothera sinuosa	wave-leaved gaura*
Oenothera elata	great marsh evening-primrose
Oxalidaceae- Oxalis Family	
Oxalis pes-caprae	Bermuda buttercup*
Oxalis sp.	oxalis*
Papaveraceae- Poppy Family	
Eschscholzia californica	California poppy
Plantaginaceae- Plantain Family	

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Plantago elongata	plantain
Plantago erecta	dwarf plantain
Plantago lanceolata	English plantain*
Plantago major	common plantain*
Platanaceae - Sycamore Family	
Platanus racemosa	western sycamore
Plumbaginaceae- Leadwort Family	
Limonium perezii	statice*
Polemoniaceae - Phlox Family	
Linanthus dianthiflorus	ground pink
Navarretia hamata	skunkweed
Polygonaceae- Buckwheat Family	
Chorizanthe fimbriata	fringed spineflower
Chorizanthe staticoides	Turkish rugging
Eriogonum fasciculatum ssp. fasciculatum	California buckwheat
Eriogonum fasciculatum var. foliolosum	interior flat-top buckwheat
Polygonum arenastrum	common knotweed*
Persicaria lapathifolia	willow weed
Rumex crispus	curly dock*
Portulacaceae- Purslane Family	
Calyptridium monandrum	sand-cress
Claytonia perfoliata var. perfoliata	miner's lettuce
Portulaca oleracea	common purslane*
Primulaceae- Primrose Family	
Anagallis arvensis	scarlet pimpernel*
Dodecathecon clevelandii	shooting star
Ranunculaceae - Buttercup Family	
Clematis pauciflora	ropevine
Rhamnaceae - Buckthorn Family	
	wart-stemmed
Ceanothus verrucosus	ceanothus†
Rhamnus crocea	spiny redberry
Rosaceae- Rose Family	
Adenostoma fasciculatum	chamise

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Heteromeles arbutifolia	toyon
Prunus fremontii	desert apricot
Prunus persica	peach*
Rosa californica	California rose
Rubiaceae- Madder Family	
Galium sp.	Bedstraw
Salicaceae - Willow Family	
Populus fremontii ssp. *fremontii*	Fremont's cottonwood
Salix gooddingii	Godding's black willow
Salix laevigata	red willow
Salix lasiolepis	arroyo willow
Salix lasiandra var. lasiandra	shining willow
Salix sp.	willow
Sapindaceae- Soapberry Family	
Cupaniopsis anacardioides	carrotwood*
Saururaceae- Lizard's Tail Family	
Anemopsis californica	yerba mansa
Scrophulariaceae - Figwort Family	
Antirrhinum sp.	snapdragon
Castilleja densiflora	owl's clover
Nuttallanthus canadensis	large blue toadflax
Mimulus aurantiacus	monkey-flower
Simaroubaceae - Quassia or Simarouba Family	
Ailanthus altissima	tree of heaven*
Simmondsiaceae-Jojoba Family	
Simmondsia chinensis	jojoba
Solanaceae- Nightshade Family	
Datura wrightii	jimson weed
Nicotiana glauca	tree tobacco*
Solanum douglasii	white nightshade
Solanum xanti	purple nightshade
Tamaricaceae- Tamarisk Family	
Tamarix ramosissima	Tamarisk

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Urticaceae- Nettle Family	
Urtica dioica	stinging nettle
Urtica urens	dwarf nettle*
Verbenaceae - Vervain Family	
Verbena menthifolia	verbena
Verbena sp.	verbena
Verbena lasiostachys var. *lasiostachys*	western vervain
PTERIDOPHYTES Polypodiaceae - Polypody Family	
Polypodium californicum	California polypody
Selaginellaceae- Spike-moss family	
Selaginella cinerascens	ashy spike-moss
GYMNOSPERMS Pinaceae - Pine Family	
Pinus attenuata	knobcone pine*
Pinus muricata	Bishop pine*
Pinus radiata	Monterrey pine*
MONOCOTS	
Agavaceae - Agave family	
Agave americana	century plant*
Agave shawii	Shaw's agave†
Agave sp.	agave
Arecaceae - Palm family	
Phoenix canariensis	Canary Island date palm*
Washingtonia filifera	California fan palm
Washingtonia robusta	Mexican fan palm*
Asparagaceae - Asparagus family	
	florist's smilax/smilax
Asparagus asparagoides	asparagus*
Asphodelaceae - Asphodel family	
Asphodelus fistulosus	hollow-stem asphodel*
Cyperaceae - Sedge Family	
Cyperus eragrostis	tall flatsedge
Cyperus esculentus	yellow nitsedge
Cyperus involucratus	umbrella plant*

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Cyperus sp.	umbrella sedge
Eleocharis macrostachya	pale spike-rush
Eleocharis montevidensis	Dombey's spike-sedge
Eleocharis sp.	spike-rush
Schoenoplectus acutus var. occidentalis	tule
Scirpus sp.	bulrush
Iridaceae- Iris Family	
Chasmanthe floribunda	African corn flag*
Sisyrinchium bellum	blue-eyed grass
Juncaceae- Rush Family	
Juncus acutus ssp. *leopoldii*	southwestern spiny rush †
Juncus bufonius	toad rush
Juncus sp.	rush
Liliaceae- Lily Family	
Bloomeria clevandii	San Diego goldenstar†
Brodiaea orcuttii	orcutt's brodiaea†
Calochortus sp.	mariposa lily
Chlorogalum pomeridianum	soap plant
Dichelostemma capitatum	blue dicks
Hesperoyucca whipplei	chaparral yucca
Lilium sp.	lily*
Yucca baccata	Spanish bayonet*
Yucca schidigera	Mohave yucca
Yucca sp.	yucca
Poaceae- Grass Family	
Arundo donax	giant reed*
Avena barbata	slender wild oat*
Avena fatua	wild oat*
Avena sp.	wild oat*
Bothriochloa barbinodis	cane bluestem
Brachypodium distachyon	purple falsebrome*
Bromus diandrus	common ripgut grass*
Bromus hordeaceus	soft chess*
Bromus madritensis ssp. *rubens*	foxtail chess*
Cortaderia jubata	pampas grass*
Cynodon dactylon	Bermuda grass*
Digitaria sanguinalis	large crabgrass*
Distichlis spicata	saltgrass
Ehrharta calycina	veldt grass*

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Elymus condensatus	giant wild rye
Elymus triticoides	beardless wild ryegrass
Festuca myuros	fescue*
Festuca perennis	Italian ryegrass*
Festuca sp.	fescue
Gastridium phleoides	nit grass*
Holcus lanatus	common velvet grass*
Hordeum murinum	glaucous barley*
Lamarckia aurea	goldentop*
Melica imperfecta	melic
Muhlenbergia rigens	deergrass
Paspalum dilatatum	dallis grass*
Pennisetum clandestinum	kikuyu grass*
Pennisetum setaceum	fountain grass*
Poa annua	annual bluegrass*
Poa pratensis ssp. *pratensis*	Kentucky bluegrass*
Polypogon monspeliensis	rabbitfoot grass*
Schismus barbatus	Mediterranean grass*
Sporobolus sp.	dropseed*
Stenotaphrum secundatum	St. Augustine grass*
Stipa miliacea var. miliacea	smilo grass*
Stipa pulchra	purple needlegrass
Stipa sp.	needlegrass
Triticum aestivum	wheat*
Typha latifolia	broad-leaved cattail
Typha sp.	cattail

*Denotes non-native species
†Denotes sensitive species

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ANIMAL SPECIES OBSERVED IN THE TCNP NRMP AREA

SCIENTIFIC NAME	COMMON NAME
INVERTEBRATES	
Crustaceans	
Order Decapoda	Crayfish
Order Ostracoda	Ostracod
Insects	
Coleoptera - Beetles	
Coccinella californica	California ladybird beetle
Mungantia histrionica	harlequin cabbage bug
Lepidoptera- Butterflies	
Apodemia mormo virgulti	Behr's metalmark
Colias sp.	sulphur
Coenonympha californica californica	California ringlet
Coenonympha tuilla	common ringlet
Erynnis funeralis	funereal duskywing
Glaucopsyche lygdamus australis	southern blue
Leptotes marina	marine blue
Nymphalis antiopa	mourning cloak
Papilo rutulus	western tiger swallowtail
Pieris rapae	cabbage butterfly
Pontia protodice	checkered white
Vannessa annabella	west coast lady
Vannessa cardui	painted lady
Vannessa sp.	lady
VERTEBRATES	
Amphibians	
Anaxyrus boreas	Western toad
Pseudacris regilla	Pacific treefrog
Xenoput laevis	African clawed frog*
Reptiles	
Anguidae - Alligator Lizards	
Elgaria multicarinata	southern alligator lizard

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Colubridae - Colubrid Snakes

Lampropeltis getulus	common kingsnake
Pituophis melanoleucus	gopher snake

Iguanidae - Iguanids

Sceloporus occidentalis	western fence lizard

Phrynosomatidae- Lizards

Phrynosoma coronatum blainvillei	San Diego horned lizard†
Uta stansburiana	side-blotched lizard

Scincidae - Skinks

Plestiodon skiltonianus	western skink

Squamata - Snakes

Anniella pulchra pulchra	silvery legless lizard

Teiidae- Whiptails and Relatives

Aspidoscelis hyperythra beldingi	orange-throated whiptail †

Viperidae- Vipers

Crotalus viridis	western rattlesnake
Crotalus exsul	red diamond rattlesnake†

Birds

Accipitridae- Hawks, Old World Vultures, Kites, Harriers, and Eagles

Accipiter cooperii	Cooper's hawk †
Accipiter striatus	sharp-shinned hawk †
Aquila chrysaetos	golden eagle†
Buteo lineatus	red-shouldered hawk
Buteo jamaicensis	red-tailed hawk
Circus cyaneus	northern harrier †
Elanus leucurus	white-tailed kite

Aegithalidae - Bushtit

Baeolophus inornatus	oak titmouse
Psaltriparus minimus	bushtit

Alcedinidae - Kingfishers

Megaceryle alcyon	belted kingfisher

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Anatidae - Ducks, Geese, and Swans

Anas platyrhynchos	mallard

Apodidae - Swifts

Aeronautes saxatalis	white-throated swift
Chaetura vauxi	Vaux's swift

Ardeidae - Herons, Egrets, and Bitterns

Ardea herodias	great blue heron
Ardea alba	great egret
Butorides virescens	green heron
Egretta thula	snowy egret
Nycticorax nycticorax	black-crowned night heron

Bombycillidae - Waxwings

Bombycilla cedrorum	cedar waxwing

Cardinalidae - Cardinals

Passerina amoena	lazuli bunting
Pheucticus melanocephalus	black-headed grosbeak

Caprimulgidae - Goatsuckers

Chordeiles acutipennis	lesser nighthawk

Charadriidae- Plovers and Relatives

Charadrius vociferous	killdeer

Columbidae - Pigeons and Doves

Columba livia	rock dove*
Steptopelia risoria	ringed turtle dove*
Zenaida macroura	mourning dove

Corvidae -Jays, Crows, and Magpies

Aphelocoma californica	western scrub jay
Corvus brachyrhynchos	American crow
Corvus corax	common raven

Cuculidae - Cuckoos and their allies

Geococcyx californianus	roadrunner

Emberizidae- Sparrows, Buntings, Blackbirds, Orioles and Relatives

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Aimophila ruftceps canescens	southern California rufous-crowned sparrow †
Euphagus cyanocephalus	Brewer's blackbird
Geothlypis trichas	Common yellowthroat
Icterus bullockii	northern oriole
Icterus cucullatus	hooded oriole
Junco hyemalis oreganus	dark-eyed junco
Melospiza lincolnii	Lincoln's sparrow
Melospiza melodia	song sparrow
Molothrus ater	brown-headed cowbird
Passerella iliaca	fox sparrow
Pipilo crissalis	California towhee
Pipilo maculatus	spotted towhee
Sturnella neglecta	western meadowlark
Zonotrichia atricapilla	golden-crowned sparrow
Zonotrichia leucophyrys	white-crowned sparrow

Falconidae- Falcons

Falco mexicanus	prairie falcon†
Falco peregrinus	American peregrine falcon†
Falco sparverius	American kestrel

Fringillidae- Finches and Relatives

Carduelis psaltria	lesser goldfinch
Haemorhous mexicanus	house finch

Hirundinidae - Swallows

Hirundo rustica	barn swallow
Petrochelidon pyrrhonota	cliff swallow
Stelgidopteryx serripennis	northern rough-winged swallow

Laniidae - Shrikes

Lanius ludovicianus	loggerhead shrike†

Laridae - Gulls and Terns

Larus delawarensis	ring-billed gull
Larus occidentalis	western gull
Larus sp.	gull

Mimidae- Mockingbirds and Thrashers

Mimus polyglottos	northern mockingbird
Toxostoma redivivum	California thrasher

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Motacillidae - Wagtails and Pipits	
Anthus rubescens	American pipit
Odontophoridae - Quails and Bobwhite	
Callipepla californica	California quail
Parulidae - Wood-warblers	
Geothlypis tolmiei	MacGillivray's warbler
Icteria virens	yellow-breasted chat †
Setophaga coronata	yellow-rumped warbler
Setophaga nigrescens	black-throated gray warbler
Setophaga occidentalis	hermit warbler
Setophaga petechia brewsteri	yellow warbler†
Setophaga townsedii	Townsend's warbler
Parulidae - Wood-warblers	
Cardellina pusilla	Wilson's warbler
Oreothlypis celata	orange-crowned warbler
Oreothlypis ruficapilla	Nashville warbler
Passeridae- Old World Sparrows	
Passer domesticus	house sparrow*
Picidae - Woodpeckers and Wrynecks	
Colaptes auratus	northern flicker
Melanerpes formicivorus	acorn woodpecker
Picoides nuttallii	Nuttall's woodpecker
Psittacidae - Parrots	
Unknown	parrot
Ptilogonatidae - Silky-flycatchers	
Phainopepla nitens	Phainopepla
Regulidae - Kinglets	
Regulus calendula	ruby-crowned kinglet
Strigidae - Owls	
Bubo virginianus	great horned owl
Tyto alba	barn owl
Sturnidae - Starlings	
Sturnus vulgaris	European starling*

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Sylviidae - Gnatcatchers

Polioptila californica californica	coastal California gnatcatcher†

Thraupidae- Tanagers

Piranga ludoviciana	western tanager

Timaliidae - Wrentits

Chamaea fasciata	wrentit

Trochilidae - Hummingbirds

Archilochus alexandri	black-chinned hummingbird
Calypte anna	Anna's hummingbird
Calypte costae	Costa's hummingbird
Selasphorus rufus	rufous hummingbird

Troglodytidae - Wrens

Thryomanes bewickii	Bewick's wren
Troglodytes aedon	house wren

Turdidae - Thrushes

Catharus guttatus	hermit thrush
Turdus migratorius	robin

Tyrannidae - Tyrant Flycatchers

Contopus sordidulus	western wood-peewee
Empidonax difficilis	Pacific slope flycatcher
Empidonax traillii	willow flycatcher
Myiarchus cinerascens	ash-throated flycatcher
Sayornis nigricans	black phoebe
Sayornis saya	Say's phoebe
Tyrannus verticalis	western kingbird
Tyrannus vociferans	Cassin's kingbird

Vireonidae - Vireos

Vireo gilvus	warbling vireo
Vireo bellii pusillus	least Bell's vireo†

Mammals

Canidae- Foxes, Wolves, and Relatives

Canis latrans	coyote
Urocyon cinereoargenteus	common gray fox

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Didelphidae- New World Opossums

Didelphis virginiana	Virginia opossum

Felidae- Cats and Relatives

Lynx rufus	bobcat

Geomyidae - Pocket Gophers

Thomomys bottae	Botta's pocket gopher

Heteromyidae - Kangaroo Rats, Pocket Mice, and Kangaroo Mice

Microtus californicus	California vole

Leporidae - Rabbits and Hares

Lepus californicus bennettii	San Diego black-tailed jackrabbit†
Sylvilagus audubonii	desert cottontail
Sylvilagus bachmani	brush rabbit

Muridae- Mice, Rats, and Voles

Chaetodipus fallax	San Diego pocket mouse
Neotoma macrotus	large-eared woodrat
Peromyscus boylii	brush mouse
Peromyscus eremicus	cactus mouse
Peromyscus maniculatus	deer mouse
Peromyscus californicus	California mouse
Reithrodontomys megalotus	western harvest mouse

Mustelidae - Weasels and Relatives

Mephitis mephitis	skunk
Mustela frenata	long-tailed weasel

Procyonidae - Raccoons and Ringtails

Procyon lotor	common raccoon

Sciuridae- Squirrels, Chipmunks, and Marmots

Spermophilus beecheyi	California ground squirrel

*Denotes non-native species
†Denotes sensitive species

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APPENDIX C

CULTURAL RESOURCES AND HISTORY OF TECOLOTE CANYON NATURAL PARK

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Cultural Resources and History of Tecolote Canyon

Regional Context

The earliest accepted archaeological manifestation of Native Americans in the San Diego County area is the San Dieguito complex, dating to approximately 10,000 years ago (Warren 1967). According to the traditional view of San Diego prehistory, the San Dieguito complex was followed by the La Jolla complex, at least 7,000 years ago, possibly as long as 9,000 years ago (Rogers 1966). This chronology has, however, been disputed by archaeologists in the region in recent years, with some suggesting that the differences in artifact assemblages between sites reflect functional differences rather than temporal or cultural variability (Bull1987; Gallegos 1987).

In the southern portion of San Diego County, the late Prehistoric period is represented by the Cuyamaca complex. This complex represents the Yuman forebears of the Kumeyaay (Diegueño, named for the San Diego Mission). They were primarily hunters and gatherers, eating rabbit, acorn and grass seed. To encourage larger seeds and attract animals for hunting, they burned the grasslands and hillsides. Regular, seasonal travels took them from the coast to the mountains and even to the desert to gather fresh food (Christenson 1994). In this complex, fewer projectile points and a greater number of scrapers and scraper planes are found at coastal sites (Robbins-Wade 1986, 1988). These people emphasized the use of ceramics, with a wide range of forms and several specialized items. They also established defined cemeteries away from living areas, used grave markers, cremated their dead and placed them in urns, and used specially made mortuary offerings (True 1970). It is the descendants of these people who the first Europeans encountered when they founded the Mission San Diego de Alcala in 1769.

The period from 1769 to 1821 was characterized by exploration; establishment of the San Diego Presidio and the San Diego and San Luis Rey missions; and the introduction of horses, cattle and agricultural goods. Cattle ranching prevailed over agricultural activities and the development of the hide and tallow trade increased during the 1820s and 1830s. Although several land grants were made prior to secularization of the San Diego Mission de Alcala in 1834, vast tracts of land were dispersed through land grants after secularization. When Mexico ceded California to the United States under the Treaty of Guadalupe Hidalgo, ending the Mexican-

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American War in 1848, much of the land that once constituted the Mexican rancho holdings became available for settlement by emigrants to California. The influx of people to California and the San Diego region was the result of various factors, including the discovery of gold in the state; conclusion of the Civil War; availability of free land through passage of the Homestead Act; and importance of the county as an agricultural area supported by the construction of connecting railways. The growth and decline of towns occurred in response to an increased population and the economic "boom and bust" in the late 1800s.

Tecolote Canyon

The Park is within lands that were once inhabited by the Kumeyaay Indians, also known as Dieguefio or Ipai/Tipai (Luomala 1978). Recorded sites associated with these people include two ethnohistoric village sites *(Cosoy* or *Kosoi,* and *Nipaquay)* associated with Mission San Diego de Alcala in Mission Valley (Carrico 1993) and two "old rancheria" sites in the Old Town area. These rancherias may represent portions of the ethnohistoric village of *Cosoy.* In addition, the ethnohistoric village *La Rinconada de Jamo* was located in the area that is now I-5 and Garnet Avenue (Carrico 1977; Winterrowd and Cardenas 1987). The Park is in proximity to all of these habitation sites. Around 1900, many Kumeyaay continued to live around the edge of Mission Bay and throughout MissionValley (Shipek 1970).

Records research indicates that Tecolote Canyon (particularly its southern portion) and its immediate vicinity supported small family farms/homesteads, ranches and market gardens for decades. It is believed that the first European settler in Tecolote Canyon was Judge Hyde, who built a house about 1.5 miles from the mouth of the Canyon and began farming in the Canyon around 1872. Roberta Fish recalled that her father built a house and five windmills on the 40 acres they owned in the Canyon in the 1880s (Davidson 1936). Based on a survey in 1901, structures occurred in three locations within the Park and one location just outside of it. These structures, as well as a ranch complex just outside of the Park, appear in a 1928 aerial photograph. Farming and ranching within the Canyon continued through World War II, and cattle continued to graze in the Canyon as late as 1953.

A large historic trash dump is located within the Park. This site, locally known as the Medina Site, was named after Fernando Medina, a local high school student and Tecolote Canyon volunteer who discovered and studied the site. The dump includes restaurant debris, medicine bottles and at least one artifact from the Panama-

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California Exposition held in Balboa Park in 1915. Debris apparently was discarded in the drainage alongside a road until the 1960s (La Rue 1997).

A small farming community was located at the mouth of the Canyon by 1930 and included a dairy farm owned by Mr. Ambort, a chicken farm owned by the Pena family and a tomato farm owned by Peter Sampo. Lima beans and pigs also were raised in the Canyon (Kosits undated) and the Romo family ran cattle and did some truck farming (Battle, pers. comm.). Based on mapping done in 1939, three structures occurred in the Park and structures at one of the 1901 locations were shown as ruins. Manuel Pena ran a chicken ranch in the Canyon that supplied the military during World War II (Williams 2004). Dr. Isham and his family lived on one of the last farms in the Canyon (Kosits undated). Their farmhouse is still standing at the end of Gardena Avenue, just outside of the Park (Battle, pers. comm.). Only one structure occurred in the Park in 1950, in the area of a house that was present in 1901, 1928 and 1939. As late as 1953, cattle were still grazing in the Canyon, and startled residents sometimes found mounted cowboys herding strays out of the backyards of their rim- side homes (Tecolote Canyon CAC 1982).

Tecolote Canyon has been designated as a cartographic feature on area maps since 1845, when the first map was made for the pueblo of San Diego. The word "tecolote," meaning owl, is still used in the Spanish language today and scholars hold that it has an Aztec root. The Canyon is said to have been named after the flourishing owl population that used to inhabit the Canyon; however, one researcher suggested that the name may have referred to certain vines that grew in abundance in the Canyon (Davidson 1936).

From the first settlements in San Diego, Tecolote Canyon had remained in private ownership and was generally undeveloped, except for the farm buildings on the broad plain at the month of the Canyon. In the 1940s, the City of San Diego began expanding northward and housing was built on the mesas and along the Canyon rim, forming the communities of Clairemont Mesa and Linda Vista. In 1957, the residents of these communities protested the City's plans to open a sanitary landfill in Tecolote Canyon and the plan was subsequently abandoned.

In the 1960s, as land for development became scarce within the City, builders proposed housing and a major four-lane road on the floor of the Canyon, which was zoned for single-family residences. The Fireside Park Homeowners Association successfully defeated a plan to build high-density multiple residential units that would have stair-stepped down the Canyon slopes.

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Tecolote Canyon Golf Course was constructed in the central portion of the Canyon in 1964. In the mid-1960s, community planning groups were formed throughout the City as a vehicle for citizen input as required for Housing and Urban Development programs. The Kearny Vista Planning Committee (now called Linda Vista Community Planning Organization) and Clairemont Mesa Development Committee (now called Clairemont Mesa Planning Committee) agreed from the outset that Tecolote Canyon, their common community boundary, should be preserved as open space. Representatives from these planning groups formed a Joint Advisory Board and launched a movement to persuade the City Council to enact legislation enabling the formation of a park district to preserve Tecolote Canyon as an open space park. In 1969, the City Council adopted the Park Procedural Ordinance. The initiation of the Park District was pursued for several years by the planning groups, the Joint Advisory Board for Open Space and several allied "ad hoc" groups, including Citizens to Save Open Space, Georgetown Homeowners Association and Tecolote Canyon Protective Association.

The intense lobbying resulted in the initiation of the Park District by a unanimous vote of the City Council in January 1971. Two finger canyons were deleted from the original district and a borrow pit permit was allowed to stand. The District was formed in July 1974. A legal challenge to the Park Procedural Ordinance was filed but the ordinance was upheld by the courts. Land within the District was acquired and the Dedication Ordinance was adopted in November 1977. A dedication ceremony was held on April 1, 1978, where the park was officially named Tecolote Canyon Natural Park and the first members of the Tecolote Canyon CAC were sworn in. The duties of the Tecolote Canyon CAC included the preparation of the Tecolote Canyon Natural Park Master Plan (Master Plan) for the Park, which was completed in December 1982. On May 24, 1983, the City adopted the Master Plan, which currently serves as the primary planning document for the Park.

The Tecolote Canyon Nature Center was constructed near the mouth of the Canyon and was opened in July 1994. The Nature Center serves as the main entrance into the Park. Ground was broken for expansion of the Nature Center on September 29, 2003, and work was completed about a year later. The expanded Nature Center includes exhibits featuring the biological and cultural resources of the Park, a classroom for school field trips and lectures, and staff offices. A native plant garden and Kumeyaay Village have been constructed adjacent to the Nature Center. These facilities offer visitors educational opportunities in addition to the recreational opportunities available within the Park.

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APPENDIX D

Climate – Smart Conservation Adaptation Strategies

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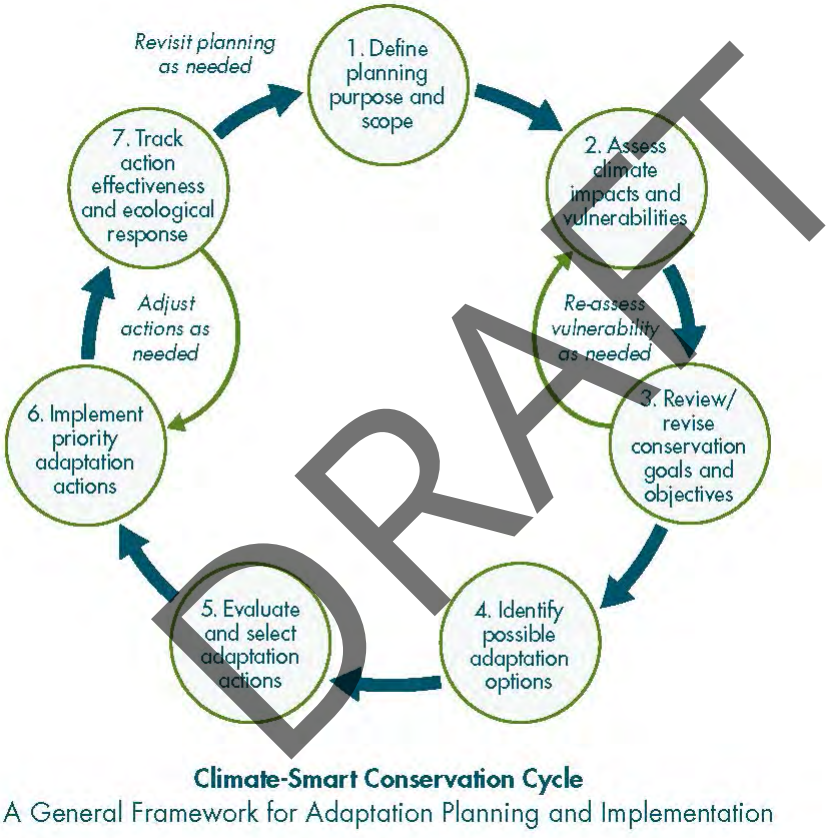
In 2014, the National Wildlife Federation released the Climate-Smart Conservation: Putting Adaptation Principles into Practice (Stein et al. 2014). The guide defines climate-smart conservation as "the intentional and deliberate consideration of climate change in natural resource management, realized through adopting forward-looking goals and explicitly linking strategies to key climate impacts and vulnerabilities" (Stein et al. 2014). Seven steps are identified and explained for adaptation planning and implementation, described as a loop with the last step feeding back into the first as needed:



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(Stein et al. 2014)

Steps 1-3 were completed for Tecolote Canyon as part of the development of this NRMP. Continuing this exercise, 37 possible adaptation strategies were identified. In order to identify the highest objectives (Step 5), each action was ranked based on feasibility of the action, potential impact for enhancing resiliency to climate change, and finally compatibility with other actions. Each category was given a score of 1-5, and the final score was totaled with a maximum score of 15. The highest ranking adaptation options were integrated into the selection and prioritization of management options.

Target, Goals, and Key Vulnerabilities	General Adaptation Strategy		Specific Management Option (example)	Compatible with:	Compatibility (1=low; 5=high)*	Feasibility (1=low; 5=high)**	Impact (1=low; 5=high)***	TOTAL RANK
Conservation Target: Riparian Woodland and Scrub	Reduce non-climate stressors to promote ecosystem resilience	R1	Control and/or remove Argentine ants	C1, C5, R3, R4	4	2	2	8
Conservation Goal: Provide vertical complexity and biological diversity of native riparian plant and animal species		R2	Reduce predation of songbirds by feral and domestic cats through education and informational signage and/or other programs if available	C3	2	3	4	**9**
		R3	Reduce the incidence of activities that cause runoff to enter the canyon from developed areas including golf course in the dry season.	R1, R4, R9, R11, C5, A4, A7	5	4	4	**13**
Key Climate-Related Vulnerabilities: Increased temperature: increased number of extreme heat days stressing heat-sensitive plants and animals		R4	Install and implement BMPs at storm drains with chronic dry weather discharges	R1, R3, R9, R11, C5, A4, A7	5	4	4	**13**
Increased temperature: increased average temperature resulting in gradual and subtle shifts in species distributions, timing of botanical life cycles, and altering migratory or non-migratory animal behaviors		R5	Reduce the incidence of utilities-related emergency and non-emergency projects that impact wetland habitats	A2	2	5	3	**10**
Altered precipitation: increased duration of droughts resulting in lower water tables and stressed communities		R6	Monitor oaks in the canyon for GSOB infestation and prepare GSOB management plan for Tecolote Canyon.	A6, A10	3	5	4	**12**
Altered precipitation: increased frequency and magnitude of precipitation events causing more structural damage to riparian community from erosion and flooding		R7	Continue to control and remove known infestation of red sesbania	R9, R10, R12, A5, A6	3	3	4	**10**
		R8	Reduce illegal overnight camping and chronic homeless encampments from the park	A5, R10	3	5	2	**10**

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Limitations to Adaptation Due to Non-Climate Stressors: invasive species, urban runoff, homeless encampments	Protect key ecosystem features	R9	Identify areas where invasive plants significantly reduce the vertical complexity and biological diversity necessary to provide foraging and nesting habitat for riparian bird species.	R3, R4, R7, R10, A6 A7, A9	5	4	4	**13**
	Ensure connectivity	R10	Restore riparian habitat to provide consistent high quality habitat throughout the Park and eliminate barriers to movement to encourage small scale species migrations and range shifts in response to shifts an abiotic and biotic conditions resulting from climate change.	R7, R8, R9, A6, A9	4	3	5	**12**
	Restore structure and function	R11	Install BMPs upstream of storm drains at outfalls identified to contribute significantly to erosion issues within the canyon.	R3, R4, A8	3	4	4	**11**
	Support evolutionary potential	R12	Encourage restoration using native plants species with high biological diversity matching current or historic records for the riparian community in Tecolote Canyon and favoring species more likely to survive periods of drought and/or flooding	R9, R10, A6, A7, A9	4	4	5	**13**
	Protect refugia	R13	Protect areas of high quality riparian habitat, such as recently completed mitigation projects and/or identify areas where high quality habitat is likely to remain high quality with projected climate changes and shifts in species ranges	A6	2	5	5	**12**
	Relocate organisms	R14	Implement brown-headed trapping programs *if* conditions listed in the NRMP are met for presence of sensitive riparian birds and documented nest parasitism by cowbirds		1	3	4	**8**
Conservation Target: Coastal Sage Scrub	Reduce non-climate stressors	C1	Control and/or remove Argentine ants	R1, C5	3	2	2	**7**
		C2	Control and/or remove known infestation of Canary Island St. Johnswort (CISJW).	C8, C10	3	5	4	**12**

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Conservation Goal: Provide appropriate habitat with available forage and breeding opportunities for sensitive coastal sage scrub animal species		C3	Reduce predation of songbirds by feral and domestic cats through education and informational signage and/or other programs if available	R2	2	2	4	**8**
		C4	Reduce the incidence of encroachment and dumping onto coastal sage scrub	R3	2	5	3	**10**
Key climate-related vulnerabilities: Increased temperature: increased number of extreme heat days stressing heat-sensitive plants and animals		C5	Reduce the incidence of overwatering landscape areas on the rim of the canyon to prevent excess water from seeping down canyon slopes.	R1, R3, C1	3	5	4	**12**
		C6	Reduce the incidence of utilities-related emergency and non-emergency projects that impact upland habitats		1	5	3	**9**
Increased temperature: increased average temperature resulting in gradual and subtle shifts in species distributions, timing of botanical life cycles, and altering migratory or non-migratory animal behaviors	Protect key ecosystem features	C7	Protect soil crust by enforcing off-leash and off trail policies throughout the Park.	C8, C9, C10	3	5	4	**12**
Altered precipitation: increased duration of droughts resulting in lower soil moisture and stressing plants and animals	Ensure connectivity	C8	Restore coastal sage scrub habitat to provide consistent high quality habitat throughout the park and eliminate barriers to movement on a local scale	C7, C9, C10, C11, C12	4	4	4	**12**
Altered precipitation: increased frequency and magnitude of rain events causing more structural damage to uplands from landsliding and erosion	Restore structure and function	C9	Ensure that non-native grasses do not spread into existing high quality coastal sage scrub habitat by maintaining certain areas of the park free from disturbance: enforce on-trail and dog leash regulations within the Park.	C7, C8, C10	3	5	4	**12**
Elevated CO2: favor exotic grasses	Support evolutionary potential	C10	Encourage restoration using native plant species with high biological diversity based on current or historic records for coastal sage scrub community in Tecolote Canyon but selecting for more heat and drought tolerant species	C8, C9, C11	3	4	5	**12**
Limitations to Adaptation Due to Non-Climate Stressors: invasive species, urban runoff, illegal off trail recreation	Protect refugia	C11	Continue to promote rapid response time for fires within the park to enable the canyon to serve as a important habitat for California gnatcatcher where the species is otherwise highly vulnerable to the affects of fire.	C7, C9	3	5	4	**12**
	Relocate organisms	C12	Transplant and propagate San Diego Barrel Cactus if individuals are threatened by emergency and non-emergency utilities-related projects within the Park	C7, C8, C10	3	3	4	**10**

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Conservation Target: Aquatic Communities	Reduce non-climate stressors	A1	Identify the non-native aquatic pest species and identify programs to control and/or eradicate those species consistent with regional guidelines once available	A9	2	2	4	**8**
Conservation Goal: Restore water quality to non-elevated levels and provide high quality habitat for native aquatic species.		A2	Reduce the incidence of utilities - related emergency and non-emergency projects that impact the water quality and stream bed.	R5	2	5	3	**10**
		A3	Reduce the runoff of fertilizers and excess water coming from the Tecolote Golf Course.		1	4	4	**9**
		A4	Implement BMPs upstream to filter out heavy metals, bacteria, and other contaminants from commercial and residential areas before runoff enters Tecolote Creek.	R3, R4, A8	3	5	4	**12**
Key climate-related vulnerabilities:		A5	Reduce the incidence of chronic homeless encampments from the park adjacent to the Creek	R8	2	5	2	**9**
Increased stream temperatures resulting in mortality if lethal temperatures are exceeded and reduced dissolved oxygen from increased algal blooms	Protect key ecosystem features	A6	Protect riparian habitat to promote shading of streams and reducing temperature increases	A7, R6, R6, R9, R10, R12, R13	5	5	5	**15**
Altered precipitation: increased duration of droughts lowering water table and reducing the amount of water available for aquatic organisms	Ensure connectivity	A7	Remove wetland specific invasive species that clog up streams, reduce flow and increase stream temperature, and limit connectivity within the stream on a local scale	R7, R9, R10, R12	4	4	4	**12**
Altered precipitation: increased frequency and magnitude of rain events resulting in structural damage from flooding and erosion and water quality impacts from sedimentation	Restore structure and function	A8	Implement BMPs upstream to reduce damaging effects of high volume discharge from storm drains during heavy rainfall events	A4, R11	3	5	4	**12**
	Support evolutionary potential	A9	Remove invasive plant and animal species that dominate the aquatic environment and prevent a diverse array of native species to occur.	A1, R3, R4, R7, R9	4	3	4	**11**
Limitations to Adaptation Due to Non-Climate Stressors: invasive species, urban runoff, homeless encampments	Protect refugia	A10	Provide adequate protection and/or shading and bank stabilization with native riparian habitat around deeper pools where aquatic species could shelter during periods of drought or extreme heat when stream temperatures reach lethal temperatures for aquatic species.	A6	2	4	5	**11**

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	Protect refugia	A11	Manage invasive aquatic species in portions of Tecolote Creek with potential habitat for native aquatic animals.	A12	2	3	2	**7**
	Relocate organisms	A12	Consider bringing in captive bred or relocated native aquatic species *if* habitat conditions are appropriate and invasive aquatic species have been controlled and/or eradicated.	A11, A9	3	3	2	**8**

*Compatibility Scale: Rank 1 = 0 listed, Rank 2 = 1 listed; Rank 3 = 2-3 listed; Rank 4 = 4-5 listed; Rank 5 = 6+ listed

**Feasibility Scale: Rank 1 = No current protocol or methodology available; Rank 2 = Research currently testing protocol or methodology; Rank 3 = City would need to hire consultant and find additional funding; Rank 4 = Could perform the work with City staff but would be an addition to normal management; Rank 5 = City regularly performs this activity

*** Impact Scale: Rank 1 = Action does not address underlying issues; Rank 2 = Action impact would be limited because of complicating factors; Rank 3 = Action benefits species and communities for today's conditions but does little to promote resilience to future changes; Rank 4 = Action indirectly enhances the park's resilience; Rank 5 = Action directly enhances the park's resilience

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APPENDIX E

Invasive Species Removal and Habitat Restoration Plan

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1. OVERVIEW

Invasive species have been identified as a high priority threat in the draft Natural Resources Management Plan (NRMP) for Tecolote Canyon Natural Park (Park). Fifty mapped invasive plant species have been mapped within Tecolote Canyon (Figures 22-25 in the NRMP). Of these, two species were ranked high priority for removal based on the 2012 report Management Priorities for Invasive Non-native Plants (Dendra Inc, 2012); Management Objectives focused on removal and restoration of these mapped areas. The NRMP also includes Management Objectives to map invasive species within the Park, and guides restoration activities to be conducted in areas where infestation is highest and/or where it would provide a benefit to sensitive species. The Climate-Smart Adaptation Strategies (Appendix D) also guides restoration to enhance the Park's ability to adapt to or be resilient to the effects of climate change, such as connecting patches of high quality habitat thereby allowing space for climate change-forced movements (e.g. forced by flooding or extreme temperatures). Activities to restore the area would benefit numerous MSCP covered plant and animal species described in the NRMP.

This habitat restoration and enhancement plan is intended to support the City of San Diego's draft Natural Resources Management Plan for Tecolote Canyon Natural Park and to provide the technical details necessary to implement that NRMP's Management Objectives for restoration of native habitats within Tecolote Canyon Natural Park. The plan is intended to be used for implementation of smaller restoration projects carried out by City of San Diego Park Ranger staff, volunteers, and/or other grant-funded projects.

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2. GOALS

The goals of this plan include protecting existing native habitat from human disturbance, enhancing and restoring disturbed areas through removal of non-native vegetation, and discouraging unauthorized public activities. Sites shall be prioritized based on Management Objectives included in the NRMP; species shall be prioritized by the Management Objectives and other regional invasive removal plans such as the Management Priorities for Invasive Non-native Plants (Dendra 2012). The goals will be achieved by:

1) Manual removal of non-native and invasive plant species where possible without impacts to native vegetation;
2) 'In place' drilling and killing non-native palms where physical removal would result in impacts to native habitats;
3) Combined herbicide treatment and removal of non-native trees, shrubs, and other plant material where possible without impacts to native vegetation ; and

4) Restoration of recently treated sites, trail closures, and/or small habitat enhancement projects.

All proposed actions would be monitored for success and adaptively modified based on the results.

3. INVASIVE REMOVAL

3.1 Site Preparation

The following sections describe the activities that will take place to prepare the site before invasive removal activities will occur.

Due to the high likelihood of bird nesting, all removal of living or dead plant material shall be scheduled outside of bird nesting season (Feb 1 – Sept 15) in order to avoid noise and direct impacts to nests. Drill and kill of non-native palms may occur within nesting season. This may allow for the plant material to die and ease the removal of material outside of the nesting season.

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3.2 Manual Removal

Manual removal (includes chainsaws for cutting) of invasive plants will be accomplished through cutting and excavating living or dead invasive plants and any associated debris. Cut material shall be removed from the site within 3 days or be chipped and spread on site as mulch if it is determined by a qualified biologist that doing so would not spread any viable seed. Vehicles may be used within existing vehicular access paths only, and no staging areas will be sited within the MHPA. Cranes/equipment staged/parked outside of the jurisdictional area may be used to remove living or dead invasive plants from within the riparian area if use and access by the equipment would not impact native habitat, as evaluated by a certified project biologist. Direct and indirect impacts to native vegetation shall be avoided.

3.3 Drill and kill of palms

Palm trees that cannot be removed without impacts to native vegetation will be killed in-place using the 'drill and kill' method of pumping herbicide directly into the trunk.

3.4 Herbicides

Plant-specific application of herbicides which are currently approved by the USEPA may be applied. Application of herbicides in any area supporting threatened and/or endangered

species must be consistent with the USEPA's Office of Pesticide Programs, Endangered Species Protection Program county bulletins. Application of herbicide within a wetland requires use of wetland-approved herbicide. Plant specific techniques are limited to application via a backpack sprayer and/or the cut-and-paint technique (cutting of the plant, followed by immediate direct application of herbicide to the freshly cut stump), and tools with herbicide-soaked wicks. Drill and kill (drilling holes into the core and pouring approved herbicide into the hole) may be used for palm trees that cannot be removed without disturbance to native vegetation. No herbicide may be applied to native vegetation of any type except where limited treatment of poison oak (less than 400 square feet) which may be required to allow access to invasive plant removal areas.

4. RESTORATION

Where appropriate, restoration activities shall be completed to implement the Management Objectives listed in the NRMP, to assist in trail closures, and/or to discourage reestablishment of invasive plants in recently treated areas. Restoration could include planting with native seed or native container plants, using locally sourced seed and using a species list and composition that mimics surrounding reference sites.

4.1 Maintenance Schedule

Sites that have been planted or seeded will be monitored as needed to manage weeds and to supplement with hand watering if required. Other maintenance activities like trash removal and access control will be conducted throughout the year, on an as-needed basis.

5. SUCCESS GOALS

Based on the severe nature of the current management issues and adaptive nature of the management strategies implemented through this project, it is not anticipated that implementation of this Plan will entirely or immediately remedy all management concerns. Therefore, the success of the project will be evaluated based on a measurable decrease in baseline metrics for the current key management concerns, as determined by qualified project biologist.

6. REFERENCES

Dendra Inc. 2012. Management priorities for invasive non-native plants: A Strategy for regional implementation, San Diego, CA.

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