



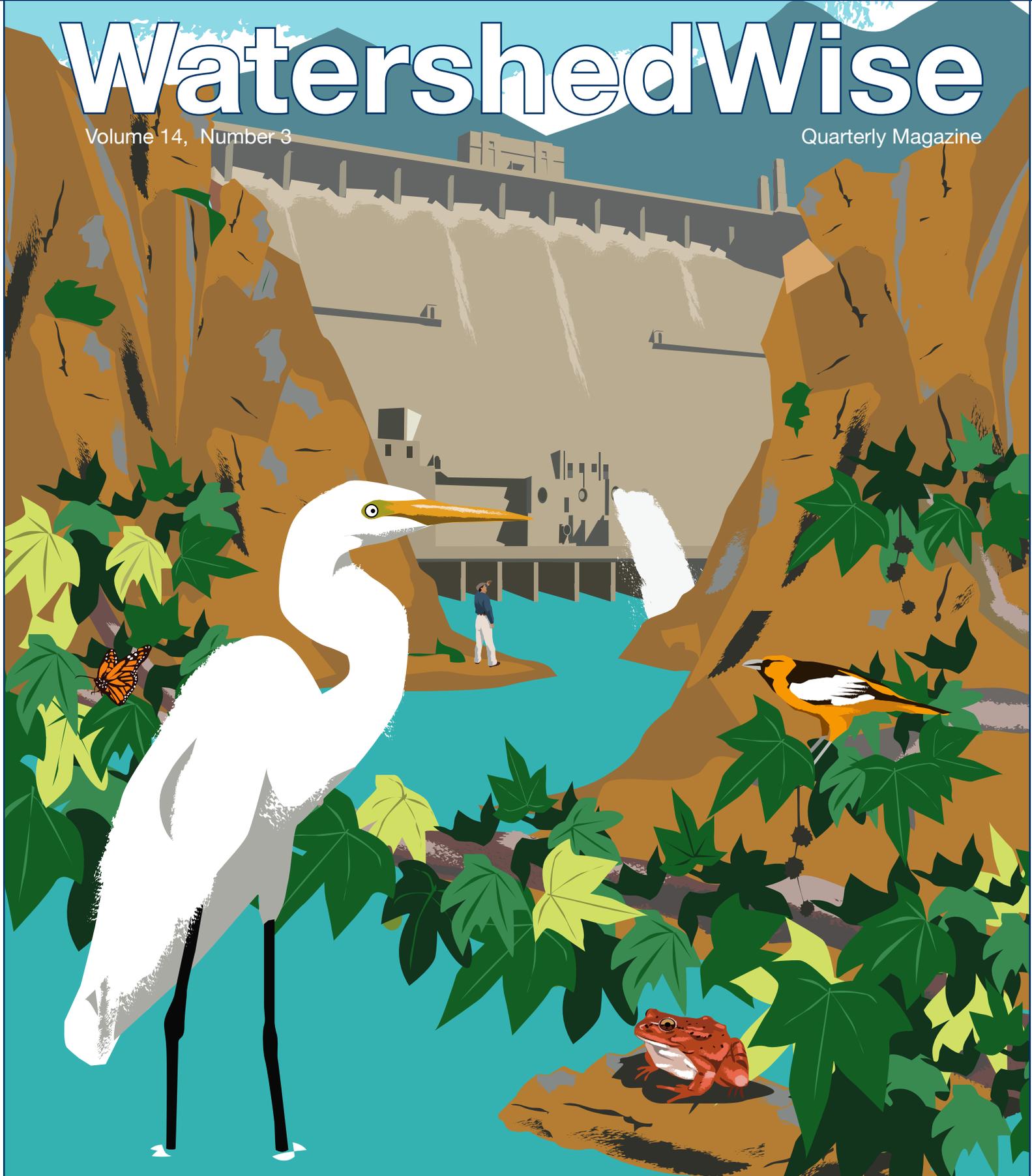
Council for
Watershed Health

Biota of the San Gabriel River Watershed

WatershedWise

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Letter from the Editors

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The San Gabriel River begins in the picturesque undeveloped San Gabriel Mountains and wraps its way more than 60 miles through a highly urbanized set of cities. In comparison to its neighbor, the Los Angeles River, the San Gabriel may appear to be untouched by the hand of man. The truth of the matter, however, is that the river is managed through a complex system of dams, levees, and infiltration basins designed to capture a large portion of the water. To the biota of the region, however, the San Gabriel River is more than a mechanism for capturing our drinking water and controlling pollutants. It is the lifeblood that gives sustenance to thousands of species.

On May 4, 2012 at Occidental College in Eagle Rock, the Council for Watershed Health organized a full-day symposium on "Biota of the San Gabriel River Watershed" for the Southern California Academy of Sciences Annual Meeting. The goal of the symposium was to highlight the occurrence and distribution of plant and animal communities throughout the watershed to enhance efforts to protect and restore critical ecosystem functions.

Understanding how our plants and animals are responding to conditions in the river provides a glimpse into our own health. Indeed, it was John Muir who said:

"When we try to pick out anything by itself, we find it hitched to everything else in the universe."

Thus, when the experts tell us that many of our native snakes and frogs are in danger of extinction, we should not just shrug it off as a problem for the snakes and frogs. Likewise, when they tell us that the endangered Green Sea Turtles have migrated upstream, we should take notice. At the end of the day, watershed health is human health.

This issue of WatershedWise focuses on biologists who have and continue to survey resources in the river system and the peculiar habitat requirements for declining species. We hope these habitat requirements can be incorporated into plans for the river that will restore the look as well as the utility of the river system to these declining species.

Cover art illustration by Ed Lum (www.funkyjunkfarms.com/ed)



BIOTA OF LOS CERRITOS WETLANDS

an urbanized ecosystem

Eric Zahn | Co-Principal/Coastal Ecologist, Tidal Influence

The San Gabriel River watershed culminates at the Los Cerritos Wetlands, before entering the Pacific Ocean at Los Alamitos Bay. This intersection between the riverine, marine and terrestrial systems results in a highly productive environmental that supports an abundant and diverse assemblage of plant and animals species. From 1894 to present, approximately 12,063 acres of these wetlands have been lost throughout Los Angeles and Orange Counties and recent activities have focused on protecting and restoring these important habitats.

Historically, the once 2,400 acre Los Cerritos Wetlands system supported multiple habitat types including coastal salt marsh, riparian woodlands, coastal sage scrub, coastal strand and sub tidal marine. In the past century, urban infrastructure such as the construction of roads, flood control facilities, and power generating plants has dramatically altered this ecosystem and the effects have gone largely undocumented until recently.

Over the past 20 years, public agencies and local environmental groups have pursued habitat conservation initiatives in the remaining 500 acres of the Los Cerritos complex, recognizing that this site is one of the few remaining opportunities in southern California for restoration of estuarine habitat. The Los Cerritos Wetlands Authority was established in 2006 with the purpose of acquiring

and owning property in the wetlands and to plan and implement restoration activities. Currently 255.67 acres of public properties lie within the wetland boundary and 172 acres are owned by the Wetlands Authority.

Cataloguing the remaining habitats and associated floral and faunal communities of Los Cerritos Wetlands commenced in 2011 as part of an effort to complete a conceptual restoration plan for the area. To date, 11 habitat types have been identified that host 63 species of native plants, 123 bird species, 11 mammal species, and 7 fish species, along with a variety of reptiles, amphibians and invertebrates that have been documented. Importantly, critical habitat for special status plants and animals is present including the endangered Belding's savannah sparrow, California's least tern, and the Pacific green sea turtle.

The cataloguing of existing biota is important to advising both large-scale comprehensive restoration efforts and smaller-scale community-based restoration projects. It tells us what special status species to protect and what is absent that should be present. Understanding the existing biota of the Los Cerritos Wetlands will properly inform the future restoration of the San Gabriel River's estuary.

Herptofauna And Habitats: A Survey Of The San Gabriel River

Mickey Long | Los Angeles County Natural Areas Administrator (retired)



Photo by Lou Orr

The San Gabriel River watershed, as a whole, supports 49 species of amphibians and reptiles (43 native and 6 introduced) (Figure 1). In compiling this survey, I examined several published works on herpetofauna from the San Gabriel Mountains and sites along the lowland portion of the watershed, including personal records and those supplied by field colleagues.

The habitats in the mountains, along the upper tributaries of the river, support interesting and diverse species like coastal slope collared lizards (*Crotaphytus bicinctores*) in rocky streambeds of the headwaters of the East Fork San Gabriel River, and a newly-named (1996) amphibian, slender salamander (*Batrachoseps gabrieli*), from talus slopes in canyon live oak/bigcone douglas-fir habitat below Crystal Lake.

Figure 1. Survey of Herpetofauna Species in the San Gabriel River Watershed

| HERPETOFAUNA SPECIES | OVERALL WATERSHED | SANTA FE DAM | WHITTIER NARROWS | PUENTE HILLS/ WHITTIER HILLS |
|----------------------|-------------------|--------------|------------------|------------------------------|
| Native | 43 | 17 | 11 | 17 |
| Introduced | 6 | 1 | 4 | 0 |
| Total | 49 | 18 | 15 | 17 |

Where the San Gabriel River exits the mountains, the Santa Fe Dam basin, including a protected wildlife area of outstanding alluvial scrub vegetation, supports a fairly diverse herpetofauna, by virtue of its geographic location at the base of the mountains and fairly undisturbed habitat. The open spaces within the native shrub cover support low annuals and few stands of invasive grasses and forbs and therefore support populations of coast horned lizard (*Phrynosoma coronatum*), coastal whiptail (*Aspidoscelis tigris stejnegeri*) (Figure 2) and other reptiles.

Figure 2. Coastal whiptail (*Aspidoscelis tigris stejnegeri*)



Photo by Chuck Haznedl

The Whittier Narrows Dam basin, 8 miles downstream from Santa Fe Dam, is more impacted by recreational land uses and more dense invasive grasses and herbaceous cover, such as mustards (*Hirschfeldia* and *Sisymbrium* spp.), European bromes (*Bromus* spp.) and giant reed (*Arundo donax*) yielding a depauperate

herpetofauna by comparison. Several species drop out here (e.g. coast horned lizard and coastal whiptail), although there is still a localized population of red racer (*Coluber flagellum piceus*).

The Puente Hills to the east of Whittier Narrows has been surveyed more systematically for herpetofauna and, as an upland series of hills, retains some species now rare or absent from the lowland San Gabriel River corridor including the arboreal salamander (*Aneides lugubris*), western spadefoot (*Spea hammondi*), and western blind snake (*Leptotyphlops humilis*). The widespread and ubiquitous species, western fence lizard (*Sceloporus occidentalis*), southern alligator lizard (*Elgaria multicaudata*) and San Diego gopher snake (*Pituophis catenifer*) occur nearly throughout the watershed.

Restoration of a native herpetofauna along the lower San Gabriel River depends on protecting the small existing open spaces and restoring soft bottom riverbed and side tributaries. Amphibians require water, which needs to be made available year-round. The one native, highly imperiled pond turtle, (*Actinemys marmorata*), would be a good target for restoration by providing deep side pools and open sandy banks for egg-laying.

The several introduced amphibian species established in the River drainage, like bullfrog (*Lithobates catesbiana*) and African clawed frog (*Xenopus laevis*), pose problems as competitors and/or predators on native herpetofauna, and their removal is important to restoring a native herpetofauna.

The author thanks Marty Ruggles and Dan Cooper for field records and helpful suggestions on this work.



Fig 1. Grape Soda Lupine (*Lupinus excubitus*)



Fig 2. Golden Yarrow (*Eriophyllum confertiflorum*)

NATIVE SEED PALETTES FROM THE ANGELES NATIONAL FOREST

Katie VinZant

Botanist, U.S. Forest Service,
Angeles National Forest

Photos courtesy of Katie VinZant

The Angeles National Forest provides the largest open space within Los Angeles County. Located between the southern coastal plain to the south and the high desert to the north, the Angeles contains a wide diversity of plants that are typical of the desert on the north side and those typical of coastal sage scrub communities to the south. Recently an aggressive plan for restoration projects across the Forest led to the development of native seed palettes for many varied vegetation types. These types range from alluvial fan scrub, coastal sage scrub, mixed chaparral, oak woodland, and assorted riparian vegetation complexes. The determination of plant species in the restoration palette is based on a variety

of factors such as commonality/dominance, reproduction methods and rates, growth habit, drought, sunlight, and disturbance tolerance, soil preference, and wildlife habitat requirements. The emphasis for propagules focuses on collection from locally native plants or those within 5 to 10 miles of the restoration site.

Restoration palettes include species from all growth forms from trees and shrubs to subshrubs and vines. Propagules include container plants, seed and cuttings for easily rooted species. While most tree species are planted from container stock, such as maple (*Acer macrophyllum*), sycamore (*Platanus racemosa*) and California bay (*Umbellularia californica*), others more successfully root from cuttings, such as any of the willows (*Salix* spp.) and mulefat (*Baccharis salicifolia*).

Emphasis for seeded species focuses on those that germinate easily since much seed is needed for large restoration areas. Other aspects that must be considered are the availability, ease in collection, and storage life of the native seed to be harvested and the associated cost to collect clean, test, and store this seed. After taking all these attributes into consideration, we generate a native plant palette with a listing of anywhere from ten to forty species for restoration use.

Four common plant mixes that we've researched include:

Upland "Workhorses," which include chia (*Salvia columbariae*), California sagebrush (*Artemisia californica*), brittlebush (*Encelia farinosa*), white sage (*Salvia apiana*), black sage (*Salvia mellifera*), deerweed (*Lotus scoparius*), California buckwheat (*Eriogonum fasciculatum*), our Lord's candle (*Hesperoyucca whipplei*), and grape soda lupine (*Lupinus excubitus*) (Figure 1), and golden yarrow (*Eriophyllum confertiflorum*) (Figure 2). These species germinate readily and are well suited to survive in open, disturbed landscapes.

Ephemeral Riparian "Workhorses" which include willows (Figure 3), mulefat, scalebroom (*Lepidospartum squamatum*) and giant ryegrass (*Leymus condensatus*). Riparian areas where the hydrology remains intact typically recolonize quickly without additional seeding, but cuttings of willow and mulefat can often speed up the restoration process.

Mid to Late Seral Species which includes chamise (*Adenostoma fasciculatum*), thicketleaf yerba santa (*Eriodictyon crassifolium*), and Mexican elderberry (*Sambucus mexicana*). These species should be added to a restoration site as container plantings, since seeding efforts are unlikely to produce results quickly.

One of the most important steps to ensure successful restoration is the removal of non-native species, such as, bromes (*Bromus* sp.), filaree (*Erodium cicutarium*), thistles (*Cirsium* spp.), and mustards (*Hirschfeldia* and *Sisymbrium* spp.).

For more information on restoration plans for the Angeles National Forest, contact Katie at kvinzant@fs.fed.us.



Fig 3. Willow cutting sprouting

Native Seed RESOURCES COALITION

Conservationists will tell you that there is an incredible need to provide watershed-specific native seeds for use in restoration and revitalization projects in local watersheds. For this reason, The Council for Watershed Health and our partners have established the Native Seed Resources Coalition. This cooperative program promotes the protection and the ecological restoration of native plant communities.

Are you a collector or buyer of seed? If so, be sure to visit our website to see how you can be part of the solution:



**Council for
Watershed Health**
www.watershedhealth.org



Identification of Focal Wildlife Species for Restoration

Coyote Creek Watershed Master Plan

Robert A. Hamilton
President,
Hamilton Biological, Inc.

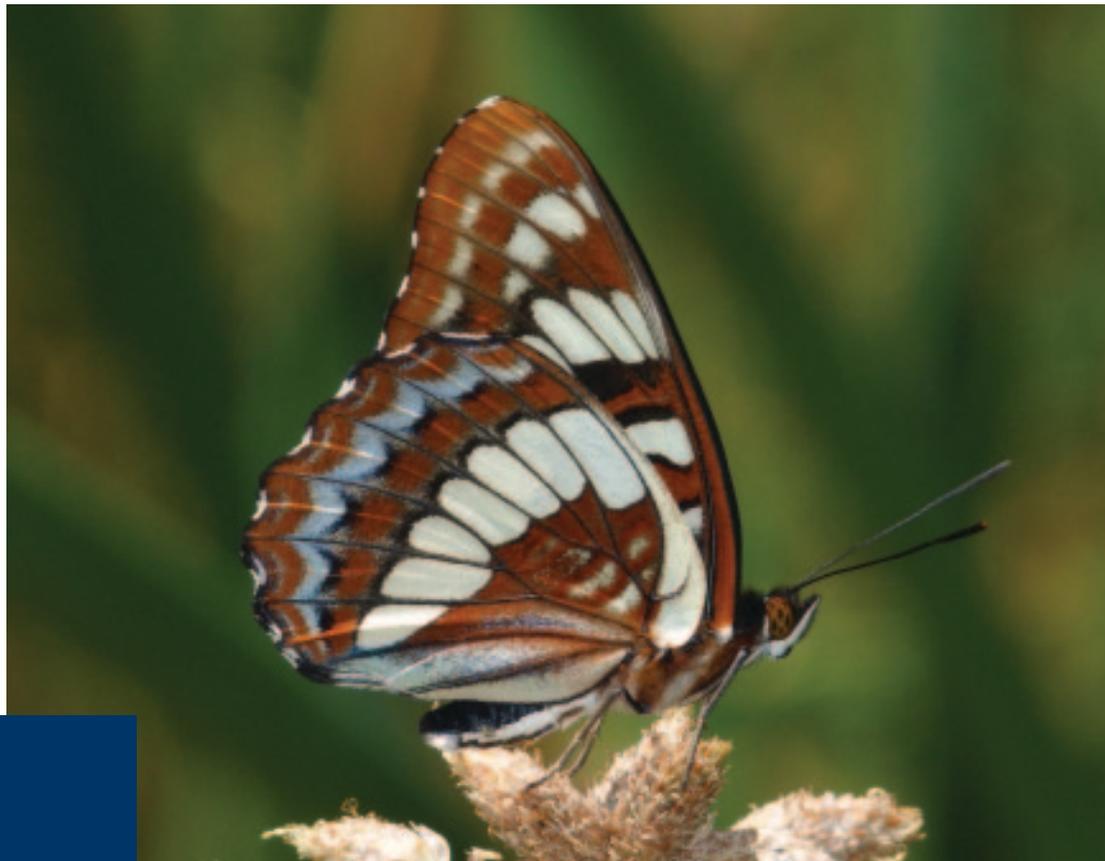
Photos by Robert Hamilton

(Top-left) Lorquin's Admiral
(medium-term focal insect
species for aquatic/riparian
areas).

(Top-middle) Southwestern
Pond Turtle (medium-term
focal reptile species for
aquatic/riparian areas in
the Puente Hills).

(Top-right) California
Gnatcatcher (short-term
focal bird species for
coastal sage/alluvial scrub
areas in the Puente Hills).

(Bottom) Hutton's Vireo
(medium-term focal
bird species for oak
woodlands).





| | Aquatic/Riparian Communities | Coastal Sage/Alluvial Scrub | Oak Woodlands |
|-----------------------------------|--|--|---|
| Short-term (1-7 yrs) | Western Tiger Swallowtail, Allen’s Hummingbird, Least Bell’s Vireo (Puente Hills; medium-term elsewhere), Common Yellowthroat, Song Sparrow, Western Toad (Puente Hills), Baja California Treefrog (Puente Hills), Western Spadefoot (Puente Hills), Southwestern Pond Turtle (Puente Hills) | Behr’s Metalmark, Western Fence Lizard, Western Skink (Puente Hills), Side-blotched Lizard (Puente Hills), Coastal Whiptail (Puente Hills), Mourning Dove, Anna’s Hummingbird, California Gnatcatcher (Puente Hills), Northern Mockingbird | Bushtit, Western Scrub-Jay, Lesser Goldfinch |
| Medium-term (8-25 yrs) | Lorquin’s Admiral, Fatal Metalmark, Arroyo Chub, Downy Woodpecker, Yellow Warbler (Puente Hills), Yellow-breasted Chat (Puente Hills), Bullock’s Oriole, American Goldfinch | California Legless Lizard (Puente Hills), Costa’s Hummingbird, Bewick’s Wren, Cactus Wren (Puente Hills), California Towhee | California Dogface Butterfly, California Sister Butterfly, Hutton’s Vireo, House Wren, Spotted Towhee |
| Long-term (>25 yrs) | Santa Ana Sucker, Threespine Stickleback, Rainbow Trout, Red-legged Frog | Coast Horned Lizard, Coastal Banded Gecko, Orange-crowned Warbler | Arboreal Salamander, Nuttall’s Woodpecker, Ash-throated Flycatcher, Western Bluebird |

Figure 1. Wildlife species as restoration indicators in Coyote Creek. Scientific names are not provided due to space limitations.

The Coyote Creek watershed encompasses 165 square miles in Orange and Los Angeles counties; most of the watershed is heavily urbanized and the creek is largely channelized. The Coyote Creek Master Plan (<http://www.rmc.ca.gov/plans/water.html>) is a blueprint for improving the health of the watershed through multi-objective projects, policies and site design guidelines. Under contract to the County of Orange, conservation ecologist Verna Jigour and I identified wildlife species to serve as indicators of successful restoration of natural communities in this watershed. We identified suites of wildlife species for the short term, medium-term, and long-term; these have been modified here for simplicity and to correct errors (Figure 1). We identified Chino Hills State Park as an ecological reference site to help guide future habitat restoration efforts. This park supports populations of most of the focal wildlife species and thus represents a source for recolonization; it can also serve additional reference needs for habitat restoration.

As a “visioning document” that lays out a set of aspirations, the Master Plan is not constrained by what is currently feasible. We were directed to proceed on the assumption that watershed management could be radically changed over time, enabling large-scale restoration, including removal of concrete channels, restoration of sediment flow, and control of exotics; therefore, we identified certain rare and declining species with specific habitat needs, some of which would need to be translocated from elsewhere. The “focal species” appropriate for a specific mitigation plan would be constrained by considerations of feasibility at the time of plan development. In the following lists, some species are identified as appropriate only in the Puente Hills, where surrounding natural areas remain.

A photograph of two snakes on a sandy surface. One snake is coiled on the right, with its head raised and mouth open, showing its tongue. The other snake is on the left, also with its head raised. The background is a plain, light-colored sand.

WILDLIFE IN THE PUENTE HILLS PRESERVE

removing barriers and preserving opportunities

Shannon Lucas
Ecologist, Puente Hills Habitat Preservation Authority

Photo by Terry Tuttle

The Puente Hills Preserve (Preserve) covers nearly 3,800 acres midway between the mountains and the sea and represents one of the largest remaining intact habitat islands in the San Gabriel Watershed. The Preserve is part of the Puente-Chino Hills Wildlife Corridor (PCHWC), widely recognized as a critical for wildlife movement and habitat connectivity south to the Santa Ana Mountains. Although surrounded by urban

development and fragmented by several large roadways, the Preserve supports a high diversity of wildlife species and a functional ecosystem with all trophic levels represented. High diversity is due, in part, to habitat types typical to Southern California prior to development including coastal sage scrub, chaparral, oak and walnut woodland, riparian, and grasslands. Numerous studies within the PCHWC document more than 200 different

wildlife species ranging from the 50 species of dragon/damsel/butterflies to mountain lions:

- 7 amphibian species including black-bellied salamander (*Desmognathus quadramaculatus*), Pacific tree frog (*Pseudacris regilla*), and the sensitive spadefoot toad (*Spea hammondi*).
- 13 reptile species including striped racer or whipsnake (*Coluber lateralis lateralis*), gopher snake (*Pituophis catenifer annectens*), alligator lizard (*Elgaria multicarinata multicarinata*), and the ringneck snake (*Diadophis punctatus amabilis*).
- 157 bird species including common species such as, great horned owl (*Bubo virginianus*) and red-tailed hawk (*Buteo jamaicensis*); sensitive species such as, California gnatcatcher (*Polioptila californica*), and burrowing owl (*Athene cunicularia*); many are migratory, such as Bullock's oriole (*Icterus bullockii*); some are residents, such as the greater roadrunner (*Geococcyx californianus*), coastal cactus wren (*Campylorhynchus brunneicapillus*), or the California gnatcatcher.
- 38 mammal species include the common Botta's pocket gopher (*Thomomys bottae*), desert cottontail rabbit (*Sylvilagus audubonii*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), mule deer (*Odocoileus hemionus*), spotted skunk (*Spilogale gracilis*) (tracks), long-tailed weasel (*Mustela frenata*), coyote (*Canis latrans*), and at least 30 sensitive species including American badger (*Taxidea taxus*) (roadkill), and cougar (*Puma concolor*).

Three surveys have documented at least 11 bat species in the PCHWC. Some are migrants, some roost in tree foliage or bark, others in cavities or crevices, many roost near water. Some are rare, including the pallid bat (*Antrozous pallidus*), western mastiff bat (*Eumops perotis*), Townsend's big-eared bat (*Corynorhinus townsendii*), and southern yellow bat (*Lasiurus xanthinus*).

Several studies have focused on medium/large mammal movements through this Corridor.

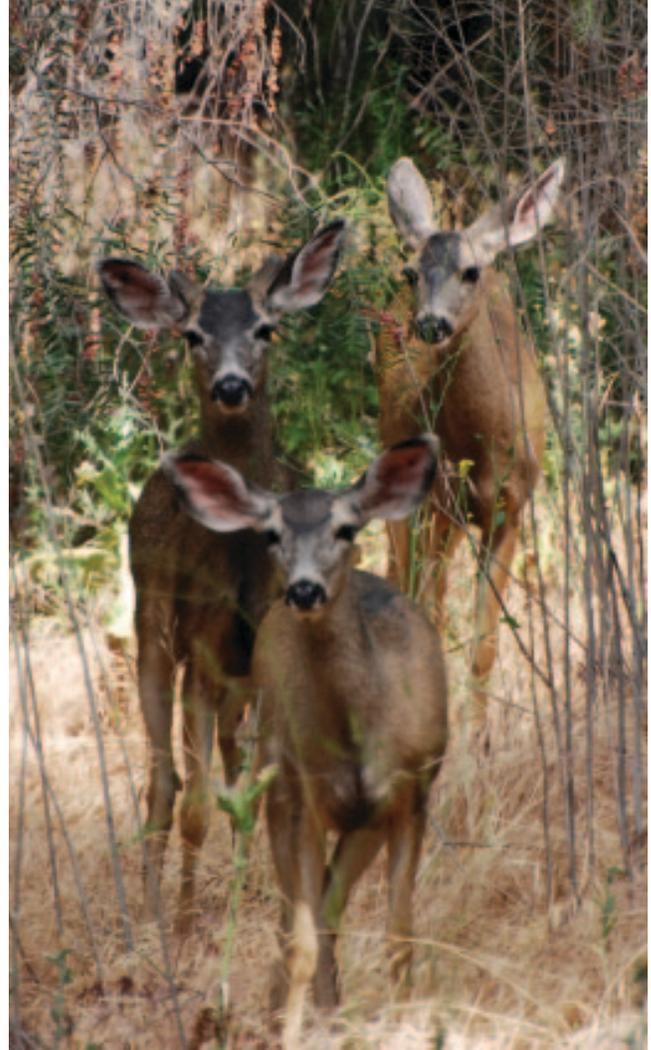


Photo by Terry Tuttle

These studies have highlighted the importance of removing barriers to and preserving opportunities for: animal movement/dispersal of juveniles, response to habitat alteration (i.e. wildfire), and gene flow for adaptability to environmental changes. Roadway underpasses are critical to successful wildlife movement across high-volume roads which can act as barriers, but the underpasses' location and characteristics is also critical to their functionality. Habitat restoration through revegetation and non-native plant removal helps connect existing habitats and species populations, and also creates more habitat for species dispersal and occupation. Other factors influencing movement and connectivity may include increased human activity and habitat quality. Securing remaining private lands in the corridor through acquisition will also promote the long-term function and viability of the PCHWC.

The full species list and studies can be found at <http://www.habitatauthority.org/nrm.shtml>.



Photos courtesy of Adam Backlin

Can native frogs be restored to the San Gabriel watershed?

Adam R. Backlin, Elizabeth A. Gallegos, Ben Young Landis, and Robert N. Fisher

Frogs might be a thing of fond childhood memories, or an acoustic welcome during a peaceful hike along a gurgling creek. But, amphibian declines are occurring on a global scale, and this trend is also being seen here in southern California.

The amphibians most affected by declines in southern California are the large frogs of the Family Ranidae. Historically, three Ranid frog species occupied the San Gabriel watershed: the California red-legged frog (*Rana draytonii*), the foothill yellow-legged frog (*Rana boylei*) and the Sierra Madre yellow-legged frog (*Rana muscosa*), which is commonly referred to as the mountain yellow-legged frog.

By 1970, both the California red-legged frog and the foothill yellow-legged frog had been extirpated from the San Gabriel watershed. Currently, the only remaining species within the San Gabriel watershed is the Sierra Madre yellow-legged frog — but it itself is listed as endangered by the U.S. government, the State of California and the International Union for Conservation of Nature (IUCN).

Since the early 1970s, the Sierra Madre yellow-legged frog has declined precipitously in southern California. In concern for this species, a working group was formed in 2000 to develop conservation and recovery strategies.. The working group has representatives from many agencies and non-government organizations, including the U.S. Fish and Wildlife Service, California Department of Fish and Game, the U.S. Forest Service, U.S. Geological Survey and the San Diego and Los Angeles Zoos.

Sierra Madre yellow-legged frogs are only known to occur in nine small populations across southern California's three mountain ranges — San Gabriel, San Jacinto and San Bernardino. Less than 200 adults remain in the wild; some were moved to zoos after habitat destruction by the 2009 Station Fire. Worse, all known populations in southern California are also infected with the amphibian chytrid fungus — *Batrachochytrium dendrobatidis* or "Bd" — an amphibian disease implicated in the extirpation and decline of countless species around the world.

Locally, the USGS Western Ecological Research Center has been studying the remaining Sierra Madre yellow-legged frog populations since 2000, including leading monitoring surveys and restoration efforts. One project has shown short-term success occurring in the upper headwaters of the San Gabriel Mountains. At one Bd-positive site in the San Gabriel Mountains, the working group identified and implemented two priority restoration actions: non-native trout removal and limiting recreational use through temporary forest closures.

With 12 years of monitoring at the site before and after the restoration efforts, USGS researchers found that the frogs responded to the removal of non-native trout. Frogs re-occupied several kilometers of newly fishless habitat over a three year period. At sites where recreation use was limited, the frogs responded immediately and showed an 875% increase in the average number of adult frogs detected over the course of five years.

Based on the success of this project, similar projects have been initiated at other sites. In addition to the restoration work with the Sierra Madre yellow-legged frog, discussions are underway to initiate restoration and reestablishment actions with the California red-legged frog in southern California. As for the foothill yellow-legged frog, it will be some time before plans are underway for the restoration of this elusive species.

Southern California is fortunate to have a little slice of nature surrounding its bustling communities. With scientific research and a little luck, our native frogs might continue to provide that vocal reminder of the great outdoors.



“To reach one of the last wild populations of the mountain yellow-legged frog on Earth, Adam Backlin and Elizabeth Gallegos tramped down a no-nonsense trail, scaled cliffs and barged through nettles along a vein of water in a scowling canyon deep in the San Gabriel Mountains...The life and times of mountain yellow-legged frogs embody the challenges facing species — and wildlife biologists — in Southern California.”

- *Louis Sahagun, Los Angeles Times**

** Taken from the article “Endangered mountain yellow-legged frogs might get a happy ending” - Sept. 16, 2012*



Photo by Jeff Lemm

LANDSCAPE CHANGES WITHIN THE SAN GABRIEL RIVER WATERSHED: Which **Snake** Species Are Keeping Pace And Which Ones Are Not (Or Cannot)

Edward Ervin | Merkel & Associates, Inc.,

The San Gabriel River Watershed (SGRW) contains three general physiographic zones; coastal plains, hills, and mountains. It ranges from sea level up to 10,068 ft (3,069 m) at the peak of Mount San Antonio and supports a wide range of generalized vegetation communities including salt marsh, coastal prairie, freshwater marsh, coastal sage scrub, valley grassland, riparian woodland, valley and foothill woodland, oak woodland, chaparral, conifer forest, montane meadow, and subalpine forest. Twenty one snake species historically occurred within the various habitats of these vegetation communities (Stebbins 2003). However, some snake species within the SGRW

are more at risk of extirpation than others due to their historical rarity and/or habitat alteration and destruction during the European colonization through the present.

At-risk snake species include:

The red diamond rattlesnake (*Crotalus ruber*) currently persists in the Puente Hills and Chino Hills (Hass et al. 2002). It is likely that the highly localized populations declined over the last century due to over grazing and increases in fire frequency, and the resultant conversion of vegetation from a mosaic of native grassland, coastal sage scrub, and chaparral to dense

non-native grassland. However, in response to open space management policies and the ongoing restoration of native vegetation communities, the red diamond rattlesnake should recolonize previously occupied areas.

The glossy snake (*Arizona elegans*) was restricted to the alluvial wash habitats characterized by low topography and sandy substrates that stretched across the coastal plain from the foot of the mountains to the beaches. The greatest threat has been near complete destruction of the alluvial wash habitat due to urbanization. However, there is a possibility that a remnant population may still persist within the Santa Fe Dam Recreation Area.

The South Coast garter snake (*Thamnophis sirtalis* ssp.) is considered the rarest snake in coastal southern California. It is restricted to areas consisting of a mosaic of freshwater marsh and dense riparian woodlands within the coastal plain zone (Ervin and Mahrtdt, In Prep). As a result of widespread wetland-riparian habitat destruction and alteration beginning during the European colonization period, nearly all of these historically limited habitats are filled or drained leaving only a small fraction of what historically occurred. One of the last remaining areas within the SGRW where the combination of wetland-riparian still exists is within the Whittier Narrows Dam Recreation Area. Currently there are no known records of the South Coast garter snake within Whittier Narrows. However, this area should be considered a priority for any regional surveys for this historically rare snake species.

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HELP SHAPE OUR EVENTS!

The Council for Watershed Health is soliciting feedback to direct our Watershed Symposia, Sustainable Landscape Seminars and other events to areas of concern for our stakeholders. We appreciate your input.

The survey is located online at:
<http://survey.watershedhealth.org>.

SAVE THE DATE

Environmental Funders and Media Forum
December 6, 2012
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Pipeline for the Future

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Add your water conservation projects
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Turtle Soup

An Endangered Species in the San Gabriel River

Dan Lawson | National Marine Fisheries Service, Southwest Region, Protected Resources Division

Since at least the 1980s, green sea turtles (*Chelonia mydas*) have been periodically sighted in the inland waterways and coastal region near Long Beach, California. These informal public sightings have been recorded by the National Marine Fisheries Service (NMFS) and the presence of these endangered species in the area was generally considered a reflection of ephemeral foraging visits by transient individual animals. As these sightings became increasingly more regular, the NMFS Protected Resources office, Long Beach, in cooperation with the Aquarium of the Pacific, initiated more dedicated efforts to study sea turtles in the San Gabriel River in 2008. A specific area of interest includes a stretch of the San Gabriel River located approximately 1.5 miles inland and adjacent to two coastal power plant facilities releasing warm water effluent.

An observational survey was conducted by several staff and volunteers from the NMFS and Aquarium of the Pacific from 2008-2010 (Table 1). The observations suggest that the green sea turtles are present in the vicinity of the power plants along the San Gabriel River year-round. Conservative minimum estimates of individual turtles were as high as 10, although actual numbers of individuals present may have been greater.

To better understand the dynamics and ecology of green sea turtles in this area, NMFS is currently conducting a tag-recapture study. In cooperation with the California State University at Long Beach, NMFS is using acoustic telemetry to study turtle movements

within the San Gabriel estuary and other local estuaries, such as Anaheim Bay, where turtles have also been sighted. Additional research interests include genetics and population demography, local diet and habitat usage, as well as contaminant studies.

Already, the information collected from these surveys is suggesting that the Long Beach area may be supporting significant numbers of green sea turtles, ranging widely in size, and that this area may serve as a much more important habitat for green sea turtles in southern California than was previously understood. Consequently, NMFS is actively engaged with many partners on research and management implications of hosting an endangered species in the backyard of a highly urbanized area. Local groups such as the Los Cerritos Wetlands Stewardship Program have expressed interest in including preferential green sea turtle habitat among the considerations in planning the long-term restoration of Los Cerritos Wetlands, which includes the lower San Gabriel River. In addition to learning more about this group of resident sea turtles, the NMFS is interested in the relationship between the water quality of the San Gabriel River watershed and the health of sea turtles that may reside in this area for significant lengths of time.

There appears to be exciting opportunities for organizations like the Council for Watershed Health to assist NMFS gain insights into how the overall health of the watershed might relate to the recovery of an endangered species.

Table 1. Summary of green sea turtle observational survey.

| | |
|---|--|
| No. of observation periods with records (5/20/08-12/30/10): | 155 (completed on 143 different days by 3 observers) |
| No. of observation periods turtles were successfully spotted: | 149 (96% of time at least 1 turtle present and observed) |
| Minimum estimate of individual turtles observed in 1 period: | 10 (actual number present may have been greater) |

Photo by Hugh Ryono, Aquarium of the Pacific



TIDBITS FROM OTHER SPEAKERS

As mentioned in the Letter from the Editors, the symposium highlighted the occurrence and distribution of plant and animal communities throughout the watershed to enhance efforts to protect and restore critical ecosystem functions. Presenters emphasized specific habitat requirements for a variety of native and historic plants and animals including birds, bats, fish, green turtles, amphibians and snakes. The morning session focused on terrestrial systems, while the afternoon session emphasized aquatic systems. Dr. Nancy Steele, Executive Director at the Council for Watershed Health and a long-time member of the Southern California Academy of Sciences, opened the session by describing the past, present and “future” of the watershed. The following is a brief summary of the other presentations not featured in this issue.

Jonathan Baskin, California State Polytechnic University Pomona, presented the freshwater fishes of the San Gabriel River and highlighted four native, strictly freshwater species: the Santa Ana sucker, speckled dace, arroyo chub, and the rainbow trout. An additional three native freshwater species including the unarmored three-spine stickleback, the Pacific lamprey, and the Pacific brook lamprey were once present but have since been extirpated. In their place, twenty species of non-native fish have been introduced.

Mark H. Capelli, Recovery Coordinator with the National Marine Fisheries Service (NMFS),

provided an overview of the Southern California Steelhead Recovery Plan. The critical Recovery Action for the San Gabriel River identifies the need to implement operating criteria to ensure the pattern and magnitude of groundwater extractions and releases from dams in the upper watershed support the habitat needs of both adult and juvenile steelhead. (<http://swr.nmfs.noaa.gov/recovery/index.htm>)

Ellen Mackey, senior ecologist, presented ongoing mapping efforts within the San Gabriel river system rights-of-way (ROW) that seek to capture vegetation, wildlife use, recreation opportunities and other characteristics to assist future planners designing valuable wildlife corridors through the urban matrix to the upper watershed lands, and to provide valuable acreage for linear parkways in park-poor cities. Their work is presented in ArcGIS Explorer format. (<http://watershedhealth.org/programsandprojects/rmp.aspx>)

Milan Mitrovich, SoCal Ecology, related his experiences with the design process of the Orange County Great Park, a 500 hectares military air station that can become a high biodiversity multi-functional public facility. Milan described the onsite habitats and wildlife as well as the collaboration between the ecologists, landscape architects, civil and structural engineers, hydrologists and architects in hopes that this process can be replicated to restore native wildlife habitats in other Southern California urban areas.

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TIDBITS FROM OTHER SPEAKERS

Kristy Morris, Sr. Scientist at the Council for Watershed Health discussed the results of 5-years of monitoring by the San Gabriel River Regional Monitoring Program. Results to date demonstrate that streams in the relatively un-developed upper watershed support much healthier biological communities and riparian habitat compared to streams in the largely-developed lower watershed. There have been few exceedances of water quality standards during the past 5 years, and public swimming areas are typically considered “safe to swim”. (<http://www.sangabrielriver.org>)

Claire Robinson, Amigos de los Rios, described several case studies in their “steppingstone” parks that promote biodiversity along the river system. These parks are based on sustainable design principles, use indigenous materials, native plant landscapes that foster biodiversity & assist urban residents of all ages to reconnect with local habitats within economically-disadvantaged So. Cal urban neighborhoods. (<http://www.amigosde-losrios.org/necklace.htm>)

Eric Stein, Southern California Coastal Water Research Project, described the use of historical ecology as a tool for informing restoration planning in the San Gabriel River Watershed. An analysis of historical maps, aerial photography and surveys in the watershed reveal that approximately 86% of historic wetlands have been lost with the greatest losses occurring on the lower river floodplain. Despite this, Eric noted that there are several opportunities for wetland restoration where remnant wetlands and/or wetland signatures exist. (<http://www.sccwrp.org>)

Wendy Willis, Aquatic Bioassay and Consulting Laboratories Inc., further described the health of streams throughout the watershed by characterizing the condition of benthic macroinvertebrate (BMI) communities. BMI community condition is measured by the So CA Index of Biological Integrity (IBI) and data from 2005-2010 show that physical habitat disruption and actively-managed flood control have compromised the integrity of these communities.

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Rancho Santa Ana Botanic Garden presents the **Fall Native Planting Festival**

Mark Your Calendars for **November 3!** The Fall Planting Festival at Grow Native Nursery at Rancho Santa Ana Botanic Garden will showcase thousands of California native and water efficient plants, many propagated from our own collections and not available anywhere else. Proceeds support Rancho Santa Ana Botanic Garden programs.

Don't miss this ideal opportunity to purchase hard-to-find, one-of-a-kind natives and to get your gardening questions answered by friendly, experienced botanic garden professionals and volunteers. This **FREE** event will include a lecture series with 30-minute horticultural and landscape design talks at 10 a.m, 11 a.m. and 1 p.m. and much more. Admission to the Botanic Garden is also free and there will be live music, a beer garden, and gourmet food trucks as well!

The event runs from 10am-4pm (members-only; 8-10am).
Visit www.rsabg.org for more information.

