

Stewardship - Education - Advocacy

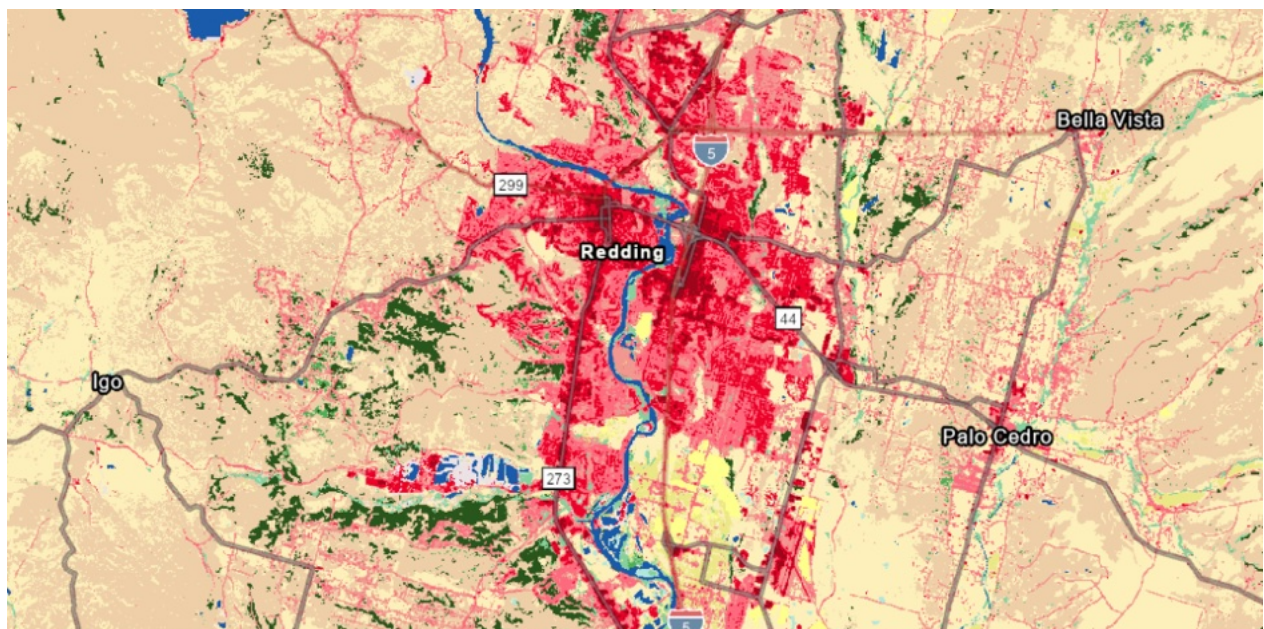


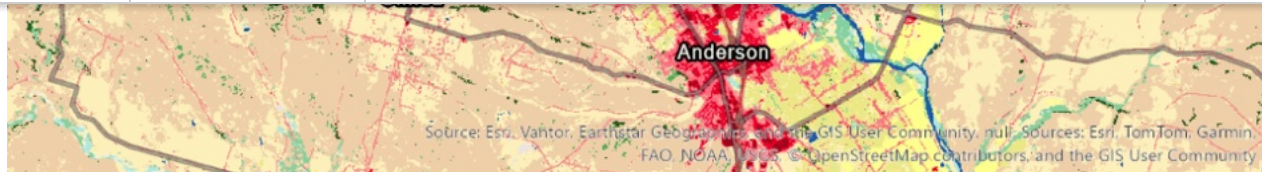
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July Newsletter

What's New

The Urban Heat Island Effect





By Kat Camplin

Redding Nights Are Staying Hot. That's a Problem We Built.

Redding has always been hot in the summer. But the heat people experience in Redding is not only a product of weather and geography; how much of the ground is paved, how much tree canopy is left to shade it, and how much open land has been replaced by rooftops and asphalt all affect how much heat the city absorbs during the day and how long it holds onto that heat after dark. Over the past four decades, Redding's land cover and tree canopy have both changed in ways that make the city hold more heat than it used to.

How Heat Gets Trapped

Anyone who has walked across a parking lot at dusk knows the feeling: The sun is down, but the ground is still radiating heat. Pavement, concrete, and rooftops soak up solar energy all day and stay hot for hours after dark. Pack enough pavement into one area, and the air above it never gets a chance to cool down. Open ground releases its heat. A city full of hard surfaces holds onto it. That difference between developed land and open land is called the urban heat island effect.

Trees counter that heat in two ways.

Trees counter that heat in two ways. Tree canopy shades the ground and keeps pavement from absorbing as much solar energy during the day. Tree roots pull water from the soil, and the leaves release that water as vapor, cooling the air around the tree the same way sweat cools skin. When trees are cut down and the ground is paved over, both of those cooling processes stop, and the pavement absorbs and radiates heat with nothing working against it.

What Happens When Nights Don't Cool Down.

Hot days are hard on the body, but most people recover better when nights cool down. Cooler nights allow body temperature to drop and give the heart and blood system time to recover. When nights stay warm, especially above 70 Fahrenheit, sleep tends to be less restorative and the body remains under strain. A single night is uncomfortable, but repeated warm nights can become a serious health stress, especially for older adults, people with chronic conditions, and anyone without effective cooling.

that cooling slows down, so stream temperatures remain higher. For cold-water fish like salmon, warmer water means less dissolved oxygen and more physiological stress. Sustained warmth can also increase the risk of algae growth and low oxygen events, which can harm fish populations.

Just like humans, plants breathe and burn energy, and when daytime heat makes them work too hard, cool nights let them rest and save the food they created. Normally, moist night air allows the plants to finally soak up moisture through their leaves and roots. For some plants, if daytime air is too hot for them to open their pores, they wait until the cool night to open up, breathe, and catch moisture safely. If plants can't do that, they can't recover from the heat and they become dead and drying vegetation that is fuel for fire.

Two Problems at Once

Climate change is raising baseline temperatures in inland Northern California, and Redding cannot solve that alone. But the urban heat island effect is a separate problem that Redding built on top of the climate trend. A warming climate sends more solar energy into the valley. A landscape full of pavement and thin tree cover traps more of that energy overnight. The climate trend makes the local problem worse, and the local problem makes the climate trend hit Redding harder than it would hit a place with more tree cover and less asphalt.

What Can Actually Change

Redding cannot control the climate, but Redding can control what the local landscape looks like. Trees in places like Shasta County are essential infrastructure, not decoration.

The most effective steps are not complicated. Protect the large, established trees that are still standing, because mature trees provide far more cooling than newly planted ones. Plant new trees where the heat is worst: along streets, in parking lots, around buildings. Stop approving large expanses of dark pavement with no shade. Use lighter-colored paving materials that reflect sunlight instead of absorbing it.

Every acre Redding paves adds heat. Every tree it keeps prevents it. Redding has been adding heat for 40 years. Changing how the city builds going forward is how that pattern starts to reverse.

The full feature on ecoshasta.org tracks Redding's land cover and tree canopy decade by decade from 1985 to 2023, with the maps that show it happening.

For Cooling Resources and Heat Safety please visit the [County's website](#) for more information and announcements

Get to Know Your Watershed

**Species of the Month:
Chinook Salmon, *Oncorhynchus tshawytscha* (Part
2):
Return of the King**



Photo by Jane Work

by Stacey Alexander

As promised, here is the second part of everything you ever needed to

may think that all these runs are created equal, but this is not the case. Winter-run is one of our most important runs, in that it is the most endangered out of the four runs. It was officially listed as endangered back in 1989, and even had an all-time low of only 186 spawners returning to the Sacramento River in 1993.

You may be asking why this run of salmon is struggling so much... the short answer is Keswick and Shasta dams, but the long answer is a little more complicated. Looking back to their life history, we know that winter-run spawn all the way until July, leaving their nests to incubate for three months after in the hottest months of the year. Salmon eggs need water temperatures to be between 42.5 and 57.5 degrees Fahrenheit to incubate. This made sense as a life strategy when these salmon were able to access the cold waters of the upper Sacramento River, but now they are cut off from those waters. This has led to United States Bureau of Reclamation being required to build a Temperature Control Device (TCD) in the early 1990's. The TCD is a large structure situated on the inside face of the dam that allows water from different depths to pass through the hydro-power facility. Basically, this device pulls colder water from the bottom of Shasta Lake and releases that cold water from the Shasta Reservoir.

Although the creation of the TCD helped winter-run populations recover in the 1990's, it's not a perfect solution. The amount of cold water in Shasta Lake is limited, and many factors can cause it to run out. For example, back in 2012-14 drought years, the California Department of Fish and Wildlife (CDFW) estimated that in 2014 and 2015 approximately 95% of the juvenile winter-run Chinook salmon production was lost when temperatures on the spawning grounds exceeded the goal of 56°F, after the cold-water pool was depleted.



The TCD from U.S. Bureau of Reclamation

This information may seem like a bummer, but wait! There is hope! The past few decades have led to some really interesting science being used to improve the winter-run population. First is the construction of Livingston Stone National Fish hatchery, the only hatchery on the planet that is rearing winter-run salmon. Adult salmon are captured at Keswick Dam and transferred to Livingston Stone, where the fish are genetically tested to confirm their run type and to minimize inbreeding by assessing relatedness. Second, in partnership with Livingston Stone, CDFW scientists are researching reintroducing hatchery winter-run salmon into other tributaries. Currently there is already a well-established plan to reintroduce winter-run in Battle Creek and the McCloud River, since both will offer cool water and habitat needed to maintain the populations.



East Sand Slough, a side channel restoration project photo from Resource Conservation District of Tehama County

Additionally, there have been massive efforts to restore habitat within the Sacramento River to create and improve spawning areas by not only adding spawning gravel to the river but also restoring those spawning areas. There are also efforts to create more rearing habitat by creating side channels on the Sacramento River. These side channels create slower flow areas where juvenile salmon rest, as opposed to the fast flow within the mainstem river. Some of these projects also reconnect the channels to the historic floodplain that, pre-dam, the salmon would have had access to. Floodplains allow for baby salmon to grow bigger faster. There are also significant efforts to restore Battle Creek, by not only removing historic dams that were once fish barriers, but also restoring sections of the creek to allow for better salmon habitat (side channels and floodplain access).

Sources:

"Chinook Salmon." California Department of Fish and Wildlife Home Page, wildlife.ca.gov/Conservation/Fishes/Chinook-Salmon. Accessed 15 June 2026.

"Chinook Salmon (Protected)." NOAA Fisheries, 16 Mar. 2026, www.fisheries.noaa.gov/species/chinook-salmon-protected.

Kratville, Daniel, and Mary Olswang. "Winter-Run Chinook Salmon." Conservation, 10 Apr. 2018, wildlife.ca.gov/Conservation/Fishes/Chinook-Salmon/Winter-run.

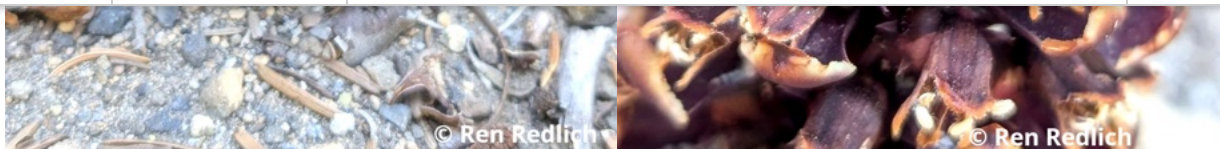
Species of the Month: California groundcone, *Kopsiopsis strobilacea*



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I met this plant for the first time while participating in a Community Science project to track biodiversity within National Forests. Along with a group of other volunteers, I was up near Ash Creek Butte in Mt. Shasta, CA. Walking down a forest service road, I scouted ahead to find a spot with enough clearance to enter the thick wall of snowbrush ceanothus (*Ceanothus velutinus*). Finding a path good enough to tromp through without too much effort, I waited for the group to catch up. Our leader fell behind, and then excitedly jogged up to tell us why. They asked if we had seen the pinecones along the road. Being in the middle of a National Forest with many conifer species, the answer was, of course, yes. Then they revealed that those weren't pinecones at all... they are plants called "groundcones." The bracts of this plant resemble the cone scales of various conifers.

These dark purple to reddish-brown plants grow out of the ground and produce yellow and purple flowers. They have no green parts. Simply put, plants are green because they rely on photosynthesis to live and grow. Then how do these plants extract nutrients if not through the sun? The answer is that they are holoparasites, which fully depend on another host species for survival. This particular species penetrates and wraps around the roots of madrone and manzanita with root-like structures called haustoria. Humans call plants like these "parasites", because they take the water and nutrients of other species to survive, but there is no scientific evidence that these plants harm their host.

California groundcones are native to California and Southern Oregon, where they grow in forests and chaparral shrub-land. They feed off Pacific madrone (*Arbutus menziesii*) and manzanita species (*Arctostaphylos*). Both these host species have far-spreading roots, so groundcones can be found in areas where the host species isn't immediately apparent. If you want to see a California groundcone in Shasta County, they have been observed at Whiskeytown Lake, Shasta Lake, and the area around Shingletown, CA. If you feel like taking a summer road trip, they are most commonly found in the stretch from Trinity National Forest up to Umpqua National Forest.

Upcoming Events

Adopt-A-Swim Beach Program

**August (day TBA),
8am - 10am**

Whiskeytown NRA has created a program to keep beaches clean over the summer! SEA will be responsible for one of the three 'swim beaches' that Whiskeytown Lake has to offer. So far, we have picked up 20 lbs. of trash. Be sure to keep checking our social media pages for our clean-up days!



**Click Here to Volunteer for the Adopt-A-Swim
Beach Program with SEA!**



There Is No Planet B Book Club

July 19, 2026

Our exploration of Ayana Elizabeth Johnson's *What If We Get It Right?* continues on July 19 from 2:15pm-4pm!

Join us for conversations about what's possible, biophilia, nature as teacher, reworking food systems, design justice, and surely much more. To receive meeting details and additional resources please join our TINPB book club contact [list](#) or contact juliet@ecoshasta.org.

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Community Education Recap

The Extraordinary Caterpillar

By Juliet Malik

We truly had a blast at our screening of [The Extraordinary Caterpillar](#) film at the Riverfront Playhouse on July 12. Along with us were representatives of the Western Shasta Resource Conservation District, the Shasta Chapter of the California Native Plant Society, and Ghost Pine Native Plant Nursery, set up in the lobby hosting a plethora of information, plants and even an in-progress live painting of a monarch butterfly!

After the film we had an entomologist, two native plant experts, a hobby lepidopterist, and a wildlife biologist answer questions from the audience to help us contextualize the film's information and message locally.

For those who were unable to attend, here are a few of the highlights from the film:

- Caterpillars (the larval form of moths and butterflies) come in an astonishing array of colors, sizes, textures, shapes and designs.
- Some are so amazing at camouflage that it's unlikely you will ever notice them – looking at you, twig mimics!

hail the mighty moth!

- Beware of the fluffiest of the caterpillars, as they tend to be the most dangerous. Lurking beneath their seemingly plushie exterior are often venomous barbs that will mess you up! Admire them with your eyes and compliments, but maybe don't pet them.
- Caterpillars are the engines of the food web, converting tremendous amounts of plant matter into protein for birds and other animals. Fun fact: A single nest of chickadees will consume 6000 - 9000 caterpillars to get them to the fledgling stage of development.

Now for the bummer news (sorry!). Caterpillars, along with many other insects, are in severe decline due to habitat loss, overuse of pesticides (especially the neonicotinoid variety), invasive plant species, and climate change. Remember, these guys are the engines of the food web, so this is troubling news for other animals, including us.

The good news is there are some easy and joyful things we all can do to prevent the collapse of the food web:

1. Plant supportive native plants in your yard, especially keystone species like oaks, willows, and native cherries (*Prunus* spp.). Removing some lawn to make space for these plants is a win-win, as they are drought tolerant once established so you'll save on your water bill too.
2. Stop using pesticides, and when buying plants from a nursery, make sure they have not been treated with neonicotinoids. Shift your perspective to see the munched holes in your plant leaves as a good thing – you're supporting wildlife!
3. Leave the leaves! Caterpillars and other insects need the fallen leaf litter for winter protection, and many eat dead leaves as well as green ones.
4. Remove invasive plants that are choking out the native ones.
5. Hail the mighty moth by turning off your outdoor lights, or putting them on a motion sensor. This includes those charming string lights too – great for a party, but not for leaving on every night.

For more information on protecting caterpillars and biodiversity check out [Homegrown National Park](#).





Be a Voice for the Environment

Do you care deeply about protecting our local environment and the wildlife, forests, rivers, and public lands that make it special? Join our board and help guide advocacy efforts that shape land use, conserve natural habitats, and preserve spaces for recreation and enjoyment. Bring your ideas, energy, and passion to make a real difference for the environment and your community.

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