Icon	Description
Public natural areas / Areas naturales públicas	Local parks like Topanga, Griffith & Kenneth Hahn State Park welcome visitors w/ picnic areas, hiking & nature trails. Most are in SM Mountain range. The rainier western side of mountains shunts water down canyons into SM Bay during the rainy season. These canyons provide seasonal streamside habitat that sustains native plant & animal communities. Many canyons have disturbed habitat & invasive exotic plants.
Drinking water / Agua potable	Bringing water to LA's semi-arid metropolis is a dramatic tale retold in movies and books. Currently, 15% of the freshwater used in Southern California is groundwater from local sources. The remainder is imported from Sacramento Delta, Colorado River, & Sierra Nevada via large aqueducts & pumps. Locations on map designate chlorification, purification & storage facilities.
Greenways / Via verde	Whether they originate from underground springs or carry rainwater down from canyons, both intermittent & year-round streams play a role in the hydrologic cycle. Neighboring riparian vegetation, such as sycamores, willows, mulefat & lillies, adapt to extreme rain & drought. Most streams, like Ballona Creek, are subject to flood control measures & carry urban runoff to the sea.
Native vegetation / Vegetacion nativa	California Live Oaks feed nearly 800 species of insects & butterflies, which in turn feed many birds. Native plants have co-evolved with fauna for millions of years & provide food & shelter for several times more species of birds, insects & butterflies than do exotic species. In fact, many exotics are bred for resistance to insects. Loss of open space has also reduced native habitat.
Butterfly habitat / Habitat de las mariposas	There are 106 species of butterflies left in So. Cal, of which 21 are "urban." The other 85 species cannot survive without native plants. The El Segundo Blue spends its entire life cycle with coastal buckwheat flowerheads. Loss of native habitat has accelerated decline in butterfly species. Butterfly gardens need 2 kinds of plants: those whose flowers supply nectar for adults & those that supply food for caterpillars.
Pacific flyway / Camino de vuelo por el Pacifico	LA is a stop for birds along the Pacific Flyway. Some birds, like the Pacific Brant, start their 3000 mile journey in the Bering Sea/Alaska & feed in La Ballona Wetlands before continuing on to winter in Mexico. Others, like Yellow-Rumped Warblers & White-crowned Sparrows, winter here. As native habitat is lost, birds no longer stop in LA. As distances between rest & food stops increase, whole populations become stressed.
Wetlands / Pantano	Wetlands are home to rare & endangered plant species, migrating & resident birds, & marine & mudflat creatures. 90% of wetlands in greater LA have been drained or filled to create farmland, oil & gas fields, industrial sites & disposal areas for trash or soil. La Ballona Wetlands is the last remaining wetland in the LA Basin. As such, it presents a number of opportunity sites for LA.
Environmental school / Programas escolares del medio-ambiente	Encouraged by DWP & LAUSD Cool Schools and School Greening Programs, LA schools have increased ground water percolation, reduced polluted runoff, created habitat, lowered energy needs and increased environmental learning opportunities by strategically planting trees/shrubs and removing asphalt. Combined, these schools have planted over 700 trees and removed at least 20% asphalt!

WHAT IS A WATERSHED?
& why make a watershed map?

A watershed is an area of land that drains all water that falls within it to a common point. This map identifies environmental features and resources in the Ballona Watershed, which is part of the larger Santa Monica Bay Watershed. The Ballona Watershed drains through Ballona Creek to Santa Monica Bay. A watershed is an important way to organize how we think about natural relationships between water, earth, & people. Watersheds provide habitat for plants and animals and provide important environmental benefits such as water filtration and storage. The hydrologic cycle (precipitation, percolation and evaporation) intersects with and shapes earth's topography, contributing to unique combinations of plant and animal species. People are also part of watersheds, relying on their water and unique environments, yet, by channeling streams & paving over the earth humans have drastically altered the original percolation & filtration zones of the watershed. It is our hope that the reader will contemplate these changes, and also dream of how we might restore some of the watershed while continuing to enjoy living an urban life in Southern California.

MASTER LEGEND

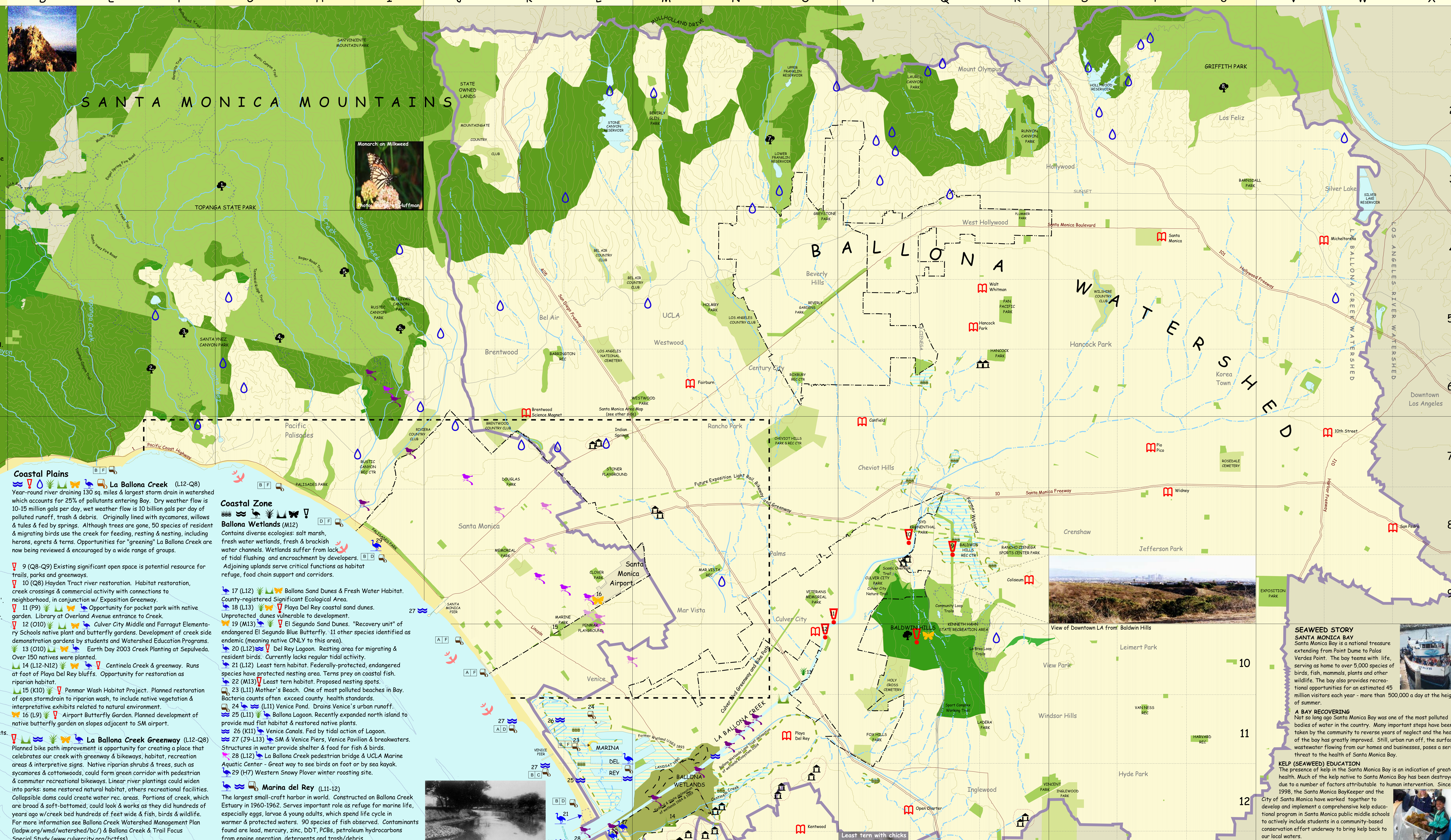
- Hiking Trail
- City boundary
- SM Area Map boundary
- Watershed boundary
- Streets
- Freeways
- Land contours
- Ocean contours
- Former creek
- Rivers and creeks
- Ocean and lakes
- Former lake
- Former Native American village
- Former wetland
- Wetland
- Native habitat private land
- Native habitat public land
- Parks
- Golf courses/country clubs/cemeteries
- Beach

1 1/2 0 1
Miles

Sources: SCAG; Thomas Bros; USGS 1893 & 1989

USING THIS MAP

This green map identifies environmental features and resources of the Ballona Watershed. The map on the reverse side provides detail in the Santa Monica area. The icons around the perimeter of the map describe the unique resources and features found in the area. Find specific sites on the map by matching the grid references in the description to the map grid.



Mountains

Santa Monica Mountains (A1/7-X1/2)
This east-west trending range defines the northern boundary of the watershed. Water flows from upper elevations down to the basin, sustaining diverse plant communities of sage scrub, woodlands & chaparral. These serve as the basis of a food chain that includes insects, lizards, road runners, snakes, coyotes, badgers, mountain lions & bobcats. I-405 & 101 freeways are disruptions in essential wildlife corridors. Grizzly bear shot in 1853.

1 (D1-I6) Topanga State Park. Largest wildland within any world city. Temescal Peak is highest point at 2126'.
2 (F6) Los Liones Canyon. Rugged, steeply-sloped, & secluded. From "Outlook" there is spectacular view of coast.
3 (F3-G7) Santa Ynez Canyon. Upper canyon contains caves & rock shelters in cliffs. Waterfall fed by Eagle Springs above. Pacific tree frogs & tadpoles populate area. Lower canyon is shaded by woodland along stream. Eagle Rock, massive sandstone ridge, dominates.
4 (G3-H6) Temescal Canyon. Creek cascades down narrow gorge, feeding waterfall.
5 (G1-I7) Rustic Canyon. Upper canyon - mosaic boulders & grottos. Blue Gorge narrows to 4', has rapids & waterfalls. Streambeds change with each storm. View of Cathedral Rock-amphitheater in cliff. Lower canyon - rock climbing, streams, secluded ravines & cliffs.
6 (H1-I5) Sullivan Canyon. Heavy rains cover canyon floor & redistribute million year old gravel. Spectacular sunsets.
7 (O1-O3) Franklin Canyon. Outdoor classroom. Reservoirs used by resident & migrating birds for resting & nesting.
8 (T1-V2) Griffith Park. Streams, waterfalls & lush native vegetation found in Moco-Cahuenga Canyon (Council grounds of chiefs), Ferndell picnic area & Fern Canyon NatureTrail.

Baldwin Hills (P9-Q10)
Significant, though degraded, natural lands to be restored for public use. Planned new park to connect to Ballona Creek & beach bike trails. Chaparral & riparian plants in arroyos, native grasslands & sage scrub in hilltops, sand dunes & marshes in uplands, 166 bird species, mammals, reptiles & amphibians. Native sand banks aid in revegetation of low lands below.

Coastal Plains

La Ballona Creek (L12-Q8)
Year-round river draining 130 sq. miles & largest storm drain in watershed which accounts for 25% of pollutants entering Bay. Dry weather flow is 10-15 million gals per day, wet weather flow is 10 billion gals per day of polluted runoff, trash & debris. Originally lined with sycamores, willows & tules & fed by springs. Although trees are gone, 50 species of resident & migrating birds use the creek for feeding, resting & nesting, including herons, egrets & terns. Opportunities for "greening" La Ballona Creek are now being reviewed & encouraged by a wide range of groups.

9 (Q8-Q9) Existing significant open space is potential resource for trails, parks and greenways.
10 (Q8) Hayden Tract river restoration. Habitat restoration, creek crossings & commercial activity with connections to neighborhood, in conjunction w/ Exposition Greenway.
11 (P9) Opportunity for pocket park with native garden. Library at Overland Avenue entrance to Creek.
12 (O10) Culver City Middle and Farragut Elementary Schools native plant and butterfly gardens. Development of creek side demonstration gardens by students and Watershed Education Programs.
13 (O10) Earth Day 2003 Creek Planting at Sepulveda. Over 150 natives were planted.
14 (L12-N12) Centinela Creek & greenway. Runs at foot of Playa Del Rey bluffs. Opportunity for restoration as riparian habitat.
15 (K10) Penmar Wash Habitat Project. Planned restoration of open stormdrain to riparian wash, to include native vegetation & interpretative exhibits related to natural environment.
16 (L9) Airport Butterfly Garden. Planned development of native butterfly garden on slopes adjacent to SM airport.

La Ballona Creek Greenway (L12-Q8)
Planned bike path improvement is opportunity for creating a place that celebrates our creek with greenway & bikeways, habitat, recreation areas & interpretive signs. Native riparian shrubs & trees, such as sycamores & cottonwoods, could form green corridor with pedestrian & commuter recreational bikeways. Linear river plantings could widen into parks: some restored natural habitat, others recreational facilities. Collapsible dams could create water rec. areas. Portions of creek, which are broad & soft-bottomed, could look & works as they did hundreds of years ago w/creek bed hundreds of feet wide & fish, birds & wildlife. For more information see Ballona Creek Watershed Management Plan (ladpw.org/wmd/watershed/bc/) & Ballona Creek & Trail Focus Special Study (www.culvercity.org/bctfss)

Coastal Zone

Ballona Wetlands (M12)
Contains diverse ecologies: salt marsh, fresh water wetlands, fresh & brackish water channels. Wetlands suffer from lack of tidal flushing and encroachment by developers. Adjoining uplands serve critical functions as habitat refuge, food chain support and corridors.

17 (L12) Ballona Sand Dunes & Fresh Water Habitat. County-registered Significant Ecological Area.
18 (L13) Playa Del Rey coastal sand dunes. Unprotected dunes vulnerable to development.
19 (M13) El Segundo Sand Dunes. "Recovery unit" of endangered El Segundo Blue Butterfly. 11 other species identified as endemic (meaning native ONLY to this area).
20 (L12) Del Rey Lagoon. Resting area for migrating & resident birds. Currently lacks regular tidal activity.
21 (L12) Least tern habitat. Federally-protected, endangered species have protected nesting area. Terns prey on coastal fish.
22 (M13) Least tern habitat. Proposed nesting spots.
23 (L11) Mother's Beach. One of most polluted beaches in Bay. Bacteria counts often exceed county health standards.
24 (L11) Venice Pond. Drains Venice's urban runoff.
25 (L11) Ballona Lagoon. Recently expanded north island to provide mud flat habitat & restored native plants.
26 (K11) Venice Canals. Fed by tidal action of Lagoon.
27 (J9-L13) SM & Venice Piers, Venice Pavilion & breakwaters. Structures in water provide shelter & food for fish & birds.
28 (L12) La Ballona Creek pedestrian bridge & UCLA Marine Aquatic Center - Great way to see birds on foot or by sea kayak.
29 (H7) Western Snowy Plover winter roosting site.

Marina del Rey (L11-12)
The largest small-craft harbor in world. Constructed on Ballona Creek Estuary in 1960-1962. Serves important role as refuge for marine life, especially eggs, larvae & young adults, which spend life cycle in warmer & protected waters. 90 species of fish observed. Contaminants found are lead, mercury, zinc, DDT, PCBs, petroleum hydrocarbons from engine operation, detergents and trash/debris.

SEAWEED STORY

SANTA MONICA BAY
Santa Monica Bay is a national treasure extending from Point Dume to Palos Verdes Point. The bay teems with life, serving as home to over 5,000 species of birds, fish, mammals, plants and other wildlife. The bay also provides recreational opportunities for an estimated 45 million visitors each year - more than 500,000 a day at the height of summer.

A BAY RECOVERING
Not so long ago Santa Monica Bay was one of the most polluted bodies of water in the country. Many important steps have been taken by the community to reverse years of neglect and the health of the bay has greatly improved. Still, urban run off, the surface wastewater flowing from our homes and businesses, poses a serious threat to the health of Santa Monica Bay.

KELP (SEAWEED) EDUCATION
The presence of kelp in the Santa Monica Bay is an indication of greater health. Much of the kelp native to Santa Monica Bay has been destroyed due to a number of factors attributable to human intervention. Since 1998, the Santa Monica BayKeeper and the City of Santa Monica have worked together to develop and implement a comprehensive kelp educational program in Santa Monica public middle schools to actively include students in a community-based conservation effort underway to bring kelp back to our local waters.

Icon	Description
Opportunity site / Sitios de oportunidad	Pending improvement of existing conditions, "opportunity sites" have the potential to sustain many wildlife species through preservation & restoration of degraded or unprotected lands. Restorations of Baldwin Hills & La Ballona Creek are prime examples. These sites will provide residents of LA the ability to interact with & demystify nature while learning value of biodiversity & importance of co-existence with it.
Water pollution source / Fuente de la contaminación del agua	Most of SM Bay pollution comes from urban runoff. Trash, cigarettes & grease dumped in streets enter stormdrains & flow to SM Bay. Heal the Bay, an environmental organization, grades beaches on A to F scale based on water quality monitoring. Map shows dry /wet weather grades at outfalls indicated as A/F. 2 out of 50 miles of coastline are polluted in summer, but water quality drops dramatically during rainstorms, rebounding within days. Not all outfalls are shown.
Coastal habitat / Habitat costero	Coastal habitat is found along SM Bay shoreline. Tidal lagoons, saltmarshes & beaches serve as feeding, resting & nesting areas for resident & migrating birds such as Least Tern, Snowy Egret, Kingfisher, Cormorant & Western Grebe. Much of coastal habitat is degraded, destroyed or endangered by shoreline development, pollution, & predation by domestic animals. Remnants offer restoration opportunities.
Marine habitat / Habitat marina	Breakwaters provide shelter and nourishment for many species of fish such as California Halibut, Surf Perch, Sardines, Lobster & Smelt. Warmer, protected waters of Harbor & Lagoons serve as nursery & habitat for young marine & mudflat creatures such as Long-jawed Mudsucker, Shadow Goby, Fiddler & Mudflat Crab, Ghost Shrimp, & Sea Hare.
Native American site / Sitio indigeno Norte Americano	Before Spanish & other European Americans came to California, the Tongva (Gabrielino) Indians lived around wetlands & natural springs in LA for thousands of years. The Kuruvungna Springs, a sacred Tongva site and once the location of a thriving village of the Tongva, is now located on the campus of University High School. The Gabrielino Tongva Springs Foundation hosts visitors to the springs on the first Saturday of each month.
Urban Green Corridor/ Bird Watching / Pasillo urbano ecologico mirador de pajaro	In 2000 the Wildlife Club at SAMO High School investigated opportunity of creating wildlife corridors to connect open spaces. The Wildlife Club & Audubon Society conducted a bird count along these corridors. Number of species counted is as follows: Over 10 species; 7-10 species; 5-7 species; 0-4 species

A Green Map is a map that locates and promotes sustainable urban features, both natural and manmade. All over the world, cities & towns are being Green Mapped using the globally shared, award-winning icons seen on this map. For more info visit greenmap.org.

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Santa Monica & Ballona watershed green map

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