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Sketches SAN DIEGO AUDUBON

Celebrating 75 Years of Protecting Birds

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Creating Wildlife Habitat *at Home with* NATIVE PLANTS

The landscaping of Dennis and Pamela Mudd's home blends seamlessly into the natural habitat. Photo by Dennis Mudd

Growing Biodiversity at Home

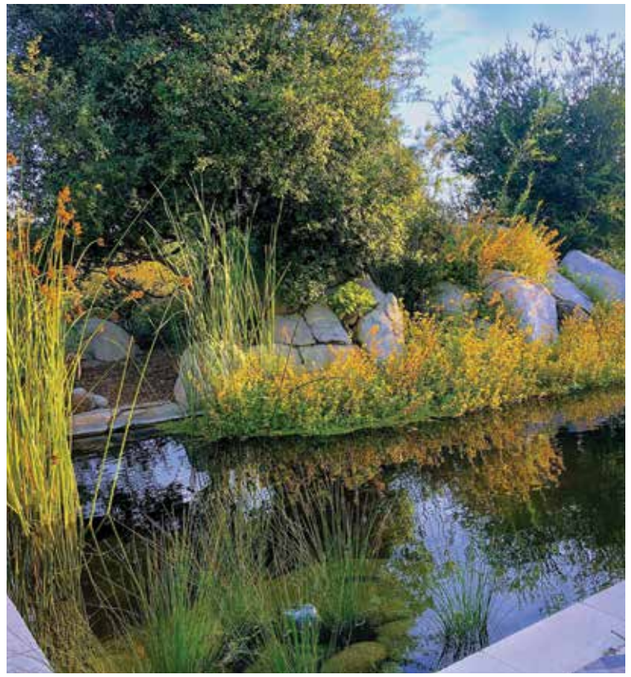
by LaTresa Pearson, Sketches Editor

As soon as I open my car door, I hear them. A cacophony of *ribbits* fills the air, announcing the presence of an army of Baja California Treefrogs advertising their availability to potential mates. It's a surprising sound, considering it's 4 p.m. on a February day, and I'm standing on a street lined with homes in an upscale, gated Poway neighborhood. The home I've come to see, however, isn't like many of the other houses on the street, with their neatly manicured lawns and non-native, ornamental landscaping. Somewhat obscured by the native trees and shrubs gracing the front yard, I actually drove past the house before I realized it was there. The driveway is composed of small permeable pavers, and rainwater fills a rock-lined creek bed that runs from the side of the yard and cuts through a portion of the driveway. As I approach the front door, I see a wall with ferns tucked into its stone crevices, which help funnel rainwater from the roof into a rock-lined basin below. It has been raining much of the week, and the owners of this home have provided all of the necessary ingredients the treefrogs need to thrive here—native plants, which provide shelter, as well as draw the insects the treefrogs need to eat, and a source of water, which they need not only for basic survival, but also to complete their reproduction cycle.

This is the home of Dennis and Pamela Mudd, and I'm here to learn about their experience transforming their once sterile, water-hogging lawn and tropical landscaping into their own private nature preserve. Dennis greets me at the door and leads me through the large open living area and kitchen toward a wall of glass that opens out to their backyard. The main garden is nearly two acres, and the Mudds also own 4 ½ acres of rolling hills behind their home, so it really does feel like entering a nature preserve. When they started the project in the early 2000s, Dennis's goal was to recreate the environment he saw while mountain biking in various San Diego preserves, including Los Peñasquitos Canyon Preserve and Black Mountain Open Space Park. "It wasn't just the plants," says Dennis. "It was this vibe that you got in nature." He says he spent the next eight years trying to figure out how to recreate that sort of nature in their garden.

The first two attempts failed to recreate the environment he sought because the landscape designers in each instance chose plants that didn't match the surrounding natural area and conditions. Even though the second attempt included beautiful California native plants, most were native to Central and Northern California, not San Diego County. "They were beautiful in the beginning," says Dennis. "The flowers on some of these were incredible, just beautiful, but then, gradually, they all started dying because they just weren't the right plants for this area."

In addition to not being able to survive Poway's summer heat and winter frosts, the plants, although beautiful, still didn't look like the nature Dennis was seeing on his bike rides. "That sparked a lot of research," he says. He started studying the plants in San Diego County and how they varied according to the topography and various microclimates. "It's amazing, the specificity, especially in San Diego, maybe more than anywhere else, because it's such a tough environment. We have so many biozones." He began plotting out the plants in the different biozones to figure out which ones really belonged in his yard. The plants he chose based on his research not only thrived in his garden, but they also began self-seeding and attracting wildlife, including birds, butterflies, and other insects. "It isn't just a nice try at natural biodiversity," he says. "I think we're up to 120 plant species just in these two acres. "The more different species of plants, the more host-plant insects, the more birds, bats, lizards, and snakes." (This process actually sparked the idea for a database that would enable others to search for the native plants that would work best in their yards, too. He and Pamela founded Calscape in 2009 and brought in Jim Smith, a former business associate, to head up research and development. They later donated the database to the California Native Plant Society.) *(See Native Plant Resources, p. 10–11)*



Seep Monkeyflowers add color to the pond. Photo by Dennis Mudd

With more than 1,700 plant species and subspecies, San Diego County is the most biodiverse county in the continental United States, containing more than half of the biodiversity of the entire California Floristic Province, according to Justin Daniel, President of the San Diego Chapter of the California Native Plant Society (CNPSSD). The California Floristic Province is one of just 36 biodiversity hotspots in the world. But a biodiversity hotspot isn't just a place with a lot of species of plants and wildlife, it's also a place where those plants, and the wildlife that depend on them, are the most threatened. Globally, biodiversity is declining at a catastrophic rate, with more than a million species of plants and animals known to be at risk of extinction. Ecosystems function best when they contain a lot of different species. In fact, the more species, the better. Greater biodiversity in an ecosystem means greater stability, productivity, and resilience to all the pressures ecosystems face.

In his book *Nature's Best Hope: A New Approach to Conservation That Starts in Your Yard*, Doug Tallamy, a professor in the Department of Entomology and Wildlife Ecology at the University of Delaware, makes the case that we can use our yards to help save Earth's biodiversity by creating a "Homegrown National Park." We don't have to wait for politicians and governments to act. Like Dennis and Pamela Mudd, and many others in San Diego County, we can turn our yards into conservation corridors that provide wildlife habitat. Even if we don't have a large property to fill with native plants, we can still make a difference. Something as simple as a small native plant container garden for pollinators on an apartment patio or balcony can help connect habitat for birds and wildlife moving between the natural spaces that are separated by our urban and suburban neighborhoods. Here are some steps you can take to provide much-needed habitat for birds, insects, and other wildlife in your yard:

Aromatic Purple Sage creates an inviting seating area. Photo by Dennis Mudd

Shrink the Lawn

According to the National Audubon Society, there are 40 million acres of lawn currently in the United States. Annually, Americans apply 80 million pounds of pesticides to their lawns and use 800 million gallons of gasoline to mow them. Add the water needed to keep them green in San Diego County's Mediterranean climate, the pesticide and fertilizer runoff that pollutes our waterways, not to mention the lack of biodiversity they promote, and it's easy to see why lawns should play a much smaller role in our landscaping. In their book, *Planting in a Post-Wild World*, Thomas Rainer and Claudia West advise homeowners to think of lawns as area rugs, not wall-to-wall carpeting. Reverse the norm by letting native plants dominate your landscaping and use lawn or native lawn substitutes as accents (not synthetic turf, which has nonrecyclable blades containing forever chemicals. These blades break down into microplastics that enter our waterways).

Remove Invasive Species

While it's okay to keep a small number of non-native plants in your habitat garden, it's important to remove invasive plants that can escape yards and take over natural spaces. This is especially critical if your yard is near open-space preserves, but even if it's not, birds and wind can carry seeds and deposit them miles away. Some of the biggest problem plants in San Diego are Mexican Fan Palms, Pampas Grass, Freeway Iceplant, and Giant Reed. The California Invasive Plant Council's *Don't Plant a Pest* program offers regionally specific landscaping advice, including plants to avoid and alternatives to consider. For example, instead of using highly invasive periwinkle as a groundcover, use wild strawberry *(Fragaria chiloensis or Fragaria californica)*, which has the added benefit of being a good lawn substitute, as well as providing fruit for wildlife. Not every alternative offered on the site linked here is a Southern California native plant, so be sure to select one that is. (https://www.cal-ipc.org/solutions/prevention/landscaping/dpp/?region=socal)

Ceanothus Silk Moth Caterpillar ©busbybio

Cultivate Caterpillars

Most of us are familiar with the concept of a keystone animal species—a species that is so critical to the functioning of an ecosystem that its removal dramatically changes that ecosystem—but did you know there are also keystone plants that act similarly in local ecosystems? In his research at the University of Delaware, Tallamy and his associates found that certain native plants are eaten by insects far more than others. That's important because insects are the primary way plant energy is passed on to animals. "Most vertebrates do not eat plants directly; far more often than not, they eat insects that have converted plant sugars and carbohydrates into the vital proteins and fats that fuel complex food webs," Tallamy explains in *Nature's Best Hope*.

The most important insects in the food web are caterpillars, the larval forms of butterflies, moths, and sawflies. Why caterpillars? There are thousands of species in North America, and they make easy pickings for birds and other wildlife. They are also easy to digest and high in nutrients, including proteins, fats, and carotenoids. Carotenoids stimulate immune systems, improve color vision and sperm vitality, and serve as antioxidants that protect DNA from oxidative damage. In birds, they are a major component of colorful feather pigments, and caterpillars are the best source of these nutrients for them. Of North America's land bird species, 96% rear their young on insects rather than seeds and berries, and the majority of those insects are caterpillars and adult moths. A typical pair of birds requires thousands of caterpillars to bring a nest of chicks to fledging, so the availability of caterpillars can make or break a bird's ability to successfully reproduce. *(Continued on page 4)*

(Continued from page 3)

In a study on breeding chickadees in the suburbs of Washington, D.C., one of Tallamy's students, Desiree Narango, and a team of field assistants, found that parent birds foraged on native plants 86% of the time. Yards dominated by introduced plants produced 75% less caterpillar biomass and were 60% less likely to have breeding chickadees. When chickadees nested in yards with non-native plants, the nests contained fewer eggs, produced fewer chicks, and chicks had slower maturation rates than those in nests located in yards with lots of native plants. In fact, chickadee populations only produced enough chicks each year to replace the adults lost to old age and predation in yards with less than 30% non-native plants. "Desiree's research helps us to understand that the plants we have in our yards make or break bird reproduction, not the seeds and suet we so dutifully buy for our feathered friends, although supplements certainly help birds after they have successfully reproduced," writes Tallamy.

The reason native plants play such a critical role is that caterpillars can't eat just any plant. "By far the most important and abundant specialized relationships on the planet are the relationships among the insects that eat plants and the plants they eat," writes Tallamy. "Most insect herbivores, some 90% in fact, are diet specialists—host-plant specialists that are restricted to eating one or just a few plant lineages." This is because plants have evolved ways to deter insects and other wildlife from eating them, such as producing chemicals that are stored in their leaves and other vulnerable tissues to make them taste bad or even make them toxic. "Because caterpillars necessarily ingest chemical deterrents with every bite, there is enormous selection pressure to restrict feeding to plant species they can eat without serious ill effects," explains Tallamy. Caterpillars have evolved ways to deal with a plant's defenses through a combination of sequestering, excreting, and/or detoxifying the chemicals they ingest. "It usually takes many eons for an insect to adapt to a new host plant, if it can adapt to the plant at all," writes Tallamy.

Ceraunus Blue butterfly by Dennis Mudd

Tallamy and his associates' research shows that in order to support caterpillars and all of the birds and other wildlife that depend on them, we need not only to have native plants in our yards, but also to make sure some of those plants host a wide variety of caterpillars. Tallamy calls the plants that host the most species of caterpillars, "keystone plants." "Landscapes that do not contain one or more species of keystone genera will have failed food webs, even if the diversity of other plants is very high," writes Tallamy.

You can go to the National Wildlife Federation's Native Plant Finder website to get a list of keystone genera trees and shrubs, as well as flowers and grasses, in your area by entering your zip code (https://nativeplantfinder.nwf.org/). The plants are based on Tallamy's research and are ranked by the number of butterflies and moths that use it as a caterpillar host plant. When I entered my zip code, for example, willows *(Salix)*, host to 328 species; oaks *(Quercus)*, host to 275 species; and cherries *(Prunus)*, host to 262 species, came up as the top three caterpillar host trees and shrubs for my area. The top host flowering genera for my zip code are lupines *(Lupinus)*, sagebrush/wormwoods *(Artemisia)*, strawberries *(Fragaria)*, sunflowers *(Helianthus)*, deer vetch *(Lotus)*, and goldenrod *(Solidago)*, hosting between 50 and 75 species of caterpillars each. While flowering herbaceous shrubs, perennials, annuals, groundcovers, and grasses host fewer caterpillars, they play an important role in the garden not only as host plants, but also as cover for developing pupae. Leaf litter, loose soil, and old logs are also important for developing pupae.

Plant for Native Bees

When creating a pollinator garden, we tend to focus on plants that attract butterflies and hummingbirds, but the majority of actual plant pollination is carried out by bees. While many of us picture the European honeybee when we think of bees, there are 1,600 native bee species in California. San Diego County has more than 700 native bee species, the highest diversity of bees in the continental U.S., according to Jess Mullins, a Ph.D. student in David Holway's Lab in the Ecology, Behavior, and Evolution Department at UCSD.

With the exception of bumblebees, our native bees are solitary. They don't live in large colonies, make honey, or behave aggressively. Native bees are actually much better pollinators of our native plants than honeybees. They move quickly from plant to plant, cross-pollinating plants at a rapid rate. Honeybees can actually decrease the fitness of native plants because they tend to linger on a single plant, slowly going from flower to flower to collect pollen for their colonies. As a result, they often end up self-pollinating plants instead of cross-pollinating them, leading to plant offspring that are less likely to germinate, develop, and reproduce, according to a recent study conducted by UCSD researchers, which was published in the *Proceedings of the Royal Society B*.

(Above) Cassin's Kingbird with White-lined Sphinx Moth. by DS

(Left) Long-horned Bee on Purple Sage. It is one of over 700 bee species native to San Diego County. Photo by Dennis Mudd

(Below) As the female Praying Mantis munches on a native bee, the male cautiously approaches from behind. By Dennis Mudd

Two-thirds of native bee species nest in the ground, including sweat bees, mining bees, and digger bees. To encourage these bees to nest in your garden, try creating a 6- to 12-inch mulch-free zone around the base of plants that bees and other pollinators visit. You can also allow natural leaf litter to remain in your garden to enrich soil, provide weed suppression and moisture retention, as well as to create cover for overwintering bees.

Other native bee species, such as leafcutter bees, mason bees, and carpenter bees are cavity nesters. They like to nest in holes in wood or plant stems with pithy centers. To support these bees, be careful when trimming plants and leave some 12- to 18-inch stems for bees to nest in. The plants that work best have long, linear, strong flower stalks with varying diameters. Tree stumps and fallen trees or branches can also provide nesting habitat for cavity nesting bees.

Native bees forage on native plants more frequently than on non-native plants, and some specialize on particular plant groups when gathering pollen for their larvae. It's important to provide a continuing sequence of flowering plants for native bees because going even two or three weeks without blooms available in a landscape is deadly to bees. In a presentation at Cabrillo National Monument (CBN) titled, "San Diego's Native Bees and the Plants They Love," UCSD Entomologist Jess Mullins and CBN Vegetation Specialist Patricia Simpson offered plant recommendations for providing year-round blooms for native bees. For January blooms, try Lemonadeberry *(Rhus integrifolia)* and Sea Dahlia *(Coreopsis maritima)*. Beginning in March, Bladderpod *(Peritoma arborea)* is a reliable and prolific bloomer that can keep flowering nearly year-round. Try Dudleya *(Dudleya sps.)* for blooms in May and June, and Toyon *(Heteromeles arbutifolia)* for June and July. Chaparral Bush Mallow *(Malacothamnus sp.)* blooms in July and August, attracting the Ochraceous Chimney Bee, which visits only this plant. In late summer, when many native plants go dormant, California Buckwheat *(Eriogonum fasciculatum)* is an important source of blooms, attracting many species of native bees. In fall, Goldenbush *(Isocoma menziessi)* attracts a large variety of bees. Broom Baccharis *(Baccharis sarothroides)* is another good choice. (If you'd like to learn more about our native bees, watch their fascinating presentation on YouTube https://www.youtube.com/watch?v=TD99pz1lSnY).

Nurture Diversity

A garden with a greater abundance and diversity of native plants will provide habitat for a greater abundance and diversity of insects, birds, and other wildlife.

- ***Plant in overlapping, vertical layers of trees, shrubs, perennials, annuals, and groundcovers*** to provide wildlife with options for shelter, foraging, and raising young.
- ***Include multifunctional habitat plants***, such as Ceanothus species, which host caterpillars and offer late winter/early spring blooms for native bees, seeds for birds, and shelter for a variety of wildlife.
- ***Attract birds*** such as Cedar Waxwings, American Robins, Western Bluebirds, Northern Mockingbirds, and House Finches, as well as other wildlife, with fruit-bearing plants, such as Toyon, Catalina or Holly Leaf Cherry, Coffeeberry, Lemonadeberry/Sugar Bush, Elderberry, California Grape, Currant, Gooseberry, and Manzanita.
- ***Provide seed-bearing plants***, including Buckwheats, Sages, Deergrass, Goldenrod, and Sunflowers to attract birds such as Lesser Goldfinches, California and Spotted Towhees, Song Sparrows, and Dark-eyed Juncos.
- ***Attract hummingbirds*** with plants such as California Fuchsia, Hummingbird Sage, Showy Penstemon, Dudleya, Bladderpod, and Desert Willow. Since we are fortunate to have hummingbirds year-round, be sure to provide a succession of blooms throughout the year.
- ***Mass plants in groups of five or more*** to provide foraging habitat for native bees, butterflies, and hummingbirds.

Just Add Water

In addition to food, shelter, and places to raise young, birds and other wildlife need a source of water for drinking and bathing. From shallow dishes to hollowed-out boulders, birdbaths, fountains, and ponds, water sources for wildlife can be simple or elaborate. The most important thing is ensuring they are safe for wildlife by keeping them clean and, in the case of ponds, providing an escape route in case animals fall in.

For Dennis and Pamela Mudd, a pond was the last major addition to their habitat garden. Instead of constructing a pond from scratch, they chose to convert their existing swimming pool into a pond. "She thought I'd finally lost my mind when I told her I wanted to do the pool-to-pond conversion," Dennis laughs. "But that's been the final step in getting the rest of the birds, and I don't mean just ducks," Pamela is quick to interject.

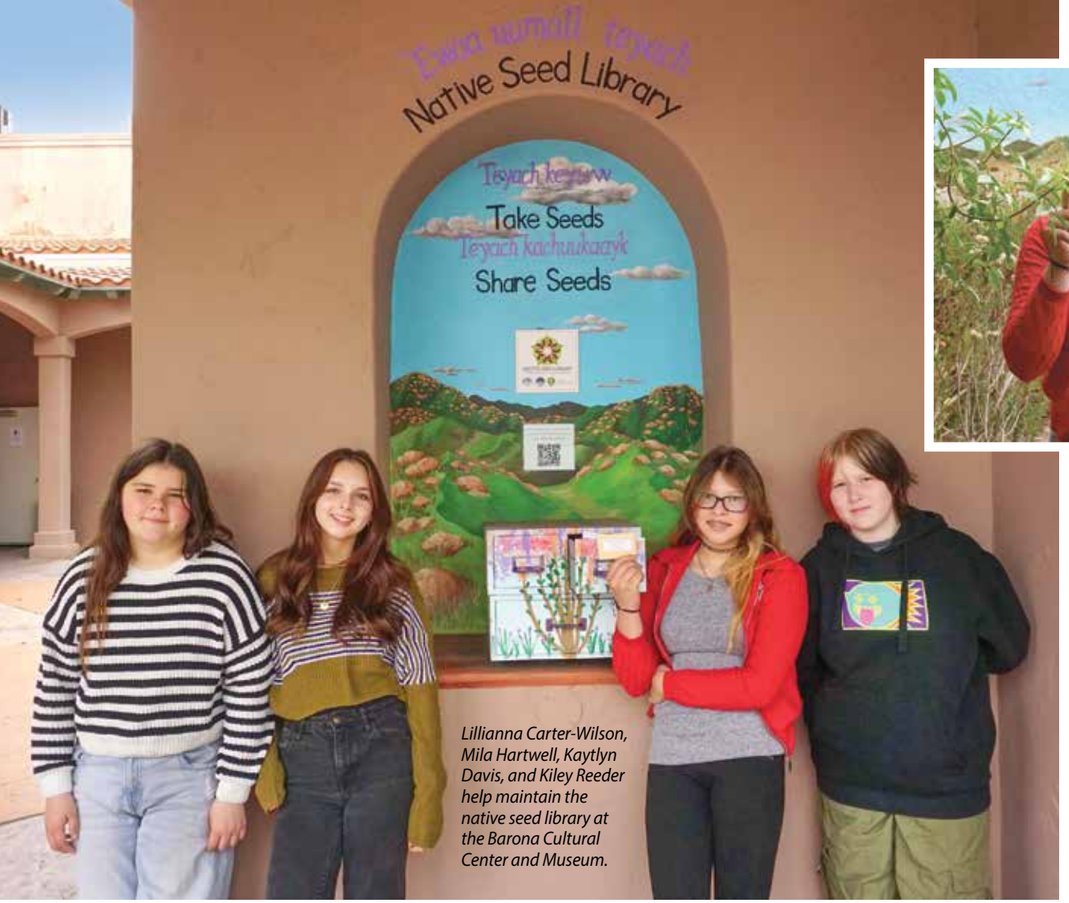
In addition to visits from ducks, Green Herons, Night Herons, and Snowy Egrets, the pond once even attracted the attention of a Belted Kingfisher. "It was right up on that roof looking for fish in the pond," says Dennis. "Every time you see a new bird species, it's wow, it's incredible. I haven't done the update in a while, but the last time I did my bird list for just this property, there were over 50 species."

For those wishing to create a habitat garden at their homes, the Mudds recommend taking it slowly and doing it in stages. "Don't try to convert your entire yard," says Pamela. "It would be such a big job." We did certain areas, and then took a year or two between each one. It's more manageable. It's a less daunting task." Dennis adds that you also learn a lot from each stage that you can apply to the next one. Both are thrilled that they took the plunge and encourage others to do so, too. "We can save so many species, and we can create habitat for so much of nature if homeowners would do little nature restoration projects in their own gardens," says Dennis. "We put that in the mission of Calscape to try and create these little islands of biodiversity to slow down and even reverse the loss of biodiversity we have in this state primarily through development."

(Above) An Anna's Hummingbird tends her nearly fledged chicks.

(To left) Showy Penstemon attracts more than just hummingbirds.

Both photos by Dennis Mudd



Lillianna Carter-Wilson, Mila Hartwell, Kaytlyn Davis, and Kiley Reeder help maintain the native seed library at the Barona Cultural Center and Museum.

Ethnobotany is part of the curriculum for 7th graders at the **Barona Indian Charter School**, and students receive hands-on education by maintaining the native plant garden and native seed library at the Barona Cultural Center and Museum. They are also adding a new pollinator garden. Not only do the students learn how to identify and care for the native plants, but they also learn the *'lipay Aa* word for each plant, as well as the native knowledge, which has been passed down for generations among the Kumeyaay people, for how each plant can be used. The students also harvest seeds from the plants to stock the native seed library. "They cut off all the seedpods when they turn to seed," says Laurie Egan-Hedley, Director and Curator of the Barona Cultural Center and Museum, who teaches the Culture class. "They've been instrumental in separating seeds, letting them dry, and packaging them for the seed library."

Kaytlyn Davis with Blue Elderberry shrub (kupall) in the native plant garden.

by LaTresa Pearson

If creating habitat corridors for wildlife in your yard is good for biodiversity, imagine what a whole neighborhood of native plant gardens could achieve. That's the goal of San Diego Audubon's Native Seed Library program. By making native seeds available in neighborhoods throughout the county, we hope to make native plant gardening accessible to everyone.

Each library is constructed and managed by volunteer librarians, who stock them with a variety of native seeds provided by SDAS (through CNPSSD). The goal, however, is for each library to become self-sufficient, so ideally people who take seeds from the library will replenish them with seeds that they harvest from the native plants they grow in their gardens.

Since our Audubon Advocates started the program two years ago, native seed libraries have sprouted up throughout the county—in neighborhoods, public libraries, schools, businesses, and public spaces.

NATIVE SEED LIBRARY
SAN DIEGO AUDUBON

From Imperial Beach to Rainbow, and east all the way to Julian, there's a native seed library near you. See our website to enter your zip code and find a convenient location. Here are just a few.

When Christine Small decided to install a native seed library near her home in **Juniper Canyon**, she networked with neighbors to get the job done. Patrick Trimm, an expert carpenter, constructed and installed the library with the help of his daughter, Alex, and Christine's husband Tom. Another neighbor, Pati Voneuw, created labels with QR codes for each seed packet—scanning the code takes you to the Calscape information for each specific plant. She also created full-color, laminated information sheets for each plant, so people can see what the plants look like. Christine gets help filling the seed packets from neighbor Roger Busse, and concludes, "Everyone likes to be on a fun team and do something great for the neighborhood."

Sisters Havana and Annalisa select native seeds.

(Above) The Juniper Canyon neighborhood team, from left to right: Alex Trimm, Pati Voneuw, Patrick Trimm, Christine Small, Tom Small, and Roger Busse. Photos from Christine Small.

The Mission Hills-Hillcrest/Knox Library *(photo far left)* is one of a growing number of public libraries throughout the county that have added native seeds to their seed libraries. Branch Manager Steve Wheeler and his wife have even added a native seed library to their own front yard *(photo to right)*. Wheeler became a native plant convert after attending a presentation by Doug Tallamy at the Mission Trails Regional Park Visitor Center. "I learned about how important it is for individuals to grow native plants and what a big difference there is between native plants and introduced plants when it comes to the ecosystem and supporting insects, and through the insects, the animals and birds," he says.

The Point Loma Native Plant Garden *(photo to left)*, owned by the City of San Diego and managed by the San Diego River Park Foundation, is the perfect place to view a large variety of native plants in a garden setting. Mike and Dana Sanchez enjoyed strolling around the garden. During their visit, they stopped at the native seed library and picked up a variety of seeds, including Santa Cruz Buckwheat, San Diego Sunflower, and California Poppy. Dana discovered the garden through a program called "Story Stroll" that she participated in as the Youth Services Librarian for the Point Loma/Hervey Library. "When I came here last summer, I was stunned by how beautiful it was, how well maintained it was, and how many volunteers they had," Dana says.

The Wheeler's home seed library (above). Photo by Steve Wheeler. Other photos by LaTresa Pearson.

Restoring Nature, One Yard at a Time

Anna's Hummingbird *Photo by LaTresa Pearson*

Create a small-scale coastal sage habitat for a variety of native birds, insect pollinators, and other wildlife, plus a floral display that will bring color throughout the year. Even a modest-sized yard, properly designed and cultivated, can make a difference.

As a host to hundreds of species of caterpillars and a producer of nutritious acorns, the **Coast Live Oak** is the ultimate bird feeder. It also supports cavity nesters and a variety of other wildlife. As the oaks go, so goes the biome's biodiversity. *Photo by DS*

Nuttall's Woodpecker *by Ed Henry*

Cleveland Sage, as well as other local sage species, is highly aromatic and will attract butterflies and other pollinators. Several species of **Monkeyflower** (below) grace our region, and are great for pollinators. *Photos by DS*

The profuse flowers and seed-filled "bladders" of the **Bladderpod** support healthy insect populations and many native bird species. *Photo by Karen Straus*

California Fuschia is a familiar coastal sage species very popular with hummingbirds. *Photo by Karen Straus*

Blue Grosbeak
Photo by Ed Henry

California Buckwheat is a familiar coastal sage plant that will attract seed eaters and provides ground cover for towhees and other small birds. *Photo by DS*

Coyote Bush, sometimes called Chaparral Broom, attracts seed eaters like this Bushtit. *Photo by Gerry Tietje*

Townsend's Warbler feeding on Western Sycamore seed pods. *Photo by Ed Henry*

Catalina Cherry, with cherry-like fruit that draws songbirds like this Hooded Oriole. *Photo by Jonathan Coffin*

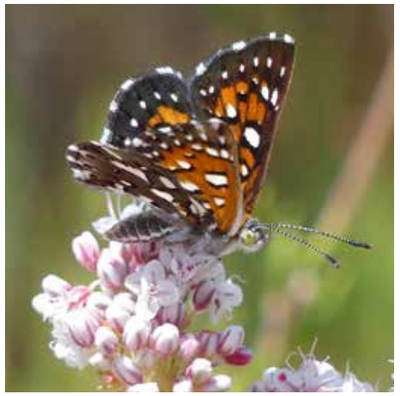
Several species of **Ceanothus (California Lilac)** are available at local nurseries. In a garden setting, they thrive on minimum water. *Photo by DS*

American Robin *Photo by DS*

Growing Opportunity for Wildlife

by Justin Daniel, President, San Diego Chapter of the California Native Plant Society

Each spring, the San Diego Chapter of the California Native Plant Society (CNPS) hosts a garden tour during which local homeowners open their habitat gardens, filled with native plants, to the patrons who wish to come see them. The theme of this year's tour (held April 6 and 7) was "Planting Animals," chosen to illustrate how each plant in a habitat garden offers food, shelter, crafting materials, play areas, and special relationships for various wildlife. Each plant attracts bees, butterflies, moths, and a wide variety of other insects. The plants and insects draw other wildlife, too—birds, mammals, reptiles, amphibians, and tiny predators such as ants, mantids, and arachnids. By planting regionally native plants and providing access to them, an urban garden can support beleaguered animals surviving on the edge in fragmented habitats. In a sense, every healthy and thriving native plant "grows" opportunity for animals. Some animals require the right type of plant and adjacent habitat to live a full life, and a few others require such exacting conditions that their relationships with specific species of plants and conditions make them rare even without modern pressures on their habitat.



Behr's Metalmark on buckwheat by Lauren Glevanik

The Behr's Metalmark butterfly *(Apodemia virgulti)* exemplifies how we can make a difference for a declining species by including native plants in our gardens. Southern California is home to the Behr's Metalmark, which has eight subspecies, each covering ranges that correlate with habitat types featuring an abundance of buckwheat *(Eriogonum sps)* (but reasons for their range limitations are still being studied). All have grey wings with black and bright orange banding, and white spots. All are medium-sized butterflies that enjoy flying among the flower heads of low shrubs on a sunny day, basking in the sunshine, and sipping from shallow pools of rainwater and mud.

Buckwheat plants are widespread and common, forming an easy-to-find host, shelter, and nectar plant for the Behr's Metalmark in all life phases. The butterflies form two flights each year—one in the spring and another in late summer, though in places that don't freeze, another flight may occur in a warm winter. Despite having a wide-ranging host and nectar plant, populations of all Metalmark species have been in decline. Reasons include habitat loss, pollution and pesticides, loss of nectar plant diversity, fast vehicle traffic bifurcating habitats, wildfire, drought, and extreme weather events. All of the subspecies of this butterfly are considered species of concern, though they are not yet imperiled enough to be listed for specific protections. This butterfly is found most often along hiking trails in the rural wild, but also in gardens and open spaces interspersed in the urban complex. Where buckwheat is grown in abundance, this butterfly is likely to find these plants and create a home.

Thankfully, buckwheat plants are easy to grow, stay green year-round, and are covered in flowers that attract all sorts of life for long periods of time. They are easy to maintain and to prune, if needed, filling spaces that are recently disturbed and remediating barren soils with a rich humus of leaf litter that retains rainwater long into the summer. They take summer rain and tolerate mixed gardens, though the butterflies and plants do best in a garden with a variety of locally native plant species. Whether grown by seed thrown on the ground in late fall or winter, or planted from nursery-grown plants, varieties of buckwheat are some of the easiest and most rewarding native plants in almost any landscape. Recommended are the California Buckwheat (*Eriogonum fasciculatum*—coastal, inland, and desert transition varieties and cultivars), and Wright's buckwheat (*Eriogonum wrightii*—mountain variety), though other buckwheat varieties are occasionally used.

The Behr's Metalmark butterfly is just one example of a species that needs our study and support, but support for one species through restoration and rewilding, native gardening/landscaping, and conservation can meet the needs of many species. Individuals can protect habitat at their homes and can engage with the public process, through legislative and planning frameworks, to advocate for habitat and wildlife that cannot speak up for themselves. By planting natives at home, we provide more habitat and connectivity for wildlife to exist and to thrive. By advocating for wildlife and their habitats through collective communication and action, we stand for keeping our wildland's special character and diversity.

LOCAL NURSERIES *Specializing in California Native Plants*

Moosa Creek Nursery
27201 Cool Water Ranch Road, Valley Center, (760) 479-3216
www.moosacreeknursery.com
You can purchase plants online and have them delivered to a local retail partner or purchase directly from local retail partners. See their website for a list of partner nurseries and garden centers near you.

The Little Barn at Native West Nursery
1849 Leon Ave., San Diego, retail location, (619) 423-2284
www.nativewest.com
The Little Barn offers a large selection of native plants from the 130-acre wholesale nursery across the street. You can also purchase locally collected native seeds and other items. See their website for native plant gardening resources, special events, and workshops, or to buy online.

Neel's Nursery
466 N. Coast Hwy 101, Encinitas
www.neelsnursery.com
Buy online for pick-up/delivery in San Diego County or visit the retail location in Encinitas, which is open Saturday–Monday, 9 a.m.–5 p.m. The nursery adds new inventory every Friday night.

Tree of Life Nursery
33201 Ortega Highway, San Juan Capistrano, (949) 728-0685
www.californianativeplants.com
The nursery's retail location, Casa La Paz, features plants, books, garden decor, and unique gifts. Open Monday–Saturday, 9 a.m.–3:30 p.m. See their website for events and workshops or to buy online.

Resources for Native Plant Gardening

The National Audubon Society www.audubon.org/native-plants

With National Audubon's native plant database, you can enter your zip code to receive a list of native plants hand-selected by regional Audubon experts. Each plant is an important bird resource, relatively easy to grow, and available at local native plant nurseries. You can narrow your search by specifying plant types, such as shrubs or perennials; resources, such as nectar, seed, or caterpillars; and type of bird you'd like to attract.

Calscape www.calscape.org

Managed by the California Native Plant Society, this powerful database allows you to enter your address to receive a list of plants native to that location. The Advanced Search feature enables you to choose from a variety of criteria. For example, you can search for a shrub that can be used in a hummingbird garden, and then specify the flowering season in addition to specific growing conditions, such as partial shade and slow-draining soil. At press time, Calscape 2.0 was expected to be released in April, promising an enhanced user interface, better regional integration, wildlife interactions, pollinator information, landscaping selections, and more.

Calflora www.calflora.org

Calflora's database includes more than 3 million plant observations, covering more than 8,000 plants, including both natives and weeds. The website offers multiple ways to access plant observations, including a Planting Guide with similar functions to Calscape. You can enter your address and specify search criteria to get a list of plants that satisfy those conditions. You can get in-depth information, including soil conditions, water usage, and planting information.

California Native Plant Society, San Diego Chapter (CNPSSD) www.cnpssd.org.

CNPSSD is a great resource for information about San Diego and Imperial County native plants and their natural habitats. Two popular events for native plant gardeners are the chapter's Fall Native Plant Sale, where you can purchase a large variety of regionally native plants and seeds, and its Spring Native Garden Tour, which showcases the coastal and inland native plant gardens of local San Diego County residents. See their website to buy seeds online and to find information on upcoming events, involvement opportunities, and more. Here's a link to native plant gardening resources, including CNPSSD's Native Landscape Planting Guide with 50 California native plants that are easy to grow and likely to thrive in San Diego County gardens. Log on at https://www.cnpssd.org/garden-resources

California Native Plant Society (CNPS) www.cnps.org

Find additional native plant gardening information on the main CNPS website. Here's a link to the organization's popular Naturehood gardening webinar series, where you can register for upcoming webinars or listen to recordings of existing webinars on a variety of native gardening topics. Log on at www.cnps.org/gardening/webinars. You can also find native plant gardening advice for beginners through experts at www.cnps.org/gardening/habitat-revolution

Theodore Payne Foundation www.theodorepayne.org

If you find yourself in Los Angeles County, the 22-acre canyon site of the Theodore Payne Foundation in Sun Valley features a nursery; a store with a large selection of books, seed, and garden accessories; and demonstration gardens showcasing mature plants for sun, shade, slopes, narrow beds, pollinators, birds, groundcovers, wildflowers, and fire-wise landscapes. See their website for a wealth of native plant gardening resources, and to buy seeds, books, and other items. They do not ship plants. Here's a link to a series of handy plant guides, including plants for birds, plants for bees, and plants for butterflies and moths. https://theodorepayne.org/learn/guides/

APPLICATIONS

iNaturalist
This app helps you identify the plants and animals around you, and then share your observations with millions of others. Those data are then used to help scientists better understand and help protect nature. Great for keeping records and collaborating with scientists and naturalists.

Seek
Created by iNaturalist, the Seek app uses image recognition technology to help you identify plants, fungi, and wildlife. Great for families, you can earn badges by identifying species and by participating in challenges.

Merlin
Powered by eBird from the Cornell Lab of Ornithology, Merlin Bird ID helps you identify birds step-by-step, through bird songs or calls, or photos. You can also add your sightings to your Life List and report them on eBird.

BOOKS

The California Wildlife Habitat Garden: How to Attract Bees, Butterflies, Birds, and Other Animals
by Nancy Bauer

Practical advice paired with beautiful photos and profiles of several inspirational California wildlife habitat gardens, complete with plant lists, make this book a delightful resource for aspiring habitat gardeners.

California Native Plants for the Garden by Carol Bornstein, David Fross, and Bart O'Brien

This must-have reference book features descriptions of more than 500 California native plants and 450 color photos.

California Native Gardening: A Month-by-Month Guide
by Helen Popper
Beginning with October, this book lays out monthly gardening tasks for a successful native plant garden, including planting, pruning, watering, seed collection, and propagation.

The Drought-Defying California Garden: 230 Native Plants for a Lush, Low-Water Landscape
by Greg Rubin and Lucy Warren

Local native gardening experts Greg Rubin and Lucy Warren offer practical advice for installing and maintaining a native plant garden, as well as information and planting tips for 230 native plants designed for low-water landscaping.

Nature's Best Hope: A New Approach to Conservation That Starts in Your Yard by Douglas W. Tallamy

Building off his popular book, *Bringing Nature Home: How You Can Sustain Wildlife with Native Plants*, Tallamy makes the case that we can and must help save the planet's rich biodiversity "one yard at a time" by planting native plants, especially keystone plants that support the largest number of caterpillars. His latest book, *The Nature of Oaks: The Rich Ecology of Our Most Essential Native Trees*, focuses on the king of keystone plants, native oak trees.

Protecting Ramona's Golden Eagles

Through Audubon Advocates and the Wildlife Research Institute

by Natalie Jane Cibel, Wildlife Biologist, Science Communicator, and SDAS Conservation Committee Member

The air was crisp, but the sun cast a warm glow over the Ramona Grasslands. Surrounded by a vast expanse of golden fields and the music of rustling grass, I found myself alongside other birdwatching enthusiasts who had gathered together for the Wildlife Research Institute's (WRI) Hawk Watch event. My heart quickened with anticipation as I looked up at the bright blue sky. "Did you see that?" I exclaimed, my voice filled with a mix of awe, excitement, and disbelief as I looked up at the massive bird above me. The wingspan alone was six to seven feet wide, and the white wing spots against the golden brown of the bird was breathtaking. It was my first encounter with a Golden Eagle, and the shared thrill of the sighting bound our group together. It was as if the universe had granted us a front-row view of one of its most majestic raptors.

Golden Eagle by Rich Durham

That encounter sparked my desire to understand the threats that Golden Eagles face amidst San Diego County's urban sprawl and led me to apply for the San Diego Audubon Society's Audubon Advocates program. I teamed up with Eric Klug and Mari Conrad to help protect the nesting pair of Golden Eagles that hunt in the Ramona Grasslands Preserve. The Ramona Grasslands territory is on the western edge of Golden Eagle habitat. Every other more eastern nesting site, from Oceanside to the Mexican Border, has been abandoned over the past 100 years. We reactivated a coalition that a 2019 advocacy training group had created, called the Golden Eagle Alliance, and we got to work.

Golden Eagle near Ramona Grasslands, by Dave Bittner

For the past eight months, the Golden Eagle Alliance has collaborated with WRI's Research Director Katie Quint to better understand the current threats that this specific nesting pair face in the Ramona Grasslands. Through Audubon Advocates and involvement with WRI, we learned about the necessary advocacy steps to take to help protect the pair, as well as the community engagement tactics that would help to spread awareness about the threats they face. The Audubon Advocates program provided us with strategies to implement policy change and community-based social-marketing campaigns that would benefit the Golden Eagles and the communities coexisting with them.

These strategic steps included reading *The Empowered Citizens Guide: 10 Steps to Passing a Law That Matters To You* by Pat Libby, which armed us with the knowledge for how to build a coalition of advocates and how to contact local representatives for policy change. We gathered each month, learned about the theory of change, and learned how to best strategize our objectives and key results for our mission of protecting Golden Eagles in San Diego County.

As we built our coalition and networked with Katie, we began to understand the social-ecological complexities of protecting this Golden Eagle pair. By partnering with WRI, we learned firsthand how recreational activities, such as hiking, horseback riding, mountain biking, and dog walking, can threaten the breeding success of Golden Eagles because the species is very sensitive to human disturbance, especially during breeding and fledging season. Upon learning about these threats, the Golden Eagle Alliance attended the WRI Hawk Watch events on Saturday mornings to engage in community outreach and to conduct surveys for gauging the audience's understanding of Golden Eagle threats in Ramona.

In addition to these boots-on-the-ground efforts, SDAS helped us to channel our advocacy into policy initiatives by engaging with local and state authorities to shape policies that prioritize the protection of Golden Eagles and their habitats. Through education, outreach, and policy advocacy, SDAS and WRI stand as beacons of hope for the Golden Eagles of San Diego County, a testament to the transformative impact that advocacy can have on threatened birds and their habitats.

The Audubon Advocates program not only provided me with an avenue for personal growth, but it also showcased the collective power of passionate individuals, communities, and nongovernmental organizations striving for a shared conservation goal. By participating in public forums, advocating for stronger conservation regulations, and collaborating with like-minded organizations, SDAS amplifies the voice of those who champion the cause of these regal raptors.

The 2024 Advocacy Training program will start up in May, with applications available in early April. Find the application and more information on our website: https://www.sandiegoaudubon.org/what-we-do/audubon-advocate-program.html

Silverwood Scene *Spring Birds and Blooms Beckon Visitors*

by Phillip Lambert, Silverwood Resident Manager

Miner's Lettuce by Phil Lambert

The winter's abundant rainfall brought the Hairy Ceanothus *(C. oliganthus var. orcuttii)* and Hoary Leaf Ceanothus (*C. crassifolius var. crassifolius)* to life in February, adorning the chaparral canopy with their clusters of light blue and white blooms. In the observation area, Miner's Lettuce *(Claytonia perfoliata ssp. Perfoliata)* bejeweled the riparian oak forest floor. This enchanting annual begins to grow a whorl of long, slender, linear leaves. As they mature, the tips of the linear leaves begin to form into a spade-like shape. The tips then fan out and around, fusing together to form one circular cup-shaped tip where a petiole with blooms forms in the center.

Signs of a very colorful spring also began to appear in February. Leafy rosettes of annual White and Yellow Pincushion *(Chaenactis artemisiifolia, C. glabriuscula var. glabriuscula)*, species of *Cryptantha* (Popcorn Flower), Parry's Phacelia *(Phacelia parryi)*, Field Sun-cups *(Camissonia hirtella)*, and Red-maids (Purslane family) offered an array of diverse leaf patterns.

By April, the flora and fauna are in full celebration of the arrival of spring. The main tributary still trickles with flowing water as annual flowers in and around the observation area begin to bloom. All 10 species of annual and perennial Monkeyflowers, including the San Diego Monkeyflower *(Diplacus x australis)*, Slope Semiphore *(Diplacus brevipes)*, Fremont's Monkeyflower *(Diplacus fremontii)*, Bush Monkeyflower *(Diplacus longiflorus)*, Coast Monkeyflower (*Diplacus puniceus)*, Scarlet Monkeyflower *(Erythanthe cardinalis)*, Slimy Monkeyflower *(Erythanthe floribundus*), Seep Monkeyflower *(Erythanthe guttatus)*, Palomar Monkeyflower *(Erythanthe diffusa)*, and Downy Monkeyflower *(Mimetanthe pilosus)* will paint the landscape with an array of colors.

High up along the ridge in the open granite slab area, many species of annual flowers begin to bloom within the successional islands. Southern Goldfields *(Lasthenia coronaria)* cover the open fields with a carpet of rich gold dotted with the pinkish fringed petals of Ground Pinks *(Linanthus dianthifloru)* and purple Dove Lupines (*Lupinus bicolor)*. Within the chaparral bordering the slab, the yellow flowering Bush Poppy *(Dendromecon rigida)* and showy, pale blue *Ceanothus* flowers add delight to the scenery.

Each year during the month of March, many early spring migrant birds begin to arrive at Silverwood. The Violet Green Swallows dart through the oaks looking for cavities to nest in. White-throated Swifts can be seen soaring high above the ridge lines. Wilson's Warblers, Black-and-White Warblers, Western Wood-Pewee's, and Hutton's Vireos rove through the oak woodlands. During the month, an average of 48 species of birds can be seen at Silverwood.

Be sure to come out and enjoy the seasonal colors that make Silverwood a jewel of the East County.

Silverwood Wildlife Sanctuary is open to the public on Sundays 9 a.m.–4 p.m. Silverwood is also open to **San Diego Audubon members on Wednesdays 8 a.m.–12 p.m.** Please call (619) 443-2998 a week in advance to arrange your visit.

The programs and services we offer here at Silverwood are made possible through your support, and we would like to express our appreciation to our many generous volunteers, members, donors, and partners.

(Left) Seep Monkey Flower (below) Hairy Ceanothus. Photos by Phil Lambert.

Anstine Ambles

Native Plants Welcome Wildlife

by Rebekah Angona, Anstine-Audubon Nature Preserve Manager

When planning a garden in your yard, there are typically two approaches for your design: Plant species that provide a pleasing aesthetic appeal to your residence or grow plants that attract particular species of birds or other wildlife to your yard. When using native Southern California plants, you don't have to compromise beauty for the benefits to wildlife. Native plants are those that naturally grow in our region and, in San Diego County, we could not be more fortunate to have so many low-water, fire-resistant, wildlife-attracting native plants to adorn our properties.

The Anstine-Audubon Nature Preserve is home to four distinct native habitats: coastal sage scrub, oak woodlands, mixed riparian, and a freshwater pond, each boasting a variety of native plants that support the more than 100 bird species observed on our preserve. But native plants do not just support birds, they are essential for other pollinators, including butterflies, moths, bees, bats, and even small mammals.

Before you enter our trails, you'll be greeted by the fluttering dance of Monarch butterflies as they float between the white and pink flowers of the Narrow-leaf Milkweed. The pink bell-shaped flowers of Showy Penstemon, and Fuchsia-flowering Gooseberry are perfectly designed for hummingbird beaks. Purple flowering plants, including White Sage, Black Sage, Purple Sage, Cleveland Sage, and Ceanothus are a spectacular contrast to the yellow Coast Sunflowers. Monkeyflowers can be seen lining the trails in yellows, oranges, and dark reds. And, of course, the vibrant orange of the California Poppy is sure to bring a smile to anyone walking by.

Whether you have a few planters on your patio, a modest backyard, or sprawling acreage, native plants can have a place in your landscape designs. Not sure what native plants to grow in your area? Visit calscape.org to find native plants in your neighborhood, as well as the best planting techniques to ensure your native garden is an attractive success.

And when visiting Anstine, you can even collect native seeds at our native seed library to start your own native plant garden at home!

The Anstine-Audubon Nature Preserve is open on Saturdays 9 a.m.–12 p.m. and on the third Wednesday of the month 8 a.m.–11 a.m., October–June.

Lemonadeberry (top) and Showy Penstemon. Photos by DS

Franklin's Gull, a Great Plains species that nests mostly in Central Canada and winters along the coast in South America. This bird is a rare vistor to our region. It takes a keen eye to discern the differences between the Franklin's and Laughing Gull. *Photo by John Avise, Professor Emeritus at UC Irvine.*

409 SPECIES

Two Local Birders Set County Record with Big Years

San Diego County is sometimes championed as "America's birdiest county" with an approximate total of 540 species identified since such records were first kept. This past year saw the county record of 402 species identified in one calendar year by a solo birder (a Big Year) broken by two local birders, David Trissel of San Diego and Sally Veach of Oceanside. They both stood on the shore of Sweetwater Reservoir on the last day, spotting a solitary Franklin's Gull, a species that seldom strays to the West Coast. They were alerted to its presence by the online eBird community. Trissel and Veach themselves would often share information and encouragement. Records like this are most likely dependent on this growing network of birders that can spread the word of a rare sighting in minutes, drawing amateurs and pros alike. While there is an energy driving species counts that's akin to sports, the greater value is in the data gathering that helps document the birds' presence.

The San Diego Birdathon, a friendly fundraising competition held each year in April, has been part of the chapter's annual events calendar for decades. If you would like to share in the fun as a sponsor, just log on to sandiegoaudubon.org and find Birdathon under "Ways to Give."

Conservation and Community

At the 2024 San Diego Bird Festival

by Padma Jagannathan

Keynote speakers Tiana Williams-Claussen, Christian Cooper, and Julia Zarankin

The San Diego Bird Festival of 2024 was nothing short of a triumph this year, and I am proclaiming this just based on the quality of the keynotes. The outings and talks were outstanding, too, and the 1000+ people who had registered must be on cloud nine now. I have been attending the festival since 2013 when my daughter was 8. We only did the Family Sunday the first year, started attending a few talks the second, and then added in keynotes and trips as her interest grew. I remember we did a birding by ear workshop in 2017, which also led us to seeing the beautiful owls of Tecolote Canyon, and one year we went on an amazing pelagic trip. This year was bittersweet for me because my daughter is away in college, and I was by myself, but she asked me to quit moping and appreciate how lucky I was to be at the festival!

The festival's star attraction was Christian Cooper of *Extraordinary Birder* fame—a show that we love at our home. Parents with a Disney+ subscription should watch it with their kids of all ages! (Some of the episodes are also available on Nat Geo Wild's YouTube channel.) Not only did they feature some truly remarkable birds, but the emphasis on conservation efforts resulted in the show featuring some remarkable birders, too. Cooper's keynote at the Bird Festival delivered what it promised! It was funny, heartwarming, inspiring, and was a clarion call to all the groups working to protect biodiversity to expand their tent and incorporate multifactorial diversity in their approach. The opening night keynote was by writer and birder Julia Zarankin, who was very funny with a self-deprecating humor, which was perfect for her messages—it is never too late to get into birding, it is OK to make mistakes, and there is no one particular way to be a birder.

But the highlight for me this year was the keynote by Tiana Williams-Claussen who spoke about her 17-year journey to reintroduce the California Condor to the wild in the ancestral territories of the Yurok tribe and the Pacific Northwest. I think if there was ever a perfect talk, this was it! It had everything—culture, chronicles, conservation, courage, continuity, and most importantly condors. Graduating with a B.A. from Harvard, Tiana returned to work for her tribe, and listening to elders, she felt that bringing the condors back would be the panacea for all of the things the ecosystem and her people needed.

California Condor by David Stump

Condors hold an important place in the Yurok's foundational stories, and their songs and feathers are an integral part of their world renewal ceremonies. The soaring condors were said to carry the prayers of the Yurok upward to the creator. She talked about how they were an indicator species to the ecosystem because of the important services (not just ecosystem but also cultural and spiritual) they provide and drew parallels between what happened to condors and what happened to Native Americans.

The story of California Condors went from being a tragic one (the total world population was only 22 in 1987) to one of conservation success, which has led to the reintroduction of condors to their native habitats. The wild population now numbers 530, with the San Diego Zoo playing a critical role in the recovery program. Tiana's talk at the San Diego Bird Festival was just perfect, as she is part of the long line of conservation biologists who have worked tirelessly to bring these birds back into our landscape. Her work is by no means done. I was shocked to learn that even today DDT is having a huge impact on mortality of these birds. I mean, *Silent Spring* was published in the 1960s, and these chemicals are still persistent in the bodies of marine mammals, which become food for condors.

Condors, being obligate scavengers, can be seen as conjurers who create life from death, and folks like Tiana are doing the same to the condors—snatching them from the brink of extinction and bringing them "back to life." The birds she shared with us were each given names according to their personality and what they meant to her people. My favorite was *Ney-gem' 'Ne-chweenkah,* whose name in English was "She Carries Our Prayers." Tiana closed her lecture with a picture of her 5-year-old and said how thrilled she was that her child was growing up in a time with condors circling the skies. I am not ashamed to admit that I teared up at that!

I left this festival with a lot of hope. Julia's keynote reminded me it is never too late to become a birder and to find the sense of humor to laugh at ourselves, Tiana showed me how cultural connections forge strong links to conservation and communities, and Christian asked us to expand our tent and become more inclusive as we face an "all-hands-on-deck" kind of moment.

It also made me nostalgic as I looked back to 2013/2014 when my daughter and I started attending San Diego Audubon events, birdwalks, lectures, restoration events, and the festival itself. We were an odd couple—my daughter and I. I was a 40-year-old who couldn't tell an Osprey from a cormorant trying to keep up with an 8-year-old. We were welcomed by the SDAS community, who made room for both of us and gave us our very first birding lesson at the Tijuana estuary—how to tell Great and Snowy Egrets apart! I am grateful for that and all the lessons we have been learning ever since. The 2024 festival was another step along that journey.