

# Habitat Revolution

Help for  
the Insect  
Apocalypse

BY KATHY MORRISON

Caterpillars are extremely picky about what they eat.

Why should you care? Because each caterpillar is destined to become juicy bird food — or a beautiful butterfly or moth. Humans who worry about pollinator decline, birds, or biodiversity in general need to be concerned about the availability of caterpillar food.

Here's the dietary restriction: Native caterpillars need to eat local native plants, the flora that have co-evolved with them. Some of them rely on just one or two species for food. If that plant is unavailable, the food chain is interrupted through several levels, and California's rich biodiversity becomes poorer.

Above: A monarch caterpillar (*Danaus plexipuss*) feeds on a showy milkweed (*Asclepias speciosa*). Photo: Jim Wadsworth

Top: A monarch butterfly (*Danaus plexipuss*) rests on a leaf of a western sycamore (*Platanus racemosa*). The monarch is native to California but disappearing rapidly throughout its range. Photo: Dennis Mudd

A new feature on [Calscape.org](http://Calscape.org), the CNPS native plant database, helps address the challenge with host plant information for more than 1,400 species of Lepidoptera (butterflies and moths). People can search by butterfly or moth species, by address, or by plant.

### Lists of native 'Leps' and more

For example, a resident of Ojai will find a list of 169 butterflies and moths native to that location, from the monarch butterfly (*Danaus plexippus*) to the *Acrionicta othello* moth, with most names accompanied by color photographs. Maps of the species' range also open up. When users click on a species name, they see names and photos of likely host plants. In Ojai, for instance, there are three native milkweeds for the monarch and one native host plant, laurel sumac (*Malosma laurina*), for the moth.

Dennis Mudd of Poway developed Calscape to aid in the restoration of native flora in California's landscapes, donating the website to CNPS in 2015. He hopes this new feature will increase awareness of the specific food needs of native pollinators, especially the state's Lepidoptera.

"I think it's a great tool. If we really care about Leps, and get the word out, maybe we can save some species, especially monarchs," he said. "But it also shows how critical



A sara orangetip butterfly (*Anthocharis sara*) pauses on black sage (*Salvia mellifera*), a California native but not a host plant for the butterfly. Photo: Dennis Mudd

native plants are, not just for people who love plants but also those who love animals."

"This is the whole thing that has been missing," says Chris Lewis of the CNPS Sacramento Valley Chapter and director of Elderberry Farms, the chapter's native plant

Calscape users can select the Butterflies tab on the top menu to browse or search more than 1,400 species of butterflies and moths.



The El Segundo blue butterfly (*Euphilotes battoides allyni*), an endangered species, lands on its host plant, a sea-cliff buckwheat (*Eriogonum parvifolium*). Photo: Ann Dalkey

nursery. “For some time, birders have been focused on things like water sources and seeds and berries, but too little has been said about caterpillars.”

Caterpillars are crucial bird food, Lewis notes. “Doug Tallamy’s research has shown that just one clutch of chickadees needed 9,000 caterpillars in six weeks.”

Tallamy, professor of entomology at the University of Delaware, has been at the forefront of research on the specialized relationships between native plants and insects. “If you care about the collapse of butterflies and other pollinators, this is a simple tool you can use to help in a very real way,” he says of the new Calscape feature.

In his upcoming book “Nature’s Best Hope,” excerpted on Calscape, Tallamy writes:

“To improve your yard’s ability to support life, you have to use the plant species that are good at passing the energy they have harnessed from the sun to animals.”

#### Fast-tracked and accessible to all

The new Calscape feature came together in just a few months, Mudd says. A user of the website, Bridget Kelly, inquired whether it was going to support host plant data. She then volunteered to help set it up. “We got a lot of help from her,” Mudd notes.

The Calscape team mined data, range maps, algorithms and photographs from numerous sources, including the (London) Natural History Museum’s of the World’s Lepidopteran Hostplants, UC Berkeley’s Jepson Herbarium as well as the Essig Museum of Entomology, the National Wildlife Federation’s Native Plant Finder, the Calphotos website and Tallamy’s own university lab. Reusing the Calscape setup for plants helped speed things along.

“The data are out there; they had never been aggregated,” Mudd says.

The listings for host plants include names of nurseries, seed stores, and other plant sources for gardeners. The default listing for the host plants is by popularity, Mudd notes. “We make it pretty easy to find the plants you want.”

### A sense of urgency

“We need more local native plants everywhere,” Lewis emphasizes. She and other volunteers from the CNPS Sacramento Valley Chapter are developing a project they call Homegrown National Park, a concept made popular by author Richard Louv (“Last Child in the Woods”) and Tallamy. They hope to engage the public in taking quick simple, action to help avert extinction, right here at home. “We’re not telling you to take out your favorite gardenia, but maybe you can put five local native plants in a corner. It’s just about expanding habitat.

“Every community can focus on its five most ecologically important plants. It’s probably always going to be an oak, a Ceanothus, a Baccharis.”

Calscape already is a valuable tool for park managers, urban managers, landscape designers and landscape architects, as well as gardeners all over the state, Mudd says, with 2 million unique users tallied. “We’re getting enough momentum to make a difference now,” he says.

### Not just about butterflies

The endangered monarch butterfly has become the poster species for what’s been dubbed the “insect apocalypse,” but Mudd believes we can still help the monarch. “Milkweed is amazingly effective at attracting and supporting monarchs,” he says. “I’ve counted close to 100 monarch caterpillars this summer in a small milkweed patch in my garden, and seen a steady stream of monarch butterflies passing though.”

### Boosting habitat in the neighborhood

Not far from the busy avenues of Torrance, Calif., the CNPS South Coast Chapter maintains the Point Vicente Interpretive Garden, a refuge for wildlife and humans alike. Located in Rancho Palos Verdes, the ocean cliffside garden is home to hundreds of butterfly host plants, including sea-cliff buckwheat (*Eriogonum parvifolium*) for the El Segundo Blue Butterfly.

Two years ago, the chapter along with CNPS garden ambassador Ann Dalkey created the Patch Habitat Program to improve habitat for the El Segundo Blue Butterfly and other local native butterfly species. Volunteers planted hundreds of host plants across the community, including those in the Point Vicente garden. Today, hundreds of students and neighbors visit the garden each season where they can take tours, read educational signage, and experience a native habitat garden firsthand.

“It’s about finding the sweet spot between landscaping and creating habitat,” notes Cris Sarabia, a CNPS board member, co-founder of Flora y Tierra in Long Beach, and an active member of the South Coast Chapter. “People want to have something beautiful in their landscapes, something to make you feel inspired as you step out the door every morning. We can do that, and we can also create much-needed habitat at the same time.”

The Point Vicente Interpretive Garden in Rancho Palos Verdes. Photo: Megan Wolff



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Milkweed (*Asclepias*) includes 14 native species in California. These range from the familiar narrow-leaf milkweed (*A. fascicularis*), native of most of the state, to serpentine milkweed (*A. solanoana*), which grows only in the North Coast ranges from Lake Berryessa north, and skeleton milkweed (*A. subulata*), found in southeast California's desert terrain. Once established, milkweed easily reseeds, Mudd notes.

Lepidoptera also covers moths, which are pollinators, but unlike butterflies have an image problem. "They are a little harder to love," Mudd notes of moths. "But they are bird food — that's how you have to sell it. Ninety percent of bird species depend on caterpillars."

Another image problem that gardeners have to get past if they want to help Lepidoptera: the idea of the perfect, untouched plant. Caterpillars chew leaves, after all.

## An urban community learns about natives

San Francisco, a built-out city of just 49 square miles, does not have much native vegetation left, but it does have a Biodiversity Resolution, passed in 2018 by the Board of Supervisors.

"A resolution is an aspiration, the way San Francisco is doing it," explains Eddie Bartley, vice president of the CNPS Yerba Buena Chapter. The city departments had a year to decide how policy changes would move toward the spirit of biodiversity. The problem? City staff wasn't sure how to translate a desire for biodiversity into something real. "We've been on an education push ever since," he says.

With projects such as the renovation of Golden Gate Park's Middle Lake also coming up, chapter representatives have been at two or three meetings a week with city staff members and the several commissions that advise city departments. "They like what we say, but moving it to the ordinance phase is more difficult," Bartley says.

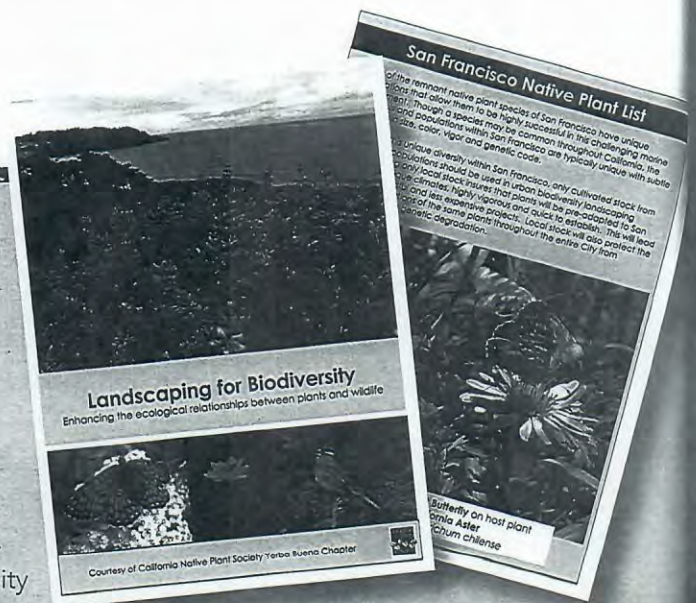
The chapter also is working to change what Bartley calls "the Arbor Society mentality" in S.F. that pushes to plant more street trees — even though most of the current sidewalk trees are stressed-out conventional landscape choices. (Just 1 percent of S.F. trees are natives.) Commercial landscape design in the city is based entirely on ornamentals, with no awareness of the benefits of local options, he says. To counter this mindset, the Yerba Buena Chapter has created a sidewalk-strip planting guide with a list of recommended local natives. The chapter also provides a native butterfly host-plant list and a general plant guide for commercial landscapers.

"It's very much a learning thing," Bartley says of the chapter's efforts with government and non-government organizations. "Just saying 'native, native, native' isn't gettin' it." But, he notes, "We're feeling like we're making a difference."

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"If you don't see chewed leaves, you're probably not going to see birds, see butterflies, see life," Mudd notes. And chewed leaves do not present an issue for the plant, if it's well established, he adds. "We're really talking about sterile environment vs. natural environment," he says.



The CNPS Yerba Buena Chapter in San Francisco has repackaged its horticulture information into a local, biodiversity-focused landscaping guide.



## Natives on a waterfront

Sausalito's waterfront Bay Model Visitor Center now includes Marin County's first public California native plant garden.

The garden came about through the efforts of CNPS Marin Chapter members Charlotte Torgovitsky and Laura Lovett, as well as many Marin Chapter volunteers, working with Park Manager Chris Gallagher. The beauty of the site inspires visitors to plant their own native habitat gardens, chapter members report.

To read more on the Bay Model Garden, turn to Featured Garden, page 28.

The butterfly bed, looking toward the monarch section and waterfront. Photo: Laura Lovett

## To help nature, to help ourselves

The United Nations biodiversity report released in May underscores the urgent need for humans to rethink how they're treating the natural world. The report concluded that 1 million plant and animal species are on the verge of extinction, with alarming implications for human life as well.

But there is hope still, notes Robert Watson, a British chemist who served as chair of the U.N. panel that released the landmark study. "The report also tells us that it is not too late to make a difference, but only if we start now at every level, from local to global," he says.

Tallamy, on his website [bringingnaturehome.net](http://bringingnaturehome.net), stresses the importance of making residential and commercial landscapes part of the natural ecosystem:

"Though vital as short-term refuges, nature preserves are not large enough to meet our ecological needs, so we must restore the natural world where we live, work and play. Because nearly 85 percent of the U.S. is privately owned, our private properties are an opportunity for long-term conservation if we design them to meet the needs of the life around us."

And the insect world is an ideal place to start. "Everyone needs to understand the plight of insects right now," Lewis says. "Not next month, not next week. There are things we need to be doing now to help them:

1. Don't use pesticides.
2. Reduce competition from invasive weeds.
3. Plant more local native plants everywhere: your yard, your homeowners' association or apartment complex, your church, your kids' school, your granddaughters' school. Plus, encourage your parks, developers, water districts, and local governments to do the same!"

Or, as Tallamy has put it: "Garden as if life depended on it."

## Demonstrating the value of natives

What if you've never seen a native plant garden? How confident would you be in planting one?

The Alta Peak Chapter, in Tulare and Kings counties, is working with the Tule River Parkway Association to establish 18 native plant demonstration gardens along the Tule River through Porterville. Cathy Capone, a CNPS board member and liaison to the CNPS Chapter Council, says these gardens will demonstrate to homeowners what a native plant garden looks like while providing much-needed habitat for pollinators and birds.

In addition, the chapter is updating its plant palette to advise the city of Porterville on street tree selection. Capone says the city is open to revising its plant list partially because of the high percentage of street trees that are dead or dying.