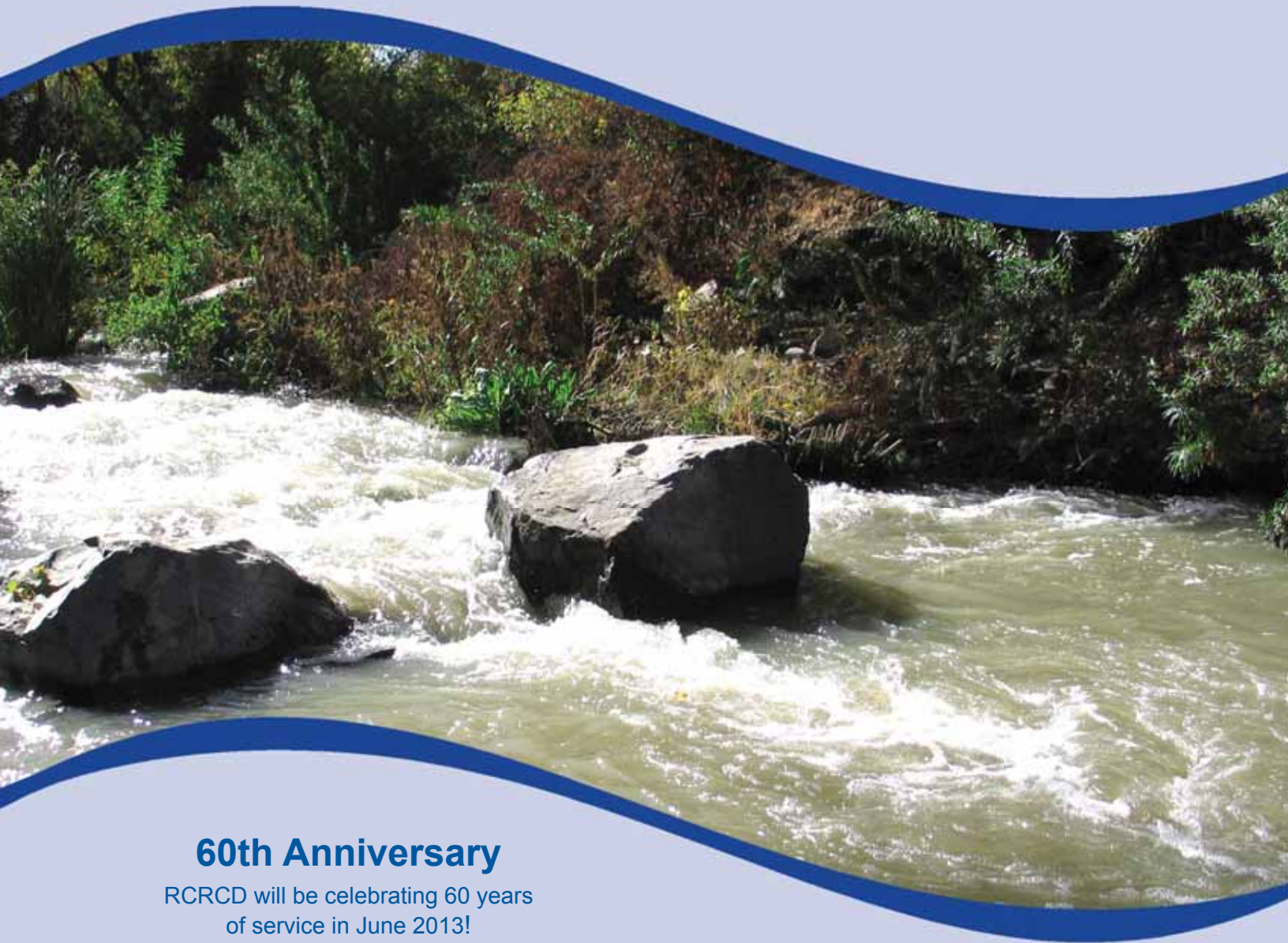




Long Range Objectives

2010-2015



60th Anniversary

RCRCD will be celebrating 60 years
of service in June 2013!



This document is an assessment of the resource management and outreach needs of the Riverside-Corona Resource Conservation District (RCRCD), a local government agency. The objectives provided within will be used to plan future projects and district operations. An Annual Work Plan will be developed for each year from 2010 to 2015 based on long term “Goals and Objectives”.

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Chalcedon checkerspot butterfly

Mission

The Riverside-Corona Resource Conservation District (RCRCD) works to create *sustainable communities by helping people conserve natural resources, so that high quality water, land, soil, wildlife, air, and plant life will be abundant forever.

RCRCD advocates that each acre of land be managed according to its needs.

**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.*

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.



About the RCRCD

Methods

RCRCD provides resource management assistance to private and public land users and conducts land treatment, education, and volunteer programs to steward natural resources. RCRCD fosters the sustainable use of natural resources for each land-use, including native habitats, urban/ suburban areas, and agriculture.

The RCRCD works to sustain natural resources by:

- Coordinating community resources and cooperating with others;
- Providing information and educating broad audiences;
- Restoring habitat through land treatment and invasive species removal; and
- Providing onsite technical assistance, such as irrigation system evaluation.

The RCRCD is non-regulatory. It achieves its conservation goals by working cooperatively with others.

The RCRCD provides onsite technical assistance to “cooperators”, land *stewards who are interested in conserving their natural resources.

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

***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.**



Gavilan Plateau and tributary to Temescal Wash

Photo by Diana Ruiz

Organization

The 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 1:00 p.m. at the District Office. The public is welcome to attend.

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 RCRCD programs address, but are not limited to:

- Habitat restoration
- Conservation of irrigation water
- Prevention and control of soil erosion
- Prevention of storm water pollution
- Conservation of riparian areas

In the past, the goal of the RCRCD 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 so that they will last forever. It requires us to plan for the future, not just conserve in the present.

Today our goal is to determine the best site-specific management that will minimize hazards to human health and environmental quality over the long term.



Photo by Kerwin Russell

Erosion control structure and habitat restoration at Sycamore Canyon Park, Riverside, CA.

Goals and Objectives

GOAL 1 Creating Sustainable Communities

Coordinate and support sustainability efforts within and between communities, enlisting help from public and private sources, for each land use.

Objectives

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.
- 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 city, county, and regional planning efforts in relation to natural resources and their sustainable use.
- Support the development and stewardship of open space and “Green” Infrastructure.
- Support efforts to develop well designed corridors that connect blocks of habitat.
- Work with agencies to incorporate RCRCDC conservation lands in mitigation bank programs.

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



Community composting workshop

Promote sustainability and conservation issues and 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.

Take a leadership role 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 RCRCDC web site.
- Do research toward the development of 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 on restoration methods, specifically the use of native plants and time of seeding.
- 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.



Photo by Arlee Montalvo

Replanted vegetation along Temescal Wash

Goals and Objectives

GOAL 2 Fostering Stewardship through Education

Educate all ages of district residents about sustainable use and ecosystem management for native habitats, urban areas, and agriculture, enabling each person to steward natural resources.

Objectives

Improve delivery of learning materials and facilitate collaboration by making greater use of electronic technologies.

- Create triannual newsletters that can be uploaded onto the RCD website.
- Add sustainability and resource conservation education links to the website.
- Create children's materials that correlate to the LandUse Learning Center.
- Upload educational documents to the site, such as *Living on the Edge*, *Stream Care*, *the Soil Saver Club*, etc.
- Provide resource materials to teachers via on-line request, and build an address list and/or list-serve of interested teachers.

Develop the LandUse Learning Center (LLC).

- Seek sources of funding. Develop sponsor recognition signs.
- Design an interpretive building based on LEED and Energy Star guidelines.
 - Design the indoor museum space based on exhibit conservation guidelines.
 - Design, develop, and construct indoor interpretive displays and exhibits.
- Finish the Urban and Agricultural Areas of the LLC garden.
 - Develop the Ag area planting plan with specific species and conservation demonstrations to correlate to sign placement, etc.
 - Install the Ag Area interpretive signs.
 - Install trails, conservation demonstrations, irrigation systems, and plants.
 - Design and develop interpretive signs for the Urban and Native Habitat Areas.
 - Design and develop plant identification signs for the Native Habitat, Urban, and Ag areas.
- Complete the LLC entrance area.



Interpretive signs at the Riparian plant community, with a view of Mt. Rubidoux in the background at the LandUse Learning Center.

Develop the LandUse Learning Center educational programs and materials.

- Design and construct curriculum kits for three land uses, four plant communities, climate change, urban forestry, and more.
- Develop plant community and other posters.
- Develop Fact Sheets that are correlated to LLC demonstrations to empower visitors. Provide information about sustainable choices.
- Develop a docent program for interpretation programs at the LLC.
- Set up a gift shop with business docent assistants.

Continue sustainability outreach and education programs.

- Seek funding from a variety of sources including partnerships and grants.
- Offer and provide educational materials to public and private schools and homeschoolers, as requested.
- Develop the “traveling classroom” motorhome (*Conservation on Wheels.*)
- Conduct and promote school programs:
 - 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. Match Master Gardeners and Composters to youth projects.
 - Present *Help Create a Sustainable Community* programs to school students upon request.
 - Develop conservation education programs for elementary, middle and high schools.
 - Upon completion of the LLC, develop a school field trip program for use of the demonstration garden and complimentary materials.
 - Promote and conduct the *StormWater Pollution Patrol* and the *Soil Saver Club* programs, if requested.
 - Conduct community conservation, service-learning, and citizen-science programs as needed, such as bluebird monitoring and tree/habitat plantings.



Students from Victoria Elementary School planted a garden of native plants with support from RCRCD's minigrant.

Goals and Objectives



- Present a variety of programs to a variety of audiences, including:
 - Home Gardening... Simple and Environmentally Friendly*
 - Fire-wise and water-wise landscaping
 - Sustainable Landscapes & Gardening
 - Help Create a Sustainable Community*
- Create and present generalized RCD power point presentations on various RCD programs.
- Build and present displays at public events, such as community conservation events, downtown market nights, field days, fairs, libraries, and expos, as requested.
- Develop, update, and distribute educational and technical print materials as needed:
 - LLC Fact sheets, trail guides, brochures, posters, curriculum
 - Children's book on native plants
 - Roadside revegetation guide
 - Weed identification brochure
- Backyard habitat
 - Exotic, invasive species control
 - Invasive species to avoid planting when landscaping near arroyos and other wildlands
 - Native and non-native plant guides as needed for local projects.
 - Standardized plant pallets
- Promote sustainability through the media including technical periodicals and publications of partnering organizations.
- Distribute District literature to all kinds of offices and waiting rooms that offer reading material.
- Inform the public about national, state, and local issues relating to resource conservation through the newsletter, website, and other means, whenever possible.

Continue watershed education programs.

- Promote and provide the *Only Rain Down the Storm Drain* Program for the Cities and County of Riverside to schools, groups, and for events, should funding be available.
- Develop materials as needed.
- Identify local target areas based on need. 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.
- Collaborate on pamphlets about regulations pertinent to wetland and watershed protection.

GOAL 3 Land Treatment and Support Efforts

Help create sustainable native habitats through land treatment.

Objectives

Plan and conduct habitat restoration and on-the-ground conservation projects.

- Conduct exotic species removal and planting of natives, as needed.
- Expand the inventory of local native plants in the RCRCD nursery.
- Collect, document, and inventory native seeds and cuttings for restoration of native landscapes and for urban landscaping near the wildland/urban interface.
- Increase rare, threatened, and endangered species monitoring and rearing programs.
- Work with federal, state, and local agencies and appropriate nonprofits to develop a PTRAs (propagation, translocation, reintroduction and augmentation program for freshwater fish and amphibian conservation.
- Propagate and release Southern California native fish and amphibians as needed.

Develop standardized costs for different types of mitigation projects.



Biologists search for native fish along the Santa Ana River.

Goals and Objectives

Research, evaluate, and determine restoration methods.

- Evaluate seeding rates, depths, mixes and cultural techniques for the establishment of native grasses, shrubs, and forbs for Southern California.
- Conduct research on native plant gene pool regions in Southern California.
- Develop a competition study using native plants for control of noxious weeds.
- Collect information on the sensitivity of different local native species to different herbicides.
- Research and evaluate herbicide treatment on non-native, invasive plants.
- 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.
- 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.
- Provide information on native grasses and other native plants for Emergency Watershed Protection wildfire reseeding to determine best mixes and seeding rates for immediate erosion control.
- Provide information about different kinds of wildlife corridors and about bridging roads and railways with under-crossings and “green” or “living bridges”.
- Develop fuel modification demonstration projects, which include mowing, thinning of woody vegetation, and fire-wise planting.



Photo by Arlee Montalvo

Spraying mulch and seed for erosion control.

Collaborate on establishing a regional Native Seed Network, which would coordinate seed collection, storage, and source documentation programs as well as growers, sellers, and buyers of native seeds.

GOAL 4 Natural Resource Conservation through Technical Assistance

Provide technical assistance to land users to help them manage their natural resources in sustainable ways, maintaining quality and conserving quantity.

Objectives

Monitor natural resources, identify resource problems, and provide technical information regarding best management practices (BMP's) pertaining to three land uses: native habitats, urban areas, and agriculture

- Provide technical assistance to district cooperators, developers, consultants, and planners, as requested.
- Conduct plant materials workshops on a variety of subjects for RCD, NRCS, and other agency personnel.
- Evaluate the effectiveness of conservation practices applied to lands within the District.

Coordinate projects with appropriate agencies and organizations regarding plant material issues and/or concerns.

Implement Army Corps of Engineer's In-Lieu Fee Program within the RCD's jurisdiction.

Implement California Department of Fish and Game's In-Lieu Fee Program within the RCD's jurisdiction.

Assist local water districts with various conservation projects.



Water quality monitoring

Photo by Kerwin Russell

Goals and Objectives

Operate the Irrigation Water Management Mobile Lab to help land users manage their irrigation.

- Provide water conservation and irrigation water management (IWM) programs to residents. Continue to provide the residential Water Audit program in conjunction with local water agencies.
- Promote mobile lab programs in the cities of Colton, Corona, Grand Terrace, Norco and Riverside.
- Assist nurseries with IWM.
- Monitor water quality and address problems as needed.

Advise land users regarding erosion control, non-point source pollution of water, and flood damage potential.

Provide assistance regarding open space and habitat management.

- Promote exotic, invasive species control; support the weed management area.
- Promote the use of local native plant genotypes for revegetation projects.
- Promote genetic diversity in local native plant materials.
- Promote conservation easements with local landowners.

Provide soil and water testing for homeowners.

Research, evaluate, and determine effective conservation methods.

- Research and evaluate herbicide treatment on non-native, invasive plants.
- Evaluate herbicide treatments which are safe for use during establishment of particular native plants.
- Evaluate use of other Integrated Pest Management (IPM) weed treatments in sensitive habitats such as flaming and planting of native plant competitors.
- Develop reference site comparison methods for assessing restoration success.

Address emergency resource issues as they arise.



Photo by Shell Lamb

Spraying herbicide on non-native, invasive plants along the Temescal Wash

GOAL 5 Efficient Operations

Conduct all programs efficiently, and meet goals effectively.

Objectives

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.
- Monitor redevelopment projects within the District.

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.
- Continue to develop personnel policies as needed.
- Provide training for District staff as needed.
- Have staff attend professional groups, professional development programs, training, and networking opportunities.
- Internships
 - Increase internships with local universities.
 - Continue to participate in internship programs as needed.
- Provide programs and services on a nondiscriminatory basis without regard to race, color, national origin, religion, sex, age, marital status, or handicap.



Photo by Kerwin Russell

Craig Mogi (kneeling) teaches interns how to evaluate irrigation systems.

Goals and Objectives

Public Relations

- Improve name recognition and purpose. Promote the RCRCDD mission and programs to mass audiences.
- Celebrate a 60 year anniversary and recognize the contribution of board members.
- Develop both a permanent and a portable timeline of the 60-year history of RCRCDD. Develop a display for conventions, public places, etc.
- Publish triannual newsletter *Resources Update*.
- Encourage public participation in District programs.
- Recognize local citizens who implement good resource conservation practices.
- Write news releases to major 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 to all kinds of offices and waiting rooms that offer reading material.

Property Management

- Complete the transfer of the Resource Conversation Center property to RCRCDD ownership.
- Continue to renovate and maintain the Resource Conservation Center facilities.
- Develop and coordinate signage around the Resource Conservation Center (RCC).
- 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.



RCRCDD is working to complete the LandUse Learning Center to educate about the sustainable use of natural resources.

District Operations: Establish, plan, and direct a resource conservation program.

- Continue to monitor and 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 Plans.
- Publish Annual Reports.
- Conduct annual audits.
- Monitor changes to Division 9 of the California Public Resources Code.
- Provide necessary liability insurance to conduct business.
- Develop and/or purchase computer programs to support District programs and projects.
- Encourage use of new technology, as it becomes available.
- Provide necessary office equipment to conduct business.
- Participate in national, state, and local programs as requested.
- Monitor California's direction regarding local government and its role in the state.
- Memorandums of Understanding (MOU's) with cooperating agencies spell out working relationships and how each partner will function. RCRCD will develop MOU's with the following, and as needed:

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

- Review and continue Memorandums of Understanding with the following, as needed:
 USDA Natural Resources Conservation Service (NRCS)
 California Department of Water Resources
 Riverside County Flood Control and Water Conservation District
 Metropolitan Water District of Southern California
 Western Municipal Water District
 City of Riverside, Public Utilities

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

Army Corps of Engineers (ACOE)
 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)



Photo by Shelli Lamb

RCRCD staff inspecting irrigation system at a local Riverside business.

Goals and Objectives

California Association of Nurseries and Garden Centers
California Department of Water Resources (DWR)
California Department of Fish and Game (DFG)
California Department of Parks and Recreation
California Urban Forest Council
California Baptist University
USDI Bureau of Reclamation
City of Colton
City of Corona
City of Grand Terrace
City of Norco
City of Riverside
Friends of Mt. Rubidoux
Friends of Riverside's Hills
Center for Biological Diversity
USDA Forest Service (USFS)
Native Seed Network
Orange County Coast Keeper
Riverside Community College
Riverside County Farm Bureau
Riverside County Flood Control
San Bernardino Ag Commissioner
Tri-County Conservation League
San Bernardino Planning Department
Regional Water Quality Control Board
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 Municipal Museum
City of Riverside, Public Utilities Department
Network for Environmental Science Teaching (NEST)
Metropolitan Water District of Orange County (MWDOC)
Riverside County Waste, Master Composters
San Bernardino County Board of Supervisors
Santa Ana Watershed Project Authority (SAWPA)
Santa Ana Watershed Planning Advisory Committee
USDI Fish and Wildlife Service (USF&W)
USDA Pacific Southwest Research Station, Fire Lab
Western Municipal Water District (WMWD)
Environmental Protection Agency (EPA)
University of California, Riverside (UCR)
UCR Center for Conservation Biology



Photo by Shelli Lamb

RCRCD staff conducting agency meeting at easement job site.

UCR Center for Sustainable Development
UCR Herbarium
UC Cooperative Extension Service
UC Master Gardeners
Victoria Avenue Forever
Local native plant nurseries, museums, libraries, colleges and universities
Riverside County Office of Education and unified school districts

- Continue memberships with:

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



Volunteer Cody Snyder places a Bluebird nest box in a tree.

History 1952-2010

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 soil and water conservation measures, 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 which 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. Today the population is over 1.5 million. Current RCD programs work to restore habitat, educate the public, and conserve water in urban landscapes.



1959 South East Corona, CA 2007

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 the City of Riverside.

The Conservation District's early education program consisted of land judging competitions for Future Farmers of America (FFA), 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 present water quality programs to adult groups and schools, with support from the *Only Rain Down the Storm Drain* program of the Cities and County of Riverside. Tree programs are conducted for schools and events. Each year, teachers are given learning tools such as posters, puzzles, and booklets.



Photo courtesy of SAWA.

Arundo donax has invaded a waterway and engulfed an abandoned trailer.

During the eighties and nineties, urbanization eliminated or degraded important native habitats. Many 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. RCRCDC 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 RCRCDC has removed *Arundo donax* (giant reed), an invasive weed. During 2008, over 1,000 vireo territories were documented in the watershed, an increase of 600 since 2000. (A "territory" is an area claimed by a male through singing.)

Also, in the past decade, volunteer programs were developed so concerned community members could steward resources. During the last decade, volunteers provided nest boxes for 687 bluebirds and 207 other native cavity-nesting birds. Volunteers built, hung, and monitored the nest boxes each spring, facilitating the longest running, most prolific "bluebird trail" in western Riverside County. Monitoring results are added to national data to aid research.



Photos by Erin Snyder

Bluebird nest box and eggs.

History

Most RCRCDC programs are conducted as joint efforts with partners who provide technical assistance, materials, or funding. We have named some of the agencies, groups, and individuals who have collaborated for conservation over the past 50 years.

In an effort to improve collaboration and to better address some of the complex resource issues of inland Southern California, the RCRCDC has been developing a Resource Conservation Center. The Center includes offices, a native plant nursery, aquatic tanks for rearing threatened fish and amphibians, greenhouses, and the LandUse Learning Center.

The LandUse Learning Center (LLC) is a 3 acre garden that demonstrates conservation methods in the three main land uses of Southern California: native habitats, urban areas, and agriculture. As the LLC develops, displays and signs will interpret plantings and practices. The demonstrations serve as examples that community members can repeat at their own homes and properties.

The Resource Conservation Center is located at a former research facility, the Soil Salinity Laboratory at the base of Mt. Rubidoux near downtown Riverside. In an effort to reuse the site, most of the buildings have now been renovated. The Center houses the Conservation District's office (Building A) and other agencies with similar missions.



Photo by Kerwin Russell

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.



Photo by Shelli Lamb

Natural Resource Manager Kerwin Russell (far left) explains habitat needs of native fish at the LandUse Learning Center stream.

Location and Climate

Location

The RCRCDD 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.



Photo by Diana Ruiz

View of Riverside's urban forest from Mt. Rubidoux

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.



Photo by Kerwin Russell

Santa Ana River



Photo by Kerwin Russell

Cleveland National Forest

Location and Climate

Climate

The climatic character of the area is semi-arid, with warm, dry summers and mild winters. Although there is one distinct climate, there are many micro-climates within the District which vary depending upon elevation, vegetation, landforms, 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. Winters are also cool and wet, and night temperatures rarely drop below 25 degrees F. Annual precipitation averages 8 to 12 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



Land Uses

Urban and Suburban Areas and Population

In 1990, the population of the District was slightly over 492,000. By 1995 the population actually decreased by 11 percent due to a poor economy, as some residents had to move to find jobs elsewhere. Since then, the population has grown steadily to approximately 650,000 people with new housing and industrial developments in and around Temescal Canyon, the Woodcrest and Orangecrest areas of Riverside, Highgrove, Norco, and Corona.

For the urban ecosystem we must rethink current methods, and shift to measures that better replicate natural systems or provide for more efficient use of resources. For example, using gravel in place of pavement increases water infiltration to replenish underground water basins. Planting trees in cities (urban forestry) provides shade, which reduces the unnatural accumulation of heat from concrete, asphalt, and roofs. Rather than containing waterways in storm drains, we can prevent urban encroachment and preserve natural drainage systems through urban and suburban areas. Another urban infrastructure improvement might be to create green bridges for wildlife crossings and trails. Innovative building design can improve the urban ecosystem as well; e.g., straw bale insulation or “green” roofs to reduce heat concentrations.

Education

The RCRCDC strives to educate community leaders and residents of all ages by offering multiple programs, volunteer opportunities, technical assistance, and resource information. The District seeks to empower people to be stewards (caretakers) of natural resources and to be well-informed citizens in relation to resource issues and management.

For residents and adult groups, the RCRCDC 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.



Photo by Diana Ruiz

Restoration ecologist Arlee Montalvo taught a plant identification class for the CA Native Plant Society at the LandUse Learning Center.

Land Uses

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; and
- A visit to the LandUse Learning Center.

In development at the Resource Conservation Center is the LandUse Learning Center (LLC), a 3 acre demonstration facility that will exhibit land conservation methods in each of the three main land uses. As the LLC continues to be developed, it will serve as a local resource offering land use management information and materials for the public and for schools.

School Programs

The RCRCDD provides classroom hands-on programs in the areas of sustainability, storm water pollution prevention, and water conservation to educate future decision makers.

Currently, there are 121 public schools (K–12th grade) with the District, with a student enrollment of approximately 120,000. These numbers are relatively steady, but are expected to increase over the long term. The RCRCDD serves schools in the Alford, Corona-Norco, Riverside, and portions of Colton, Val Verde and Lake Elsinore Unified School Districts. In addition, there are many other private schools, home school groups, charter schools, youth organizations, and an increasing number of organized “after-school” and off-track student programs within RCRCDD boundaries.



Children pollute “Fancy Fin’s” stream for Resource Educator Kasey Davis as part of the *Only Rain Down the Storm Drain* program

The RCRCDD strives to provide community members and leaders, students and teachers with information in the most effective and efficient ways possible. Internet technology and our website, www.rcrcd.com, will be tools to increase the delivery of information and resource materials to growing numbers of students and area residents.

Agriculture

In terms of agriculture, sustainability means creating a healthy agro-ecosystem to ensure long-term productivity.

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 \$1,268,589,900 for the county in 2008. Leading agricultural economists agree that every dollar received by farmers in Riverside County has the financial impact of at least three times that amount. Therefore, \$1,268,589,900 represents an impact of approximately \$4.4 billion in revenue generated into the local and regional economy. Riverside County is the 12th leading agriculture producer in California, raising high value crops like table and wine grapes, citrus, and nursery stock. There are currently 120 organic producers listed in Riverside County with 14 of them within the RCD.



Photo by Melissa Badalian

Residents support sustainable agriculture by purchasing certified organic produce at the Riverside Farmer's Market.

According to the 2009 Riverside County Agricultural Commissioner's Crop Report, the majority of agricultural land within the Riverside-Corona district is devoted to field and seed crops such as hay and alfalfa, which, ironically, yield the least value. Nursery stock produces the vast majority (87%) of the total gross crop value for the district on less than 20% of its agricultural land. Citrus, avocados, deciduous trees, truck crops, and specialty crops such as Chinese vegetables account for the remaining district harvest. Crops were harvested on 10,997 acres within the Riverside-Corona district in 2009, yielding a gross valuation of \$82,565,100, down from a peak of \$118,897,000 in 2007, and the lowest gross crop valuation since 2001. 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.

Land Uses

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.

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.

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. Habitat provides wildlife water, food, shelter, nesting sites, and space to live. Native habitats support insects, birds, bats, and other animals that 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. They reduce flooding and help control erosion.

Quality of Life

Natural areas enhance the quality of life for people by providing opportunities for exercise, recreation, and solitude. 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 equipment, 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 need to plan land-use to preserve large blocks of native landscapes and connect those areas with corridors for wildlife movement. The RCRCD is working with local landowners and regulatory agencies to obtain conservation easements on critical habitat areas.



Photo by Kerwin Russell

Habitat corridor through McBride Canyon

Land Uses

Significant Natural Areas

The California Department of Fish and Game's Lands and Natural Areas Program determines "Significant Natural Areas" (SNA's). These areas represent "the most important elements of California's natural diversity". SNAs are not technically protected by the state, but are designed to raise awareness of their uniqueness. Hopefully, if an area is listed as an SNA, the listing will prevent future abuse and uncontrolled, unplanned development.

There are twelve SNA's found within the RCRCDD 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 Wash.



Photo by Melissa Badalian

Lake Mathews

Together, the SNA's 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, Coastal Sage Scrub, Alluvial Sage Scrub, and Oak Woodland.

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.

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 Mousetail, 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."



Photo by Squamatologist

Rare Tecate Cypress

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.

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.

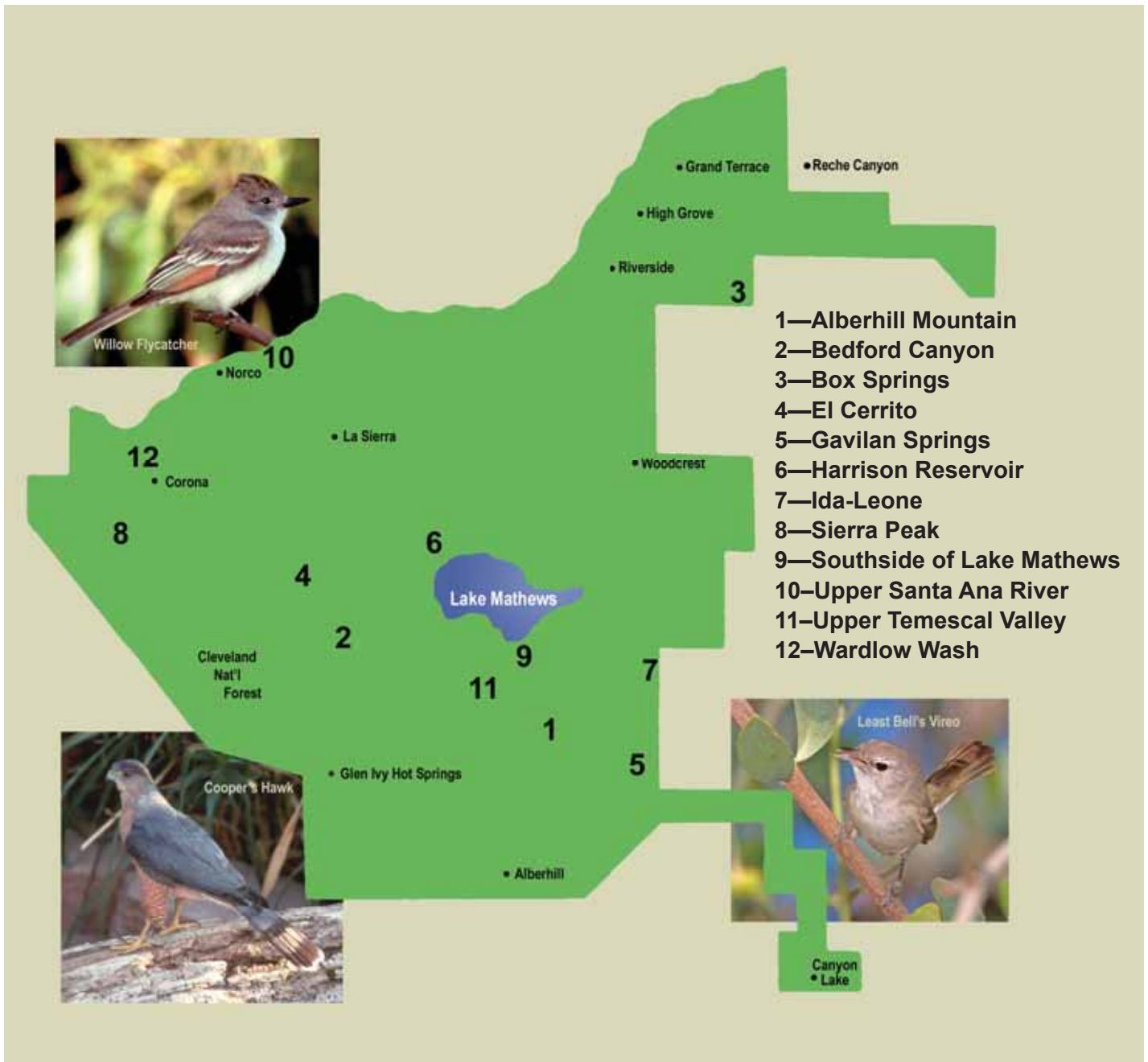
The **Upper Santa Ana River** can be described as a southern cottonwood willow riparian forest. Sensitive animals in the area include San Diego Horned Lizard, Orange-Throated Whiptail, White-tailed Kite, California Black Rail, Burrowing Owl, Willow Flycatcher, Least Bell's Vireo, and the Yellow-Breasted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

Upper Temescal Valley communities include southern cottonwood willow riparian forest and southern willow scrub bordered by Coastal Sage Scrub and Alluvial Fan Scrub. The shrubland slopes above riparian communities support the Orange-Throated Whiptail, 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 and other associated bird species.

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.

Land Uses

Significant Natural Areas in the Riverside-Corona Resource Conservation District



- 1—Alberhill Mountain
- 2—Bedford Canyon
- 3—Box Springs
- 4—El Cerrito
- 5—Gavilan Springs
- 6—Harrison Reservoir
- 7—Ida-Leone
- 8—Sierra Peak
- 9—Southside of Lake Mathews
- 10—Upper Santa Ana River
- 11—Upper Temescal Valley
- 12—Wardlow Wash

Cooper's Hawk & Willow Flycatcher photos by James Gallager

Least Bell's photo by Mark A. Chappell

Natural Resources

Watershed

The District is within the Santa Ana River Watershed, which is the largest river basin south of the Sierra Nevada, encompassing 3,200 square miles. When runoff does occur, it is often rapid and debris-laden, flowing into the valley areas. Stream flow increases rapidly due to steep gradients and high volumes. Velocities contribute to channelization and flooding in the alluvial and low-lying areas.

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. The most recent severe flooding occurred in January of 1969, and again in 1995 when Riverside County sustained damages of \$32,112,000 and lost four lives. In 1993, six lives were lost due to floods. Although flows were only at 77,000 cubic feet-per-second, the 1969 floods were the most damaging floods on record in Orange, Riverside and San Bernardino Counties. Other great floods of the past equaled or exceeded the 1969 flows. However, they occurred when Southern California was not so intensively developed, or after flood control projects were done in suburban areas. 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. More recent flooding occurred in January of 1993, 1995 and 1998 along Mockingbird Canyon and along some lowland sections of the Santa Ana River.



Photo by Kerwin Russell

Flood damaged home along Santa Ana River

Air Quality

The South Coast Air Basin is California's largest metropolitan region. The area includes the southern two-thirds of Los Angeles County, all of Orange County and the western urbanized portions of Riverside and San Bernardino Counties.

The air basin includes 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. Overall, since 1975 the emission levels of CO and the ozone precursors NOX and ROG have been decreasing in the South Coast Air Basin and are projected to continue decreasing through 2010. Both population and the daily number of vehicle miles traveled, (VMT), grew at high rates from 1982 to 2001. Population increased 36% and VMT, 90%. According to adjusted REMI and SCAG forecasts, the population of Riverside County is expected to grow 51% between 2000 and 2015, and 21% from 2015 to 2025, compared to a projected 19% growth for the entire four-county Los Angeles area between 2000 and 2015, and 9% from 2015 to 2025. While high growth rates are often associated with corresponding increases in emissions and pollutant concentrations, aggressive emission control programs in the South Coast Air Basin have resulted in emission decreases and improvement in air quality. In 1976, Riverside had 66 first stage smog alerts. In 1993, there were only 15. In 1976, Corona had 34 alerts and in 1993, there were only three. Since 1982, the number of days above the standards has declined dramatically, as have the number of Stage I and Stage II episode days. No Stage I or II Smog Alerts were recorded within the RCRC District from 2000 through 2008. However, ozone levels continue to be above the national average, with Riverside-Rubidoux reporting 64 days above the national '08 8-hour standard in 2008, down from 134 days in 1993 and 164 days in 1976.

To comply with the Clean Air Act, additional measures will have to be taken within the District to control air pollution. One aspect targeted by the Environmental Protection Agency and State Air Quality Board is visible air pollution, dust, referred to as PM 10.

The District will continue working with the South Coast Air Quality Management District in the implementation of their 403 standards for controlling PM 10, especially from farmland sources. The RCRC District, along with the South Coast Resource Conservation & Development program, will explore funding proposals relating to alternative transportation methods, monitoring stations, and trail development, which may be available through various federal and state grant programs. The RCRC District promotes smart growth, mixed zoning, and transportation-efficient urban design for foot and bike trails and mass transit. The number of estimated days exceeding the national 24-hour standard for PM10 at the Riverside-Rubidoux monitoring site has decreased from 18.4 in 1993 to 0 in 2008.



Basin air pollution

Soils

The district has over 100 different soil classifications with varying depths and textures.

The 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 can be up to 60 inches deep and have a finer texture.

Upland soils are shallow on rolling to steep terrain. Many of the native soils hold little water after the rainy season due to their coarse texture, so supplemental irrigation is necessary for adequate production. Most upland soils are shallow, usually no more than 36 inches in depth, with most less than 24 inches of effective depth.

Highly productive agricultural soils have been classified as prime farmland and farmland of statewide importance. Unfortunately, many of these soils have been lost to development or other non-farm uses. These soils have also been identified and mapped as part of the Riverside County Important Farmland Study and are included in the Western Riverside County Soil Survey. The RCRCDC promotes soil erosion control through education programs, such as the *Soil Savers* activity booklet.



Prime ag soils have been rapidly converted to urban land use.

Natural Resources

Water

Water in the District is limited and is currently supplied from three sources: the Colorado River; State Water Project, delivered by the Western Municipal Water District; and underground production, primarily by the Cities of Riverside, Corona, Norco, Elsinore Valley MWD, and the Riverside Highland Water Company. Home landowners have private wells, but most of those wells do not produce more than 100 gallons per minute. Most are used for domestic purposes, and cannot provide enough water for most agricultural or urban uses.

High in salts (around 700 ppm), water quality of the Colorado River has received significant attention. It has become increasingly costly for agriculture, and a significant entitlement reduction has recently occurred. Even greater reductions may occur in the near future. The California State Water Project, delivered chiefly for domestic uses, began with a small increment in late 1979, and the current allocation for the District is projected at 30,000 acre feet. Degrading quality and contamination generally plague local underground water sources. The Arlington basin has already been abandoned due to high nitrate, MTB, and perchlorate levels in many wells. 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 up the aquifer.



Photo by Darin Marshall

Colorado River Aqueduct

Western Municipal Water District serves the greatest portion of the District, with both domestic and agricultural deliveries. WMWD is the largest supplier of water in the RCRC, meeting both agricultural and domestic needs.



Photo courtesy of the Riverside Metropolitan Museum

Gage Canal flumes brought water from San Bernardino to Riverside, essentially doubling the acreage that could be used to grow citrus. Photo taken c. 1888. The view is west overlooking Tequesquite Arroyo near where Chicago and Central Avenues intersect.

The City of Riverside is the next largest supplier, meeting primarily domestic needs, from underground sources. The city also has holdings in the Gage Canal, which delivers water to most of the remaining citrus areas within the city. This source is of fair quality (420 ppm average total dissolved solids) and may soon be used for more domestic purposes. The canal delivers 36,000-39,000 acre feet of water to the Arlington Heights area. 55 percent of the water is delivered to citrus with the remaining 45 percent delivered to the City of Riverside Reservoir. Predominantly for domestic purposes, the City of Corona blends underground supplies with approximately 33 percent delivery of Colorado River water from Western Municipal Water District. 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.



Photo by Melissa Badalian

Vintage sign highlights Arlington Height's agricultural heritage.

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 Elsinore and Colton.

Natural Resources

Reclaimed Water

Western Municipal Water District uses reclaimed water. Riverside National Cemetery currently receives reclaimed wastewater from the adjacent March Air Force Base wastewater facility for about four months of the year 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 within their cities with reclaimed water. Some of the tertiary treated water is discharged into the Santa Ana River for enhancing riparian habitat quality. Additional possible uses are currently on the drawing board. The City of Riverside also supplies Toro Lawnmower Company with approximately 100,000 gallons of reclaimed water daily for use on turf. The eventual reclaimed water use for irrigation of parks, the airport, golf courses and driving ranges, and other turf areas is addressed in the City of Riverside's Long Term Plan and General Plan.



Reclaimed water is used to irrigate local parks.

Vegetation

Vegetation found within the District consists of six major plant communities— riparian woodland, grassland, chaparral, coastal sage scrub, southern oak woodland and yellow pine forest, and transitions between communities. Riparian woodland, coastal sage scrub and southern oak woodland are considered sensitive habitat within the District.

Riparian woodland is found in moist to wet soils along rivers and streams. Riparian woodlands are generally characterized as narrow and frequent discontinuous bands of trees following stream courses. These woodlands are of considerable regional importance to many wildlife species.

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. Grasslands are associated with relatively gentle topography and deeper, fine textured soils.



Photo by Kerwin Russell

Riparian habitat



Photo by Kerwin Russell

Chaparral habitat

Chaparral consists mostly of evergreen shrub species that form a continuous canopy 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 is best developed between 2,000 and 4,000 feet elevation where annual rainfall is 14-25 inches. Many species sprout or produce seedlings in response to fire.

Natural Resources

The coastal sage scrub community occupies coastal foothills and bluffs, inland valleys, and mountain slopes below 3,000 feet and below the chaparral. Compared to the 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 both 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 resprout or have seeds that germinate after fire.



Coastal sage scrub habitat



Oak woodland habitat

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.

The community of Yellow pine forest is found at elevations between 5,000 and 8,000 feet. Precipitation, mostly in the form of snow, can fall between 25-80 inches per year. The soils are mostly residual upland soils and are moderately to strongly acidic. Plants of this community can include: Yellow pine, Jeffrey pine, Sugar pine, Incense cedar, White fir, Big cone spruce, Kellogg oak, and Greenleaf manzanita.

Invasive Plant 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.

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.



Photo by Arlee Montalvo

Infestation of Tocalote (*Centaurea melitensis*)

Common invasive plants of riparian areas include:

- Giant Reed
- Salt Cedar
- Perennial Pepperweed
- Castor Bean

Common invasive plants of upland slopes include:

- Yellow Starthistle
- Tocalote
- Shortpod mustard
- Sahara mustard
- Red brome
- Ripgut brome

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 invasive plants, eradication takes many years, with some plants requiring as many 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 as well.

Natural Resources

Native Habitat Restoration

The RCRC is actively involved with the preservation, restoration, enhancement and creation of diverse natural habitats within the district's service area. The district owns and manages a 135-acre open space in the Temescal Canyon area that adjoins the Estelle Mountain Reserve, which is part of the multi-species reserve system. The connectivity improves the district's efforts in the restoration of this coastal sage scrub habitat that has historically been occupied by the California Coastal Gnatcatcher and is currently occupied by the Stephens Kangaroo Rat. The District holds multiple conservation easements, especially along Temescal Creek. These sites support a number of sensitive plant and animal species. Restoration of these lands will improve habitat value for the Least Bell's Vireo, Coastal California Gnatcatcher, and many more sensitive species. The District has the opportunity to work with adjacent landowners with similar restoration projects which will help residents, developers and municipalities sustain local habitats for the benefit of the community. The District accepts conservation easements and deeds with appropriate endowments or habitat mitigation funds.



Photo by Arlee Montalvo

A wildlife corridor follows the Temescal Wash. Note the channel bank restoration and set-back of urban development.

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 have adverse impacts on wildlife populations.

In the RCRC, threatened habitats include:

- Riparian habitats such as the Santa Ana River and tributaries which support numerous species, including several of limited abundance;
- 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; and
- 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.



Photo by Len Nunney
Endangered California Gnatcatcher



Photo by Len Nunney
Chocolate Lily (*Fritillaria biflora*)

The following species have been identified as sensitive, rare, threatened, or endangered by the US Department of Interior, the California Department of Fish and Game, 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.

Natural Resources



Photo by MSHCP-Riverside County Bob Packard

Coast Range Newt



Photo by Jack Bath

Borrowing Owl



Photo by Kevin Russell

Arroyo Toad

(Sensitive, rare, threatened, or endangered species, continued)

INSECTS

Quino Checkerspot Butterfly (*Euphydryas editha quino*) FE

Delhi Sands Flower-Loving Fly (*Rhaphiomidas terminatus abdominalis*) FE

FISH

Arroyo Chub (*Gila orcutti*) SSC

Coastal Rainbow Trout (*Oncorhynchus mykiss irideus*) SSC

Santa Ana Speckled-Dace (*Rhinichthys osculus ssp*) SSC

Santa Ana Sucker (*Catostomus santaanae*) FT

AMPHIBIANS

Arroyo Southwestern Toad (*Bufo californicus* =*Bufo microscaphus californicus*) FE, SSC

California Red-Legged Frog (*Rana aurora draytonii*) FT

Western Spadefoot Toad (*Spea* [=*Scaphiopus*] *hammondii intermontanus*) SSC

Coast Range Newt (*Taricha torosa torosa*) SSC

Western Pond Turtle (*Actinemys marmorata*) SSC

REPTILES

Coast Horned Lizard (*Phrynosoma coronatum blainvillii*) SSC, SP

Coast Patch-Nosed Snake (*Salvadora hexalepis virgultea*) SSC

Coastal Rosy Boa (*Charina* [=*Lichanura*] *trivirgata roseofusca*) SSC

Coastal Western Whiptail (*Cnemidophorus tigrismultiscutatus*) SSC

Granite Spiny Lizard (*Sceloporus orcutti orcutti*) MSHCP

Long-Nosed Leopard Lizard (*Gambelia wislizenii*) SSC

Orange-Throated Whiptail (*Cnemidophorus hyperythrus beldingi*) SSC, SP

Red Diamond Rattlesnake (*Croatalus ruber ruber*) SSC

San Bernardino Ringneck Snake (*Diadophis punctatus modestus*) SSC

San Diego Banded Gecko (*Coleonyx variegates abbotti*) SSC

San Diego Horned Lizard (*Phrynosoma coronatum blainvillei*) SSC, SP

BIRDS

Bald Eagle (*Haliaeetus leucocephalus*) SE

Borrowing Owl (*Speotyto cunicularia hypugaea*) MSHCP

Cactus Wren (*Campylorhynchus brunneicapillus cousei*) MSHCP

Coastal California Gnatcatcher (*Polioptila californica californica*) FT

Cooper's Hawk (*Accipiter cooperii*) MSHCP

Gilded Northern Flicker (*Colaptes auratus chrysoides*) SE

Golden Eagle (*Aquila chryseatos*) MSHCP

Grasshopper Sparrow (*Ammodramus savannarum perpallidus*) MSHCP

Least Bell's Vireo (*Vireo bellii pusillus*) SE, FE

Mountain Plover (*Charadrius montanus*) MSHCP

Rufous-Crowned Sparrow (*Aimophila ruficeps canescens*) MSHCP



Photo by Donna Dewhurst

Yellow Warbler



Photo by Merlin D Tuttle
Bat Conservation International

Pallid Bat



Photo by Melissa Badalian

Coulter's Matilija Poppy

Birds (cont.)

- Southwestern Willow Flycatcher (*Empidonax traillii extimus*) FE
- Swainson's Hawk (*Buteo swainsoni*) ST
- Tricolored Blackbird (*Agelaius tricolor*) MSHCP
- Western Yellow-Billed Cuckoo (*Coccyzus americanus occidentalis*) ST
- Wilson's Warbler (*Wilsonia pusilla pileolata*) MSHCP
- Yellow Warbler (*Dendroica petechia brewsteri*) MSHCP
- Yellow-Breasted Chat (*Icteria virens longicauda*) MSHCP

MAMMALS

- Badger (*Taxidea taxus*) MSHCP
- Black-Tailed Jack Rabbit (*Lepus californicus bennettii*) SSC
- Bobcat (*Lynx rufus californicus*) MSHCP
- Coyote (*Canis latrans clepticus*) MSHCP
- Desert Woodrat (*Neotoma lepida intermedia*) SSC
- Los Angeles Pocket Mouse (*Perognathus longimembris brevinasus*) SSC
- Mountain Lion (*Puma concolor*) SP
- Pallid Bat (*Antrozous pallidus*) MSHCP
- San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) FE
- Stephen's Kangaroo Rat (*Dipodomys stephensi*) ST, FE

PLANTS

- California Orcutt-Grass (*Orcuttia californica*) SE, FE
- Chocolate Lily (*Fritillaria biflora*) MSHCP
- Coulter's Goldfields (*Lasthenia glabrata var. coulteri*) CNPS 1B, C2, MSHCP

- Coulter's Matilija Poppy (*Romneya coulteri var. trichocalyx*) MSHCP
- Heart-leaved Pitcher Sage (*Lepechinia cardiophylla*) 1B, C2, MSHCP
- Large-Leaf Fillare (*Erodium macrophyllum*) MSHCP
- Little Mouseling (*Myosurus minimus ssp. apus*) C2, MSHCP
- Many-Stemmed Dudleya (*Dudleya multicaulis*) CNPS 1B; MSHCP
- Munz's Onion (*Allium munzii*) ST, CNPS 1B
- Palmer's Grapplinghook (*Hapagonella palmeri*) CNPS 2, C2, MSHCP
- Parry's Spineflower (*Chorizanthe parryi parryi*) MSHCP
- Payson's Jewelflower (*Caulanthus simulans*) C2, MSHCP
- Plummer's Mariposa Lily (*Calochortus plummerae*) CNPS 1B, C2, MSHCP
- Robinson's Peppergrass (*Lepidium virginicum var. robinsonii*) CNPS 1B; MSHCP
- Santa Ana River Woollystar (*Eriastrum densifolium ssp. sanctorum*) SE, FE, 1B
- Santiago Peak Phacelia (*Phacelia suaveolens var. keckii*) CNPS 1B, C2, MSHCP
- Slender-Horned Spineflower (*Dodecahema leptoceras*) SE, FE, CNPS 1B
- Smooth Tarplant (*Hemizonia pungens ssp. laevis*) CNPS 1B, C2, MSHCP
- Southern California Black Walnut (*Juglans californica var. californica*) MSHCP
- Thread-Leaved Brodiaea (*Brodiaea filifolia*) SE, CNPS 1B

Native Fish and Amphibian Restoration

The RCRCD was awarded the American Fisheries Society Riparian Challenge Award 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 aquatic pests such as crawdads, bullfrogs and Red-eared Slider turtles. Many of these pests were released as pets or used as bait by fisherman, but have, subsequently, become “naturalized” and compete with the native plant and animal populations. The project helped to remove the naturalized pests through seining, dip netting, monthly monitoring of water quality, and installation of native plants along stream banks. All of these efforts help to improve habitat for both native fish and amphibians. There are only five native fish species present in Southern California, four of which occur in the RCRCD: the arroyo chub, speckled dace, coastal rainbow trout and the Santa Ana sucker, a threatened species. All of these species prefer clean, clear, running water, such as gravel or cobble bottomed streams, particularly those where no predatory fish are present. Good streamside habitat also helps to protect young fish by shading the water during the hot summer months. Native fish populations decline rapidly in water over 80 degrees Fahrenheit or in water that is otherwise of poor quality. Factors such as flooding, drought, illegal dumping in waterways, and other human activities can also impact native fish populations. The RCRCD maintains on-site fish quarantine and population augmentation facilities to help protect, rear and relocate small groups of these fish as needed, especially in streams where post-fire debris flows would otherwise clog waterways and extirpate native fish. In addition, the RCRCD maintains a large, natural native fish stream to study populations of fish and their life history, as well as a number of natural raceways for reproductive purposes.



Photo by Miles Bintz

Red-eared Slider Turtle



Photo by Kerwin Russell

Biologists remove non-native aquatic pests to improve the stream habitat for native species.

The RCRCD also has an amphibian restoration program through a Special Environmental Project (SEP). On the Lee Lake Conservation Easement, which is managed by the RCD, a three-acre pond is being used to restore native Western Pond turtle habitat. This is the only native turtle in the RCRCD service area, and their numbers have declined in recent years. It is also a species of special concern with the California Department of Fish and Game. 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. 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 as well.

The RCRCD maintains other easement areas for the benefit of fish and amphibians, whether or not they are present, by improving habitat and maintaining easements in perpetuity.



Photo by Kerwin Russell

Western Pond Turtle



Photo by Kerwin Russell

RCRCD's Fish and Amphibian tanks at the Resource Conservation Center

Natural Resources

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. Rain, construction grading, and earthquakes cause soil movement. Soft 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 either abandoned or depleted.

Seismicity

The San Jacinto Fault branches from the San Andreas Fault near Cajon Pass, crossing into the District at the Santa Ana River just east of Colton, and 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.

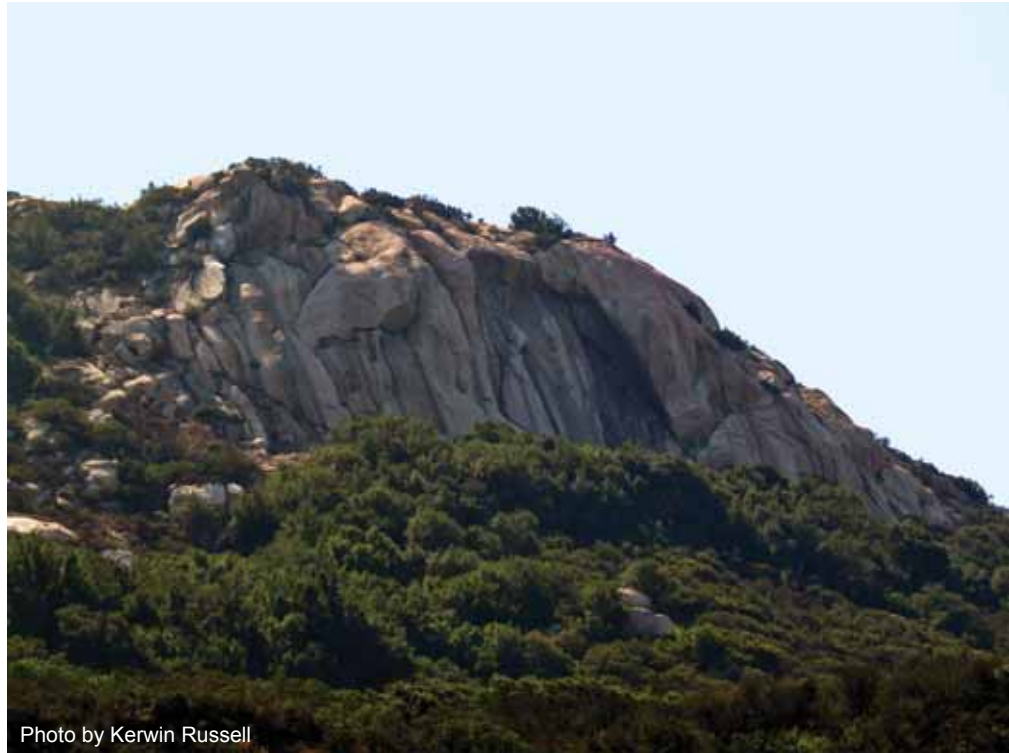


Photo by Kerwin Russell

A granite outcrop in the Santa Ana Mountains

Awards

2010 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 A \$1,500 gift was awarded by the Deep Creek Flyfishers, for RCRCDD's fish research, restoration and education program.



Diana Ruiz accepted the NACD Award.

2006 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).

2006 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.

2006 A *Certificate of Recognition* on behalf of the California State Legislature was presented to RCRCDD in response to its *Outstanding Litter Prevention Efforts Award* by "Keep Riverside Clean and Beautiful."

2006 A *Certificate of Appreciation* was awarded by the U.S. Department of Agriculture for outstanding educational outreach.

2006 *Environmental Awareness Award* Certificate of Special Congressional Recognition was presented by Ken Calvert, member of US Congress to RCRCDD in recognition of outstanding and valuable service to the community.

2006 A *Certificate of Appreciation* from U.S. Senator Barbara Boxer honored RCRCDD's outstanding service and litter prevention efforts.

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

2005 *McMurchie Excellence in Safety Award*

2003 *Earl F. Sayer Safety Award* for Excellence, presented by the California Special Districts Association.

2003 *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.

2003 *Award of Appreciation* for outstanding support of the 2003 California Envirothon State Champions, Arlington High School Lions, 1st in California, 16th in North America

2002 *District Outreach Award* was sponsored by the National Association of Conservation Districts (NACD) and the Association of Equipment Manufacturers for a special publication by RCRCDD.

2002 *Outreach Award* in the special publications category for publishing *Birdwatching in your own Backyard for the Inland Empire*. Presented by NACD.

Awards

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)

1997 *Water Efficiency Award* was presented by the Water Education Advisory Council of Western Riverside County for RCRC's California Water Awareness Campaign.

1997 *Integrated Pest Management Innovator* award was presented to RCRC by the California Environmental Protection Agency, Department of Pesticide Regulation, for invasive species removal.

1995 RCRC's newsletter, *Resources Update* was chosen first place national winner by NACD and the Equipment Manufacturers Institute (EMI).

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1994 *Environmental Achievement Award* for excellence in education, presented by the International Erosion Control Association

1993 The *Land Stewardship Award* was awarded by the Riverside Land Conservancy to RCRC for being an outstanding public agency cooperator.

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1991 *Land Stewardship Award* for outstanding public agency cooperation, presented by Riverside Land Conservancy

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 winner for the *Conservation Education Award* from NACD and the Deutz-Allis Corporation.

1988 *Merit Award for Conservation Education and Public Outreach*, presented by the Soil and Water Conservation Society

1987 Goodyear Honor District for California



Stan Cooley and Shelli Lamb display "Resources Update" newsletter.

1986 The District's newsletter, *Resources Update* was selected Pacific regional winner by NACD and the Farm Industrial Equipment Institute (FIEI).

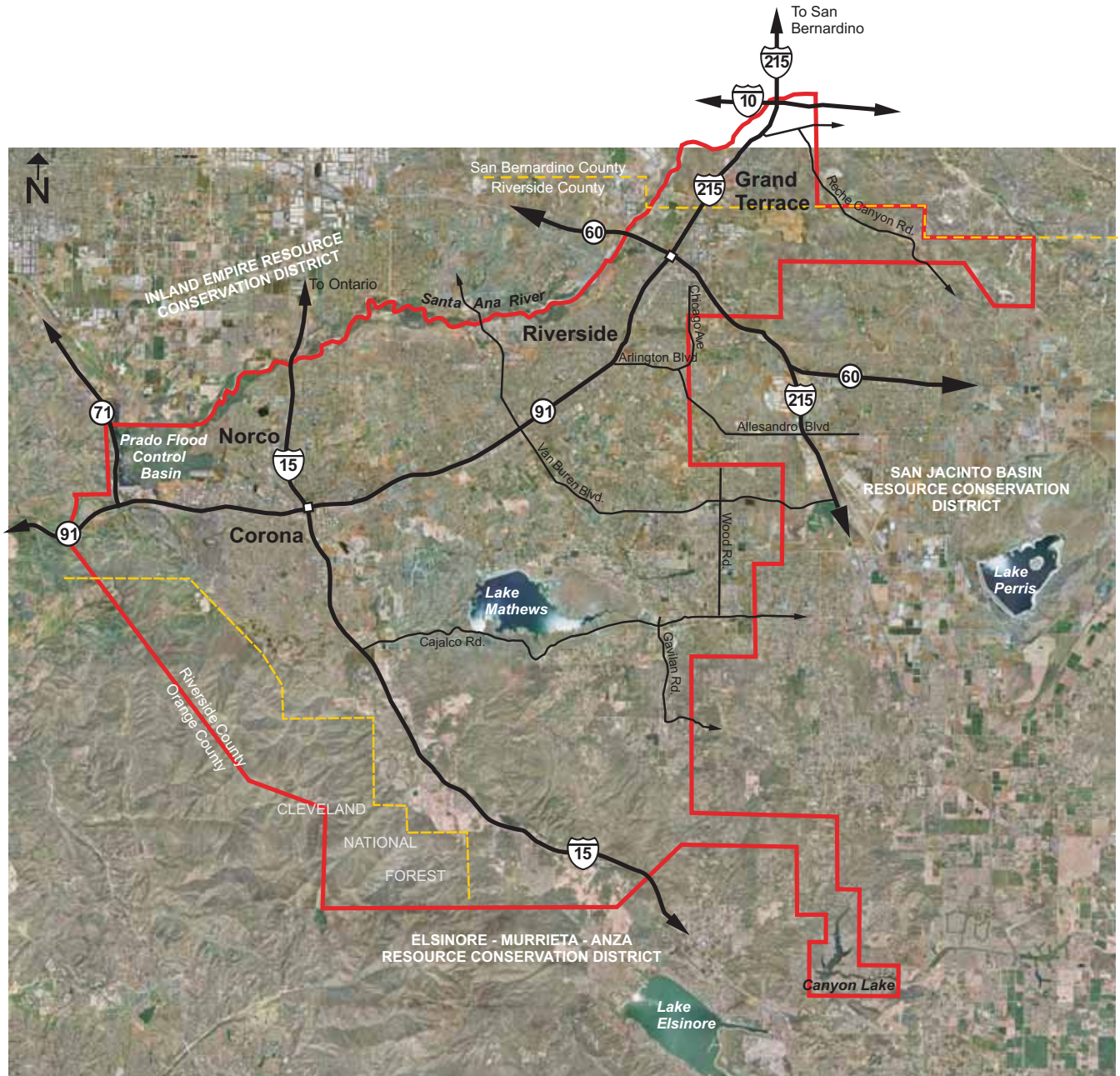
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Riverside-Corona Resource Conservation District

Portions of Western Riverside and San Bernardino Counties, California



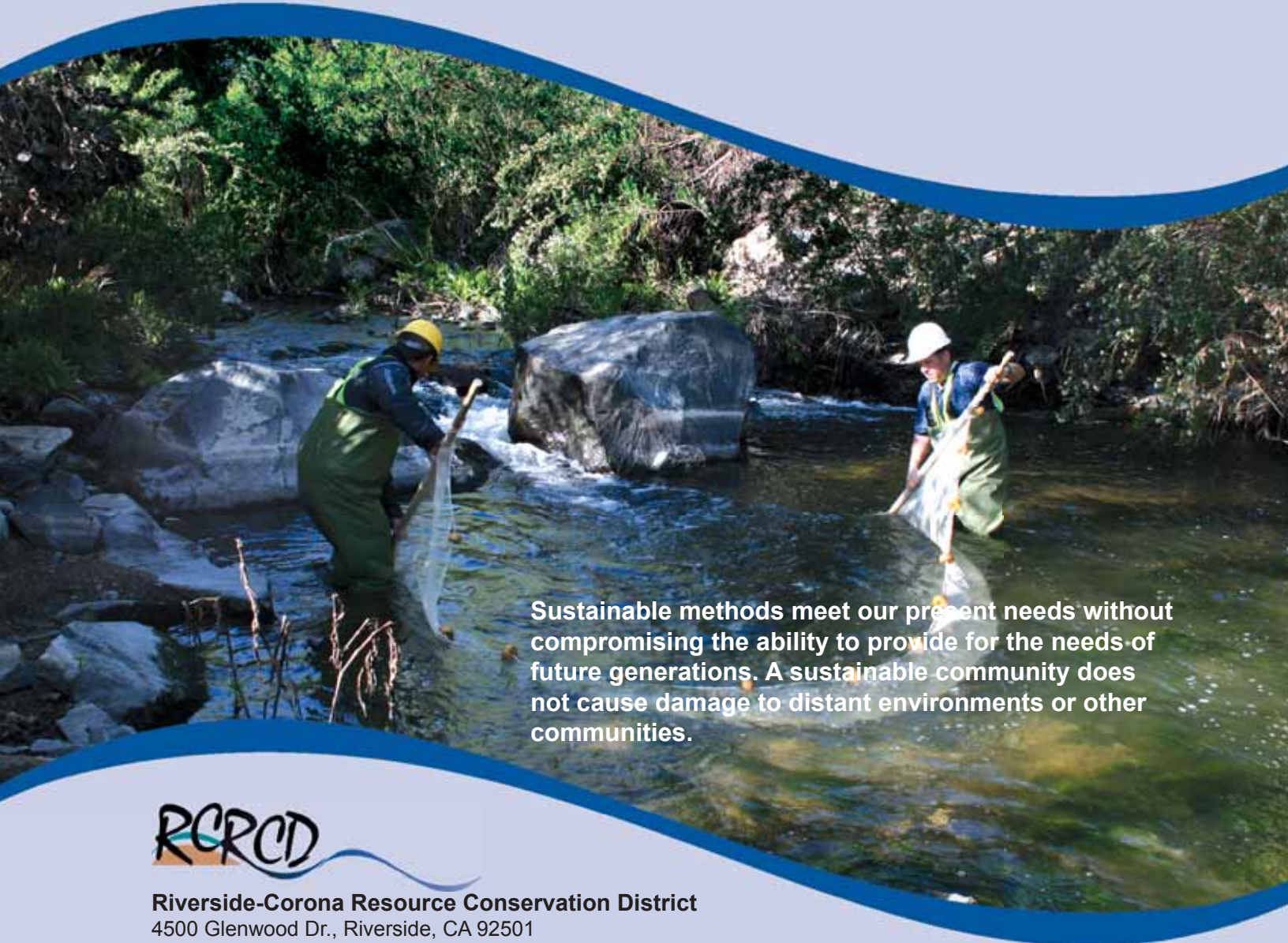
Join Us

The Riverside-Corona Resource Conservation District is a small, 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.



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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