

Meriwether Lewis would be proud, helping Lewis's namesake woodpecker in the pine forests of central Oregon

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Published in Living Bird Magazine, Cornell Lab of Ornithology

<http://www.allaboutbirds.org/Page.aspx?pid=2141>

Walking in sandals across the ashy volcanic landscape, Diane Kook approaches nest box number 12 to check on a brood of hissing nestlings. The box houses one of the 16 families of Lewis's Woodpeckers that she is monitoring at the site of the Aubrey Hall burn—a blaze that scorched a ponderosa pine forest southwest of Bend, Oregon, two decades ago. Kook heads a group of volunteers with the East Cascades Bird Conservancy (ECBC) who have brought citizen science to local woodpecker conservation. She and her team have made up for the loss of standing snags in this burned forest by attracting Lewis's Woodpeckers to nest in artificial boxes, an unprecedented achievement with promising implications for one of the continent's most sensitive and specialized woodpecker species.

In the summer of 1990, a stand-replacement fire transformed 3,000 acres of forest into a field of crispy black spires. Burning between the city of Bend and the Deschutes National Forest, the blaze also destroyed 22 homes and forced 3,000 Bend residents to evacuate. Thousands of burned snags remained standing after the fire, and the site quickly became a favorite woodpecker-viewing spot for local birders. That winter, local Christmas BirdCount (CBC) participants tallied record numbers of Downy, Hairy, and Black-backed woodpeckers in the Aubrey Hall burn area. Black-backed Woodpeckers frequently show up after forest fires, and 16 of them were counted that year—an Oregon CBC record that stands to this day. It was also the first time in the Bend count's 30-year history that the species had been seen.

Through the 1990s, woodpecker populations in the burn transitioned from fewer *Picoides* species (such as Hairy, Downy, Black-backed, and American Three-toed woodpeckers) to increasing numbers of Northern Flickers and Lewis's Woodpeckers, a typical occupation pattern after a high-intensity fire. But in the following decade, the small but prolific Lewis's Woodpecker population seemed to be declining in numbers, according to anecdotal reports. The declines correlated with a decrease in the amount of standing dead timber in the area. Over several years, many snags had been blown down by the powerful mountain winds that come barreling down the east slope of the Cascades. Lewis's Woodpeckers depend almost entirely on snags for nesting, so the loss of these dead trees alarmed local birders.

The Flycatching Woodpecker

At the base of the eastern Cascades, a broad swath of ponderosa pine forest separates the expansive high desert from the montane forests that reach toward the crest of the mountains. These “yellow” pines form the eastern boundary of the region’s “Woodpecker Wonderland,” where 11 species of woodpeckers annually raise their young in mind-boggling concentrations. As one of the least woodpeckerlike and perhaps most enigmatic of the region’s woodpeckers, the Lewis’s Woodpecker faces an interesting ecological challenge. Throughout its range, the species requires a handful of primary habitat components, and if any of them is missing, local populations may disperse or dwindle. One of these limiting factors is an adequate food supply.

Unlike other woodpeckers, the Lewis’s spends most of its time fly-catching, sallying, and hawking for aerial insects. With its broad wings and specially adapted flight muscles, a Lewis’s Woodpecker can catch multiple insects in a single flight foray. Northern breeding populations typically disperse southward to winter in areas with abundant acorns or other mast, but even these birds regularly catch insects in the skies above the oak trees. Nonmigratory populations typically live in oak woodlands, where there are plenty of acorns and insects. Flying insects are particularly abundant over open woodlands, burned forests, and mature riparian zones, which are the Lewis’s Woodpecker’s favorite habitats.

Lewis’s Woodpeckers nest in cavities excavated in dead or dying trees, so the availability of snags is another critical limiting factor. But the bird lacks the specialized anatomy needed for heavy-duty excavating, so it typically occupies cavities created by other birds to raise its young. Some may occasionally excavate their own cavities in rotten trees, but far more often they just increase the size of the entrance hole and the volume of an existing cavity. They may even take over the nest site of another cavity nester, such as a House Wren or bluebird.

Mature riparian zones in the West often have large cottonwoods of varying ages and sizes, which provide snags and large snapped-off branch stubs for cavity nesters. Mature oak woodlands typically also have this important nesting component, and burned forests usually have numerous snags. All three of these favored nesting habitats often support several species of woodpeckers, which unknowingly help the Lewis’s Woodpeckers with their excavation work.

Fire, Insects, and Woodpeckers

The blackened snags in burned forests attract hordes of beetles during the first few months after a fire. These wood-boring beetles and bark beetles lay their eggs in the bark of the charred trees, and their larvae burrow into the cambium or behind the bark of the trees to complete their life cycles. These post-burn beetle infestations attract a cadre of woodpeckers that either specialize in or opportunistically exploit this abundant food source. Woodpeckers of the *Picoides* genus are the best adapted for stripping bark and boring into the boles of trees in search of beetle

larvae. Immediate inhabitants of burned forests typically include the Hairy, Black-backed, and American Three-toed woodpeckers, with other species in lower concentrations according to region.

The same adaptations that make these individuals good beetle hunters also make them the primary cavity excavators of newly burned forests. In the first few years after a fire, *Picoides* woodpeckers are typically the most common. Once the adult beetles have emerged from the dead trees, these birds move on to more recent burns or into unburned beetle-infested forests. The Lewis's Woodpecker, however, increases in number with successive years after a burn, exploiting both the increase in aerial insects each year and the abundance of cavities that were excavated by *Picoides* woodpeckers.

Persistence and Experimentation

In 2003, Diane Kook and friends at the ECBC decided to increase the number of nest cavities at the Aubrey Hall burn site by installing large nest boxes on three living trees that had survived the fire. Although Northern Flickers frequently use artificial nest structures, this had never been tried with the Lewis's Woodpecker.

To their surprise, early that summer a single pair of Lewis's Woodpeckers laid a clutch of eggs in one of the three boxes. Kook went to the nest site to photograph the birds' activities, but unfortunately, the birds were not there. After two more days of no activity, Kook opened the nest box and found that the eggs were gone. A handful of woodpecker species have been documented carrying eggs away from a nest cavity in their bills, usually in response to a disturbance. This behavior had never been documented for the Lewis's Woodpecker, however, so Kook and the others could only speculate about the fate of that single clutch.

Despite the mystery of 2003, the ECBC volunteers were excited about the results, and they installed four additional boxes the following nesting season. Nothing happened, so in 2005 they tried attaching ponderosa pine bark to the outside of five new boxes. Still nothing. Undaunted, the group installed yet another four bark-covered boxes in the early spring of 2006, bringing the total number of nest boxes to 16.

On a blustery day in late April 2006, a loose procession of small dark figures fluttered over Bend's southern horizon. Like clockwork, the Lewis's Woodpeckers had returned to Aubrey Hall. Their courtship and mate selection began in earnest, but 2006 would be different from the previous years. A month after returning from their southern wintering grounds, eight pairs of Lewis's Woodpeckers had staked out nest boxes. No one could predict whether these prospective pairs would abandon their clutches as the other pair had done in 2003. But soon enough, the raspy sound of Lewis's Woodpecker nestlings could be heard in seven of the eight boxes, and that summer, all seven boxes fledged at least one young.

Reeling from their successful season, the team installed another nine boxes in the burn, and in the summer of 2007, Lewis's Woodpeckers occupied 18 of the 25 boxes. All but two produced fledglings. The group's success continued the next year, with another 18 boxes occupied in 2008, all but two of which were successful, followed by another productive year in 2009, with 16 pairs occupying boxes and 13 fledging. Clearly, the technique is amazingly effective.

Diane Kook continues to play a custodial role in the ECBC Lewis's Woodpecker project. A nurse by profession and an avid birder, the project fits well with her lifestyle.

"I am a caregiver at heart, and this extends into my hobbies," she explained. "There are many bird species with declining populations, and with this project I can play a tiny role to help Lewis's Woodpeckers throughout the region."