July Newsletter from Shasta Environmental Alliance

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Shasta Environmental Alliance

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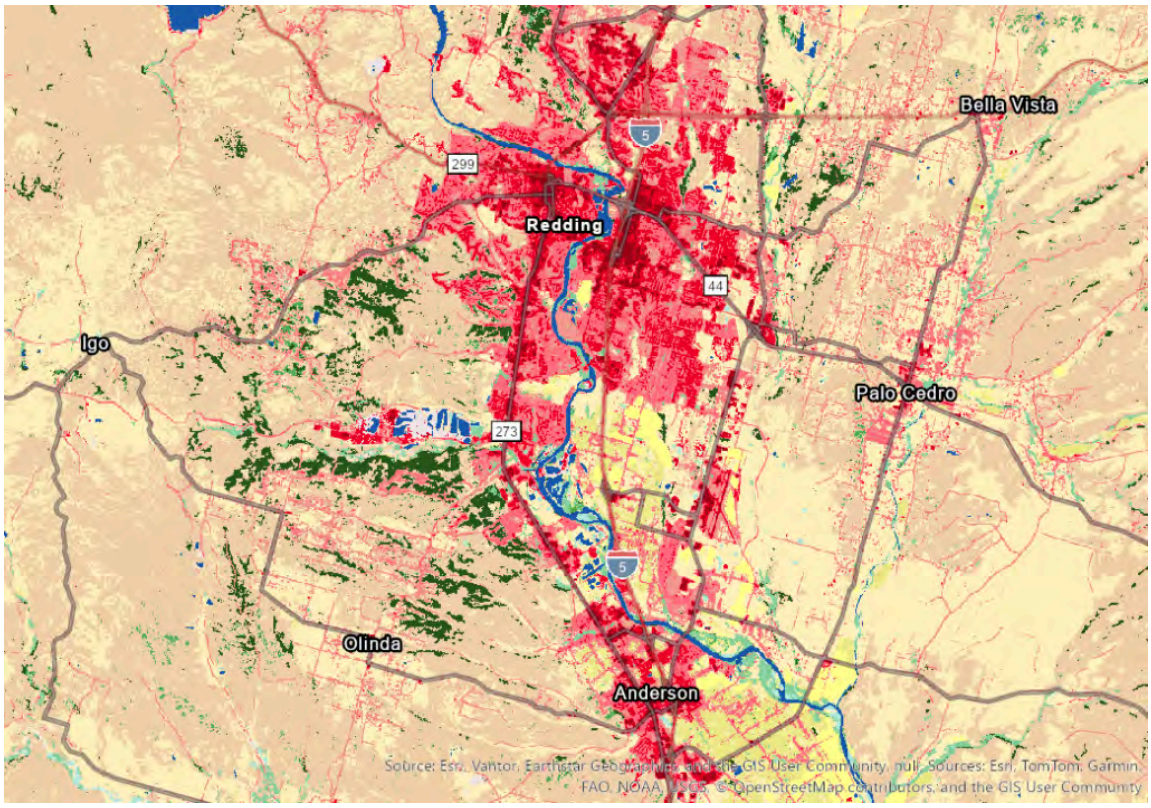
July Newsletter

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and geography; how much of the ground is paved, how much tree canopy is left to shade it, and how much open land has been replaced by rooftops and asphalt all affect how much heat the city absorbs during the day and how long it holds onto that heat after dark.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.

Water systems are affected in a similar way. Rivers usually cool at night because cooler air pulls heat out of the water. When nights stay warm, 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