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ANIMALS

Goats may help prevent wildfires in California as drought worsens

The voracious herbivores are being deployed to clear invasive plants throughout wildlands as another catastrophic fire season looms.

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Goats leased by Sage Environmental Group munch on vegetation in Glendale, California, in July 2021.

PHOTOGRAPH BY ROBYN BECK/AFP VIA GETTY IMAGES

BY CHRIS IOVENKO



ADV

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WHITTIER, CALIFORNIA – From a sunbaked peak in the Puente Hills Preserve, the panorama stretches from the skyscrapers of downtown Los Angeles to the edge of the fog-blanketed Pacific Ocean. In between, rolling green and brown hills are dappled yellow with blooming black mustard, an invasive plant that poses a mounting threat in California.

Native to Eurasia, the black mustard plant outcompetes native vegetation because it grows profusely and its roots generate biochemicals that stop the seeds of other plants from germinating. Its growing season makes it a particular menace: It thrives in the spring and can grow to eight feet high, only to die and turn to dangerous tinder by early summer.

The buildup of dead vegetation in parkland and wilderness areas, along with the effects of climate change, has accelerated the trend of devastating wildfires in California. In 2021, the state lost more than two million acres of wilderness to wildfire, and megablazes fires that burn more than 100,000 acres are becoming increasingly common. Another dry winter and the continuation of the worst drought in at least 1,200 years means the 2022 fire season could be a catastrophic one, meteorologists say.

Prior to fire seasons in the past, land managers traditionally relied on herbicide and human labor to thin plants and brush to reduce fuel load, the amount of flammable material that can burn in a fire. But access to

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traditional clearing practices can leave behind seeds that germinate the next year. ([Read how the western U.S. drought could last until 2030.](#))

That's why more people in California are turning to a four-legged solution: Goats. Deploying goats to clear land of vegetation is an age-old practice, but as wildfires worsen worldwide, places as diverse as Greece, Australia, and other parts of the U.S., such as Arizona and Colorado are embracing the herbivores as important tools for wildfire prevention.

For the past six years, Alissa Cope's California company has contracted out goat herds to various clients who need the animals to chow down on unwanted vegetation and invasive plants.

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“When we got started it was for habitat restoration, and I just got tired of dumping gallons of herbicide on everything,” says Cope, owner of the [Sage Environmental Group](#), a company that specializes in environmental planning with a natural resource focus.

“When goats eat the seed, it goes through their digestive tract, and it becomes nonviable. It doesn't grow after it comes out the other end, which

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On a clear spring morning in Puente Hills Preserve, a 3,800-acre park situated in the lower Transverse Ranges, a hundred goats of varying colors and sizes are milling about in a large pen. When the gate opens, the animals trot out and immediately devour the surrounding weeds and black mustard, which Spain's Franciscan missionaries may have brought with them in the 1700s.



Non-native black mustard plants bloom throughout Griffith Park in Los Angeles, California. The plants die off in summer, creating dangerous fuel for wildfires.

PHOTOGRAPH BY MARIO TAMA / GETTY IMAGES

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fuel load and invasive plants. The pilot program is to investigate whether the herbivores can lower the risk of wildfire in the preserve.

Trevor Moore, a pre-fire engineer who helps arrange and coordinate the CAL FIRE grants in Los Angeles County, hopes that this program will work as a successful model for future initiatives.

“We would love to have a successful fuels reduction program that is environmentally low impact, so I can show it to other communities as a good example to follow,” says Moore. “It could really help us protect life, property, and the environment.”

Goats at work

One of the oldest domesticated animals, goats are adventurous and curious eaters with iron-clad stomachs. They can eat plants toxic to other kinds of livestock. They also are hardy and can climb steep hillsides and terrain inaccessible to other animals. (*Read how goats can perceive each other's emotions.*)

The roughly 300 goats Cope owns are deployed at various Los Angeles and Orange County sites, mostly in the springtime, to limit the growth and spread of invasive plants prior to fire season. Her company requires a 10-acre minimum and doesn't work on residential property.

From the company's south-central Los Angeles operations center where they're housed, the goats are transported to a work site, usually for about a month. Before their arrival, the site is enclosed by a temporary electric fence that's periodically repositioned so that the goats gradually cover and treat a very wide area.

There are about a dozen companies that supply grazing goats in Southern

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acre. The city of Yorba Linda commissioned Sage for a similar pilot project at a cost of about \$13,000.

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Many companies also follow the traditional practice of hiring a person—called a goatherd—to live nomadically with the goats.

To watch over the working goats and protect them from predators, such as coyotes and mountain lions, Cope trains both Great Pyrenees and Komondores, two dog breeds that have been used for livestock management for hundreds of years.

The goats at Puente Hills graze under the protective gaze of two Komondores, sometimes known as mop dogs because of their long white dreadlocks. Anyone who gets too close to the electric fence is met by a barking 120-pound canine, making it easy to see why even mountain lions steer clear of the herd.

Once finished, the goats are transported back to the operations center, where their hooves and coats are cleaned to ensure that remnant seeds from invasive plants aren't accidentally transported to the next site.

Protecting native plants

Many native plants grow slowly, are adapted to live in specific environmental conditions, and are vulnerable to extremes, such as prolonged droughts. But invasive plants often thrive in dry conditions and reproduce quickly, so climate change is exacerbating their spread, says

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Council, a nonprofit that seeks to protect California's environment and economy from invasive plants.

"They outcompete other plant types and can create monocultures," Burger says. "It can become a self-perpetuating cycle."

Burger agrees that goats can effectively clear areas overgrown with invasive plants and potentially give native species a chance to flourish. But she cautions goats must be carefully monitored and controlled, too. (*Read how invasive grasses are overwhelming U.S. deserts.*)

"Goats are like an indiscriminate brush cutter; they will chew on any vegetation that they like," says Burger. "So, if you have a habitat that you'd like to keep, you are going to need to defend that or be hyper-vigilant about how long you keep the goats on that site."

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Do goats actually help?

Studies looking at whether goats' grazing can reduce the severity or impact of wildfires are scarce, particularly in California. But some research suggests they're beneficial.

In Arizona, some scientists have observed that land cleared of excess vegetation by goats acts as fire breaks and can stop wildfires in their tracks.

A recent study in the journal *Forest Ecology and Management* found

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such as pine needles or grass. These fine fuels are the most likely to form a continuous bed of fire, so controlling and containing them is crucial to limiting the spread of wildfires.



Goats from Indacochea Sheep Ranch eat grass near a home in Laguna Beach, California, part of the city's strategy to reduce wildfire risk.

PHOTOGRAPH BY MINDY SCHAUER/DIGITAL FIRST MEDIA/ORANGE COUNTY REGISTER VIA GETTY IMAGES

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And in Greece, which has a Mediterranean climate like that of California, grazing of both goats and sheep seems to maintain a less fire-prone environment.

“Grazing is the most widespread vegetation management we have in California,” says Lynn Huntsinger, professor of rangeland ecology and management at the University of California, Berkeley.

“We really need to think about how to use it better and more strategically. We have this tool and we would be crazy not to use it as much as we can.”

Anecdotally, Cope has observed her goats have positive, long-lasting effects on the areas they graze.

“We found it after two years of grazing, we change the ecology” of a site, she says. “It goes from being really crazy, out-of-control noxious weeds to being low-growing grasses.”

A more diverse approach

However, some land managers contend that goats are not that useful in reducing fuel load and that applying them on a wider scale is impractical and expensive.

“In terms of managing fuel loads, mowing is probably just as effective as grazing except on steep or rocky terrain,” says Robert Freese, program manager for the Irvine, California-based nonprofit Irvine Ranch Conservatory, in an email. “Mowing is also less expensive than grazing except when conducted on a very large scale.”

That’s in part why Freese and others believe the best approach to reducing fuel load is multi-faceted: Mixing goat grazing, manual brush clearance, prescribed burns, and herbicides. *(See what it’s like to be inside a*

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Back at Puente Hills, the goats have worked their way down a precipitous hillside and are now in a swale, happily munching away at a dense thicket of mustard flower. High above, a distant redtail hawk drifts on the warm breeze, black against pale blue sky.

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Walking back to the truck, Cope points to a thin plume of smoke rising from the foothills miles away.

“Maybe it’s a structure fire,” I say, almost hopefully.

“No,” says Cope. “That would be black smoke. That’s white. A wildfire.”

It’s a grim reminder that California’s fire season, which starts earlier and grows fiercer every year, is already upon us. ▣

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