Appendix B: Biological diversity

Prepared by Greg Tatarian, Wildlife Research Associates; Tom Gardali, PRBO Conservation Science; Denise Cadman, City of Santa Rosa, and Anna Warwick Sears, Laguna de Santa Rosa Foundation

Table 9 was compiled from a variety of sources; it includes both federal and state listing status, as of 2005, as well as local prioritizations. The biodiversity committee recognized that conservation focus is best placed on protecting and restoring habitats, but acknowledged that some species need special attention to promote their recovery. Many of these species have federal and state protections.

In compiling this table, the committee was concerned not only with species that are rare and endangered—species should not have to be at the edge of extinction to be the target of conservation efforts—but with keeping species from *becoming* rare. For this reason, the committee wished to recognize the value of certain native birds and wildlife, like the great blue heron and the river otter, that are signature or totem species of the Laguna. Fifteen plants and animals are federally listed as threatened or endangered, and thirty-eight are state listed as threatened, endangered, or species of special concern. The California Native Plant Society has designated forty-three plants as species of local concern.

Table 9: *Species of Concern* in the Laguna de Santa Rosa watershed			
Scientific Name Common Name	Federal Status State Status Local Status	Habitat Affinities and Reported Localities in the Watershed	Occurrence Potential/ Season of Concern
AMPHIBIANS			
Ambystoma californiense California tiger salamander	FT CSC Yes	Breeds in temporary or semi-permanent pools. Seeks dry-season cover in rodent burrows in grasslands and oak woodlands.	Year-round/ Year-round
Dicamptodon ensatus Pacific giant salamander	-- -- Yes	Forests near clear, cold streams. Found under logs, rocks, bark, etc.	Year-round/ Year-round
Ensatina eschscholtzii oregonensis Oregon salamander	-- -- Yes	Found in deciduous and evergreen forests under rotting logs, bark and rocks in humid microclimes. Summer retreats include rotting logs, rotted root channels or small mammal burrows.	Year-round/ Year-round
Ensatina eschscholtzii xanthoptica Yellow-eyed salamander	-- -- Yes	Found in deciduous and evergreen forests under rotting logs, bark and rocks in humid microclimes. Summer retreats include rotting logs, rotted root channels or small mammal burrows.	Year-round/ Year-round
Aneides flavipunctatus Black salamander	-- -- Yes	Found in mixed deciduous woodland, coniferous forests, coastal grasslands. Found under rocks, logs, bark, and debris.	Year-round/ Year-round
Aneides lugubris Arboreal salamander	-- -- Yes	Found in coastal live oak woodland. Found under rocks, logs and base of hollow tree trunks.	Year-round/ Year-round
Batrachoseps attenuatus California slender salamander	-- -- Yes	Found in grasslands with scattered tree, chaparral, woodlands, forests and some suburban areas. Found in damp areas such as under leaf litter, rocks, boards, etc.	Year-round/ Year-round
Bufo boreas Western toad	-- -- Yes	Breeds in permanent and temporary aquatic habitats. Buries into loose soils or seeks shelter in gopher and ground squirrel burrows.	Year-round/ Year-round

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Scientific Name Common Name	Federal Status State Status Local Status	Habitat Affinities and Reported Localities in the Watershed	Occurrence Potential/ Season of Concern
Pseudacris regilla Pacific treefrog	-- -- Yes	Frequents most habitats and breeds in temporary and permanent aquatic habitats. Important food source for many birds and animals.	Year-round/ Year-round
Rana aurora draytonii California red-legged frog	FT CSC Yes	Prefers semi-permanent and permanent stream pools, ponds and creeks with emergent and/or riparian vegetation. Occupies upland areas especially during the wet winter months. Annadel, Fairfield Osborne preserve.	Year-round/ Year-round
Rana boylii foothill yellow-legged frog	-- CSC Yes	Inhabits permanent, flowing stream courses with a cobble substrate and a mixture of open canopy riparian vegetation.	Year-round/ Year-round
Reptiles			
Emys (=Clemmys) marmorata marmorata Northwestern pond turtle	-- CSC Yes	Prefers permanent, slow-moving creeks, streams, ponds, rivers, marshes and irrigation ditches with basking sites and a vegetated shoreline. Requires upland sites for egg-laying.	Year-round/ Year-round
Sceloporus occidentalis Western fence lizard	-- -- Yes	Found in grassland, forests, oak woodlands and open coniferous forests among others. Very dominant in Annadel and eastern hills around the Santa Rosa plain.	Year-round/ Year-round
Eumeces skiltonianus Western skink	-- -- Yes	Found in grasslands, and chaparral among other habitats, near streams but also arid upland habitats.	Year-round/ Year-round
Gerrhonotus coeruleus Northern alligator lizard	-- -- Yes	Inhabits woodland and forested areas but also grasslands and chaparral habitats.	Year-round/ Year-round

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Scientific Name Common Name	Federal Status State Status Local Status	Habitat Affinities and Reported Localities in the Watershed	Occurrence Potential/ Season of Concern
Diadophis punctatus Ringneck snake	- - Yes	Found in moist habitats of woodlands, forests, grasslands and chaparral, under bark and rooting logs.	Year-round/ Year-round
Coluber constrictor Racer	- - Yes	Found in open habitats in semi-arid and moist habitats.	Year-round/ Year-round
Pituophis (catenifer) melanoleucus Gopher snake	- - Yes	Common in open grasslands and open brushlands.	Year-round/ Year-round
Lampropeltis getulus Common kingsnake	- - Yes	Inhabits a wide variety of habitats including coniferous forests, oak woodland, coastal marshes, etc.	Year-round/ Year-round
Thamnophis sirtalis Common garter snake	- - Yes	Found in grasslands, oak woodlands, scrub and forest in or near ponds, streams, marshes and streams. Tends to stay near water.	Year-round/ Year-round
Thamnophis elegans Western terrestrial gartersnake	- - Yes	Found in grasslands, oak woodlands, scrub and forest in or near ponds, streams, marshes and streams, but may also be away from water.	Year-round/ Year-round
Crotalus viridis Western rattlesnake	- - Yes	Found in open habitats and alongside rocky outcrops, rocky stream courses and ledges. Annadel and other hill areas east of Santa Rosa plain.	Year-round/ Year-round
Birds			
Phalacrocorax auritus Double-crested Cormorant	- - Yes	In the Laguna, nests near freshwater in trees across from Alpha Farm and also at the confluence of Santa Rosa Creek. Primarily feeds on schooling fish found from the surface to near (but not on) flat sand or mud bottoms; occasionally over rocky or gravelly substrates. Laguna population appears to be growing.	Year-round/ Breeding

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Scientific Name Common Name	Federal Status State Status Local Status	Habitat Affinities and Reported Localities in the Watershed	Occurrence Potential/ Season of Concern
Ardea herodias Great Blue Heron	-- -- Yes	Nests in the Laguna. Declining colony at Alpha Farm. Expanding colony at the confluence with Santa Rosa Creek	Year-round/ Breeding
Casmerodius albus Great Egret	-- -- Yes	Nests in the Laguna. Expanding colony at confluence with Santa Rosa Creek.	Year-round/ Breeding
Aythya americana Redhead	-- 2 (breeding) Yes	Observed on ponds during migration.	Transient/ N/A
Pelecanus erythrorhynchos American White Pelican	-- 1 (breeding) Yes	Pelicans are found in the Laguna from late summer to early spring. Large flocks live on the Laguna, particularly on CDFG Wildlife Area north of Occidental Road and reclamation ponds throughout the winter.	Winter resident/ N/A
Haliaeetus leucocephalus Bald Eagle	FT SE Yes	Observed in the county primarily in winter; seen increasingly in the Laguna on CDFG Wildlife Area north of Occidental Road.	Winter resident/ Year-round
Elanus leucurus White-tailed Kite	-- -- Yes	Forages in moist meadows, grasslands, low marsh vegetation, riparian edges, irrigated pastures and other cultivated fields that provide the requisite prey base (almost exclusively on small diurnal mammals); typically builds nest in isolated trees or clumps of trees.	Year-round/ Year-round
Circus cyaneus Northern Harrier	-- 2 Yes	Breeding habitat is open, usually moist, terrain intermixed with woody growth; freshwater marshes, wet meadows, moist grasslands, and hayfields. Nests on ground. Distribution tied to small diurnal grassland rodents. Harriers have declined in the Laguna in the last decade.	Year-round/ Breeding

Table 9: *Species of Concern* in the Laguna de Santa Rosa watershed

Scientific Name Common Name	Federal Status State Status Local Status	Habitat Affinities and Reported Localities in the Watershed	Occurrence Potential/ Season of Concern
Falco peregrinus anatum American Peregrine Falcon	-- SE Yes	Occasionally observed hunting within the Laguna.	Irregular/ N/A
Rallus limicola Virginia Rail	-- -- Yes	Shallow standing water; dense marsh vegetation for cover, nest sites, and brooding areas; and a suitable supply of invertebrate food.	Year-round/ Breeding
Porzana carolina Sora	-- -- Yes	Standing fresh water; dense marsh vegetation for cover, nest sites, and brooding areas; and a suitable supply of seeds and invertebrate foods.	Year-round/ Breeding
Coccyzus americanus occidentalis Western Yellow-billed Cuckoo	-- SE Yes	A former breeder within the Laguna. Requires large areas of old growth riparian forests.	Extirpated/ Breeding
Athene cunicularia hypugea Burrowing Owl	-- 1 (breeding) Yes	Inhabit dry, flat, open grasslands and disturbed areas with short vegetation. Nests inside the earthen burrows of mammals such as ground squirrels; Availability of burrows limits population size; but this owl will accept artificial burrows. Feeds on insects and small mammals.	Extirpated (as breeder)/ Breeding
Strix occidentalis caurina Northern Spotted Owl	FT -- Yes	Old-growth coniferous forests of redwood and Douglas fir, or pines and evergreen hardwoods. Nests in natural cavities or on elevated natural platforms. Feeds primarily on nocturnal mammals, such as wood rats.	Year-round/ Year-round
Asio otus Long-eared Owl	-- 2 (breeding) Yes	Occasionally observed hunting within open country of grasslands, meadows, and fields of the Laguna. Likely does not breed in Sonoma County.	Irregular/ N/A

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Scientific Name Common Name	Federal Status State Status Local Status	Habitat Affinities and Reported Localities in the Watershed	Occurrence Potential/ Season of Concern
Asio flammeus Short-eared Owl	-- 2 (breeding) Yes	Unpredictable migrant; nests in marshes, lowland meadows and moist grasslands; in irrigated, fallow, or stubble fields. Likely does not breed in Sonoma County.	Irregular/ N/A
Chaetura vauxi Vaux's Swift	-- 3 (breeding) Yes	Nests in hollowed out snags especially old growth and fire swept stands; also breeds in within chimneys.	Breeding/ Breeding
Contopus cooperi Olive-sided Flycatcher	-- 2 (breeding) Yes	Nests in open conifer and mixed conifer forests; also uses non-native stands of eucalyptus and Monterey pine and cypress where conditions are appropriate.	Breeding & Transient/ Breeding
Empidonax traillii Willow Flycatcher	-- SE Yes	Observed during migration usually within riparian habitat.	Transient/ N/A
Progne subis Purple Martin	-- 1 (breeding) Yes	May have historically bred in the Laguna. Now only seen occasionally. Nests in cavities excavated by woodpeckers in large snags often near lakes or streams.	Breeding & Transient/ Breeding
Cistothorus palustris Marsh Wren	-- -- Yes	Inhabits freshwater marshes within the Laguna; basic requisites are standing water or saturated soil and tall dense marsh vegetation for concealment and placement of nests. Likely declined within the Laguna due to loss of wetlands.	Year-round/ Year-round
Catharus ustulatus Swainson's Thrush	-- -- Yes	Nests in shady riparian areas with dense moist understory vegetation.	Breeding & Transient/ Breeding
Lanius ludovicianus Loggerhead Shrike	-- 2 (year-round) Yes	Inhabit open lowland valleys of grasslands, fields, and broken woodlands; need perches for foraging and, locally, blackberry, rose, and willow thickets for nesting. Loggerhead Shrikes have declined in the Laguna in the last decade.	Year-round/ Year-round

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Scientific Name Common Name	Federal Status State Status Local Status	Habitat Affinities and Reported Localities in the Watershed	Occurrence Potential/ Season of Concern
Dendroica petechia Yellow Warbler	-- 2 (breeding) Yes	Breeds in well developed riparian habitat; typically nest in area with early seral stage riparian with taller trees present for foraging. Alders may be important locally.	Breeding & Transient/ Breeding
Geothlypis trichas Common Yellowthroat	-- -- Yes	Inhabits freshwater marshes and swampy riparian thickets within the Laguna. Likely declined within the Laguna due to loss of wetlands and riparian habitats.	Year-round/ Year-round
Icteria virens Yellow-breasted Chat	-- 3 (breeding) Yes	Dense riparian areas with abundant blackberry patches.	Breeding & Transient/ Breeding
Agelaius tricolor Tricolored Blackbird	-- 1 (year-round) Yes	Nests primarily in dense freshwater marshes with cattail or tules, but also known to nest in upland thistles. Requires grasslands for foraging.	Year-round/ Year-round
Mammals			
Myotis evotis Long-eared myotis	-- SC Yes	Day roosts in hollow trees under exfoliating bark, and crevices in rock outcrops. Found roosting under bark of small black oaks in northern California. Found throughout California	
Myotis thysanodes Fringed myotis	-- SC Yes	Roosts in colonies in caves, cliffs and attics of old buildings. Will also use trees as day roosts.	
Myotis yumanensis Yuma myotis	-- SC Yes	Roosts colonially in cares, tunnels and buildings. Inhabits arid regions.	
Lasiurus blossevillii Western red bat	- - Yes	Scattered at lower elevations in California. Day roosts in trees within foliage. Appears to be declining.	

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Scientific Name Common Name	Federal Status State Status Local Status	Habitat Affinities and Reported Localities in the Watershed	Occurrence Potential/ Season of Concern
Corynorhinus townsendii townsendii Townsend's big-eared bat	- CSC Yes	Roosting sites include caves, mine tunnels, abandoned buildings and other structures. Forages in a variety of plant communities including conifer and broad-leaf forests, oak and conifer woodlands, arid grasslands and deserts. Most commonly associates with mesic sites. Highly sensitive to human disturbances; a single visit by humans can cause bats to abandon roosts.	
Antrozous pallidus pallid bat	-- CSC Yes	Day roosts include rock outcrops, mines, caves, hollow trees, buildings and bridges. Recent research suggests high reliance on tree roosts	
Bassaricus astutus ringtail	-- CSC Yes	Most commonly found in riparian habitats, but also in canyon and rocky slopes and chaparral. Nests in downed logs, hollow trees, snags, cavities and rocky areas. Usually not further than 0.5 miles from permanent water.	
Taxidea taxus American badger	- - Yes	Inhabits open grasslands, savannas and mountain meadows near timberline. Requires abundant burrowing mammals, their principal food source, and loose, friable soils.	
Spilogale (putorius) gracilis Western spotted skunk1	- - Yes	Mixed woodland and open areas, scrub and farmland. Anecdotal evidence points to serious declines throughout parts of California range.	
Lontra canadensis River otter	- - Yes	Found in streams, rivers, lakes, estuaries, and freshwater marshes. Diet includes fish (especially carp, suckers, catfish, and sculpins), crayfish, frogs, turtles, and aquatic invertebrates, plus an occasional bird, rodent or rabbit.	

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Scientific Name Common Name	Federal Status State Status Local Status	Habitat Affinities and Reported Localities in the Watershed	Occurrence Potential/ Season of Concern
FISH			
Lampetra tridentata Pacific lamprey	-- -- Yes	Found in Laguna tributaries. Anadromous, spawning in freshwater then migrating to the Pacific Ocean. Spawns in gravel riffles and clear streams.	
Lampetra ayresii River lamprey	-- -- Yes	Found in Laguna tributaries. Anadromous, spawning in freshwater then migrating to the Pacific Ocean. Spawns in gravel riffles and clear streams.	
Lampetra richardsoni Western brook lamprey	-- -- Yes	Found in Laguna tributaries. Non-migratory. Non-parasitic, feeds on algae and other microscopic material.	
Oncorhynchus mykiss Steelhead trout	FT - Yes	Spawns in Santa Rosa Creek, Mark West Creek, Smaller numbers are regularly observed in Windsor, Copeland and Blucher Creeks. Uses Laguna main channel only for migration.	
Oncorhynchus kisutch Coho salmon	FE ST Yes	Occasionally seen in Santa Rosa Creek and Mark West Creek. Watershed is listed as critical habitat for coho salmon.	
Oncorhynchus tshawytscha Chinook salmon	FT - Yes	Several documented occurrences in Santa Rosa Creek, but prefer the more riverine habitats of the Russian River.	
Hesperoleucus symmetricus California roach	-- -- Yes	Inhabits rocky pools of headwaters, creeks and small to medium rivers.	
Lavinia exilicauda Hitch	-- -- Yes	Santa Rosa Creek. Occurs in lakes, ponds, sloughs, backwaters and sluggish sandy pools of small to large rivers. Numbers have been declining in the state.	
Mylopharodon conocephalus Hardhead	-- CSC Yes	Santa Rosa Creek.	

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Scientific Name Common Name	Federal Status State Status Local Status	Habitat Affinities and Reported Localities in the Watershed	Occurrence Potential/ Season of Concern
Orthodon microlepidotus Sacramento blackfish †	-- -- Yes	Occurs in lakes, backwaters and sluggish pools. Usually found in warm turbid water.	
Catostomus occidentalis Sacramento sucker	-- -- Yes	Found in Laguna tributaries – prefers pools, lakes and impoundments.	
Gasterosteus aculeatus Threespine stickleback	-- -- Yes	Dominant in Laguna tributaries. May be propagated and distributed for use as a native mosquito larva predator.	
Hysterocarpus traskii ssp. pomo Russian River tule perch	-- CSC Yes	Subspecies endemic to the Russian River watershed. Prefer lowland lakes, streams and rivers with beds of vegetation or overhangs.	
Cottus asper Prickly sculpin	-- -- Yes	Santa Rosa Creek and other Laguna tributaries.	
INVERTEBRATES			
Syncaris pacifica California Freshwater Shrimp	FE SE Yes	Pool areas of low-elevation, low-gradient streams, among exposed live tree roots of undercut banks, overhanging woody debris, or overhanging vegetation. Feeds on decomposing plants and other detrital material.	
PLANTS			
Alopecurus aequalis var. sonomensis Sonoma alopecurus	FE - 1B	Wet meadows and marshy areas: Pitkin and Cunningham marsh. Hwy 116 at Llano Road. According to A Flora of Sonoma County the sonomensis variety is not clearly distinct from alopecurus.	

Table 9: *Species of Concern* in the Laguna de Santa Rosa watershed			
Scientific Name Common Name	Federal Status State Status Local Status	Habitat Affinities and Reported Localities in the Watershed	Occurrence Potential/ Season of Concern
Arctostaphylos densiflora Vine Hill manzanita	- SE 1B	Endemic to Sonoma County. Prefers sandy soil, shale outcrops. A small number of naturally-growing individuals still occur in a preserve on Vine Hill School Road.	
Arctostaphylos stanfordiana ssp. decumbens Rincon manzanita	- - 1B	Endemic to Sonoma County. Prefers chaparral ridges and oak woodland. The best remaining naturally-growing specimens are found on the Rincon Ridge in northeast Santa Rosa.	
Blennosperma bakeri Sonoma sunshine	FE SE 1B	Occurring in vernal pools in the Laguna de Santa Rosa and Sonoma Valley.	
Calandrinia breweri Brewer's calandrinia	- - 4	Uncommon on gravelly slopes such as Mt. Hood in the Santa Rosa Creek watershed	
Campanula californica Swamp harebell	- - 1B	Freshwater marsh, often coastal: Pitkin Marsh.	
Carex albida White sedge	FE SE 1B	Open, marshy grasslands: Pitkin Marsh, Highway 116 at Guerneville Road and Santa Rosa Creek near confluence with the Laguna.	
Carex buxbaumii Buxbaum's sedge	- - 4	Moist or wet ground: Pitkin Marsh.	
Carex cusickii	- - Yes	Rare in California marshes: Pitkin Marsh.	
Ceanothus confusus Rincon ridge ceanothus	- - 1B	Chaparral, ridge tops, sometimes serpentine soil: Formerly locally common, but now endangered. Mt. Hood.	
Ceanothus divergens Calistoga ceanothus	- - 1B	Chaparral: Mark West Creek watershed, Mt. Hood and Annadel.	
Ceanothus foliosus var. vineatus Vine Hill ceanothus	- - 1B	Uncommon, rolling hills: type locality: Vine Hill schoolhouse, Vine Hill School Road.	

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Scientific Name Common Name	Federal Status State Status Local Status	Habitat Affinities and Reported Localities in the Watershed	Occurrence Potential/ Season of Concern
Ceanothus gloriosus var. exaltatus Navarro ceanothus Glory bush	- - 4	Occasional, openings along roads, chaparral: type locality: Vine Hill region: Guerneville Road w. of Laguna Road.	
Ceanothus sonomensis Sonoma ceanothus	- - 1B	Occasional, chaparral: southwestern exposure Mt. Hood, Annadel.	
Chorizanthe valida Sonoma spineflower	FE SE 1B	Rare, sandy places: Sebastopol.	
Cirsium andrewsii Franciscan thistle	- - 1B	Wet or marshy ground along streams.	
Clarkis imbricata Vine Hill clarkia	FE SE 1B	Almost extinct, low grasses, roadsides, fields, orchards: Pitkin Ranch.	
Cypripedium montanum Mountain lady's-slipper	- - 1B	Rare, damp woods: Near Sebastopol.	
Downingia pusilla Dwarf downingia	- - 2	Ditches, vernal areas: Moist areas in the Santa Rosa Plain.	
Erigeron biolettii Streamside daisy	- - 3	Dry, rocky places: Santa Rosa Creek headwaters, Mt. Hood.	
Erythronium revolutum Coast fawn lily	- - 2	Margins of swamps, bogs and wooded streams: No Laguna record.	
Fritillaria liliacea Fragrant fritillary	- - 1B	Open, hilly fields, heavy soil: Annadel and summit of Taylor Mtn.	
Hemizonia congesta Ssp. leucocephala Hayfield tarplant	- - 3	Open fields: In the Laguna de Santa Rosa drainage.	
Horkelia tenuiloba Thin-lobed horkelia	- - 1B	Silty or sandy meadows: Pitkin Marsh, Vine Hill region, Santa Rosa Creek near confluence with Laguna.	

Table 9: *Species of Concern* in the Laguna de Santa Rosa watershed			
Scientific Name Common Name	Federal Status State Status Local Status	Habitat Affinities and Reported Localities in the Watershed	Occurrence Potential/ Season of Concern
Lasthenia burkei Burke's goldfields	FE SE 1B	Vernal habitats have been decimated by development and agriculture until only a relatively few populations remain: Species now very restricted to a small area in Laguna de Santa Rosa and Windsor.	
Lasthenia macrantha ssp. bakeri Baker's goldfields	- - 1B	Damp areas: Marsh on Gravenstein Hwy. s. of Molina near Sebastopol.	
Legenere limosa Legenere	- - 1B	Vernal pools: Near Lichau, no Laguna record.	
Lessingia hololeuca Woolly-headed lessingia	- - 3	Grassy hills: Hills east of Santa Rosa Plain.	
Lilium pardalinum ssp. pitkinense Pitkin Marsh Lily	FE SE 1B	Marshy situations: Pitkin and Cunningham Marshes.	
Limnanthes vinculuns Sebastopol meadowfoam	FE SE 1B	Vernal pools: Laguna de Santa Rosa and Santa Rosa Plain.	
Lomatium repostum Napa lomatium	- - 4	Brushy places, chaparral: Rincon Ridge and Los Alamos Road.	
Microseris paludosa Marsh microseris	- - 1B	Grassy, wooded areas: Todd Road Preserve, vernal pools in Windsor.	
Myosurus minimus Little mousetail	- - 3	Vernal pools, shallow marshes: Laguna de Santa Rosa at Occidental Bridge and High School Road.	
Navarretia leucocephala ssp. bakeri Baker's navarretia	- - 1B	Vernal pools: Santa Rosa Plain	
Navarretia leucocephala ssp.plientha Many-flowered navarretia	FE SE 1B	Bennett Mtn. Lake, 1 vernal pool near ne. corner of Sonoma County Airport, Shiloh Ranch near Santa Rosa.	

Table 9: *Species of Concern* in the Laguna de Santa Rosa watershed			
Scientific Name Common Name	Federal Status State Status Local Status	Habitat Affinities and Reported Localities in the Watershed	Occurrence Potential/ Season of Concern
Perideridia gairdneri ssp. gairdneri Gairdner's yampah	- - 4	Adobe flats and grasslands: Pitkin Marsh, Laguna de Santa Rosa e. of Graton between Occidental and Guerneville Roads, Laguna de Santa Rosa east of Sebastopol, Todd Road Preserve.	
Pleuropogon hooverianus North Coast semaphore	- Rare 1B	Meadows: ½ mile w. of Llano Road, right angle of Todd Road at Preserve.	
Potentilla hickmanii Hickman's cinquefoil	FE SE 1B	Marshy areas: Presumed extinct in County. Previous record at Cunningham Marsh.	
Psilocarphus brevissimus var. multiflorus Dwarf woolly-marbles	- - 4	Vernal pools of the San Francisco Bay area: More information is needed on local distribution.	
Ranunculus lobbii Lobb's aquatic buttercup	- - 4	Floating in vernal pools: Santa Rosa Plain, Laguna de Santa Rosa Drainages, City of Santa Rosa Farms, Todd Road Preserve.	
Rhynchospora californica California beaked rush	- - 1B	Open wet ground: Pitkin and Cunningham Marsh.	
Rhynchospora capitellata Brownish beaked-rush	- - 1B	Wet, marshy spots: Pitkin Marsh.	
Thermopsis macrophylla False lupine	- - 1B	Open areas: Pitkin, Petrified Forest.	

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Scientific Name Common Name	Federal Status State Status Local Status	Habitat Affinities and Reported Localities in the Watershed	Occurrence Potential/ Season of Concern
Trifolium amoenum Showy Indian clover	FE - 1B	At on time presumed extinct, rich fields, swales: Pitkin Marsh, near Wright School, O'Farrell Hill region w. of Sebastopol, Stony Point.	
Veratrum fimbriatum Fringed false-hellebore	- - 4	Wet openings, meadows, mostly coastal wet areas: Pitkin Marsh.	
Viburnum ellipticum Oval-leaved viburnum	- - 2	Chaparral, forest: Mark West area.	

Notes on Table 9 entries

* Species of Concern within the Laguna de Santa Rosa—that is, species that will likely benefit from restoration and management activities.

Federal Status: Species are listed as threatened or endangered
ft = federally threatened
fe = federally endangered
State Status: Species are listed as threatened or endangered
st = state threatened
se = state endangered
sc = California Department of Fish and Game (CDFG) Species of Special Concern
Local Status: Designated species that do not have official status but were deemed of local concern by the RMP Biodiversity and Wildlife Committee.
General occurrence / season of concern within the Laguna: Season of Concern was decided upon by the RMP Wildlife and Biodiversity Committee.

- Year-round = a species that breeds within the Laguna project and occurs at all times of the year
- Breeding = breeds within the Laguna and is primarily found within that season
- Transient = only occurs as during migration

- Irregular = sporadic presence
- Extirpated = no longer occurs
- N/A = species that are irregular or transient

Notes on Amphibians

The source for these entires was a query—for amphibians in Sonoma County—of the Museum of Vertebrate Zoology (MVZ), University of California—Berkeley, accessed May 2005. Of the 3,779 specimens available 10 species were reported within the Laguna watershed. All species ae arranged by evolutionary hierarchy, as shown in: Stebbins, Robert C. 1985. *A Field Guide to Western Reptiles and Amphibians*. The Peterson Field Guide Series. Houghton Mifflin Company. Boston. 2nd edition.

Notes on Retiles

The source for these entries was a query of MVZ for reptiles in Sonoma County. Of the 304 specimens 11 species were reported within the Laguna watershed. All species are arranged by evolutionary hierarchy, as shown in: Stebbins, Robert C. 1985. *A Field Guide to Western Reptiles and Amphibians*. The Peterson Field Guide Series. Houghton Mifflin Company. Boston. 2nd edition.

Notes on Birds

Bird species with state or federal status that have been documented within the project boundaries of the Laguna de Santa Rosa (State or Federal Threatened and Endangered), CDFG Bird Species of Special Concern (Shuford and Gardali in press). Numbered designations indicate priority levels within the list (1, 2, or 3; highest to lowest) and parentheses show season of concern. This table includes occurrences from lists compiled by Benjamin D. Parmeter and Betty Burridge. Shown are regular residents or migrants during at least one season of the year, and regularly use resources within the Laguna de Santa Rosa area. The geographical area of the Laguna is defined for the purposes of these lists to include not only the main channel of the Laguna, but also all tributaries and their watersheds. Included are Mark West, Santa Rosa, Copeland, and Blucher Creeks. The City of Santa Rosa and parts of both Rohnert Park and Sebastopol also fall into this area.

Records used to compile this list came from several sources: (1) *Birds of Sonoma County, California* by Benjamin D. Parmeter (2001); (2) *Sonoma County Breeding Bird Atlas* edited by Betty Burridge (1995); (3) "Directory

to the Bird Life of the San Francisco Bay Area" by Joseph Grinnell, and Margaret W. Wythe, *Pacific Coast Avifauna* #18 (1927); (4) personal records and recollections of records from the 1960s to the present of Benjamin D. Parmeter; (5) personal records and recollections of records from 1974 to the present of Betty Burridge.

All species are arranged by evolutionary hierarchy, as shown in: Sibley, David Allen. 2000. *The Sibley Guide to Birds*. National Audubon Society. Chanticleer Press.

Notes on Mammals

The source for these entries was a query of MVZ for mammals in Sonoma County. Of the 1,082 specimens available, 7 species were reported within the Laguna watershed and 11 species have potential to occur.

All are species are arranged by evolutionary hierarchy, as shown in: Whitaker, John O. Jr. 1997. *Field Guide to North American Mammals*. National Audubon Society. Chanticleer Press.

Notes on Fish

The sources for these entries include: 1) a list of species observed in the Laguna by Bill Cox, fisheries biologist of the CDFG; 2) the NOAA publication *A Checklist of the Fishes of Santa Rosa Creek*, by Daniel Logan, NMFS, and Jason Eberhard, SSU; 3) Froese, R. and D. Pauly, editors. 2006. *FishBase*. World Wide Web electronic publication. www.fishbase.org, version (02/2006), and 4) Peter B. Moyle. 2002. *Inland Fishes of California*. University of California Press.

Notes on Plants

Species of local concern are designated by the California Native Plant Society (CNPS) as follows:

1A	Presumed extinct in California
1B	Rare or Endangered in California and elsewhere
2	Rare or Endangered in California, more common elsewhere
3	Plants for which we need more information- review list
4	Plants of limited distribution—watch list
Yes	Plants of concern to RMP Biodiversity and Wildlife Committee

Santa Rosa Plain Conservation Strategy

The following quantitative goals and objectives were developed by the Santa Rosa Plain Conservation Strategy Team, and published August 3, 2005.

Section 3 – Biological Goals, Objectives and Assumptions

3.1 Biological Goals and Objectives

The Conservation Strategy is based on the following biological goals and objectives to achieve conservation of CTS and the listed plants. The goals and objectives are based on available information on the distribution, ecology, and genetics of CTS and listed plants. They are also based on existing and planned land use patterns. It is expected that additional information on the species will become available, which will be considered in the adaptive management process.

(1) Establish and manage, in perpetuity, preserves within the eight CTS conservation areas distributed throughout the range of the Sonoma County population of the CTS:

- Develop preserves to be contiguous with each other to the maximum extent practicable
- Establish 3450 to 4250 total acres of preserves consisting of 350 to 900 acres within each conservation area
- Establish at least one preserve consisting of a minimum of 150 contiguous acres within each conservation area
- Establish a satellite preserve in Stony Point Conservation Area of a minimum of 100 contiguous acres
- Maintain compatible land uses between preserves to allow movement of CTS between preserves to maintain genetic diversity

(2) Establish listed plant preserves to maintain genetic diversity of listed plants throughout their known range on the Plain:

- Establish 75 to 150 acres of plant preserves of 25 to 100 acres each in the Windsor Plant Conservation Area
- Maintain at least 10 occurrences of both Sonoma sunshine and Burke's goldfields throughout their known range on the Plain
- Preserve the one known population of many-flowered navarretia on the Plain

(3) Expand the number of secure occurrences of each of the listed plant species:

- Protect at least 5 extant plant occurrences in each of the conservation areas where plants are known to occur

- Establish 10 new self-sustaining plant populations of each of the listed plants within their known range on the Plain

(4) Preserve interconnected CTS and listed plant habitat within the Southwest Santa Rosa Preserve System:

- Establish three CTS and listed plant preserves totaling 153 acres
- Establish corridors between the preserves and adjacent conservation areas
- Establish one new breeding site in each of the corridors
- Maintain Sebastopol meadowfoam populations of 500 plants in at least 10 pools within the Preserve System

(5) Secure and expand CTS breeding habitat within the conservation areas, with an emphasis on preserving existing breeding sites (not including ditches):

- Assure that each preserve has at least one created or existing breeding site or is adjacent to a preserve with a breeding site
- Assure that there is one breeding site for every 50 acres of preserved upland habitat
- Develop design criteria for created breeding sites to ensure proper hydrology in years of normal rainfall; monitor for success

(6) Assure adequate management of preserves:

- Establish preserve management plans with adequate funding in perpetuity
- Assure adequate endowments for all preserves based on site specific management needs
- Provide secure management funding for all public lands that contribute to the preserve objectives

(7) Assure that preservation occurs in proportion to the effect of CTS and listed plant habitat loss:

- Apply interim mitigation requirements until the Conservation Strategy is implemented
- Apply long-term mitigation requirements once the Conservation Strategy is implemented
- Implement habitat preservation requirements of the Conservation Strategy

(8) Establish an effective adaptive management process:

- Monitor establishment of preserves for consistency with the Conservation Strategy
- Assess the effectiveness of preserve management
- Propose research to inform future implementation of the Conservation Strategy
- Monitor viability of CTS and listed plants

3.2 Assumptions

Development of the Conservation Strategy is based on the following assumptions about expected development in a ten-year time frame, the effect of that development on the species, how the preserves would offset those impacts, and the compatibility of existing land uses with CTS and listed species conservation.

- Either existing agricultural and rural land uses outside the UGBs will not change appreciably, or impacts of any changes will be adequately analyzed and mitigated
- Urban development within the UGBs may occur based on general plans of the municipalities
- Limited urban development may occur outside of the UGBs based on the Sonoma County General Plan
- Voter-approved UGBs will remain in place for at least 10 years and will likely continue into the foreseeable future
- Based on aerial photography and site visits, potential habitat for CTS and listed plants exists in locations where surveys have not been conducted
- Urban development will eliminate some CTS and listed plant habitat
- Small preserves in an urban environment are difficult to manage, and will not likely sustain viable CTS populations

In addition, there are other biological factors that were used in developing the conservation areas.

RMP Comments on the SRPCS

We fully supports the objectives of the Santa Rosa Plain Conservation Strategy, and recommend expanding them to include the following:

(2a) Assess genetic variation of listed vernal pool plants on the Plain:

- Expand current genetic survey on Sonoma sunshine, Burke's goldfields and Sebastopol meadowfoam to include more years in order to assess seasonal variation in annual populations
- Expand current genetic survey to include at least 3-7 other declining vernal pool plant species

(3b) Establish yearly seed collection protocols for at least 5 populations of listed vernal pool species and implement yearly seed collections for deposit at appropriate seed collection facilities.

- Utilize seeds from collections in future restoration of declining populations

Activities that may harm fish

Adapted from: A Citizen's Guide to the 4(d) Rule for Threatened Salmon and Steelhead on the West Coast. NMFS. 2000. http://www.nwr.noaa.gov/1salmon/salmesa/4ddocs/citguide.htm

The following is a list of activities that may overlap with restoration projects, and that have the potential for causing harm to fish. Activities on this list do not necessarily harm salmonids, depending on the circumstances of each case. However, this list can be used as a general guide for when to contact NMFS for more information.

Table 10: Activities that may harm fish

- Constructing or maintaining structures like culverts, berms, or dams that eliminate or impede a listed species' ability to migrate or gain access to habitat.
- Discharging pollutants, such as pesticides or organic nutrient-laden water (including sewage water) into a listed species' habitat.
- Removing or poisoning plants, fish, wildlife, or other biota that the listed species requires for feeding, sheltering, or other essential behavioral patterns.
- Removing or altering rocks, soil, gravel, vegetation or other physical structures that are essential to the integrity and function of a listed species' habitat.
- Removing water or otherwise altering streamflow in a manner that significantly impairs spawning, migration, feeding, or other essential behavioral patterns.
- Releasing non-indigenous or artificially propagated species (including releases of biological control agents) into a listed species' habitat or into areas where they may gain access to that habitat.
- Constructing, maintaining, or using inadequate bridges, roads, or trails on stream banks or unstable hill slopes adjacent to or above a listed species' habitat.
- Conducting timber harvest, grazing, earth-moving, or other operations that substantially increase the amount of sediment going into streams.
- Conducting land-use activities that may disturb soil and increase sediment delivery to streams--such as grazing, farming, and road construction--in riparian areas and areas susceptible to mass wasting and surface erosion.

- Various streambed disturbances may trample eggs or trap adult fish preparing to spawn. The disturbance could be mechanical disruption caused by work in a stream channel. It may also take the form of egg trampling or smothering by livestock in the streambed or by vehicles or equipment being driven across or down the streambed (or similar physical disruptions).
- Altering lands or waters in a manner that promotes unusual concentrations of predators.