

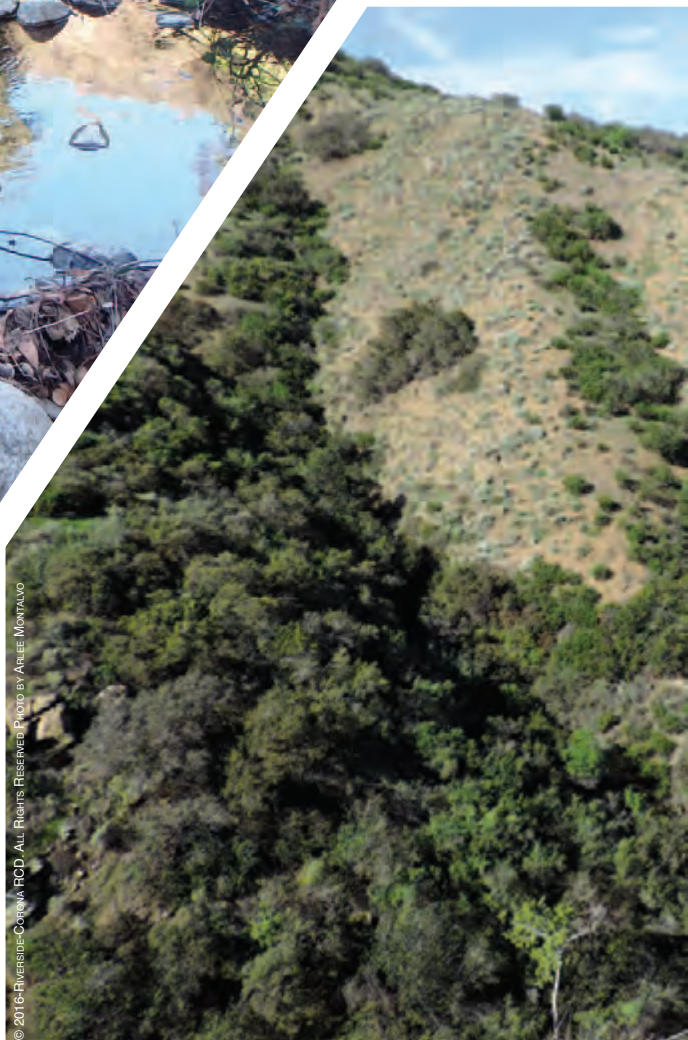
Long Range Objectives 2016-2021

RIVERSIDE-CORONA RESOURCE CONSERVATION DISTRICT

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Long Range Objectives 2016-2021

This document is an assessment of the resource management and outreach needs of the Riverside-Corona Resource Conservation District (RCRCD) (District). The objectives provided within will be used to plan future projects, programming, and district operations. An Annual Work Plan will be developed for each year based on this long term action plan.



Contents

About the RCRC	5
Programs	9
Assist Land Users with Resource Planning and Management	10
Conserve Habitat Land and Species	11
Foster Stewardship through Education, Citizen Science and Outreach	20
Goals and Objectives	28
GOAL 1—Assist Land Users with Resource Planning and Management	29
GOAL 2—Conserve Habitat Land and Species	31
GOAL 3—Foster Stewardship through Education, Citizen Science, and Outreach	34
GOAL 4—Help Create Sustainable Communities and Partnerships	39
GOAL 5—Conduct Programs Efficiently	41
Land Uses	45
Native Habitats	45
Urban and Suburban Areas	46
Agriculture	47
Resource Summaries	49
RCRC History	67

Mission

The Riverside-Corona Resource Conservation District (RCRCD) works to sustain natural resources and helps others conserve resources, so that high quality water, land, soil, wildlife, air, and plant life will be abundant forever.

The District advocates that each acre of land be managed according to its needs. District programs foster the sustainable use of natural resources for each land use, including native habitats, urban/suburban areas, and agriculture.

How do we know when a community is sustainable*?

There is a balance between the resources used and the resources generated. For example, trees are planted to replace those that were harvested.

**Sustainability is the ability to preserve the integrity of natural resources and systems, so they are neither depleted nor damaged, ensuring future generations a healthy and clean environment.*



About the RCRC

The Riverside-Corona Resource Conservation District (RCRC) is a local government agency that works to conserve the natural resources of areas within western Riverside and San Bernardino Counties in Southern California. RCRC provides resource management assistance to private and public land users and conducts land treatment and education programs about stewardship of natural resources. The District achieves its mission by coordinating community resources and cooperating with others.

The RCRC works to sustain natural resources by:

- Providing onsite technical assistance, such as irrigation system evaluations
- Conserving habitat through land acquisition, habitat restoration, and management
- Restoring native species and conducting aquatic species research and propagation
- Educating broad audiences about stewardship* of resources in natural, urban, and agricultural ecosystems.

**Stewardship is the responsible management of natural resources and systems. Stewards conserve limited resources, help regenerate degraded natural systems, and safeguard the quality of land, soil, water, air, plants, and wildlife.*

Areas of Focus

As defined in Division 9, Resource Conservation Districts are given broad abilities to protect natural resources from preventable waste and destruction.

The scope of work at the Riverside-Corona Resource Conservation District reflects local issues.

The major RCRC programs address, but are not limited to:

- Conservation of irrigation water
- Prevention of soil erosion and storm water pollution
- Habitat conservation: preservation, restoration, and management
- Facilitating sustainable agriculture and a local farm to fork food system.

In the past, the goal of the RCRC was “to conserve”, or use resources wisely, without waste or pollution. However, conservation is only one component of “sustaining” resources. To sustain resources means to use them in ways that they will last forever. It requires us to plan for the future, not just conserve in the present.



Chaparral beargrass (*Nolina cismontana*) occurs in the Santa Ana Mountains

Today our goal is to determine the best site-specific management for each land use to sustain resources while minimizing hazards to human health and environmental quality over the long term.

Structure

RCRCD is an independent, special district enabled by Division 9 of the California Public Resources Code. The District is self-governed by a locally appointed five member Board of Directors. The Board is comprised of citizens who know local resource problems. The Directors guide programs, direct operations, set policies, establish priorities, and plan resource conservation goals. The Board meets the third Tuesday of each month at 12:30 p.m. at the District's headquarters. The public is welcome to attend.

The District retains local administration and direction over its programs. It coordinates public and private sources, partnering with groups, businesses, individuals, and agencies. RCRCD enters into written Memorandums of Understanding (MOU's) with cooperating agencies, which spell out working relationships.

Most RCRCD programs are conducted as joint efforts with partners who provide technical assistance, materials, or funding. Collaboration with these partners is integral to RCRCD programs and services.

The District provides onsite technical assistance to "cooperators", and land stewards* who are interested in conserving their natural resources. A cooperator might be an individual land owner, agency, business, or group, such as a Homeowners' Association.

RCRCD is non-regulatory; it achieves its conservation goals by working cooperatively with others.



Facilities

Resource Conservation Center

The Resource Conservation Center (RCC) is a re-purposed 9-acre campus that is located at an antiquated research facility, the former USDA's Soil Salinity Laboratory at the base of Mt. Rubidoux near downtown Riverside. In an effort to reuse the site, the buildings were renovated for energy efficiency and handicapped accessibility. The Center houses the Conservation District's headquarters (Building A) and other agencies with complimentary missions within other buildings.

To demonstrate the principle of "re-use", the existing buildings were renovated. Initial demonstrations included: retrofitting parking areas with outdoor solar lighting, drought tolerant landscaping, and permeable surfacing materials. A native plant nursery was developed in abandoned salinity treatment areas, and old walk-in cold rooms have been refurbished for seed-banking. Today, the nursery and a seed bank are used for propagation of local plant species and seed storage. In addition, RCRCDC operates aquatic tanks and raceways for rearing threatened fish and amphibians; greenhouses; and the LandUse Learning Center, a demonstration garden. Conservation agencies and grassroots organizations use the Resource Conservation Center demonstration garden and conference room for programs, training, and meetings.

For fish studies and propagation, the District constructed:

- A 300-foot long, recirculating stream in the LLC where staff manages a native fish population that includes arroyo chub, Santa Ana speckled dace, and Santa Ana sucker.
- Seven fish raceways that are used to breed, study, and research the life history, growth, fecundity (reproduction), and health of native fishes.
- Eighteen re-purposed concrete tanks that are used to temporarily quarantine and treat ill or stranded fish, turtles, frogs, and salamanders that have been displaced.

Utilizing these Resource Conservation Center facilities, staff have conducted numerous research projects, including fish sensitivity to water-borne contaminants; exotic red algae impacts to the Santa Ana sucker; and Santa Ana sucker longevity and reproduction.

The facility and buildings at 4500 Glenwood Dr., Riverside, CA 92501 also house the USDA Natural Resources Conservation Service's (NRCS) Area Office; the Regional Conservation Authority's monitoring unit for the Riverside County Multi-Species Habitat Conservation Plan (MSHCP); the California Department of Food and Agriculture's (CDFA's) facility for research and control of the Glassy-winged Sharpshooter and Asian Citrus Psyllid; and the Citrus Research Board.



Pump box and raceway for fish on quarantine periods.

LandUse Learning Center

The LandUse Learning Center (LLC) is a demonstration garden that exhibits sustainable practices for the three main land uses of Southern California: native habitats, urban areas, and agriculture. The LLC is an educational tool for empowering Southern Californians to practice natural resource stewardship at home, at work, and in the community. Each area includes labelled plants with accompanying plant lists. The three garden areas demonstrate ways that land management practices, wise land use planning, and retrofits can be used to create urban and agro-ecosystems that function more like healthy natural ecosystems. The LLC is currently open Monday –Thursday, limited weekend hours, and by pre-arranged tours.

The purpose of the LandUse Learning Center is to foster community conservation efforts and to empower Southern Californians to practice natural resource stewardship at home, at work, and in the community.

Sycamore Creek Preserve and Interpretive Center

The RCRCDD field office and Sycamore Creek Interpretive Center (SCIC) is a re-purposed model home trailer that is located at 11875 Indian Truck Trail in Temescal Valley. The SCIC provides information about Sycamore Creek Preserve, which is part of a conservation easement that is managed by RCRCDD. The preserve includes a riparian corridor with a flood control sediment basin. Sycamore Creek drains into Temescal Wash, which is a major tributary to the Santa Ana River. The nearby upland habitat is home to the rare Munz's Onion. Focused monitoring every five years is part of the long term management of the site. Staff measure vegetative cover and diversity and conduct surveys for the California Gnatcatcher and other sensitive species.

The SCIC offers hands-on, nature based learning activities. Staff is developing educational programming about the local flora, fauna, ecosystem interactions, and the Santa Ana River Watershed. The SCIC will serve as a Citizen Science Outpost and as a resource center for the Santa Ana Watershed Citizen Science Program.

Currently, the SCIC is open two days a week, but additional weekend hours are planned.

Greenbelt Aquatics Facility

The District is developing an aquatic research and native fish breeding facility in the Agricultural Greenbelt area of Riverside. The construction of new raceways at the Greenbelt property will increase capacity to safely hold, rear, and study native fishes, as well as provide greater refugia for rescued fish, frogs, and pond turtles that may be extirpated from their native habitat due to catastrophic floods, drought, or other unforeseen conditions. Much of the project is part of the Upper Santa Ana River Habitat Conservation Plan (SAR HCP), which is being funded by local water districts. Under the plan, RCRCDD will create conservation easements on some of the lower tributaries of the river in order to conserve and manage essential habitat that fish rely on during warm water conditions, and at smaller backwaters. Fish propagated at the facility will be released into tributaries of the Santa Ana River where Santa Ana suckers were once common.

Programs

The Riverside-Corona Resource Conservation District conducts work under three main program areas:

Assist Land Users with Resource Planning and Management

Conserve Habitat Land and Species

Foster Stewardship through Education, Outreach, and Citizen Science



Coulter's matilija poppy (*Romneya coulteri*) occurs in the Temescal Valley and Santa Ana Mountains.

Assist Land Users with Resource Planning and Management

RCRCD provides technical assistance to land users, “cooperators”, who are interested in conserving natural resources while using or developing property.

Services provided to cooperators might include:

- onsite evaluation of a problem, such as an inefficient irrigation system;
- conservation planning based on resource data such as soil type and crop water needs;
- specifications for the installation of conservation practices, such as erosion control structures.

The RCRCD office provides resource data and planning tools, including soil and water testing, soil survey maps, and other technical information. Some natural resource management and conservation planning information is provided to RCRCD cooperators from our technical partner the USDA Natural Resources Conservation Service (NRCS).

Water Conservation

RCRCD’s Irrigation Water Management (IWM) Mobile Lab evaluates irrigation systems for efficiency and uniform distribution of water. The Mobile Lab auditor travels to cropland, homes, and large turf areas at parks, schools, and golf courses to test irrigation systems. Soil samples are taken and tested on properties larger than ½-acre. Staff then develops a report with recommendations for system improvements to help cooperators conserve water, and in so doing, save money.

Soil and Water Testing

RCRCD provides low-cost soil and water testing for private landowners and home owners. Soil tests evaluate macronutrients and micronutrients, soil texture, conductivity, and pH level. Water tests evaluate nitrate-nitrogen, phosphorus, pH level, and conductivity.

Technical Advice and Organizational Support

RCRCD collaborates with many entities to address some of the complex natural resource issues facing inland Southern California. Staff provides information about sustaining natural resources in cooperation with a variety of groups and agencies.



Jose Iniguez, irrigation auditor, tested water pressure to evaluate a sprinkler system for uniform distribution of water

Conserve Habitat Land and Species


Conserving Important Habitat

The Riverside-Corona Resource Conservation District (RCRCD) is a non-regulatory local agency that works to permanently protect land that has habitat, scenic, and/or agricultural values. RCRCD connects blocks of habitat by preserving and restoring corridors or linkages for wildlife movement and migration. RCRCD conserves open space through **habitat restoration, management, and land preservation** within acquired fee-title lands and conservation easements.

Restoration

The Conservation District improves degraded habitat by removing invasive species and trash, replanting native plants, restocking native animals, protecting soil from erosion, protecting water from pollutants, and more. The amount of restoration is determined by permit requirements (by regulatory agencies) and other field assessments.

RCRCD restores habitat in natural areas by re-establishing local native plant species for a variety of plant communities: riparian, scrubland, wetland, grassland, and oak woodland. Restoration efforts provide habitat for sensitive wildlife species including the California Gnatcatcher, Stephen's Kangaroo Rat, Horned Lizard, Red-sided Garter Snake, Least Bell's Vireo, Willow Flycatcher and other birds, mammals, and amphibians. Habitat for sensitive plant species and vegetation types is also conserved and restored.



The McBride conservation property has coastal sage scrub, chaparral, and grassland plant communities.

Management

RCRCD maintains and monitors restored habitat areas for water quality, rare and threatened wildlife species, exotic weeds, trash, Off-Road Vehicle (ORV) intrusion, noise, and other impacts. Staff monitors conservation lands and conducts a variety of different assessments, such as bird surveys for the California Gnatcatcher, soil surveys for detailed vegetation mapping, and rapid assessments of streams and vegetation communities.

As part of ongoing stewardship, RCRCD coordinates the cleanup of trash and debris; tests water quality; and monitors wildlife. Non-native aquatic species are removed from conservation easement waterways. Management includes blocking of illegal Off-Road Vehicle (ORV) routes and replanting disturbed soil with native vegetation. Occupation of preserve sites by homeless encampment has increased, mainly in riparian areas. Staff works with neighboring land owners, homeless resource groups, and law enforcement to deal with this complex and difficult issue.

Preservation

The District conserves land by accepting donations of land (deeds as fee-title, with appropriate endowments); conservation easements; and/or habitat mitigation funds. By 2016, RCRCD managed more than 2,000 acres as either fee-title lands or conservation easements.

The District owns and manages 135-acres in the Temescal Canyon area that adjoins the Estelle Mountain Reserve, which is part of the multi-species reserve system. RCRCD works to restore the historically extensive, but diminished coastal sage scrub plant community to increase nesting sites for the California Coastal Gnatcatcher. The site includes habitat occupied by the Stephens Kangaroo Rat.

RCRCD purchased 111-acres on the main stem of the Santa Ana River near Norco and Eastvale. *Arundo donax* has invaded the riparian habitat, and the invasive weed will be removed to help restore the area to a plant community with native species.

Agencies, individual landowners, and Homeowners Associations have provided conservation easements to RCRCD. The District holds multiple conservation easements along Temescal Wash, which support a number of sensitive plant and animal species. Restoration of these lands improves habitat for the Least Bell's Vireo, Coastal California Gnatcatcher, alluvial scrub, many more sensitive species, and sensitive plant communities. Most of the acquired properties have required extensive restoration, including removal of exotic weeds and replanting of native species.



California Coastal Gnatcatcher

Wildlife Corridors

RCRCD manages many valuable conservation lands that are important to the region's plants and animals. The habitat lands provide corridors which link larger blocks of habitat for wildlife movement and migration. They also often provide water sources for wildlife, protect waterways from human impacts, improve water quality, and provide beautiful vistas to observe from afar. Many of these conservation lands have required extensive restoration.

Most, but not all of the District's conserved and managed lands are located within four main areas: the Temescal Corridor, Cajalco Corridor, Riverside Area Arroyos, and the Santa Ana River Main Stem.

Mitigation Projects for Loss of Habitat

RCRCD has worked with many developers, Caltrans, and the City and County of Riverside to restore and monitor habitat to compensate for development impacts and land use changes. The California Department of Fish and Wildlife, Army Corps of Engineers, and Santa Ana Regional Water Quality Control Board allow RCRCD to work in waterways through Permits 1601, 1603, 404 and 401.

In-Lieu Fee Program

RCRCD worked with Army Corps of Engineers to develop an "In-Lieu Fee" program in response to increasing demand for mitigation opportunities that can help offset impacts due to urban development.

In-Lieu-Fee (ILF) is an approach to habitat mitigation in which a "permittee" (i.e.: land developer or public agency project proponent) pays a fee to a third party "in lieu of" conducting project-specific mitigation. ILF mitigation is used to compensate for unavoidable impacts to wetlands or other waters when it is in the best interest of the environment, and when other approaches to compensation are not available or practical.



Santa Ana Watershed Association (SAWA)

The District is a member of the Santa Ana Watershed Association. SAWA is a nonprofit organization that works to restore native habitats within the Santa Ana River Watershed by removing invasive plants and animals from waterways and monitoring wildlife populations.

Multi Species Habitat Conservation Plan

The Western Riverside County Multi Species Habitat Conservation Plan (MSHCP) is a unified plan that guides development and provides for economic growth while protecting local habitats for native plants and animals. In the 1980s-1990s a growing number of endangered species was slowing urbanization. Through a lengthy stakeholder process and environmental evaluation, a comprehensive approach was developed to protect our unique landscapes and wildlife while expediting development. The Western Riverside County Regional Conservation Authority (RCA) was created to steward the Plan, or MSHCP. RCRCD was part of the process that developed the plan, and the monitoring biologists for the MSHCP are housed in building C at the RCD's headquarters: the Resource Conservation Center. RCRCD conducts habitat conservation projects that support and complement the Plan. RCRCD staff work with RCA in the sharing of information.



Fish, Amphibian, and Aquatic Reptile Programs

RCRCD conducts a variety of restoration and research projects in an effort to increase fish and amphibian populations in their native ranges of the Santa Ana River Watershed.

Native fish and amphibian species are impacted by loss or degradation of stream habitat, water pollution, drought, non-native fish and aquatic animals, flood control structures, water diversion, sand and gravel mining, and changes in the watershed that result in erosion, sediment, and debris flows.

In an effort to help reduce impacts to important aquatic and riparian environments, the District has a permitted and specialized aquatic program that is able to:

- restore aquatic habitats
- transport and translocate native fish and amphibians
- capture, propagate, and monitor native fish
- conduct research
- remove non-native exotic species (red-eared sliders, bullfrogs, clawed frogs, etc.).

RCRCD also provides emergency watershed rescue of fish and amphibians, such as after fire. For removal of non-native species, the District is equipped with watercraft, seines, and electro-shock tools.

Augmentation of native fish populations is conducted through the Upper Santa Ana River Habitat Conservation Plan and through agreements with local water districts, the US Fish and Wildlife Service (FWS), the California Department of Fish and Wildlife (CDFW), and the U.S. Forest Service (USFS).

Eshocking fish for drought relocation.



Native Fish Studies and Propagation

In 2000, the District constructed a specially designed stream at the LandUse Learning Center that supports a native fish population of Speckled Dace, Arroyo Chub, and Santa Ana Sucker, a threatened species. The number of fish varies from year to year, depending on natural reproduction. The recirculating, 300-foot long stream was constructed to replicate a small tributary to the Santa Ana River.

RCRCD's seven 100 foot-long raceways have been used for the breeding and study of native fish, in cooperation with the California Department of Fish and Wildlife (CDFW)- Region 5&6, the US Fish and Wildlife Service (FWS), and the US Geological Survey (USGS).



Arroyo chub

Temescal Wash

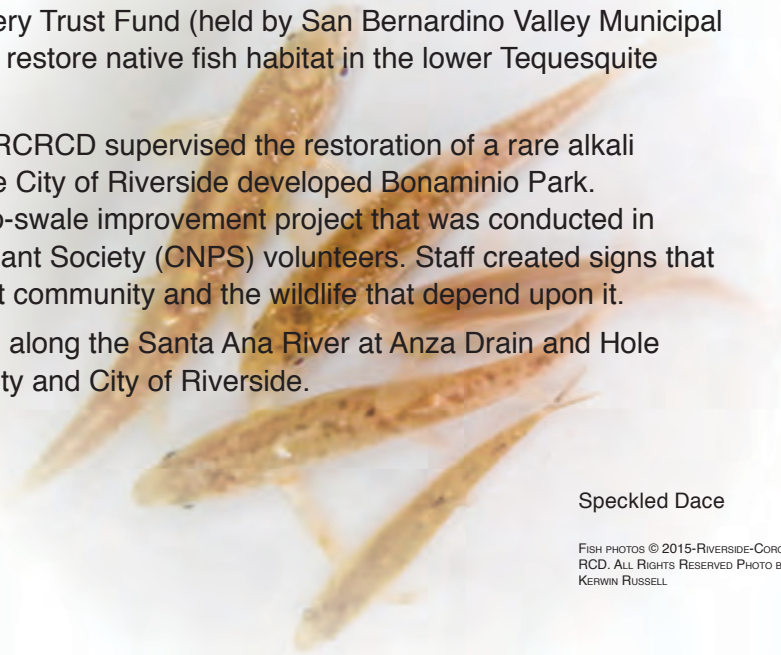
RCRCD was awarded the American Fisheries Society Award of Excellence in Riparian Management in 2010 for its work in Temescal Creek near the City of Corona, CA. The Temescal Creek Native Fish Restoration Project was conducted over a three-year period and included the removal of non-native plants and animals, such as crawdads, bullfrogs, bullhead catfish, and Red-eared slider turtles. Many of these pests were originally released as pets or bait, but have since become "naturalized" and compete with native plant and animal populations. Restoration efforts, such as dip netting and re-establishment of native plants, help to improve habitat for native fish, amphibians, and aquatic reptiles.

Riverside Waterways

RCRCD continues to work with local water districts, (San Bernardino Valley Municipal Water District, Western Municipal Water District, Riverside Public Utility), US Fish and Wildlife Service, California Department of Fish and Wildlife, and the City of Riverside on the restoration of the lower Tequesquite Arroyo for the benefit of the Santa Ana sucker. The creek was degraded due to trash, exotic plants, and barriers to water flow. The five-year project involves removing exotic species, controlling erosion on channel banks, placing substrate onto the channel bottoms to create spawning habitat, and planting of native vegetation. The Santa Ana River Restoration/Recovery Trust Fund (held by San Bernardino Valley Municipal Water District) provided \$125,000 to restore native fish habitat in the lower Tequesquite Arroyo.

Also along the Tequesquite Arroyo, RCRCD supervised the restoration of a rare alkali meadow that was removed when the City of Riverside developed Bonaminio Park. The nursery supplied plants for a bio-swale improvement project that was conducted in cooperation with California Native Plant Society (CNPS) volunteers. Staff created signs that interpret the waterway, the rare plant community and the wildlife that depend upon it.

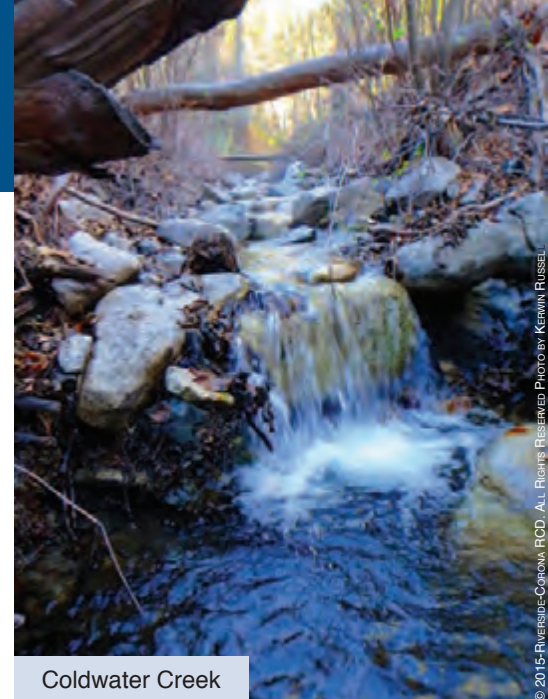
RCRCD also restored riparian areas along the Santa Ana River at Anza Drain and Hole Creek in collaboration with the County and City of Riverside.



Speckled Dace

Coldwater Creek

The RCRC D Coldwater Creek property is an 80-acre upland-riparian site that has a breeding population of genetically pure steelhead, or coastal rainbow trout. These fish once swam to the ocean, but dams, flood control projects, and changes in stream hydrology prevent migration. The District monitors creek water quality; fish population dynamics; and streamside habitat in cooperation with the CDFW each month. Ongoing surveys and monitoring will be conducted by the RCRC D in order to manage the fish population and prevent decline or extirpation.



Coldwater Creek

Upper Santa Ana River Habitat Conservation Plan

The Upper Santa Ana River Habitat Conservation Plan (SAR HCP) will create suitable conditions for Santa Ana sucker and other native fish species along the Santa Ana River in Colton, Grand Terrace, and San Bernardino. RCRC D will provide propagated fish for reintroduction. As part of the Plan, RCRC D will manage aquatic and upland sites. The District is working with the Upper SAR HCP team during the planning phases, and will help develop HCP and Forest Service goals for speckled dace. The Plan will conserve aquatic resources in tributary creeks and streams, while providing mitigation opportunities for water conveyance and storage projects.

Amphibian and Aquatic Reptile Restoration

RCRC D and partners work to foster and re-introduce amphibian and aquatic reptile populations into restored conservation areas. Some species include the Western pond turtle, California salamander, Coast range newt and California tree frog.

RCRC D manages an amphibian restoration program through a Special Environmental Project (SEP) on the Lee Lake Conservation Easement, a three-acre pond is being used to restore Western Pond Turtle habitat. As the habitat of the Lee Lake pond is improved, Western Pond turtles will be introduced. Any native turtles living in Temescal Creek would be able to use the pond as a refuge. Additionally, a one-acre small sink pond in McBride Canyon will be used as a refuge. The McBride property also serves as a home to the tri-colored black bird.

Water Quality Testing

Staff monitors water quality at Lee Lake Conservation Easement pond, at other sites in Temescal Canyon, at RCRC D's native fish stream and raceways; periodically in Coldwater Canyon; and occasionally at other sites. By the end of 2015, most of the testing locations were dry due to drought. The testing provides data for RCRC D and the Regional Water Quality Control Board to help track water quality fluctuation and trends.

Plant Programs and Projects

The Riverside-Corona Resource Conservation District (RCRC D) provides native plants for habitat restoration, landscaping, erosion control, and other types of planting projects. District staff propagate plants at the native plant nursery for a variety of re-vegetation projects and use refrigerated seed storage facilities to store locally-collected seed. Staff helps train others in production and use of native plants to help sustain the natural biological diversity of Southern California.

Native Plant Nursery

All plants produced in the native plant nursery were started from wild-collected seeds and rhizomes from our local ecoregions. Staff propagates plants from the local watershed for planting projects, but the nursery has begun to shift to testing stored seeds, collecting propagules and starting plants to be grown by others for future projects. RCRCD will provide a limited number of container plants for restoration projects and landscaping plants. In addition, staff continues to maintain a “cutting” nursery of mule fat and four species of willow.

Nursery staff cares for plants for the local chapter of the California Native Plant Society (CNPS), and hosts the “leftovers” plant sale each fall.

From 2005-2015, the nursery supplied more than 24,666 local native plants for restoration, erosion control, and water quality projects and 4,465 for landscaping. Many of the landscaping plants have been utilized at RCRCD facilities.



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RCRCD staff collect and grow native plant materials for its restoration programs.



Staff checking for ripe seeds to produce plants for restoration.

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Seed Collections

Staff stores special collections of seeds for projects in two walk-in cold rooms that were renovated in 2013. The temperature and relative humidity are controlled in the storage rooms so that seeds remain viable for longer. The stored seeds are used primarily to propagate plants for restoration, water quality, and bank stabilization projects.

RCRCD can store a limited amount of seed for use by cooperators. For example, RCRCD stored seed farmed by the Irvine Ranch Conservancy for several years while their storage facility was under development. Their native plant seeds will be used for the Conservancy's future restoration projects.

The RCRCD staff surveys sites for potential seed collection and applies for permits to collect on public lands. Staff conducts seed collection to reflect the genetic diversity of natural populations. The extended drought has made it difficult to find and collect viable seeds. It has become increasingly important to collect and store seed during relatively high rainfall years.

Alluvial Scrub, Sage Scrub, and Chaparral Native Plant Materials Project

Staff collects information about native plants and prepares plant profiles that focus on use of plants for habitat restoration. The collaborative project was funded by the USDA Forest Service Native Plant Materials Program and a Pacific Southwest Research Station internal grant program. Staff is also working on species distribution modeling and climate change forecasting of future habitat suitability for many shrub species to help guide the sourcing of plant materials for restoration projects. Results are being incorporated into outreach materials to be made available online.

Adaptation to Climate Change

In addition to work on species distribution modeling, staff participates in workshops with the U.S. Forest Service, other agencies, universities, and non-government organizations to help develop forest management priorities that address some of the problems associated with climate change. The publication that comes out of the workshops will provide information and guidance useful for managing conserved lands.

Santa Ana River and Orange County Weed Management Area

RCRCD is a partner with the Santa Ana River and Orange County Weed Management Area (SAROCWMA), which works to eradicate non-native weeds on both private and public lands in portions of Riverside, San Bernardino, and Orange Counties. The Weed Management Area has been successful in controlling common invasive weeds, especially *Arundo donax* (giant reed), *Lepidium latifolium* (perennial pepperweed), *Tamarisk* spp. (salt cedar), and *Ricinus communis* (castor bean). The group works to control populations of invasive plants, but also targets smaller populations of new, emerging weeds, and removes them before they become a problem. More funding is needed for this important work.

Foster Stewardship through Education, Outreach, and Citizen Science

Education and Outreach

RCRCD strives to educate residents of all ages by offering educational programs, technical assistance, and resource information. The District seeks to empower people to be stewards (caretakers) of natural resources and to be well-informed about resource issues and management. RCRCD provides a variety of educational services concerning natural resources and their stewardship.

School Programs

The student population from kindergarten through high school includes 133,263 from 137 public schools. RCRCD serves schools in the Alvord, Corona-Norco, Riverside, and portions of Colton, Val Verde, and Lake Elsinore Unified School Districts. Riverside is also home to the California School for the Deaf and Sherman Institute for Native Americans. There are about 7,000 students attending private schools. In addition, there are many home school groups, charter schools, youth organizations, and an increasing number of organized “after-school” programs within RCRCD boundaries.

Educational Material Distribution

Free educational materials are offered annually to all elementary, middle, and high school teachers, who work or reside within the RCRCD’s boundaries, via a “Materials Order Form”. For example, staff distributed more than 35,000 educational materials to 133 teachers at 54 schools in five school districts (Riverside, Alvord, Corona, Colton, and Lake Elsinore) during the 2014-2015 school year. Topics of educational materials vary each year, and have included: *Forests for People*, *Dig It! The Secrets of Soil*, and the Soil Saver Club.

Additionally, educational materials are provided to local partners for distribution, including Riverside Metropolitan Museum, California Native Plant Society, Inland Urban Forest Council, the Santa Ana Watershed Association, and more.

Also within RCRCD’s boundaries, there are four major colleges with a student population of 67,411. In addition, several universities have satellite schools within the area. Staff provides tours of the LandUse Learning Center for college and California Naturalist classes. In the past, RCRCD has also coordinated volunteer projects, such as bioswale plantings and invasive weed removal.



Waterways: We're All Connected.

Corona Water Education Program

RCRCD conducts water education programs for schools and youth groups on behalf of the City of Corona's Department of Water and Power. The presentations include information about Corona's water supply and hands-on activities about keeping storm water clean. The RCRCD Resource Educator conducts about 100 presentations each year for about 3,000 elementary school students. The presentations are supplemented with educational materials including the booklet "Where Does your Watershed?" and "Santa Ana River Steward" bookmarks.

Events

RCRCD helps promote and participates in 10-15 community events each year. Cumulatively, thousands of people attended the events and are provided educational materials. For example: about 2,000 people participate in Earthnight in the Garden each year. RCRCD coordinated the first Riverside Green Festival and Summit in early 2016, with over 30 speakers, 30 booths, and 600 participants. Staff coordinated community volunteers to help stage the event.

Citizen Science

Riverside Citizen Science (RCS) is an environmental education and stewardship program that engages the community in scientific observation and research in order to better connect people to the natural world. The program was created by a partnership of agencies that teamed up to facilitate natural resource documentation and research through hands-on science activities and community participation. The partners developed a strategic plan and made a long-term commitment to work together by signing a Memorandum of Understanding. RCRCD partnered with the University of California at Riverside; the USDA, Forest Service, Pacific Southwest Research, Riverside; the Riverside Metropolitan Museum; and the City of Riverside Parks, Recreation, and Community Services Department.



Dignitaries at the Memorandum of Understanding for Riverside Citizen Science. Foreground, from left are Mayor Rusty Bailey, Smokey the Bear, volunteer, UCR Chancellor Kim Wilcox, US Forest Service's Station Director Alex Friend, and RCRCD's Vice President Roy Takeno.





Riverside Citizen Science launched the Nature Spotter app that helps people share their observations of insects, plants, animals, or other living things. Spotters can send a photo with questions about what they've seen and a naturalist will reply with feedback. Observations

are collected and used to create an online database located at iNaturalist.org to document the greater Riverside area's resources. For those who don't have the iPhone or Android app, photos can be taken with any camera and uploaded through a computer. See uploads at: www.inaturalist.org/projects/riverside-citizen-science.

RCRCD is leading a new Santa Ana River Watershed Citizen Science program. The program will facilitate the use of local and regional projects that capture information and data about the health of the watershed. This program is a collaborative, multi-jurisdictional, and community-based effort to organize and train citizen scientists to participate in the protection of the watershed and its ecosystems. The District has formed partnerships with organizations and entities that will serve on the Program Advisory Committee to help guide and implement the program. Program components include the identification and development of citizen science outposts, the development of educational videos focused on the ecology and natural history of the Santa Ana River Watershed, project development, as well as trainings, field trips, and workshops for communities and local youth interested in becoming citizen scientists.

Bluebird Nest Box Monitoring

RCRCD's first citizen science program started in 2000. Since then, each spring during nesting season, volunteers have monitored bluebird nest boxes that have fledged over 2450 Western Bluebirds and more than 350 other cavity nesting birds including Ashthroated Flycatchers, Tree Swallows, Bewick's Wrens, Acorn Woodpeckers and Mountain Chickadees.

Today, the results are submitted online to Cornell University Nestwatch, the California Bluebird Recovery Program, the North American Bluebird Society, and Southern California Bluebird Club. RCRCD volunteers manage the longest running, most prolific Bluebird Trail in Riverside County.

Urban Forest Resiliency Program

RCRCD provides support to Earthwatch Institute's Focal Trees citizen science program by soliciting volunteers, promoting the program, hosting workshops, and coordinating local volunteers and tools. The data that is being collected across Southern California is used at a UC Riverside lab to research water use by various tree species.



RCRCD conducted Project Tree Canopy citizen science data collections with volunteers for the Earthwatch Institute and researchers at UCR. The Envirothon Team helped collect tree data and leaf samples at a local park.

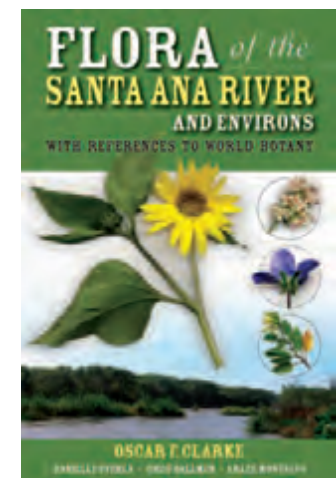
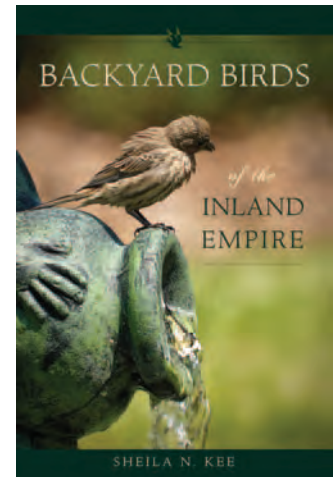
Publications

RCRCD creates localized educational publications about stewardship and resource management and distributes them at outreach events, workshops, and at partners' programs.

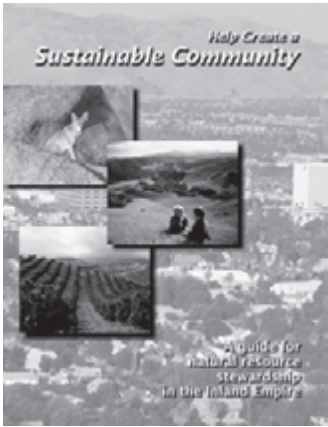
Regional Books

Staff continues to promote and sell the enhanced, second edition of *Backyard Birds of the Inland Empire* by Sheila Kee, which was developed by the Riverside-Corona Resource Conservation District and published by Heyday Books in collaboration with Inlandia Institute. The book provides descriptions and tips for identifying over 50 of the most common birds that visit yards in Southern California's inland region. Each bird is identified by color, then described by its behavioral traits, calls, food preferences, and nesting patterns. The first edition, published in 2004, won the National Association of Conservation Districts' Outreach Award. The second edition (from Heyday Books) has gone out of print. Once the RCRCD's supply is exhausted, we have plans to reprint on demand and sell electronically.

RCRCD sells *Flora of the Santa Ana River and Environs* by Oscar Clarke, Greg Ballmer, Danielle Svehla and Dr. Arlee Montalvo (our plant restoration ecologist). RCRCD helped sponsor the first edition, and sells copies at cost. The book is used as a reference for training workshops, such as for the California Rapid Assessment Method (CRAM).



RCRCD helped sponsor the Future of Cities conference. Diana Ruiz provided information about partnership opportunities to Erin Gettis, Riverside Principal Planner and City Historic Preservation Officer.



Website and Social Media

Social media and the website are tools that increase the delivery of information and promotion of programming. RCRCRD uses a variety of social media tools, including Facebook, Twitter, Instagram, a YouTube channel, NextDoor.com, and a variety of neighborhood newsletters.

Visit our website: www.rcrcd.org at “About Us” tab to find helpful publications, such as *Living on the Edge of the Urban-Wildlands Interface*: <http://rcrcd.com/uploads/files/LivingOnTheEdge.pdf>

Visit our YouTube Channel for informative videos.



Outreach

For residents and adult groups, the RCRCRD offers the *Help Create a Sustainable Community* project which explains simple ways that we can all begin to live and build communities that conserve natural resources for future generations.

The project includes:

- A slide/video production that explores ways to conserve resources in three land use areas: native habitats, urban areas, and agriculture
- A companion booklet with information about creating more sustainable communities
- A tour of the LandUse Learning Center, with publications and plant lists that empower residents to conserve resources at home, at work and in the community.



LandUse Learning Center

The LLC is an important educational tool for teaching about sustainability. Each land use has been developed with trails, plantings, interpretive signs, and appropriate plant lists. During 2015, the garden opened for visitors, group tours, and college class programs.



The **Native Habitat** area depicts four dwindling, local plant communities of inland western Riverside and San Bernardino Counties: riparian, coastal-sage-scrub, chaparral, and oak woodland. The riparian plant community includes a recycling stream for the study of native fish, including the threatened Santa Ana Sucker. Learn more about native fish in our publication: *Protecting our Native Fish* at http://www.rcrcd.org/uploads/files/ProtectingOurNativeFish_6-10-10.pdf . Learn about waterways and their protection in *Conserving Waterways: Preventing Impacts from Human Activity* at <http://www.rcrcd.org/uploads/files/ConservingWaterways.pdf> For more information about habitat, see the publication *Conserving Critical Habitat* at <http://www.rcrcd.org/uploads/files/ConservingCriticalHabitat.pdf>



Visitors learn about specific actions that they can take to reduce their impacts on habitat and wildlife, such as by eliminating invasive plant species from landscaping and creating habitat for urban-adapted wildlife in yards. You can learn more in *Living on the Edge of the Urban-Wildlands Interface* at <http://www.rcrcd.org/uploads/files/LivingOnTheEdge.pdf> and *Wild about Natives*, an introduction to the use of native plants in landscaping: <http://www.rcrcd.org/uploads/files/WildAboutNatives.pdf> .

The **Urban Area** demonstrates ways to steward resources in urban or suburban eco-systems with four styles of water-wise yards, lawn alternatives, and an Arbor Trail with tree species that are suitable for urban areas of inland Southern California. Signs about urban forestry explain the value of trees and how trees mitigate for air pollution, the urban heat island effect, and climate change. Visitors learn about proper tree care and planting; placement of trees to reduce energy use; and more. Our current tree publications include: *Tree Care* at <http://www.rcrcd.org/uploads/files/TreeCare.pdf> and *Waterwise Tree Care* at <http://www.rcrcd.org/uploads/files/WaterwiseTreeCare--web.pdf> .

The **Agricultural Area** demonstrates crops that thrive in our local climate. Interpretive signs depict sustainable agricultural practices, including irrigation water management, integrated pest management using a variety of biological controls, and other methods that farmers use, such as to build topsoil and to prevent erosion and sediment in water. Our signs encourage consumers to support sustainable agriculture and thus benefit from a high quality, safe, local food supply, while reducing transportation impacts and costs. (RCRCD provides irrigation system evaluations for farms and large turf areas.)



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Educational Partnerships

RCRCD works to support a more sustainable use of urban areas, largely through synergistic partnerships with those who have complimentary goals.

Staff has helped build capacity for groups and public-private partnerships including: Riverside City-County Arroyo/Watershed Committee, Riverside Food Systems Alliance, GrowRIVERSIDE, Riverside Community Garden Council and local gardens, Inland Urban Forest Council, the newly-formed Environmental Education Coalition, and more.

RCRCD partners with numerous organizations to provide education and outreach programs and reach broader audiences. Some educational partners include the City of Riverside, Inland Urban Forest Council, California Native Plant Society, California Urban Forest Council, California ReLeaf, UC Riverside, US Forest Service Fire Lab, Preserve the Plateau, Friends of the Entomology Museum at UCR (FERM), and the Riverside Metropolitan Museum.

Urban Forestry

Community forests are fundamental components of urban ecosystems, and their management is essential for creating sustainable communities. RCRCD works to increase canopy cover and promotes best practices and urban forest management planning. The District partnered with the Inland Urban Forest Council (IUFC) to bring professional education programs to local tree-care professionals. Staff has helped build IUFC's capacity by assisting with newsletters, displays, and an online presence, including Facebook and website.

RCRCD partnered on development of an award-winning Waterwise Tree Care campaign, which includes a publication and large tree "Price Tags" that are hung in trees to raise awareness about the value of trees and watering trees during drought.

The Waterwise Tree Care publication is on each partners' website, and the Tree Tags were hung in trees and circulated through social media on Facebook, Nextdoor.com, etc. with the message: "Prioritize watering trees during a water shortage. Trees take many years to grow and provide numerous benefits. Learn about simple ways to water deeply and reduce tree stress that invites disease, pests and death." The tree tags have a QR code with links back to the publication on one side, and links to "Invest from the Ground Up", a site that highlights the benefits of trees on the other side.

Both the publications and tree tags were in high demand. The Waterwise Tree Care publication was reprinted with additional funding from Western Municipal Water District, Metropolitan Water District, and Riverside Public Utilities. RCRCD scheduled coverage of the issue drought-stricken trees, and a 24-minute program was taped for Riverside Public Utilities' Green Power Report. The program aired on the Monday night radio show and webcast. As a result of the campaign, partner Western Municipal Water District also developed a bill insert based on the tree tag.

The California Urban Forest Council recognized RCRCD with the Excellence in Education award for its work in urban forestry during 2015-2016.

Staff worked with a coalition of tree care professionals and Audubon volunteers to develop best practices and public messaging about tree trimming during nesting season.



Riverside Food Systems

Another essential component of a sustainable community is a food system that provides for access to locally produced foods, preserves prime farmlands, and urban agriculture. Staff participated in a strategic planning process which culminated in the adoption of the Riverside Food Policy Action Plan and the formation of the Riverside Food Systems Alliance (RFSA). RCRCDD is developing a Local Guide to help RFSA with building the local farm to fork network and to raise awareness about the benefits of purchasing locally produced foods.

Staff works with community gardens and assists the Riverside Community Garden Council with capacity building. RCRCDD received a pass-through grant from the Natural Resources Conservation Service (NRCS) for Arlanza Community Garden to help with irrigation and handicapped accessibility. The District provides information and mini-grants for school gardens, two of which adjoin community gardens.

California Native Plants Society

RCRCDD works to educate people about the importance of local native plants and the creation of urban landscapes that support local native habitats. RCRCDD collaborates with the California Native Plant Society's (CNPS) Riverside-San Bernardino chapter. Staff helps with program planning, promotion, tours, outreach, the annual plant sale, and joint publications/outreach tools.



Butterfly Garden workshop in 2016 co-sponsored by the California Native Plant Society, Riverside-San Bernardino Chapter and the District.

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Riverside Sustainability Coalition

Staff serves on the mayor's Sustainability coalition, an outgrowth of the Green Action Plan. The committee meets quarterly to review the City's progress toward sustainability. Riverside has won many awards and was designated as California's first Emerald City for its efforts. RCRCDD coordinated the first Riverside Green Festival in 2016, and provided input to the City's Restorative Growth and Climate Action Plans.

Environmental Education Collaborative

The newly-formed Environmental Education Collaborative of Riverside and San Bernardino Counties has held two annual workshops. RCRCDD provides support and has hosted its meetings.

Goals and Objectives

GOAL 1

Assist Land Users with Resource Planning and Management

GOAL 2

Conserve Habitat Land and Species

GOAL 3

Foster Stewardship through Education, Citizen Science, and Outreach

GOAL 4

Help Create Sustainable Communities: Urban Sustainability and Partnerships

GOAL 5

Conduct Efficient Operations

Goals and Objectives

GOAL 1 Assist Land Users with Resource Planning and Management

Provide technical assistance to land users to help them manage their natural resources in sustainable ways. Provide conservation planning information, including inventories, assessments, and treatment recommendations for the following topics.

Objectives

1.1 Water Conservation

- Provide information about best management practices (BMPs) that conserve water.
- Conduct irrigation water management evaluations for land users.
- Conduct workshops about low water-use irrigation and maintenance.
- Partner with water districts, California Native Plant Society, GrowRIVERSIDE, and others on landscaping and other water conservation training.
- Provide information about the Water Use Classification for Landscape Plants (WUCOLS), and more current tools as they become available.
- Assist homeowners with conversion to low-water use landscapes through use of the LandUse Learning Center, plant lists, and water-wise programming.

1.2 Soil Conservation

- Conduct low-cost soil and water quality testing for residents.
- Provide information to growers about soils and best management practices (BMPs) that assist with maintaining soil quality.
- Assist landowners with erosion control, non-point source pollution, and assessing flood damage potential. Develop a BMP publication for landowners.
- Provide Healthy Soils information.

1.3 Land Conservation

- Develop an inventory of agricultural and urban ag lands and update important farmland mapping.
- Identify local growers that are interested in supplying food for the local economy.
- Connect growers to consumers by developing and distributing a Local Guide, with partners.
- Develop programs for preserving local agriculture and high quality soils and farmlands.
- Promote the use of conservation easements and fee-title donations of land

1.4 Plant Materials

- Work to expand the inventory of local native plants at partnering nurseries.
- Provide appropriate plant information for conservation purposes.
- Provide water-wise landscaping training, including for landscape professionals, specifically about the establishment and management of native plants. Partner with the California Native Plant Society.
- Provide landscape design assistance for backyard habitats, pollinator gardens, and edible yards.
- Complete a plant palette review for landscaping, restoration, erosion control, etc.
- Develop local pollinator, hedgerow, and cover crop plant palettes.
- Promote the use of local native plant genotypes for re-vegetation projects.
- Promote the use of genetic diversity in local native plant materials
- Promote long-term restoration and management planning.

1.5 Wildlife Conservation

- Provide BMP information and assistance to land users to assist with habitat management.
- Promote exotic, invasive species control and removal from landscaping.
- Provide information about different kinds of wildlife corridors and about bridging roads and railways with under-crossings and “green” or “living bridges”.
- Identify invasive species that are listed on recommendation lists, including in Water Use Classification of Landscape Species (WUCOLS) tree publications, and landscaping references.





GOAL 2 Conserve Habitat Land and Species

Restore and connect sustainable native landscapes through land treatment and preservation tools.

Objectives

2.1 Habitat Land Treatment

- Plan and conduct habitat restoration and on-the-land conservation projects with BMPs.
- Conduct exotic species removal and re-establishment of natives on District-controlled properties.
- Use tools including the In-Lieu Fee (ILF) Program, conservation easements and fee-title to obtain blocks of habitat and corridors and provide conservation treatments.
- Provide habitat and aquatic services to public and private entities with funding support.
- Develop long-term restoration plans and vegetation maps for RCRC lands. Use soil maps and ArcGIS to make overlays for all sites.
- Increase rare, threatened, and endangered species rearing and release programs.
- Increase monitoring of indicator, invasive, and rare species, including emerging pests, diseases, bees, algae, lichens, mosses, liverworts, cryptogamic crusts, and animal tracks. Help identify emerging weeds and invasive species.
- Work with federal, state, and local agencies and appropriate nonprofits to develop a propagation, translocation, re-introduction and augmentation (PTRA) program for freshwater fish and amphibian conservation.
- Create signage and companion materials/programs to educate about habitat conservation.
- Develop reference site comparison methods for assessing restoration success.
- Evaluate appropriate sites for multi-use or trails along easement edges.
- Survey and map watercourses, wetlands, soils, vegetation and wildlife on RCRC properties as a baseline for restoration planning and long-term management.

2.2 Animal Projects

- Propagate and release Southern California native fish, aquatic reptiles, and amphibians, as funding becomes available.
- Develop the “Greenbelt” research facility with fish raceways plus indoor/ outdoor tank storage for quarantine, and short term fish and amphibian care
- Install nest boxes and watering facilities in RCRCDD habitat areas as needed.
- Install wildlife cameras at RCRCDD corridor crossings and possibly webcams at select nest boxes to monitor local wildlife.

2.3 Plant Projects

- Determine restoration methods and build capacity in delivery systems.
- Promote the use of local native plant genotypes for re-vegetation projects.
- Promote the use of BMPs for controlling the spread of invasive plants, animals, insects, pathogens.
- Develop standards for the design of plant pallets for the restoration, rehabilitation, and reclamation of different types of habitat.
- Develop tools to guide restoration practitioners and land managers in habitat restoration and habitat creation plans under a changing climate.
- Develop a fact sheet on use of the available Roadside Revegetation Technical Guide
- Customize a weed identification notebook for our service area
- Provide appropriate native plant source material to local nurseries for conservation uses, including for pollinator habitat.
- Evaluate herbicide treatment on non-native, invasive plants. Evaluate the use of integrated pest management (IPM) techniques and weed treatments in sensitive habitats and during native plant establishment, which may include evaluation of flaming and planting of native plant competitors for control of noxious weeds. Collect information about the sensitivity of different local native species to different herbicides.
- Research native plant gene pool regions in Southern California.
- Research plants that can be adapted to constructed wetlands to be used to filter pollutants.
- Evaluate erosion control plants that are acceptable for use in threatened and endangered species areas. Establish native plant material trials to determine promising plants for erosion control and use in environmentally sensitive areas.
- Work on procedures for establishing and maintaining desirable and native species on roadsides.
- Coordinate projects with appropriate agencies and organizations regarding plant material issues and/or concerns, including NRCS pollinator species specifications. Integrate into planning how potential changes in climate may affect factors such as hydrology, wildfire risk, and habitat suitability for different organisms. Consider vulnerabilities of each habitat type to climate change. Consider other anthropogenic influences and their relative risks.

2.4 Seed Projects

- Collect, document, and inventory native seeds and cuttings for restoration of native landscapes and for urban landscaping near the wildland-urban interface. Purchase seed processing equipment for in-house seed bank. Coordinate with local preserves to collect seed on their lands.
- Evaluate seeding rates, depths, mixes and cultural techniques for the establishment of native grasses, shrubs, and forbs for Southern California.
- Collaborate on the regional Native Seed Coalition, which would coordinate seed collection, storage, and source documentation programs as well as growers, sellers, and buyers of native seeds. Explore options for seed testing.

2.5 Fuels Management

- Develop fuel modification demonstration projects, which include mowing, thinning of woody vegetation, and fire-wise planting.
- Research and provide training on determining viability of soil seed banks after wildfires.
- Research and evaluate fire-resistant, drought-tolerant, native and introduced landscape plants with low fuel volume, which can also provide erosion control on slopes.
- Assess native plant germination in cooperation with the USDA Forest Service Fire Lab.
- Provide information about native grasses and other native plants for Emergency Watershed Protection wildfire reseeding to determine best mixes and seeding rates for immediate erosion control.



Students from Riverside City College after working with Riverside City Parks and the District to plant a bioswale at Ryan Bonominio Park.

Erin Snyder conducts a tour at the Naturefest Open House 2013.



GOAL 3 Foster Stewardship through Education, Citizen Science, and Outreach

Educate all ages about stewardship, sustainable use, and ecosystem management for native habitats, urban areas, and agriculture.

Objectives

3.1 Education: Conduct and promote youth programs.

- Conduct water and recycling education programs for Corona Water and Power. Develop additional programs and materials.
- Offer and provide educational materials to public and private schools and homeschoolers.
- Promote and conduct the Storm Water Pollution Patrol and the Soil Saver Club programs, as needed.
- Sponsor the Conservation Mini-Grant Program to help fund school gardens and on-the-land projects. Support school garden programs and interest in environmental learning/teaching.
- Provide initial planning assistance for school gardens and projects. Refer Master Gardeners and Composters to youth projects.
- Present Help Create a Sustainable Community programs to high school students upon request.
- Provide educational materials to teachers. Inform teachers about environmental education opportunities through Facebook, online newsletter, and/or list-serve of interested teachers. Add additional sustainability and resource conservation education links to the website.
- Develop conservation education programs for elementary, middle and high schools that complement the LandUse Learning Center.
- Upon completion of the LLC, develop a school field trip program.

3.2 Citizen Science and Volunteer Opportunities

- Conduct community citizen-science programs: bluebird nest box monitoring, water quality testing, air quality monitoring, as needed.
- Provide coordination, promotion, and training for the Earthwatch Focal Trees project.
- Conduct volunteer stewardship and service-learning conservation projects as needed: tree plantings, habitat restoration projects, waterway cleanup events.

Santa Ana Watershed Citizen Science

- Develop the Santa Ana Watershed (SAW) Citizen Science Program to help monitor the Santa Ana watershed and its ecosystems.
- Form partnerships with organizations/entities and develop Citizen Science Outposts throughout the watershed.
- Identify, develop, and/or promote locally relevant citizen science projects that will be used to gauge the health of the watershed.
- Develop a SAW Citizen Scientist certificate program.

Riverside Citizen Science

- Continue collaboration with partners, including University of California, Riverside; City of Riverside's Department of Parks, Recreation and Community Services; Riverside Metropolitan Museum; USDA Forest Service-Fire Lab; Smithsonian Institute's National Museum of Natural History.
- Promote the use of the Riverside Nature Spotter app and other local citizen science projects.
- Engage stakeholders and participants in Riverside Citizen Science projects.
- Install and monitor an air quality station that measures nitrogen deposition on soil.

3.3 Outreach Programs

- Present displays at public events, including conferences, community conservation events, Earth Night in the Garden, field days, fairs, libraries, and expos. Distribute materials at those events. Identify local target areas and support those areas by attending neighborhood meetings and by providing programs such as informational workshops and walks. Distribute relevant literature, door-to-door, if necessary.
- Present programs for a variety of audiences, upon request.
- Home Gardening...Simple and Environmentally Friendly;
- Help Create a Sustainable Community;
- Promote sustainability through a variety of media including electronic, technical periodicals, and publications of partnering organizations.
- Inform the public about national, state, and local issues relating to resource conservation through the newsletter, website, and other means, whenever possible.
- Produce a series of environmental education videos about the Santa Ana Watershed.



3.4 Publications

- Produce and distribute biannual newsletters with fact sheet inserts that are also uploaded onto the RCD website. Distribute District newsletter and literature to libraries, offices and waiting rooms.
- Develop, update, and distribute educational and technical print materials: LLC plant guides, trail guides, brochures, posters, and curriculum. Upcoming materials in development include the book *Wildflowers and Important Native Plants of the Inland Empire*; and booklets: *Bluebird Nest Box Monitoring training*; *Trees for the Inland Empire*; *Backyard Bugs and Insects of the IE*; *Snakes, Lizards and Amphibians of the IE*. Additional materials may include: landscaping with native plants; a roadside re-vegetation guide; a weed identification booklet about exotic, invasive species control; a backyard habitat guide; native and non-native plant guides as needed for local projects; standardized plant pallets.

3.5 Sycamore Creek Preserve, Nature Center, and Sub-office

The purpose of the Center is to provide hands-on, nature based learning experiences for all ages through interactive exhibits, displays, crafts and activities.

Complete the development and educational components for Sycamore Creek Interpretive Center:

- Identify and secure sources of funding.
- Build capacity and staff capability.
- Hire a part-time naturalist/interpreter to staff the Center on weekends.
- Increase community engagement and partnerships.
- Promote the Center and programming through a variety of outreach methods.
- Offer programs about Temescal Valley conservation and sustainability issues.
- Continue to develop the nature center, both inside and out.
- Additional educational landscaping, drinking fountains, picnic tables
- Develop site interpretation with additional signs, murals or removable banners.
- Develop a Santa Ana Watershed Citizen Science Waystation.
- Develop educational programs at the Sycamore Creek Interpretive Center.
- Santa Ana Watershed Citizen Science. The Center will serve as a Citizen Science outpost for the Temescal Valley, providing hands-on opportunities to participate in Citizen Science projects, including those specific to the Santa Ana Watershed.
- Junior Naturalist - Steward Program and scout badges
- Remote viewing of wildlife
- Rare and invasive plant presentations
- Environmental education workshops
- Summer day camp.



3.6 LandUse Learning Center

Complete development and educational components of the LandUse Learning Center (LLC), a 3-acre demonstration of sustainable practices for the three main land uses of Southern California: native habitats, urban areas, and agriculture.

Projects to complete the development of the LLC include:

- Install two buildings (museum/audio-visual and hands-on lab), plus restrooms.
- Finish the inside of the entrance building, design and install interpretation.
- Install a grow wall and roof.
- Install solar roof panels and system.
- Design the indoor museum space based on exhibit conservation guidelines.
- Design, develop, and construct indoor interpretive displays and exhibits.
- Design and develop interpretive signs for the Urban and Native Habitat Areas.
- Complete the LLC entrance area with an arbor, demonstration landscaping, and security fencing.
- Develop an erosion control demo area and additional demonstrations/plantings.
- Install additional animal, trail and other signs.
- Install benches and water fountains.

Develop the LandUse Learning Center educational programs and materials.

- Develop an interpretive plan and script.
- Develop a docent program for interpretation programs at the LLC.
- Develop conservation education programs for elementary, middle and high schools that are companion to the themes of the LandUse Learning Center. Design and construct curriculum kits for three land uses, four plant communities, climate change, urban forestry, and more.
- Upon completion of the LLC, develop an elementary school field trip program.
- Develop a plant community and other posters.
- Develop Fact Sheets that correlate to LLC demonstrations to empower visitors. Provide information about sustainable choices.
- Set up a farm/gift shop with business volunteers/docent assistants.

Use the LLC as an educational tool.

- Promotion of the LLC and environmental/Agritourism activities.
- Conduct tours, programs, demonstrations with complementary handouts.

Seek funding and support from a variety of sources including partnerships and grants.

- Develop additional sponsor recognition.



Alternative lawn demonstrations at the RCRCD LLC.

3.7 “Green Belt” Aquatics Research Facility

Build an aquatic operational center for RCRCD programs.

- Install two 300 foot long streams that represent habitat for the Santa Ana Sucker in the Upper Santa Ana Watershed and for rearing fish for translocation.
- Install a natural stream to propagate native trout for translocation purposes.
- Monitor life history of native fish.
- Work with federal, state and local agencies and organizations to provide research on native fish and their habitats.
- Plant and maintain 200 avocados and 12 lemon trees.
- Grade and maintain access roads.
- Re-establish 1 acre riparian wetland along Woodcrest arroyo.
- Install and maintain drainage system for runoff and raceways.
- Field office and storage buildings
- Staging area for native plant restoration

Biofilters



Santa Ana river in fall at RCRCO atfillish property.

GOAL 4 Help Create Sustainable Communities: Urban Sustainability and Partnerships

Coordinate and support sustainability efforts within and between communities, enlisting help from public and private partners

Objectives

4.1 Promote efficient land use, smart growth, and the value of natural, urban, and agro-ecosystems.

- Promote sustainable agricultural methods and disseminate information about local, successful sustainable farming practices and the local farm to fork movement.
- Support GrowRIVERSIDE and help build capacity in the newly-formed Riverside Food Systems Alliance (RFSA).
- Develop, support, and promote urban sustainability efforts and values including tree plantings, urban forestry, the use of mulch, composting, recycling, storm water quality, water-wise landscaping, backyard habitat, and more.
- Support the development and stewardship of open space and “Green” Infrastructure.
- Support efforts to develop well designed corridors that connect blocks of habitat.
- Support city, county, and regional planning efforts in relation to natural resources and their sustainable use.
- Be a member and support the work of the Santa Ana River - Orange County Weed Management Area and the Santa Ana Watershed Association (SAWA).
- Collaborate with the City-County Arroyo-Watershed Committee. Distribute and promote the Conserving Waterways publication.
- Work with agencies to incorporate RCRCO conservation lands in restoration programs.

4.2 Coordinate resource conservation efforts for native habitats, urban areas, and agriculture with businesses, groups, individuals, and Federal, State, County, City agencies.

- Sponsor workshops, training sessions and meetings to inform other agencies, civic groups, and individuals, as needed.
- Network with national, state, and regional groups regarding climate change, water supplies, sustainable agriculture, soil and water conservation, urban forestry, environmental and science education, and more. Serve on various committees as needed.
- Develop working relationships with key legislators within the District as needed.
- Recognize local citizens who implement good resource conservation practices.

4.3 Promote sustainability and conservation techniques using a variety of methods.

- Use electronic media to improve communication regarding local resource issues, information, and educational opportunities.
- Build relationships with local media: newspapers, magazines, and radio stations.

4.4 Lead in developing and disseminating needed technical information and materials.

- Develop detailed profiles for native plants important to land restoration and habitat creation and make them available on the RCRCDD web site.
- Research and develop standardized plant pallets for the restoration, rehabilitation, and reclamation of habitat.
- Provide information for the use of native plants in landscaping.
- Work with other groups to promote the use of fire-wise and water-wise landscaping.
- Obtain reference site data to guide restoration activities in a variety of habitats.
- Train local agencies and others in the use of the *Flora of the Santa Ana River and Environs*
- Train local government and others about native plant restoration methods and Best Management Practices (BMPs), invasive species identification and removal, and pest management.
- Continue to develop a “Seed Bank” and cooperate with the Forest Service, Rancho Santa Ana Botanic Garden, and others in developing a “Native Seed Network” for the region.

Monitoring restored alkali meadow grassland at Ryan Bonaminio Park in Riverside.



Urban area at the RCRCO LLC.



GOAL 5

Conduct Efficient Operations

Objectives

5.1 Budget and Funding

- Research other avenues of funding to supplement District programs and projects.
- Monitor District finances on a monthly basis.
- Execute necessary contracts as needed.
- Consider developing events to raise funds for specific projects/facilities.
- Develop annual budget.

5.2 Human Resources

- Monitor staffing needs of the District.
- Provide a “health and safety” program for all employees, directors, and volunteers.
- Adhere to all appropriate Federal and State personnel laws.
- Develop personnel policies as needed.
- Provide training for District staff as needed.
- Staff will attend professional groups, professional development programs, training, and networking opportunities.
- Internships: Continue to participate in internship programs as needed.

5.3 Public Relations

Improve name and purpose recognition. Promote the RCRCDD mission and programs to a variety of audiences.

- Produce an informational video about RCRCDD including history, programs, and services.
- Create a flyer and power point presentation about District programs. Present to municipalities.
- Develop an historical display about RCRCDD.
- Publish biannual newsletter *Resources Update*.
- Recognize local citizens who are champions of resource conservation.
- Write news releases for social media and local newspapers and magazines. Distribute public service announcements (PSA's) to local radio stations informing the public of District programs, special events, and projects.
- Distribute District literature electronically, via social media and libraries, offices and waiting rooms that offer reading material.



5.4 Property Management

- Complete the transfer of the Resource Conversation Center property to RCRCDD ownership.
- Continue to renovate and maintain the Resource Conservation Center facilities, the Sycamore Creek Interpretive Center, and the Greenbelt facilities
- Develop and coordinate signage around the Resource Conservation Center (RCC) and Sycamore Creek Interpretive Center (SCIC).
- Develop security features (fencing, signs) for facilities when RCC is open on weekends.
- Manage and protect the RCRCDD's fee title and conservation easement lands.
- Manage and maintain fish/amphibian research/propagation facilities including the LLC stream, raceways and tanks.
- Manage and maintain plant propagation and seed storage facilities on site.

5.5 District Operations

Establish, plan, and direct a resource conservation program.

- Revise as necessary, District policies, procedures, and programs.
- Hold regular monthly board meetings to monitor federal, state, and local trends.
- Monitor and revise as necessary the District's Long Range Objectives.
- Develop Annual Work Plans.
- Publish an Annual Report.
- Conduct annual audits.
- Monitor changes to Division 9 of the California Public Resources Code.
- Provide necessary liability insurance to conduct business.
- Update equipment and computer programs as needed.
- Participate in national, state, and local programs as requested.
- Monitor California's direction regarding local government and its role in the state.
- Monitor and update website to comply with transparency laws.

5.6 Develop Memorandums of Understanding (MOU's) to spell out working relationships with cooperating agencies. RCRCDD will develop MOU's with the following, and as needed:

- Army Corps of Engineers
- California Department of Parks and Recreation, for seed collection
- California Department of Fish and Game
- City of Riverside Parks, Recreation and Community Services Department
- County of Riverside, for agriculture and open space permits/ordinances
- Land conservancies
- Riverside County Parks and Recreation
- Riverside County Regional Conservation Authority
- Santa Ana Watershed Association (SAWA)
- USDA Forest Service

5.7 Review and continue Memorandums of Understanding with the following, as needed:

- California Department of Water Resources
- Metropolitan Water District of Southern California
- Riverside Citizen Science
- Riverside County Flood Control and Water Conservation District
- Riverside Public Utilities
- USDA Natural Resources Conservation Service (NRCS)
- Western Municipal Water District

5.8 Strengthen relations with conservation groups, businesses, agencies, research institutions, and schools as needed, including:

- California Association of Resource Conservation Districts (CARCD)
- California Department of Forestry and Fire Protection (CAL FIRE)
- California Regional Environmental Education Community (CREEC)
- California Department of Conservation (DOC)
- California Association of Nurserymen (CAN)
- California Association of Nurseries and Garden Centers
- California Baptist University
- California Bluebird Recovery Program

- California Department of Water Resources (DWR)
- California Department of Fish and Game (DFG)
- California Department of Parks and Recreation
- California Foundation for Agriculture
- California Invasive Pest Council (Cal-IPC)
- California Native Plant Society (CNPS)
- California Naturalists
- California Regional Environmental Education Community
- California Urban Forest Council
- Cavity Conservation Initiative
- Center for Biological Diversity
- City of Colton
- City of Corona
- City of Grand Terrace
- City of Norco
- City of Riverside
- EarthWatch Institute

The Earthwatch Institute and local UCR researchers provided training for Citizen scientists at RCRCDD LLC.



- Environmental Education Collaborative
- Environmental Protection Agency (EPA)
- Friends of Mt. Rubidoux
- Friends of Riverside's Hills
- GrowRIVERSIDE
- Inland Empire Waterkeeper

5.8 Strengthen relationships continued.

- Inland Urban Forest Council
- Keep Riverside Clean and Beautiful
- Metropolitan Water District of Orange County (MWDOC)
- Native Seed Network
- Orange County Coast Keeper
- Orange County Parks and Recreation
- Plant Conservation Alliance
- Private Schools
- Regional Water Quality Control Board
- Riverside Community College
- Riverside County Farm Bureau
- Riverside County Flood Control
- Riverside County Habitat Conservation Authority
- Riverside County Agricultural Commissioner
- Riverside County Board of Supervisors
- Riverside County Building and Safety Department
- Riverside County Parks and Recreation
- Riverside County Planning Department
- Riverside County Office of Education and unified school districts
- Riverside County Waste, Master Composters
- Riverside Food Co-op
- Riverside Food Systems Alliance
- Riverside Metropolitan Museum
- Riverside Public Utilities Department
- Santa Ana River Conservancy
- Santa Ana Watershed Project Authority (SAWPA)
- Santa Ana Watershed Planning Advisory Committee
- San Bernardino Ag Commissioner
- San Bernardino County Board of Supervisors
- San Bernardino County Museum
- San Bernardino Planning Department
- San Jacinto Basin School districts
- Service organizations (i.e.: Kiwanis, Optimists, Woman's Club, etc.)
- Southwest Resource Management Association
- Tri-County Conservation League
- University of California, Riverside (UCR)
- UCR Center for Conservation Biology
- UCR Center for Sustainable Development
- UCR Herbarium
- UC Cooperative Extension Service
- UC Master Gardeners
- USDA Forest Service (USFS) Pacific Southwest Research Station, Fire Lab
- USDI Fish and Wildlife Service (USF&W)

- USDI Bureau of Reclamation
- Victoria Avenue Forever
- We are Temescal Valley
- Western Municipal Water District (WMWD)
- Local native plant nurseries, museums, libraries, colleges and universities

5.9 Continued memberships with:

- American Fisheries Society
- Bat Conservation International
- Corona Chamber of Commerce
- Cornell Laboratory of Ornithology
- California Invasive Plant Council (Cal-IPC)
- California Native Grass Association (CNGA)
- California Native Plant Society (CNPS)
- California Society for Ecological Restoration (SERCAL)
- California Special District's Association (CSDA)
- California ReLeaf
- California Urban Forest Council
- Ducks Unlimited
- Friends of the Entomology Research Museum (UCR FERM)
- Inland Urban Forest Council
- International Erosion Control Association
- Irrigation Association
- Land Trust Alliance
- National Arbor Day Foundation
- National Association of Conservation Districts (NACD)
- National Audubon Society
- National Bluebird Society (NABS)
- National Interpreters Association
- North American Association for Environmental Education
- Rancho Santa Ana Botanic Garden (RSABG)
- Riverside Chamber of Commerce
- Riverside Community Garden Council
- Riverside County Farm Bureau
- Riverside Land Conservancy
- River Network
- South Coast Resource Conservation and Development Area (RC&D)
- Southern California Bluebirds
- Southern California Water Committee
- Southern California Coalition of RCD's
- Santa Ana Mountains Fire-Safe Alliance
- Society for Ecological Restoration (SER)
- Soil & Water Conservation Society
- Trout Unlimited
- US Green Building Council

Land Uses: Native Habitats, Urban Areas, and Agriculture

Native Habitats

The land that is maintained as native habitat is important for many reasons:

Environmental Value

Natural areas are homes, or habitat, for wildlife. Native habitat provides wildlife with water, food, shelter, nesting sites, and space to live. Native habitats support a wide diversity of insects, birds, bats, fish, amphibians and other animals, which also help pollinate crops and control pest infestations.

The variety of life supported in natural areas preserves genetic diversity, which helps maintain evolutionary processes and stores genes that are potentially beneficial to humans. Native landscapes effectively clean water and air, reduce flooding and help control erosion.

Natural areas enhance the quality of life for people by providing opportunities for exercise, recreation, and solitude. They also buffer urban areas, provide oxygen and filter air pollutants. Many psychologists believe that humans require contact with nature for emotional health and well-being.

Economic Benefits

Natural areas are desirable amenities that can help define community identity. Studies have shown that natural areas enhance the economic value of residential properties. Tax-paying businesses are attracted to communities with high “quality of life”. Recreational activities support businesses, such as photography, outdoor sporting goods, fishing, and hunting supply industries. To ensure that natural ecosystems remain healthy, we remove invasive species and prevent urban pollution from entering waterways. To keep habitat viable, we work with landowners and agencies to plan land-use to help preserve large blocks of native landscapes where appropriate, and connect those areas with corridors for wildlife movement. RCRC works with local landowners and regulatory agencies to obtain conservation easements on critical habitat areas and to manage those areas in perpetuity. The District works in many sensitive and declining habitat areas, primarily, aquatic and riparian areas. These tracts of land and narrow waterways provide the hydrology necessary for all the other natural functions and values to occur, such as vegetation diversity and structure, species occupation and reproduction, water flow and velocity, and groundwater recharge.

Lee Lake Conservation Easement in Temescal Canyon

Urban and Suburban Areas

In order to meet the needs of our growing population, we must rethink how we manage and conserve natural resources in our urban landscapes. Urban ecosystems present a different set of challenges when it comes to resource conservation due to the high population density and urban infrastructure. Common practices in urban and suburban environments are now being re-examined to better replicate natural systems and result in more efficient use of natural resources. As cities and suburbs first began to expand, little thought was given to how paved surfaces might impact our underground water storage. Now we are retrofitting with practices that increase water infiltration and replenish underground water basins for example, by using pervious surfaces like gravel in place of pavement. Urban forestry is another example of conservation practice that is addressing impacts from paved surfaces. Planting trees in cities provides shade which reduces the unnatural accumulation of heat from concrete, asphalt and roofs. Other examples include urban infrastructure improvements, such as rain gardens; “green” bridges for wildlife corridors in urban areas; and “green” roofs.

The expansive rooftop succulent garden at the Getty Museum complex, rises above Los Angeles.



Agriculture

Agriculture has played a prominent role in the development of Riverside County since the last half of the 19th century. In the 1870s a variety of citrus, deciduous fruits, grains and vegetables were planted. The introduction of the Bahia Navel Orange by Mrs. Eliza Tibbets of Riverside sparked the State's "Second Gold Rush". In the wake of the navel's fame, settlements sprang up all over Southern California with a gross agricultural valuation of \$1,327,804,000 for the county in 2013 and established a new record for Riverside County. The County's total, direct economic contribution to the county economy, including the production and processing of food and fiber, was estimated at \$2.77 billion. Considering direct output and multiplier effects, Riverside County Agriculture's total economic

contribution to the county economy was estimated at \$3.87 billion. Riverside County Agriculture provided 15,116 jobs in 2013 or about one out of every 55 workers. Riverside County is the 14th leading agriculture producer in California, raising high value crops like table and wine grapes, citrus, and nursery stock. There are currently 144 organic producers registered in Riverside County with 25 of them within the RCD.

According to the 2013 Riverside County Agricultural Commissioner's Crop Report, the majority of agricultural land within the RCRCDD is devoted to nursery stock with 50% of the harvested acreage and 86% of the total gross crop value. Field and seed crops, citrus, avocados, deciduous trees, truck crops, and specialty crops account for the remaining district harvest. Crops were harvested on 19,342 acres within the Riverside-Corona District in 2013, yielding a gross valuation of \$110,078,000, down from a peak of \$121,652,448 in 2011. The impact of diminishing agricultural lands continues to be felt as most of the agricultural land is converted to residential and commercial uses, in part, as a result of the high cost of energy, water, and land. The farmland that remains is mostly small acreage estates and hobby farms, usually 5 acres or less. There is a trend in small organic farming within the district and interest is growing for more locally available produce products at farmer's markets and restaurants.

Agricultural land is essential: it is the land we use to produce the food and fiber we need to survive. Since the end of World War II, agriculture has changed dramatically in the United States. Mechanization, increased chemical use, and government policy have caused productivity to skyrocket. Farmers, using monoculture technology, have created incredibly efficient production systems. As a result, fewer farmers, with less labor, produce more food and fiber.

Unfortunately, these advanced methods require greater investments of energy and larger quantities of fertilizers and pesticides. It is now more important than ever to detect and eradicate invasive species and pests in order to sustain the food supply for a growing human population.



Covercrop in young citrus grove 1990s.

What is Sustainable Agriculture?

Sustainable agriculture does not refer to a prescribed set of practices. Instead, it challenges us to think about the long term effects and the dynamics of agricultural systems in balance with profit, community, and consumer need. As with the other land uses, farmers use the ecosystem perspective to understand sustainability in agriculture. In a sustainable agro-ecosystem, farmers evaluate nutrient and energy cycling and resource interactions. Sustainable farmers develop efficient biological systems, that are less toxic, less energy intensive, and that do not require large quantities of fertilizers and pesticides. Making the transition to sustainable agriculture is a process. The transition often involves a series of small, realistic steps. Strategies are site specific.

Principles of Sustainable Agriculture

- Protect and renew soil fertility.
- Optimize the use of on-farm resources, reducing the need for nonrenewable resources and purchased inputs, such as fertilizers and pesticides.
- Use natural, biological controls.
- Provide an adequate and dependable farm income.
- Minimize adverse impacts on health, safety, wildlife, water quality and other ecosystems.

To determine production methods, site considerations include: soil qualities, climate, potential pests, previous crop history, topography, availability of local sources for inputs, including water, and the grower's goals. Plant species are chosen to suit the site.



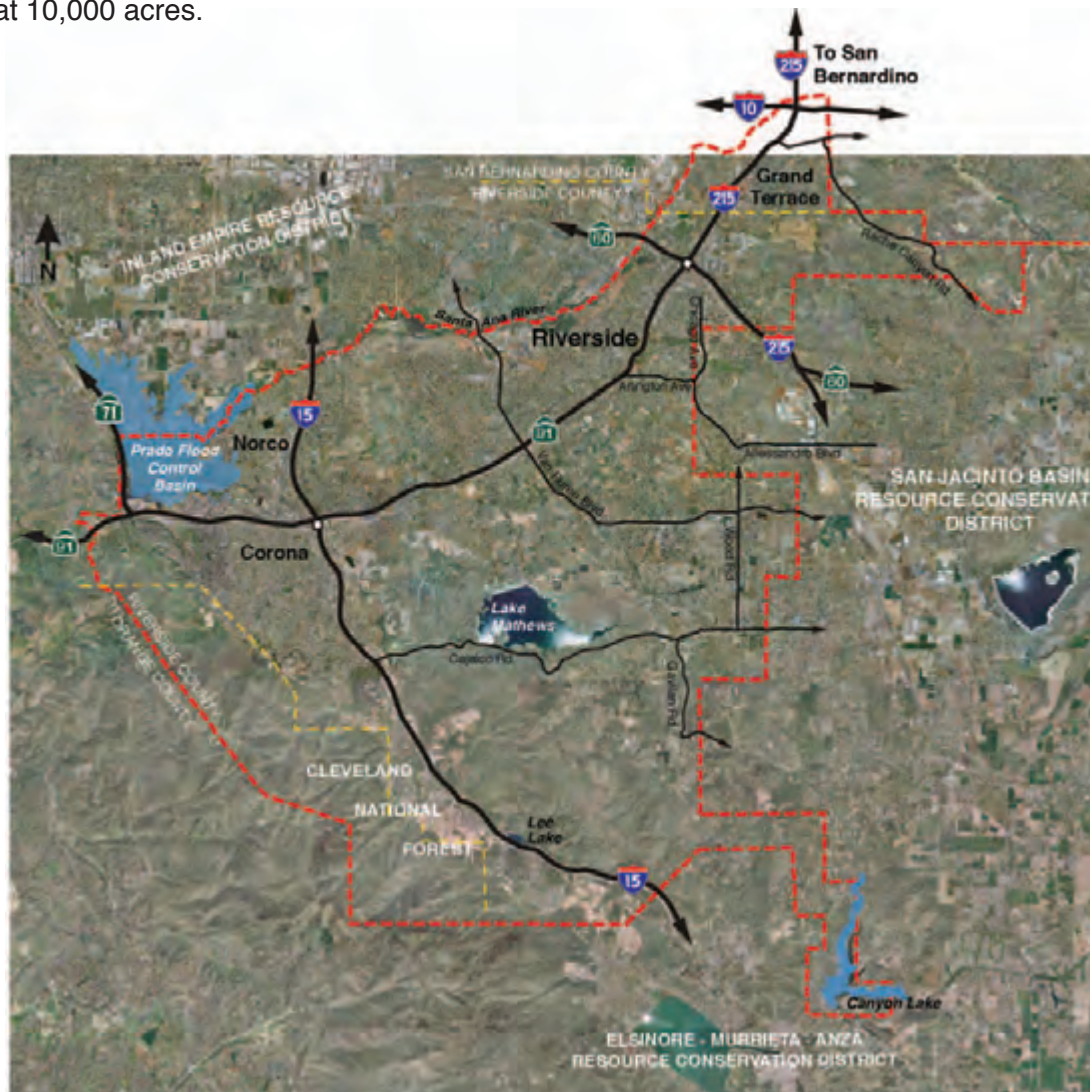
Resource Summaries

Location

The RCRCD boundaries surround approximately 200,000 acres of land in western Riverside and San Bernardino Counties of Southern California. The Santa Ana River is the Northwest border of the District in both counties. Elevations run from 400 feet in the Santa Ana River Canyon to 5,000 feet in the Santa Ana Mountains.

Approximately 150,000 acres are in urban use. Riverside County communities include Riverside, Corona, Norco, Woodcrest, Orangecrest, Gavilan Hills, Temescal Canyon, and Canyon Lake. A small area in San Bernardino County covers the Cooley Ranch and Reche Canyon areas of Colton and Grand Terrace.

Principal tracts of public lands include a portion of the Cleveland National Forest, at nearly 25,000 acres; Lake Mathews and Prado Flood Control Basin, covering about 7,500 acres; Riverside County Parks and Recreation Department holdings, in excess of 6,000 acres; and the Estelle Mountain Reserve at 10,000 acres.



Climate

The climatic character of the area is semi-arid, Mediterranean, with warm, dry summers and usually mild, wet winters. Although there is one distinct climate, there are many micro-climates within the District, which vary depending upon elevation, vegetation, landforms (topography), aspect in relation to the sun, amount of paved surface area, etc. Areas to the west have cooler summers due to onshore breezes. Upland areas have colder winters due to the higher elevations and surrounding low areas. Summer temperatures often exceed 100 degrees F, but nights are much cooler and winter nighttime temperatures rarely drop below 25 degrees F. Annual precipitation averages 10 to over 15 inches. The average growing season for crops ranges from 250 to 300 days along the valley areas, to less than 250 days in the upland areas. California has been experiencing extreme drought, with rainfall less than 6 inches in many local areas which leads to stressed habitats, fallowed farmlands, and dry waterways.



Temescal Open Space in drought.

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Population and Quality of Life

The greater Riverside area has a population of approximately 1.5 million. In 2016, the City's population is approximately 330,000. The City of Riverside is the Riverside County seat. RCRC's headquarters is adjacent to downtown Riverside that includes many courts houses and government buildings. The greater Riverside area has a rich agricultural heritage and had the highest per capita income in the country due to the citrus industry in the late 1800's.

Today, Riverside includes large blocks that have been identified as "low income and low access", including a large portion of the Arlington Green Belt, according to the Food Access Research Atlas. Areas are also identified as "Severely Disadvantaged" and "Disadvantaged Communities", including a Disadvantaged Community with a food desert on the Northside, according to the Disadvantaged Communities Mapping Tool.

According to the California Health Information Survey, four out of the 14 zip codes in the City of Riverside have a household food insecurity prevalence that is higher than the California average of 8.5%. The food insecurity percentages are 8.6% and 9.5% in the 92507 and 92504 zip codes and range between 11-12% in the 92503 and 92505 zip codes. RCRC in collaboration with partners is working to reverse this trend by improving the social determinants of health, including access to affordable, healthy food. During 2016, RCRC received a \$50,000 grant from the National Association of Conservation Districts (NACD) to assist and build capacity for the local food movement and to train farmers in conservation measures.

The county-level household food insecurity rate has become worse overtime. In 2007, the household food insecurity rate was 35.4%. By 2014, the rate had gone up to 37%. Riverside County ranks 38th out of 57 counties in California in quality of life metrics as a health outcome. In comparing state data, Riverside County ranks 39th in overall health factors, and with physical environment factors, ranks a poor 49th.

Watershed

The District is within the Santa Ana River Watershed that encompasses approximately 2,700 square miles. It is the largest river basin in Southern California. Runoff can be rapid and debris-laden, flowing into valley areas, sometimes causing flooding. Within RCRC, Temescal Wash is the terminus of the San Jacinto River, the largest tributary to the Santa Ana River.

The largest recorded flood in the Santa Ana River occurred in 1862, when an estimated 320,000 cubic feet-per-second flowed through the canyon. Severe flooding occurred in January, 1969. Flows were estimated at only 77,000 cubic feet-per-second, however, the 1969 floods were the most damaging on record in Riverside, San Bernardino and Orange Counties. Other great floods of the past equaled or exceeded the 1969 flows, however they occurred when Southern California was less urbanized and before flood control projects were constructed. Flooding occurred in January of 1993, 1995 and 1998. During a 1995 flood, Riverside County sustained damages of \$32,112,000 and lost four lives.

Within the District, major damages occurred in tributaries of the Santa Ana River, such as Oak Street Channel, Temescal Wash and Mockingbird Canyon as a result of the March, 1978 and February, 1980 floods. Oak and Main Street concrete lined channels and debris basins were constructed under USDA Soil Conservation Service programs to reduce damage to what was then downstream citrus groves in Corona, Ca.

In late 1997, in order to reduce flooding along River Road in Corona, Congressman Ken Calvert directed federal funding to RCRC for removal of invasive *Arundo donax* or giant reed.

During 2010, flooding occurred at Mockingbird Canyon, Temescal Wash, and along some lowland sections of the Santa Ana River.

Santa Ana River flooding
December 2010





Alluvial scrub vegetation bordered by chaparral.

having less than 24 inches of effective depth. Many soils hold little water after the rainy season, so supplemental irrigation is necessary for crop production and landscaping plants.

Highly productive agricultural soils are classified as prime farmland and farmland of statewide importance. Unfortunately, many of these soils have been lost to development or other non-farm uses. Important soils have been identified and mapped as part of Riverside County Important Farmland Study.



Soils

RCRCD has over 100 different soil classifications with varying depths and textures according to the Western Riverside County Soil Survey. Alluvial soils of the inland valleys are generally medium to coarse textured and usually well drained, forming into and from, deep alluvial fans. Valley soils are often greater than 60 inches deep.

Upland soils are found on rolling to steep terrain. Most upland soils are shallow, usually no more than 36 inches in depth, with most

RCRCD promotes soil health and erosion control through education and outreach programs, such as its Soil Saver Club learning materials. Staff educates the public about soil conservation through interactive programs, demonstrations, and displays at the Sycamore Creek Interpretive Center and the LandUse Learning Center.

Water

Water used within RCRC's boundaries is mainly groundwater from local aquifers. However, ground water cannot alone fulfill the needs of the Inland Empire region.

Most groundwater is pumped by local public utilities, however, a few landowners have private wells. Riverside has holdings in the historic Gage Canal, which delivers ground water to most of the remaining citrus areas within the city. This source is of fair quality (420 ppm average total dissolved solids). The canal delivers 36,000-39,000 acre feet of water to the Arlington Heights area. Fifty-five percent of the water is delivered to citrus with the remaining 45 percent delivered to a City of Riverside Reservoir.

Degraded water quality and contamination plague some local underground water sources. The Arlington basin has been abandoned due to high nitrate, MTB, and perchlorate levels. Riverside installed infrastructure to remove perchlorate from water extracted from contaminated wells. A reverse osmosis desalination plant is currently operating in the basin to produce a domestic quality supply and to help clean underground water.

In addition, some communities rely on Colorado River water and the State Water Project to meet needs. Amounts of imported water vary from year to year. The California State Water Project, delivered chiefly for domestic uses, began with a small increment in late 1979. Metropolitan Water District is the wholesaler of state water, which is normally provided to Western Municipal Water District (WMWD) and other communities. During the latest and worst drought on record, the City of Riverside sold water from underground sources to WMWD. Western provides water to the higher elevation areas in, and around Riverside, including Orangecrest, Mission Grove, Woodcrest, and Gavilan Hills. WMWD is the largest supplier of water in the RCRC meeting both agricultural and domestic needs.

Colorado River water is high in salts (around 700 ppm) and has become increasingly costly for agriculture. A significant entitlement reduction has occurred. Since the ongoing drought, less and less water has become available for use by all municipalities with rights to the water.

The City of Corona blends underground supplies with varying percentages of Colorado River water (6% in 2014), predominantly for domestic purposes.

The City of Norco currently supplies its users, essentially domestic, from underground water, which is above the Health Service Standard in regard to nitrate levels. Wells in some areas have been capped due to nitrates.



City of Corona Temescal desalter system

The only water supplier in the District with surface flow rights, Elsinore Valley MWD, also pumps from underground supplies to meet the bulk of the remaining agricultural irrigation needs. The water district anticipates the need for supplemental water from Western Municipal Water District due to domestic water demand increases. Other areas served from underground sources include the City of Grand Terrace, Home Gardens, and small portions of Lake Elsinore and Colton.

Reclaimed Water

The City of Corona was an early adopter of reclaimed water use. Corona installed purple pipes throughout the City and irrigates its parks with reclaimed water.

The City of Riverside has expanded its capacity to use reclaimed water. Eventual reclaimed water use is planned for the irrigation of parks, the airport, golf courses, and other turf areas. The City of Riverside has been supplying Toro Lawnmower Company with approximately 100,000 gallons of reclaimed water for use on turf.

Western Municipal Water District also uses reclaimed water. Riverside National Cemetery and the General Old Golf Course receive reclaimed wastewater from the adjacent March Air Force Base wastewater facility and purchases imported Colorado River water to meet the remaining demand. As other major reclaimed water customers develop in Western's service area, WMWD intends to meet demands with additional wastewater reclamation facilities.

The Cities of Colton, Corona, and Riverside have an agreement with Cal Trans to irrigate landscaped areas along the freeways with reclaimed water. Some of the tertiary treated water is discharged into the Santa Ana River for enhancing riparian habitat.

Riparian habitat along the lower Santa Ana River below Prado dam



Air Quality

American Thoracic Society researchers believe that hundreds of people die each year because of Southern California's poor air quality. Pollution levels continue to exceed the levels deemed safe by health professionals. The Riverside-San Bernardino-Ontario metropolitan area was second worst, with about 808 people estimated to die annually because of air pollution. Compared to that, the worst is the Los Angeles-Long Beach-Glendale area where about 1,341 people are estimated to die each year because of bad air. Nationally, total deaths were estimated at 9,320 a year, so a large percentage is in SoCal. The study was based on air pollution data for both fine particle and ozone levels in U.S. metropolitan areas recorded in 2011, 2012 and 2013.

The South Coast Air Quality Management District (SCAQMD) is the air pollution control agency for the South Coast Air basin. The Basin includes California's largest metropolitan region including the western portions of Riverside and San Bernardino Counties, the southern two-thirds of Los Angeles County, and all of Orange County. The air basin covers 6,729 square miles, is home to more than 40 percent of California's population, and generates about 29 percent of the State's total criteria pollutant emissions. The California Air Resources Board has current and historic data for the South Coast, as well as the whole state, including the Latest Ozone Summary.


To comply with the Clean Air Act, visible air pollution, referred to as PM 10, has been targeted by the Environmental Protection Agency and State Air Quality Board. PM 10 includes dust from wind erosion that comes largely from farmlands. RCRCDC works to raise awareness about controlling wind erosion and particulate matter from farmlands.

The Global Warming Solutions Act of 2006 (AB 32) required that the California Air Resources Board (ARB) determine the statewide 1990 greenhouse gas (GHG) emission level and approve a statewide greenhouse gas emissions limit. In 2006, Assembly Bill 1803 made ARB responsible to prepare, adopt, and update California's greenhouse gas inventory. The act also required that the Board approve a statewide greenhouse gas emissions limit, equal to the 1990 level, as a limit to be achieved by 2020. Municipalities and joint powers authorities have been developing Climate Action Plans. RCRCDC provided review of the City of Riverside's Climate Action Plan, which will help the City reach 2020 goals.

In August of 2016, the California legislature passed a bill for \$900 million Greenhouse Gas Reduction Funds (GGRF) that will create significant opportunities. California's climate initiatives recognize the role of natural and working lands to reduce carbon. Also, the bill includes incentives for greater participation within and around Disadvantaged Communities (DAC). Riverside and San Bernardino account for 15% of California's DAC population.

Air pollution comes from the products and services we use every day. RCRCDC promotes numerous practices that reduce air pollution and that mitigate for greenhouse gases.

Dust from plowed field.



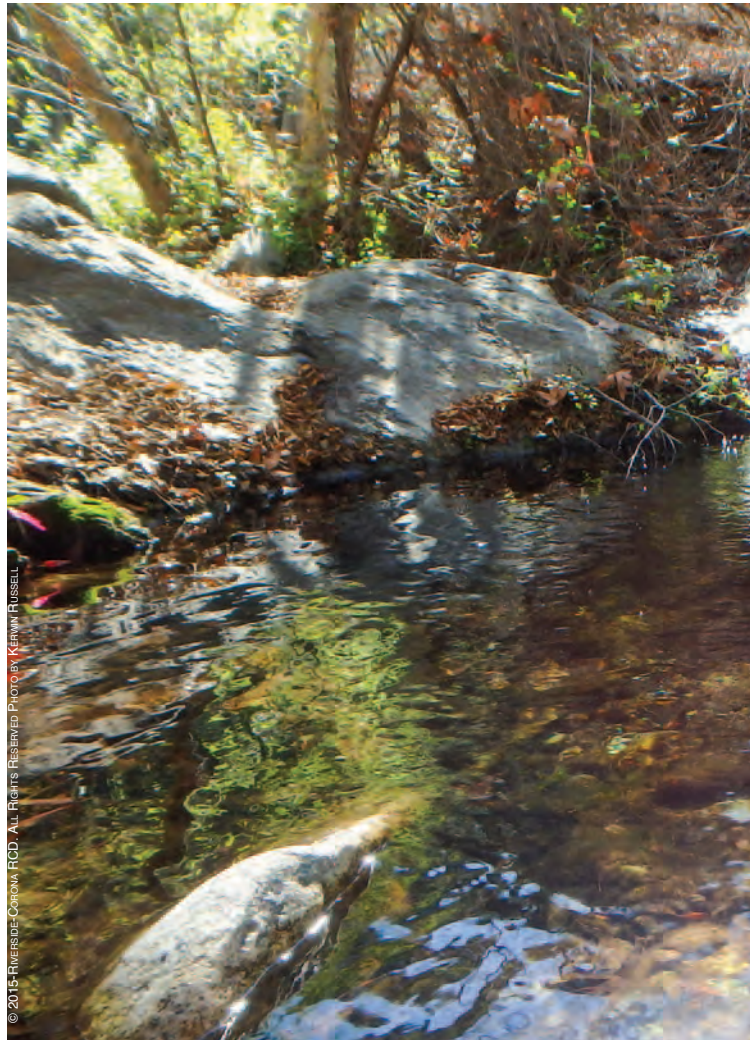
Vegetation

Vegetation found within the District consists of seven major types of plant communities—riparian woodland, grassland, chaparral, coastal sage scrub, alluvial scrub (aka alluvial fan sage scrub, scale broom scrub), southern oak woodland and conifer forest, and transitions between these plant communities. Since the Multi Species Habitat Conservation Plan (MSHCP) was implemented, a classification system for vegetation has been used that more accurately reflects the tremendous diversity encompassed within these major vegetation types. *A Manual of California Vegetation*, 2nd Edition (MCV2) is the guiding document. Riparian woodland, coastal sage scrub, some types of alluvial scrub, and southern oak woodland are sensitive habitats found within RCRC.

The Western Riverside County Multi Species Habitat Conservation Plan (MSHCP) is a unified plan that guides development and provides for economic growth while protecting native habitats. In the 1980s-1990s a growing number of endangered species was slowing development. Through a lengthy stakeholder process and environmental evaluation, a comprehensive approach was developed to protect our unique landscapes and wildlife while expediting development. The Western Riverside County Regional Conservation Authority (RCA) was created to steward the plan, or MSHCP. RCRC was part of the process that developed the plan, and the monitoring biologists for the MSHCP are located in building C at the RCD's headquarters: the Resource Conservation Center.

Riparian Woodland

Riparian woodland is found in moist to wet soils along rivers and streams. Riparian woodlands are generally characterized as narrow and frequently discontinuous bands of trees following stream courses. These woodlands are of considerable regional importance to many wildlife species as well as areas where water can be found year round.





Lepidospartum squamatum
Alluvial Scrub vegetation



Chamise chaparral in the
Santa Ana Mountains.

Alluvial Scrub

Alluvial Scrub plant communities play an essential role in stabilizing alluvial fans and wash habitats. The vegetation aids in the percolation of water into ground water systems and basins and in controlling erosion and flooding of downstream habitat and developments. Alluvial Scrub also serves as habitat for many rare plant and wildlife species and is considered as threatened habitat. Alluvial Scrub habitat is threatened by climate change, artificially high fire frequency, introduced species, disruption of natural erosion and deposition processes, urbanization, and other human impacts.

Alluvial scrub vegetation is variable in composition and occurs primarily on low gradient, unstable substrates of alluvial fans and along washes at the bases of inland mountain ranges and on alluvial terraces within the floodplain of the upper Santa Ana River and its tributaries.

One of the most important shrubs of Alluvial Scrub vegetation is scale broom (*Lepidospartum squamatum*). The species composition of Alluvial Scrub communities varies by location, depending on factors such as exposure, soil texture, time since last disturbance, water availability, elevation, frequency of fire and flooding, and the availability of intact, adjacent habitat.

Grasslands

Nearly all grasslands within the District, especially those at lower elevations are predominately introduced annual grasses. Mixed in with these are usually some native grasses and native forbs and a scattering of sub-shrubs. Upland grasslands are associated with relatively gentle topography and deeper, fine textured soils. Rare native grasslands with Purple Needlegrass (*Stipa pulchra*) or Foothill Needlegrass (*Stipa lepida*) are found on clay soils within the Santa Ana Mountains and the Gavilan Hills. The grasslands are often dominated by non-native wild oats.

There are also grasslands associated with moist, alkali-soil habitats. These sensitive grasslands are dominated by Salt Grass (*Distichlis spicata*). Some of the associated species include Yerba Mansa (*Anemopsis californica*), Alkali Heliotrope (*Heliotropium curassavicum*), trailing wild rye (*Elymus triticoides*), Alkali Heath (*Frankenia salina*), and Alkali Mallow (*Malvella leprosa*).

Chaparral

Chaparral consists mostly of evergreen shrub species that form a continuous canopy that is often less than six feet high. Species are all well adapted to withstand drought, but are most active in the cooler, wetter part of the year. Many chaparral species possess leathery leaves and deep root systems that help the plants to conserve and utilize water for a longer growing season than other shrubland communities. Chaparral usually develops between 1,500 and 4,000 feet in elevation where annual rainfall is 14-25 inches. Many species sprout or produce seedlings in response to fire.

Coastal Sage Scrub

The coastal sage scrub community occupies coastal foothills and bluffs, inland valleys, and mountain slopes below 3,000 feet, usually below the chaparral. Compared to chaparral, coastal sage scrub is dominated by low, open scrubby vegetation. Many species are aromatic, such as California sage brush and several species of sage, and have thin leaves that become dormant, and partially to completely deciduous, during the summer dry season. Precipitation is light, varying from 10-20 inches per year. coastal sage scrub is considered to be an important natural habitat, supporting a diverse array of wildlife and a diversity of forb species that occur in open areas and after fire. Many species either re-sprout or have seeds that germinate after fire.



Grassland, coastal sage scrub and chaparral on different slopes.

Oak Woodland

Two phases of the southern oak woodland exist within the District. The phases are known as the Englemann Oak phase and the Coast Live Oak phase. Isolated trees, prominently of Englemann Oak, and drier soils characterize the Englemann Oak phase. Coast Live Oak and California Walnut dominate the denser (over 30% cover), widespread woodland of the Coast Live Oak phase. Generally, this phase is found on the moister slopes, along fault lines, and by riparian areas within the District. This community can be found at elevations up to 5,000 feet. Precipitation ranges from 15-25 inches per year with a considerable amount of runoff if slopes are steep.

Conifer Woodland

The conifer woodland community is of two major types within our District, the Coulter Pine (*Pinus coulteri*) Woodland alliance and the Bigcone Douglas-Fir (*Pseudotsuga macrocarpa*) Woodland alliance, found at elevations between 4,000 and 5,500 feet in the Santa Ana Mountains. Precipitation, sometimes in the form of snow, can range between 25-45 inches per year. The soils are mostly residual upland soils and are moderately to strongly acidic. Other plants within these communities can include: Canyon Live Oak, Coast Live Oak, California Bay, with a sparse shrub understory (e.g., Eastwood Manzanita, Toyon).



Bigcone Douglas-Fir - Coulter Pine Woodland

Important Natural Areas

Within the boundaries of RCRC, the California Department of Fish and Wildlife has identified 12 “Significant Natural Areas” (SNA’s) through its Lands and Natural Areas Program. SNAs represent “the most important elements of California’s natural diversity”. SNAs are designed to raise awareness about their uniqueness. If an area is listed as an SNA, it may help prevent future abuse and uncontrolled, unplanned development.

The SNA’s found within the RCRC including: Alberhill Mountain, Bedford Canyon, Box Springs, El Cerrito, Gavilan Springs, Harrison Reservoir, Ida-Leone, Sierra Peak, southside of Lake Mathews, Upper Santa Ana River, Upper Temescal Canyon, and Wardlow Canyon (part of North Eastern Santa Ana Mountains, Fresno to Tin Mine Canyons). There are also other areas that have significant habitat value and unique, threatened or endangered species due to their location, soils, hydrology or other environmental factors. These important areas contain many sensitive species of plants and wildlife. Examples of some of the sensitive residents are listed under each SNA. Examples of sensitive habitat include: Riparian, Riversidean Sage Scrub, Alluvial Scrub, Oak Woodland and wetlands.

Alberhill Mountain is the home for the San Diego Horned Lizard, Orange Throated Whiptail, Many-Stemmed Dudleya, Munz’s Onion (extremely rare), and Palmer’s Grapplinghook.

Bedford Canyon is a community of Southern Coast Live Oak, riparian forest, southern interior Cypress forest, and Tecate Cypress.

The **Box Springs** area is characterized by southern sycamore alder riparian woodland. The San Diego Horned Lizard, Orange Throated Whiptail, Western Spadefoot Toad, Bobcat, Pallid Bat and the endangered Stephen’s Kangaroo Rat are some of the sensitive and endangered species that occur there.



Munz’s onion

PHOTO COURTESY OF THE WESTERN RIVERSIDE COUNTY MSHCP BIOLOGICAL MONITORING PROGRAM

The **El Cerrito** area contains rare southern willow scrub habitat that is home to associated bird species such as the rare Least Bell’s Vireo, the sensitive Yellow-Breasted Chat, and the Yellow Warbler.

Gavilan Springs is a southern sycamore alder riparian woodland habitat and well-formed Coastal Sage Scrub. Munz’s Onion and Large-Leaf Fillare can sometimes be found here, as well as many species of sensitive reptiles, such as the Coast Horned Lizard.

Harrison Reservoir is another place where the southern willow scrub and associated sensitive bird species define the natural community.

Ida-Leone hosts a southern coast live oak riparian forest habitat. Cooper’s Hawk and the Long-eared Owl make their homes there. Federally listed species include the threatened Coastal California Gnatcatcher and endangered Stephen’s Kangaroo Rat. Other sensitive species found there include the San Diego Horned Lizard, Little Mouseling, Orange Throated Whiptail, and Munz’s Onion. Palmer’s Grapplinghook is considered a “best example” of the area in which this plant defines the natural community, in a “relatively pristine and undisturbed condition.”

Sierra Peak is an area composed of southern sycamore alder riparian woodland and southern interior cypress forest. The rare Tecate Cypress can be found there. The heart-leaved Pitcher Sage, a candidate for federal listing, is found there, as well.



Least Bell's vireo

Southside Lake Mathews habitat is composed of southern sycamore alder riparian woodland. The Coastal California Gnatcatcher and the Stephen's Kangaroo Rat are residents of the southside.

Upper Temescal Valley communities include southern cottonwood willow riparian forest and southern willow scrub bordered by Coastal Sage Scrub and several types of Alluvial Scrub, including what has been called Alluvial Fan Sage Scrub and *Lepidospartum squamatum* scrub. The shrubland slopes above riparian communities support the Orange-Throated Whiptail (a species of lizard), Munz's Onion, Palmer's Grapplinghook, the Many-Stemmed Dudleya, the endangered Slender-Horned Spineflower, and the Stephen's Kangaroo Rat. The riparian areas support nesting populations of Least Bell's Vireo, (an endangered songbird) and other habitat-associated bird species. Temescal Creek was once home to the Yellow-billed Cuckoo, a relative to the roadrunner. It nested in the large willow-cottonwood forests along Temescal Creek. It has recently been listed as endangered and has not been seen or heard in this area since the early 1990's. The area also drains the east slopes of the Santa Ana Mountains, and the Cleveland National Forest, which are occupied by a number of additional listed species and their habitats. The District holds easements and fee-title lands along the lower slopes of the mountains, which are managed in cooperation with the forest service when District lands are adjacent to the forest. Important aquatic



The rare Tecate cypress occurs within the McBride conservation property.

habitats that occur here, and that the District owns, manages or monitors are Bedford Wash, McBride Canyon, Coldwater Creek and Horsethief Canyon.

The **Upper Santa Ana River** can be described as a southern cottonwood willow riparian forest. Sensitive animals in the area include San Diego Horned Lizard, Orange-Throated Whiptail, White-tailed Kite, California Black Rail, Burrowing Owl, Willow Flycatcher, Least Bell's Vireo, and the Yellow-Breasted Chat. The Western Yellow Billed Cuckoo may also occur there.

The **Wardlow Wash** habitat is made up of the southern cottonwood willow riparian forest and southern sycamore alder riparian woodland. The endangered Least Bell's Vireos are residents of the wash and have nested there.

Invasive Species

Over the last decade, invasive plants have come to the forefront of agricultural and environmental issues. Due to these plants' aggressive growth habits, they have overtaken many natural areas and now pose a threat to the native habitats in which they grow. Many local agencies have been working on removal over the last several years, with the District working on removal in small target areas during the past decade. Although some of these species may be visually attractive, invasive plant species do not provide quality habitat or a food source for native wildlife species. Many of these plants are out-competing the native plants that some endangered birds need for nesting. This increases the potential for damage to both the plant and animal communities and local extinctions of plants and wildlife.

These are just a few of the dozens of invasive plants that are being targeted for removal within the District service area. Due to the aggressive nature of these exotic, non-native plants, eradication takes many years, with some plants requiring as much as 10 years of control efforts. Integrated pest management (IPM) is also being used to control some species. IPM uses a mixture of chemical, mechanical, and biological controls to manage pest plants. This helps reduce the dependence on chemicals alone, and gives the management agencies and contractors better ability to control costs. A 20 year control plan for the Santa Ana River Watershed is in place for the management of Giant Reed (*Arundo donax*). The extensive plan includes cooperation with other Conservation Districts through the Santa Ana Watershed Association (SAWA). Each District works within its boundaries to control Giant Reed along upstream tributaries and the Santa Ana River main stem. Currently, there is a movement to draft a plan for management of the very invasive Perennial Pepperweed.

Invasive Pests

Other invasive pests such as the Asian Citrus Psyllid, wood-boring beetles and wild pigs have become increasingly difficult agricultural and environmental issues. Combined with drought and other environmental factors, these pests are threatening many natural and agricultural areas. Many invasive beetles, such as the Polyphagous Shot Hole Borer, target urban, native and agriculturally important species and carry fungi that cause significant damage to the affected trees. Many local and state agencies have been working on control efforts and best management practices (BMPS) to reduce the spread of pests. The District utilizes and promotes these BMPs and educates the public and conservation practitioners about these issues.

The most common problems resulting from the invasion of non-native plant species include:

- loss of native habitat,
- increased fire hazard, and
- increased use of water in riparian areas

Common invasive plants of riparian areas include:

- Giant reed (*Arundo donax*)
- Salt cedar
- Perennial pepperweed
- Castor bean
- Tree tobacco
- Fan palm
- Bullthistle
- Eucalyptus species
- Common fig

Common invasive plants of upland slopes include:

- Filaree species
- Tocalote
- Shortpod mustard
- Sahara mustard
- Red brome
- Rippgut brome
- Wild oats
- Mediterranean grass
- Stinknet

Wildlife

Distribution of wildlife is determined by the distribution and variety of vegetative communities, water, and available food. Urban growth within the District has put pressure on remaining areas suitable for wildlife. Direct loss of habitat, the diversion of streams for municipal water supplies, increased effluent discharge, and intensified recreational use of open space has adverse impacts on wildlife populations.

In the RCRCDD, threatened habitats include:

- Riparian habitats such as the Santa Ana River and tributaries which support numerous species, including several of limited abundance; one threatened species of fish and two species of concern.
- Lakes and reservoirs, which support wintering raptors and thousands of migrating waterfowl;
- Chaparral and other upland habitats which support quail, deer, ground squirrels, and numerous raptors;
- Coastal sage scrub which is home for a diverse number of species, including the endangered Coastal California gnatcatcher, the Stephen's kangaroo rat, and the Quino Checkerspot Butterfly.
- Purple needlegrass grassland
- Alluvial scrub
- Alkali meadow.

There are only six native freshwater fish species present in Southern California, four of which occur in the RCRCDD: the arroyo chub, speckled dace, coastal rainbow trout and the Santa Ana sucker, a threatened species. All of these species prefer clean, clear, cool running water, and areas that have gravel or cobble bottomed streams, particularly those where no predatory fish are present, that are good for spawning and larval fish development. Good streamside habitat also helps to protect young fish by shading the water during the hot summer months and providing insect populations for food. Native fish populations decline rapidly in water over 80 degrees fahrenheit or in water that is otherwise of poor quality and high turbidity. Factors such as flooding, drought, illegal dumping in waterways, and other human activities can also impact native fish populations.

Western Pond turtles



The Western Pond Turtle is the only native turtle in the RCRCDD service area, and its numbers have declined in recent years. It is also a species of special concern with the California Department of Fish and Wildlife. Western Pond turtles prefer warm, slow moving creeks and ponds with upland vegetation for nesting. Since much of the coastal sage scrub land of the Inland Empire has been converted to urban development, this species has not been reproducing except in the small, isolated ponds and creek areas that remain.

The following species have been identified as sensitive, rare, threatened, or endangered by the US Department of Interior, the California Department of Fish and Wildlife, and/or have been included in the Southwestern County Multiple-Species Habitat Conservation Plan (MSHCP). Many sensitive species are rare, threatened, or endangered. Federally listed endangered or threatened species (FE, FT) and State listed endangered or threatened species (SE, ST) are protected. Some species are considered sensitive by federal or state agencies and are designated as species of special concern (FSC or SSC, respectively), or candidate species for listing (C). Some of these are rare and have protected status in the state (SP). In addition, the California Native Plant Society publishes a list of rare, threatened, and endangered plants. Those that are particularly sensitive and rare are listed as 1A or 1B and are considered fully under the California Environmental Quality Act (CEQA). The Southwestern County Multiple-Species Habitat Conservation Plan (MSHCP) includes many unlisted sensitive species (e.g., CNPS, SSC, C, and other locally recognized sensitive species) in its plan, because with further habitat loss, they may become candidates for listings as threatened or endangered. All species listed below with FE, FT, SE, ST, SSC status, are in the MSHCP. The absence of other MSHCP species below does not indicate that they can't be found in the District. The species listed are those with recent documentation.

INSECTS

Quino Checkerspot Butterfly (*Euphydryas editha quino*) FE, MSHCP
 Delhi Sands Flower-Loving Fly (*Rhaphiomidas terminatus abdominalis*) FE, MSHCP

FISH

Arroyo Chub (*Gila orcutti*) SSC, MSHCP
 Coastal Rainbow Trout (*Oncorhynchus mykiss irideus*) SSC
 Santa Ana Speckled-Dace (*Rhinichthys osculus* ssp.) SSC
 Santa Ana Sucker (*Catostomus santaanae*) FT, S1, MSHCP

AMPHIBIANS

Arroyo Southwestern Toad (*Anaxyrus californicus* =*Bufo microscaphus californicus*) FE, SSC, MSHCP
 California Red-Legged Frog (*Rana aurora draytonii*) FT, SSC, MSHCP
 Western Spadefoot Toad (*Spea* [=*Scaphiopus*] *hammondii intermontanus*) SSC
 Coast Range Newt (*Taricha torosa torosa*) SSC, MSHCP

REPTILES

Coast Patch-Nosed Snake (*Salvadora hexalepis virgulata*) SSC
 Coastal Rosy Boa (*Charina* [=*Lichanura*] *trivirgata roseofusca*) SSC
 Coastal Western Whiptail (*Aspidoscelis trigrismultiscutatus*) SSC, MSHCP
 Granite Spiny Lizard (*Sceloporus orcutti orcuttii*) MSHCP
 Long-Nosed Leopard Lizard (*Gambelia wislizenii*) SSC
 Belding's Orange-Throated Whiptail (*Aspidoscelis hyperythrus beldingi*) SSC, SP, MSHCP



Coast Range Newt



Western Spadefoot Toad



San Diego Coast Horned Lizard



Red Diamond Rattlesnake



Western Pond turtle



Burrowing Owl



Cactus Wren



Mountain Lion

Red Diamond Rattlesnake (*Crotalus ruber ruber*) SSC, MSHCP
 Rubber Boa (*Charina bottae umbratica*) ST, MSHC
 San Bernardino Ringneck Snake (*Diadophis punctatus modestus*) SSC
 San Diego Banded Gecko (*Coleonyx variegates abbotti*) SSC, MSHCP
 San Diego Coast Horned Lizard (*Phrynosoma coronatum blainvilli*) SSC, SP, MSHCP
 Western Pond Turtle (*Actinemys marmorata*) SSC

BIRDS

Bald Eagle (*Haliaeetus leucocephalus*) SE, SP
 Burrowing Owl (*Speotyto cunicularia hypugaea*) SSC, MSHCP
 Cactus Wren (*Campylorhynchus brunneicapillus cousei*) SSC, MSHCP
 Coastal California Gnatcatcher (*Polioptila californica californica*) FT, SSC, MSHCP
 Cooper's Hawk (*Accipiter cooperii*) MSHCP
 Gilded Northern Flicker (*Colaptes auratus chrysoides*) SE
 Golden Eagle (*Aquila chryseatos*) SP, MSHCP
 Grasshopper Sparrow (*Ammodramus savannarum perpallidus*) MSHCP
 Least Bell's Vireo (*Vireo bellii pusillus*) SE, FE, MSHCP
 Mountain Plover (*Charadrius montanus*) SSC, MSHCP
 Southern California Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*) MSHCP
 Southwestern Willow Flycatcher (*Empidonax traillii extimus*) FE, SE
 Swainson's Hawk (*Buteo swainsoni*) ST
 Tricolored Blackbird (*Agelaius tricolor*) SSC, (pending status change), MSHCP
 Western Yellow-Billed Cuckoo (*Coccyzus americanus occidentalis*) SE, MSHCP
 Wilson's Warbler (*Wilsonia pusilla*) MSHCP
 Yellow Warbler (*Dendroica petechia brewsteri*) MSHCP
 Yellow-Breasted Chat (*Icteria virens longicauda*) SSC, MSHCP

MAMMALS

San Diego Black-Tailed Jack Rabbit (*Lepus californicus bennetii*) SSC, MSHCP
 Bobcat (*Lynx rufus californicus*) MSHCP
 Brush Rabbit (*Sylvilagus bachmani*) MSHCP
 Coyote (*Canis latrans clepticus*) MSHCP
 Bryant's Woodrat (*Neotoma bryanti intermedia*) SSC, MSHCP
 Dulzura kangaroo rat (*Dipodomys simulans*) SSC, MSHCP
 Long-Tailed Weasel (*Mustela frenata*) MSHCP
 Los Angeles Pocket Mouse (*Perognathus longimembris brevinasus*) SSC, MSHCP
 Mountain Lion (*Puma concolor*) SP, MSHCP
 Pallid Bat (*Antrozous pallidus*) SSC
 San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) FE, SSC, MSHCP
 Stephen's Kangaroo Rat (*Dipodomys stephensi*) ST, FE, MSHCP

PLANTS

- California Orcutt-Grass (*Orcuttia californica*) SE, FE, CNPS 1 B.1, MSHCP
- Chaparral Nolina (*Nolina cismontana*) CNPS 1B.2
- Chocolate Lily (*Fritillaria biflora*) MSHCP
- Coulter's Goldfields (*Lasthenia glabrata* var. *coulteri*) CNPS 1B.1, MSHCP
- Coulter's Matilija Poppy (*Romneya coulteri*) MSHCP 4.2, MSHCP
- Fish's Milkwort (*Polygala cornuta* var. *fishiae*) CNPS 4.3, MSHCP
- Heart-leaved Pitcher Sage (*Lepechinia cardiophylla*) CNPS 1B.2, MSHCP
- Large-leaved filaree (*California macrophylla*) CNPS 1B.2, MSHCP
- Little Mousetail (*Myosurus minimus* ssp. *apus*) CNPS 3.1, MSHCP
- Long-Spined Spineflower (*Chorizanthe polygonoides* var. *longispina*) CNPS 1B.2, MSHCP
- Many-Stemmed Dudleya (*Dudleya multicaulis*) CNPS 1B.2; MSHCP
- Munz's Onion (*Allium munzii*) FE, ST, CNPS 1B.1, MSHCP
- Palmer's Grapplinghook (*Hapagonella palmeri*) CNPS 4.2, MSHCP
- Parry's Spineflower (*Chorizanthe parryi* var. *parryi*) CNPS 1B.1, MSHCP
- Paysen's Jewelflower (*Caulanthus simulans*) CNPS 4.2, MSHCP
- Peninsular Spineflower (*Chorizanthe leptotheca*) CNPS 4.2, MSHCP
- Plummer's Mariposa Lily (*Calochortus plummerae*) CNPS 4.2, MSHCP
- Robinson's Peppergrass (*Lepidium virginicum* var. *robinsonii*) CNPS 4.3
- San Diego Ambrosia (*Ambrosia pumila*) FE, CNPS 1B.1, MSHCP
- San Miguel Savory (*Clinopodium chandleri*) CNPS 1B.2, MSHCP
- Santa Ana River Woollystar (*Eriastrum densifolium* ssp. *sanctorum*) SE, FE, CNPS 1B.1
- Santiago Peak Phacelia (*Phacelia keckii*) CNPS 1B,3
- Slender-Horned Spineflower (*Dodecahema leptoceras*) SE, FE, CNPS 1B.1 MSHCP
- Small-flowered morning glory (*Convolvulus simulans*) CNPS 4.2, MSHCP
- Smooth Tarplant (*Hemizonia pungens* ssp. *laevis*) CNPS 1B.1, MSHCP
- Southern California Black Walnut (*Juglans californica*) CNPS 4.2, MSHCP
- Thread-Leaved Brodiaea (*Brodiaea filifolia*) SE, FT, CNPS 1B.1, MSHCP
- Yucaipa onion (*Allium marvinii*) CNPS 1B.1, MSHCP



Chocolate Lily
Fritillaria biflora



Coulter's Matilija Poppy
Romneya coulteri

Geology

The geologic setting of the District is diversified and complex. The land is composed of sedimentary, crystalline bedrock and alluvial deposits. Fault activity dictates location and distribution of most rock types, with much of the area affected by internal faults. Surface erosion of soil and rock in many hill and plateau areas result in large residual boulders on slopes. Liquefaction poses a significant hazard along the Santa Ana River near Riverside and Norco. Landslides are a basic geologic hazard and occur on steep, unstable earth masses and mountain slopes. Rain, construction grading, and earthquakes cause soil movement. Softer sedimentary rocks along the northeast flank of the Santa Ana Mountains near Corona are subject to landslides, and many areas contain fossils from the time they were formed in shallow seas. The natural abundance of alluvial materials in the District has fostered an extensive sand and gravel industry. Sizable amounts of cement, sand, gravel, stone, iron ore and lime are mined south of Corona, and contribute to the large production of industrial minerals. Riverside County is one of the highest production areas for these materials in the state. Much of the crystalline rock in the area is similar to that of the Sierra Nevada, and was formed at the same time. A few small gold mines were dug to tap this resource, but most have been abandoned or depleted.

Seismicity

The San Jacinto Fault branches from the San Andreas Fault near Cajon Pass and crosses into the District at the Santa Ana River just east of Colton, extending to Reche Canyon. It is the most active of the faults in Southern California. During this century, seven shocks of magnitude 6.0 to 7.1 have occurred along its length. The Elsinore Fault, which is located along Temescal Canyon, has been relatively inactive in recent geologic times. Most of the geographic features of the District have been formed by faults. The Santa Ana River has cut a defile canyon through the Santa Ana Mountains and shows the slow uplift of this range as compared to the erosion and down-cutting of the river.

RCRCD conducts a hydro survey along the Santa Ana River.



RCRCD History—1952-2016

In 1952, 126 farmers sent a petition to the Riverside County Board of Supervisors, which requested the formation of a Soil Conservation District. A Conservation District could help bring federal programs to local farms. By a public vote, the Riverside-Corona Soil Conservation District was formed in 1953 and has been helping to conserve the natural resources of the greater Riverside area ever since. In 1972 Soil Conservation Districts were renamed Resource Conservation Districts (RCD's).

In its first five years, the RCRCD gained 429 cooperators who farmed 22,714 acres of land. U.S. Department of Agriculture soil conservationists and engineers worked with farmers to plan and develop their properties, largely citrus groves. The farmers installed conservation measures to conserve soil and water, including contour furrows, outlet drain lines, cover crops, mulch, check dams, grassed waterways, reservoirs, and efficient irrigation systems. In the early years, the RCRCD's technical partner was the USDA Soil Conservation Service, later renamed the Natural Resources Conservation Service (NRCS). Today, RCRCD programs rely on numerous partners and cooperative funding.

The Riverside-Corona Resource Conservation District (RCRCD) originally worked with farmers to conserve soil and water on farmland. However, over the years, RCD programs have evolved to address changing land uses and resource issues. Many of the challenges that we currently face, such as water pollution and degraded wildlife habitat, are a result of population growth. In 1950, the inland population was about 50,000 people. In 1990, the population of the District was nearly 500,000. By 1995 the population actually decreased by 11 percent due to a poor economy. Since then, housing and industrial developments have expanded throughout the District, specifically in Gavilan Hills, Temescal Canyon, Highgrove, Norco, Corona, and the Woodcrest, Orangecrest, and Eagle Valley areas of Riverside. Today the population of the greater Riverside area is over 1.5 million. Current RCD programs work to restore habitat, educate the public, and conserve resources, especially water.

In 1987 the District received funding from the California Department of Water Resources to conduct evaluations of irrigation systems for farmers. Over the years, the program has expanded to help save water at parks, schools, golf courses, and homes. Funding has come from additional sources including Western Municipal Water District, Metropolitan Water District, Southern California Edison, and Riverside Public Utility.



Published in the Riverside Daily Press, dated Wednesday May 20, 1953.

The Conservation District's early education program consisted of land judging competitions for Future Farmers of America (FFA) and Student Speak-Offs, at the high school level. During the seventies and eighties, RCD programs expanded as the population grew. Education programs were created for schools, fairs, community groups, and home gardeners to raise awareness about resource management and stewardship. Resource Educators presented water quality programs to adult groups and schools for 15 years, with support from the Only Rain Down the Storm Drain program of the Cities and County of Riverside. Tree programs were conducted for schools and events. Each year, teachers and students are given learning tools such as posters, puzzles, and booklets. A mini-grant program was created to fund outdoor, hands-on learning activities, such as gardens and composting.

At different times, RCRCRD has provided training for Sherman Indian Institute and California School for the Deaf (CSDR). CSDR students helped at the LandUse Learning Center creating compost, working the garden plots, and spreading mulch. They monitored bluebird nest boxes at their school and at Olivewood Memorial Park and collected data for Operation Tree Canopy-Focal Trees, another citizen science project.

During the eighties and nineties, urbanization eliminated or degraded many important native habitats. Waterways had been, and continue to be, contained in storm drains or lined with concrete, in order to make land useable for urban development. As a result, critical wildlife habitat was lost and fragmented. Urban runoff was degrading water quality, and invasive species were taking over much of the remaining riparian habitat. RCRCRD programs were created to monitor and manage habitat and wildlife. The Santa Ana Watershed Association (SAWA) formed to remove invasive species and restore habitat. In cooperation with SAWA, the RCRCRD has removed *Arundo donax* (Giant reed), an invasive weed. As a result, during 2008, over 1,000 vireo territories were documented in the watershed, an increase of 600 from 2000. (A "territory" is an area claimed by a male through singing.)

Storm drain labeling program for teens



California School for the Deaf (CSDR) service learning students spread mulch on the amphitheater banks.

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For more historical information, request a copy of “60 Years of Resource Conservation 1953-2013”.

Past Awards

2016 California Urban Forests Council’s Excellence in Education Award.

National Association of Conservation Districts:
\$50,000 Urban Agriculture Grant

2013 President Alfred B. Bonnet (Bud) was recognized by Congressman Ken Calvert for 50 years of service on the RCRCDD board.

California Association of Resource Conservation Districts’ District Manager Award went to Shelli Lamb.

2010 Arlington High School’s Environthon team won the international championship.

American Fisheries Society Western Division’s Riparian Challenge Award was granted to RCRCDD for its native fish restoration project for the Temescal Creek Watershed.

2009 \$1,500 gift awarded by the Deep Creek Flyfishers, for RCRCDD’s fish research, restoration and education program.

2006 \$60,000 City Makeover Grant Award, presented by the Metropolitan Water District of Southern California (MWD) to help finance the development of the LandUse Learning Center (LLC). Many partners have given funds toward development of the LLC.

An Excellence in Communications Award of \$500 and Honorable Mention was granted to RCRCDD by the National Association of Conservation Districts (NACD) and the Association of Equipment Manufacturers (AEM).

Certificate of Appreciation, awarded by the U.S. Department of Agriculture for outstanding educational outreach.

Environmental Awareness Award/Certificate of Special Congressional Recognition, presented by Ken Calvert, member of US Congress to RCRCDD in recognition of outstanding and valuable service to the community.

A Certificate of Appreciation from U.S. Senator Barbara Boxer honoring RCRCDD’s outstanding service and litter prevention efforts.

A Litter Prevention Award was presented to RCRCDD by “Keep Riverside Clean and Beautiful” for pollution prevention education programs and for organizing waterway cleanup events.



Jolyn Murphy, aide to Congressman Ken Calvert, presented a congressional award for 50 years of service to Bud Bonnett, the president of RCRCDD’s Board of Directors, at the California Association of Resource Conservation Districts’ (CARCD) South Coast Area meeting.

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- 2005** McMurchie Excellence in Safety Award
- 2004** Governor's Environmental and Economic Leadership Award.
- 2003** Earl F. Sayer Safety Award for Excellence, presented by the California Special Districts Association.
 Certificate of Recognition from John J. Benoit, Assembly member, California State Legislature, was presented to RCRCDD for fifty years of hard work and dedication to resource conservation.
 Award of Appreciation for outstanding support of the 2003 California Envirothon State Champions, Arlington High School Lions, 1st in California, 16th in North America.
 US Fish and Wildlife Service National Wetlands Conservation Award - Santa Ana Watershed Association of Conservation Districts.
- 2002** The National Association of Conservation Districts (NACD) and the Association of Equipment Manufacturers presented the District Outreach Award for a special publication *Birdwatching in your own Backyard for the Inland Empire*.
- 2000** Durrel Maughn Award, presented by the California Urban Forests Council for a pilot biomass reuse project that milled city trees into lumber and for urban forestry education.
- 1997** Grand Award for Conservation Achievement in California, awarded by Goodyear and the National Association of Conservation Districts (NACD)
 Water Efficiency Award was presented by the Water Education Advisory Council of Western Riverside County for RCRCDD's California Water Awareness Campaign.
 Integrated Pest Management Innovator award was presented to RCRCDD by the California Environmental Protection Agency, Department of Pesticide Regulation, for invasive species removal.
- 1995** RCRCDD's newsletter was chosen first place national winner by NACD and the Equipment Manufacturers Institute (EMI).
- 1994** Environmental Achievement Award for excellence in education, presented by the International Erosion Control Association.

1992-1993

The Land Stewardship Award was awarded by the Riverside Land Conservancy to RCRCDD for being an outstanding public agency cooperator.

1991 Grand Award for Conservation Achievement in California, awarded by Goodyear and the National Association of Conservation Districts (NACD)

1989 The Conservation Program Award was presented by the California Association of Resource Conservation Districts for distinguished and innovative work in conservation education.

1988 First Place- National and State Winner of the Conservation Education Award from NACD and the Deutz-Allis Corporation.

Merit Award for Conservation Education and Public Outreach presented by the Soil and Water Conservation Society.

1987 Goodyear Honor District for California

1985, 1986 & 1991

The District's newsletter "Resources Update" was selected Pacific regional winner by NACD and the Farm Industrial Equipment Institute (FIEI).



In 1985, the "Resources Update" newsletter received the first place award from NACD and the Farm Industrial Equipment Institute (FIEI) Stan Cooley and Shelli Lamb, District Manager, accepted the award.



Join Us

The Riverside-Corona Resource Conservation District is a local government agency responsible for conserving natural resources in portions of Riverside and San Bernardino Counties. This monumental task is accomplished through cooperative efforts and community support. We invite your participation.

Together, individuals, businesses, and government agencies have tremendous opportunities to create:

- A sustainable vision of the future
- A widely held ethic of stewardship
- Innovative solutions for sustainable use of natural resources

If you would like to partner with the RCRCD, please contact District Manager Shelli Lamb at (951) 683-7691 ext. 202.

All programs and services are provided on a nondiscriminatory basis without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

Sustainable methods meet our present needs without compromising the ability to provide for the needs of future generations. A sustainable community does not cause damage to distant environments or other communities.





RIVERSIDE-CORONA RESOURCE CONSERVATION DISTRICT

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