

Monarch Recovery Report

2019-2022



Riverside-Corona Resource Conservation District

About RCRCD

The Riverside-Corona Resource Conservation District (RCRCD) is a local agency in western Riverside and San Bernardino Counties, CA that is enabled by Division 9 of the California Public Resources Code to conserve natural resources, including soil, water, air, native plants and animals. The District works with private land users, organizations, and public agencies to sustain natural resources within its boundaries. RCRCD conducts a variety of educational programs for different audiences and engages volunteers with on-the-land conservation projects, including habitat restoration, community science monitoring, and tree plantings.

RIVERSIDE MONARCH MILESTONES

In 2019, representatives of the Riverside-Corona Resource Conservation District (RCRCD) and Riverside Neighborhood Partnership (RNP) met with then mayor Rusty Bailey and requested that the City of Riverside help in saving the Western Monarch butterfly species. Mayor Bailey joined with us and became a member of National Wildlife Federation's Mayor's Monarch Challenge, which designates 25 actions in three categories:

- Communication-Convenings (community outreach and education)
- Projects and Demo Garden (physical actions and resource management)
- Systems Change (internal practices that the City would have to modify, such as eliminating pesticide use in landscaping).

RCRCD then convened local monarch enthusiasts and partners to plan and take action.



A **Pollinator Festival** supported by community partners with a **Native Plant Sale** by the California Native Plant Society attracted 400 visitors.



2019



Monarch Habitat was planted at:

- Bonaminio Park
- LandUse Learning Center
- Sycamore Creek Interpretive Center

The Xerces Society provided **1,600 native pollinator plants**.



The Wildlife Conservation Board provided RCRCD a **\$60,000 grant** for habitat creation, milkweed propagation, and education.

2020

The California Association of Public Information Officers recognized RCRCD with an EPIC Award for the Pollinator Festival.



The Public Relation Society of America - Inland Empire Chapter provided a Polaris Award for the Pollinator Festival.



Sadly, the Western Monarch butterfly population drastically declined during 2020, reaching the lowest level ever recorded: less than 1% of historic populations.

RCRCD's nursery began propagation of **2,000 native milkweeds**, and a Pollinator Demonstration Garden was planted at the LandUse Learning Center.



100 volunteers planted **2-acres** of habitat at RCRCD's Greenbelt facility.

2021

RCRCD partnered the Riverside Food Systems Alliance to provide farmer training.



The online **Power of Pollinators** program was created for educators.

RCRCD conducted a second milkweed seed increase.



Mayor Lock Dawson committed to the Mayor's Monarch Pledge and developed a **pollinator garden at City Hall** next to Mariposa Alley.

2022

RCRCD sponsored a **Milkweed Sale, Monarch Day of Action**, and SoCal Monarch Conference.



Monarch signs were installed at City Hall, Bonaminio Park and the LandUse Learning Center.



Volunteers weeded and monitored for Monarch eggs and caterpillars.

Please see a short video about the Monarch Recovery Project: <https://www.youtube.com/watch?v=sCVfq81W7q0>.



Pollinator Festival

The hugely successful and free Riverside Pollinator Festival was the result of extensive community planning and engagement with in-kind support from partnering groups, agencies and volunteers. About 30 volunteers assisted with 19 informative stations along a trail that included pollinator-themed demonstrations, games, crafts, and community science activities.

The front cover of the program included key messages and the speaker schedule.



Christine and Michael Lampe of the California Rare Fruit Growers conducted an interactive presentation about the plight of Monarchs.

POLLINATOR FESTIVAL

Welcome to the fun!



Featuring:

- Butterflies
- Bees
- Beetles
- Bats
- Birds
- Moths, and some speakers too.



Learn ways that you can help:

1. Grow "host" plants for eggs and caterpillars (native milkweed for Monarchs).
2. Grow a variety of plants that provide nectar year-round.
3. Eliminate pesticides: Use the least-toxic alternative.

Speaker Schedule

Amphitheater

Noon Mayor's Monarch Pledge with Mayor Rusty Bailey
12:20 pm Speak-Off Winner Presentation

Presentations in Bldg. F

11 am Gardening for Butterflies
Christine Lampe, Master Gardeners & CA Rare Fruit Growers
12:30 pm Native Bees
Amanda Plunkett, Bee Rooted Honeybees & Botanicals
1:30 pm Urban Plant-Pollinator Interactions
Elijah Hall, PhD Student, University of California, Riverside



THANK YOU Monarch Challenge Sponsors



Festival Partners



UC RIVERSIDE



Planting Partners



Also many thanks to

Mayor Rusty Bailey & staff

Our speakers: Christine Lampe, Amanda Plunkett, and Elijah Hall

Our wonderful community volunteers,

and Stan Fry and Dave Struthers for their nature photography.

The back cover of the program thanked our partners and speakers.

Explore ways that you can help pollinators by.....
journeying through our labyrinth of adventure!



↓
 To Building F
 Speakers &
 Plant Sale

- STATIONS**
1. Welcome
 2. Seed Library
 3. T-shirt Painting
 4. Costumes & Photos
 5. Citizen Science
 6. CA Naturalist
 7. Moths
 8. Research & Specimens
 9. Gardening for Pollinators
 10. Mayor Bailey: NOON
 11. Butterflies
 12. Bees
 13. Trees & Pollinators
 14. Food Game
 15. Environmental Ed
 16. Wildlife Pollinators
 17. Fresh & Local guide
 18. Pollinator & Food Rescue
 19. Game, videos

Map and stations on the center pages of program.

The local chapter of the California Native Plant Society (CNPS) conducted a native plant sale that drew an additional 150 people. Combined, over 400 people attended and cross-pollinated (pun intended) the adjoining events.



Tom Donahue, chair of the Riverside Neighborhood Partnership, patronized the native plant sale which sold out of the Monarch's host plant and other nectar-source plants.



Mayor Bailey delivered his Monarch Conservation Challenge to a crowd of about 100 in spite of the unseasonably high heat.

During the Festival, a city-wide *Monarch Conservation Challenge* was kicked-off by Mayor Rusty Bailey. Following the Mayor, Morton Gilbert, a high school student "Speak-Off" winner presented a 4-minute, award-winning speech about the plight and conservation of the Monarch. Three speakers presented power point programs indoors, adjacent to the California Native Plant Society's plant sale. (Please see the event map and program on preceding pages.)

In total, 18 organizations partnered, and 63 people volunteered between the Pollinator Festival and habitat planting the following Saturday.



UC Riverside Entomologist PhD candidate Elijah Hall presented slides about pollinator-plant interactions.



The Inland Urban Forest Council taught about the value of trees to pollinators.

Publications, T-shirts, postcards, and posters were developed to help reinforce learning and empower home and business owners with tools to foster pollinators.

Join the Monarch Conservation Challenge!

Western Monarch populations are in drastic decline due to:

- loss of habitat
- use of pesticides & herbicides
- a microscopic parasite that causes butterfly deformity.

How can you help?

1. If you live in inland SoCal valleys, plant native Narrow Leaf Milkweed, *Asclepias fascicularis*. Please don't remove it when it goes dormant in winter.
2. Plant native nectar-producing plants close to milkweed to provide food for butterflies.
3. Do not use herbicides or insecticides. Practice non-toxic pest control, such as bursts of water to spray off pests. That way, you are supporting the beneficial insects that control pests.

If you grow non-native milkweed, please keep it cut back from November to February to mimic the dormancy of native milkweed.

Thank you for your help,

The Monarch Butterfly and



Learn more: <https://www.rcrcd.org/handouts-and-brochures>



Professional photographers Stan Fry, David Struthers, Michael J Elderman, and Jennifer Iyer donated the use of their photos for publications, videos and t-shirt designs.

This postcard includes a QR code to a monarch butterfly publication (in the photo below) distributed by RCRCD and partners.



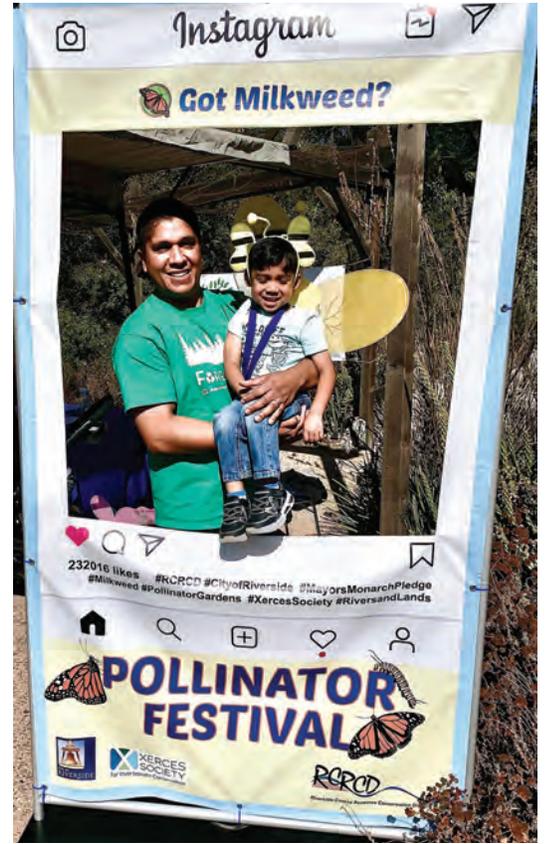
One of a series of posters used along the trail to educate about pollinators.

Each stop along the trail provided topic-related publications to take home and reinforce learning. Find the 4 page publication at: https://www.rcrcd.org/files/0e8334199/Monarch_Milkweed_for_SoCal.pdf.

The four photo “booths” were a highlight of the event.



Professional photographers donated the use of their large format pictures to create a collage with face cut-outs, for a 10 by 6 foot banner. Visitors had fun becoming moths, hummingbirds, butterflies, or bees.



A giant Instagram photo-frame was created with relevant hash tags. Visitors could include those hashtags when posting their pictures to Instagram.



Bee and butterfly wings were popular at the costume photo booth.



Monarch wings were enlarged for a 10 by 6 foot banner.

Promotion

Social Media promos were posted/shared throughout the year; heavily during Pollinator Week; and to promote the Pollinator Festival and volunteer opportunities. Shared social media promos were effective at drawing visitors and volunteers, as we had no funding for advertisement.

During 2019, overall pollinator post-reach exceeded 25,000. Each promo designated relevant partners, so they could be shared to the partners' social media sites.



One of many Pollinator Festival ads. This caption promotes t-shirt painting that was brought to the event by UC Riverside's Botanic Garden volunteers (above).



Flyers were posted at public locations, such as libraries. Electronic versions were provided to schools via Peachjar.

Promo for the California Native Plant Society's Plant Sale (left).



Habitat planting promo (right).





With no funding for advertising, promos were posted daily (leading up to the events) and were dispersed through partner networks. Each of these ads highlighted a festival activity or speaker, and were created and provided as an in-kind donation from the Riverside Garden Council.

Planting Events

RCRCD promoted the habitat plantings and sought volunteers during the Festival. For the park planting, the Rivers and Lands Conservancy helped coordinate the 33 volunteers who planted 1,240 plants that had been donated by the Xerces Society. The site required extensive grading and preparation by the City's Parks, Recreation and Community Services Department.

Girl Scouts planted at the Sycamore Creek Interpretive Center, and Boy Scouts planted at the LandUse Learning Center.



Over 30 volunteers helped install pollinator plants at Ryan Bonaminio Park.



Volunteers worked in teams to dig and plant.



Then Ward 2 councilmember Andy Melendrez (on right) pitched in to help.



Each volunteer was given a milkweed to take home with the publication: *Steps for Success with Milkweed and Monarchs for the Inland Southern California Valleys*.

Budget

Although we gained minimal funding, we ended up with maximum community engagement. A \$1,000 grant was provided from a City Sponsorship grant to the Southwest Resource Management Association, a project partner. RCRC D absorbed the remaining expenses. **The total RCRC D and community in-kind estimated contribution was \$28,000.**

Awards

This event went on to be recognized by the Public Relation Society of America - Inland Empire Chapter with a Polaris Award.

The Pollinator Festival was also awarded an EPIC award (Excellence in Public Information and Communication) for "Special Event" by CAPIO, the California Association of Public Information Officers.



During 2019, RCRC D was able to thank the Riverside City Council and present a summary slideshow. RCRC D accepted a "Monarch City" proclamation.



UCR Entomology Museum staff provided exciting outreach at their station.

SUMMARY 2020

In early 2020, RCRCO received a supplemental \$60,000 grant from the Wildlife Conservation Board that was coordinated by the California Association of Resource Conservation Districts. That grant provided funding into 2022 for:

- the propagation and planting of an additional 2,000 native milkweeds, plus 1,600 nectar plants
- the planting and hand-weeding of 2-acres of Monarch habitat at RCRCO's Ag Greenbelt facility
- farmer training programs about farming practices that support pollinators and outreach to neighboring farms
- the fabrication of a set of two Monarch interpretive signs for each demonstration planting. Four sets of the 36" X 24" signs were fabricated for the \$7,200 budget.

RCRCO is planning to develop pollinator gardens and place the same set of interpretive signs at other cities.

Please see a 2020 summary on pages 2 and 3 of the RCRCO newsletter: <https://www.rcrcd.org/files/40d61ab84/rcrcd+summer+2020+final+web.pdf>.



Seed increase plot for Narrow-leaf Milkweed with seed collection bags.



Ernesto Alvarado set out the young plants he propagated for volunteers to plant at the RCRCO Greenbelt facility.



Monarch interpretive signs were installed at Ryan Bonaminio Park.

Mysterious Monarchs

Western Monarch butterflies are amazing creatures that make a spectacular annual migration of up to 1,500 miles to overwinter in forested groves along the coast of California. Each spring, the butterflies fan out across the West to lay their eggs on milkweed and drink nectar from flowers.



Monarch Migration

Around late winter, Monarchs begin to leave their overwintering sites and reproduce. Several subsequent generations migrate inland until late summer. The last generation then migrates back to the coast. This *super generation* lives eight times longer and travels ten times farther than the prior generations. Since these monarchs were born inland, how they find their way to the coast remains a mystery!



Monarchs conserve energy during flight by soaring in updrafts of warm air called **thermals**. Once at the top of thermals, they glide toward their destination, averaging 25 to 30 miles per day. **Impressive for an insect the weight of a paperclip!**

On the Brink of Extinction

Sadly, the Western Monarch butterfly population drastically declined during 2020, reaching the lowest level ever recorded: less than 1% of historic populations.

Why the Shocking Decline?

Loss of Native Milkweed: Milkweed is the only food source for the Monarch caterpillar, and much of it has been destroyed due to land being converted from habitat to agricultural or urban use.

Pesticide Exposure: Monarchs are weakened and killed unintentionally by toxic weed and insect killers.

Drought and Climate Change impact milkweed growth and habitat availability.

Disease: Many nurseries sell tropical milkweed which does not go dormant in winter. This tropical milkweed can host a parasite called *Ophryocystis elektroscirrha*, or "OE" that weakens and kills Monarchs.

Coastal Habitat Loss: Coastal overwintering sites have been degraded or developed, leaving few trees that provide for quality roosting sites.



Narrow Leaf Milkweed
Asclepias fascicularis



Monarchs need tall trees like Eucalyptus, Monterey pine, and Cypress that provide filtered sunlight for warmth and protection from wind.



Come to the Rescue!

Be on the lookout for the four life stages. 



Plant Native Milkweed

Locally, adult Monarchs lay their eggs on Narrow Leaf Milkweed, *Asclepias fascicularis*. The caterpillars grow rapidly, increasing their weight almost 3,000 times in 10-15 days. The flowers also provide nectar for adult butterflies.

Native milkweed will go dormant around Halloween and re-emerge around Valentine's Day. **Don't weed it out if it appears dead.**



Learn more at [Steps for Success with Milkweed and Monarchs for Inland Southern California Valleys](#).

Para encontrar las distintas versiones de letreros en Español use este código QR. 

Egg
The tiny egg hatches after 3-5 days and becomes a caterpillar.



Caterpillar (larva)

Eats milkweed and grows for 9-14 days. It *molts* (sheds its skin) five times, finally *pupating* into a green chrysalis.



Chrysalis (pupa)

Starts out bright green and opaque but will gradually become transparent. The caterpillar spends 8-13 days inside transforming into a butterfly.

Eliminate Pesticides

Use nontoxic alternatives for pest control.

Grow Flowering Plants

especially natives that provide nectar in early Spring and Fall. **Avoid planting tropical milkweed.**



Butterfly (adult)

Lives 20-32 days drinking nectar.

Track Milkweed and Monarchs

Please avoid captive rearing and instead collect and post data online at the [Western Monarch Milkweed Mapper](#)  and [iNaturalist](#). 



Summary 2021

A \$2,000 mini-grant from the Environmental Education Collaborative helped fund the production of a Monarch education video and a virtual training program. The *Power of Pollinators* program was presented to gardening groups and is available to educators. Promo: <https://www.youtube.com/watch?v=OI4OKwlMOiw&t=81s> .



Resource Educator, Erin Snyder (on left), helped create the *Power of Pollinators* online education program.



RCRCD's nursery manager completed another seed increase by growing milkweed and collecting, then cleaning the seeds. This video shows his process: <https://www.youtube.com/watch?v=hcl6mL-vUw&t=8s> .

Over a hundred volunteers helped plant and weed at the Greenbelt facility during 2021. Graduates of the UC California Naturalist and Climate Stewards programs provide ongoing volunteer support. Please share our monarch volunteer opportunity. Prospective volunteers can sign up here: https://www.rcrcd.org/volunteer-opportunities#body_file-e56cb128-4e72-4780-8b3c-8988802a2357 .



RCRCD would like to thank our volunteer planters at the Greenbelt facility.



RCRCD staff and volunteers weeded the new plantings at the Greenbelt.

In 2021, Riverside's current mayor, Patricia Lock Dawson, chose to continue with the Monarch Challenge and provided a Proclamation during city council meeting June 1, 2021. She stepped up the City's commitment by installing a new pollinator garden at City Hall adjacent to Mariposa Alley where gigantic butterflies have been fabricated from recycled cans. RCRCD provided a set of the Monarch signs for the downtown landscaping demonstration.



Front: Tom Donahue (Riverside Neighborhood Partnership) and Diana Ruiz (RCRCD) accepted the Monarch Challenge proclamation from Mayor Lock Dawson (on right). Back: Councilmembers Gaby Plascencia (left) and Chuck Conder (right).

An informational letter about supporting monarch populations was sent to all landowners within a 1 mile radius of the Greenbelt facility.

Farmer training was conducted online in coordination with the Riverside Food Systems Alliance (RFSA).

A 2021 Monarch summary can be found on pages 4 and 5 of the 2021 RCRCD newsletter:

<https://www.rcrcd.org/files/6580e51d8/rcrcd+spring2021+web.pdf> .



RCRCD promotes conservation practices like hedgerows along field borders that provide habitat for beneficial insects.

Land Use Learning Center

Planting a Hedgerow for the SoCal Inland Empire

What is a Hedgerow?
A hedgerow is a row of shrubs and/or trees bordering a field, road or as part of a buffer, for a conservation purpose. Hedgerows provide many ecosystem services:

- Filter water and air to improve their quality
- Foster pollinators and pollination
- Provide habitat for beneficial insects that help control pests, thus reducing dependence on pesticides
- Provide habitat for wildlife and the biological control of rodents, rather than using rodenticides
- Reduce noise and improve aesthetic value.

Find inside a list of species for the inland valley areas of western Riverside and San Bernardino Counties for below 3,000 feet elevation. Besides shrubs, the list includes native grasses and herbaceous (non-woody) native plants, which are attractive to a variety of beneficial insects. By planting a variety of flowering plants, a hedgerow will provide flower blooms from late winter through summer. Grassy hedgerows do not need to be mowed, so they are less maintenance and use less water.

Flowering plants provide pollen and nectar to a variety of pollinating insects, primarily bees. For native bees, **leave some area of the hedgerow un-mulched** to provide habitat for ground-nesting bees, important pollinators of many agricultural crops. Providing nesting sites and nourishment for pollinating insects has become crucial due to extensive pollinator decline. Pollinator decline is attributed to a variety of things, especially loss of natural habitat, pesticide use, and disease.

Hedgerows are more likely to provide important conservation services when they are established with native plant species that occur naturally in our dry, inland southern California valleys, where rainfall averages between 10 to 15 inches per year. If the rainy season is very dry, irrigation may be needed to supplement natural rainfall. Plants not native to our region may need more water and may require irrigation outside of the rainy season.

Native California bumblebee (*Bombus californicus*) pollinating a black sage (*Salvia mellifera*).

Planting a Hedgerow for the SoCal Inland Region was developed for local farmers:

<https://www.rcrcd.org/files/4bab03892/Hedgerow.pdf> .

Summary 2022

RCRCD helped sponsor a SoCal Monarch Conference. An extension of the conference was a *Monarch Day of Action*. RCRCD hosted a day of planting, where volunteers planted next-year's seed increase and additional milkweed at the LandUse Learning Center.

During Earth Week, about 200 people attended a small successful milkweed plant sale and event with crafts and photo booths at the LandUse Learning Center's Pollinator Garden. The milkweed sold out.

Volunteers have been helping to weed and monitor at the Greenbelt 2-acre planting for Monarch eggs and caterpillars using the app: <https://www.monarchmilkweedmapper.org/>.

Staff collaborated with the Mayor's office to find a high profile, downtown location to plant a pollinator garden. City staff was in the process of redeveloping the landscaping at the City Hall Veterans' Wall. RCRCD was able to partner on the project to include a pollinator garden. The planting and interpretive signs are appropriately placed adjacent to Mariposa Alley, a well-lit alley with recycled art by a locally known artist.

Take a look at some of the progress we've made educating and turning Riverside into a Monarch haven in this video: <https://www.youtube.com/watch?v=sCVfq81W7q0>.



BEFORE: Volunteers helped plant the Pollinator Garden at the LandUse Learning Center. Nursery manager, Ernesto Alvarado (on left) coordinated the planting, as well as the propagation and milkweed seed increases.



AFTER: Monarch interpretive signs installed at the Pollinator Garden.

Plan Your Pollinator Paradise

This guide provides an example garden plan and resources for designing your own pollinator garden for inland Southern California. For more inspiration, visit the demonstration Pollinator Garden at the Riverside-Corona Resource Conservation District's LandUse Learning Center and see labeled, local native plants in the Native Habitat area.

Pollinators are in peril, and you can help.

1. Don't use weed and bug killers. These chemicals often have unintended consequences for other organisms. Most garden and lawn pest problems can be resolved with nontoxic alternatives.
2. Provide host plants and bee nesting sites. Some butterflies and moths need specific "host" plants to feed on during their caterpillar (larval) stage. Plant host plants of pollinators that are native to inland SoCal. For example, our Western Monarch butterfly population has been in steep decline due to the loss of its host plant. You can help the Monarch by planting native narrow-leaf milkweed, *Asclepias fascicularis*.
Please make sure your milkweed is native. Do not grow tropical milkweed (*Asclepias curassavica*), since it may carry disease harmful to Monarchs. Learn more in [Steps for Success with Milkweed and Monarchs for Inland Southern California Valleys: www.rcrcd.org/files/65eb89ba5/2020_Monarch_Milkweed_for_SoCal.pdf](https://www.rcrcd.org/files/65eb89ba5/2020_Monarch_Milkweed_for_SoCal.pdf)
3. Create wildflower-rich habitat in your own yard with local native plants. Pollinators have evolved with native plants that are best adapted to the local growing season, climate, and soils. Most pollinators feed on specific plant types and species: hummingbirds sip nutrient-rich nectar from long, tubular flowers, while butterflies need smaller, more open-faced blooms.

Native plants are accustomed to growing with winter and spring rains, so group plants according to similar watering needs. Some native plants will die if given too much irrigation during their dormancy during hot, dry summers.

Wash hands immediately after handling milkweed.

*When wind, water, insects or animals move pollen, the receiving plant is fertilized and can then produce fat-bodied fruit and viable seeds. Birds, bats, and flying insects, including butterflies, moths, bees, beetles, flies, and wasps, are attracted to flowers for food, their favorite pollen.

RCRCD developed a pollinator garden guide: *Plan Your Pollinator Paradise* at <https://www.rcrcd.org/files/0415dff40/Pollinator+Garden+Handout+web.pdf>.



Naturalist Michelle Felix-Debarmdiker (on right) coordinated the 2022 Milkweed Sale and habitat planting.



Mayor Patricia Lock Dawson provided support for the Monarch social media campaign.



BEFORE: Philip Falcone, assistant to the mayor, helped plan the landscape conversion of the pollinator garden at city hall.



AFTER: The new planting with interpretive signs is adjacent to Mariposa Alley.



RCRCD provides resource management assistance to private and public landusers and conducts land treatment, education, and volunteer programs to steward natural resources. The District promotes the sustainable use of natural resources for each landuse, including native habitats, urban/suburban areas, and agriculture. RCRCD works to foster community conservation efforts and empower southern Californians to practice natural resource stewardship at home, at work, and in the community.



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<https://www.rcrcd.org/click-here-to-subscribe-to-our-newsletter> .

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