Turf War Twist

Why mountain bluebirds have disappeared from western Montana’s valleys—and might never return.

By Renée A. Duckworth and Alexander V. Badyaev

IN FOR THE DURATION Secure in man-made nesting structures, western bluebirds no longer face the historical loss of nesting trees toppled by age and wind. The authors maintain that the boxes are good for this species in western Montana valleys but don’t benefit, in the long run, mountain bluebirds, which require a cycle of fire and new cavities to colonize low-elevation areas.
One morning in March 1999, just like every year for the previous 50 years or so, the late Joe Waldbillig—a cattle rancher and self-taught naturalist—was driving his pickup down the snowy road bisecting his western Montana ranch. Ranging in elevation from 4,000 to 5,000 feet, the ranch was a haven for mountain bluebirds, and every day through early spring Waldbillig drove around the valley looking for signs of the birds’ return as indication that the worst of winter was over.

But that morning, much to his surprise, he came across a bluebird species he had never before seen on his ranch: an industrious male western bluebird, inspecting nest boxes along the fence. It was a preview of momentous changes. In just five years, Waldbillig would witness on his ranch the near complete takeover of his study areas, which included the Wald-billig ranch, where we monitored these remarkable relationships. Since 1995 we have been investigating competitive interactions between mountain bluebirds and western bluebirds to understand the mechanisms underlying these dramatic changes in distribution. We learned that the historical cycle in which the two bluebird species displace one another every 20 or so generations has been disrupted. And the cause, ironically, has been the creation and maintenance of new nesting habitats.

**FIRE-INDUCED CYCLE**

Historically in Montana, western bluebirds and mountain bluebirds more or less co-existed in the forested river valleys west of the Continental Divide (another species, the eastern bluebird, lives east of Great Falls). The relationship worked like this: Bluebirds nest in tree cavities but, unlike woodpeckers, cannot make their own. After a wildfire, woodpeckers colonize burned areas, and, in less than a year, numerous cavities in dead and decaying trees provide prime nesting real estate for bluebirds.

The first to arrive are mountain bluebirds, more wide-ranging than westerns and able to find new habitat quickly. Then the more aggressive, but less mobile, western bluebirds arrive and outcompete the moun-tain bluebirds for nest sites. The mountain bluebirds retreat to the mountains, where they can survive but western bluebirds cannot, waiting for the next cycle of valley wildfire to re-set the process and start over. This went on for thousands of years.

But starting around the late 1930s, the western Montana river valley landscape changed more drastically than at any time since the last ice age. Many bottomland forests were logged and replaced with lush fields of wheat, alfalfa, and other crops. Forest fires were suppressed. Populations of western bluebirds, a species generally confined to lower-elevation valleys, were devastated by the loss of nesting cavities. By the mid-1940s they had nearly disappeared from Montana. Although mountain bluebirds also lost nesting sites, they had evolved to also use habitats at higher elevations, where forests remained largely intact.

In the early 1970s, conservation-minded Montanans began an ambitious effort to restore low-elevation bluebirds by nailing wooden nest boxes to fence posts. Over the next several decades, volunteers with the nonprofit group Mountain Bluebird Trails placed more than 8,000 nesting boxes in popular recreation areas. Then western bluebirds, which had retreated to bottomland refuges farther west and south, began to re-colonize their historical Montana range. Just as in times past, the two bluebird species were back.

**WITNESSING HISTORICAL PATTERNS**

What was so exciting for us as scientists was the opportunity provided by the bluebird boxes to observe the patterns of historical coloniza-tion and competition between the two species. It was as though the slate had been wiped clean and the birds had to re-form their relationships before our very eyes.

We documented how newly arriving western bluebirds started to rapidly replace mountain bluebirds in the valleys of west-ern Montana. In only 15 to 20 years, we watched many of our research sites go from no bluebirds, to 100 percent mountain bluebirds, to 100 percent western bluebirds. When we conducted a census of nesting bluebirds in a popular recreation area near Missoula in the early 1990s, all but one breeding pair were mountain bluebirds. By the early 2000s, the mountain bluebirds were gone, completely replaced with a much higher density of western bluebirds. Five years ago, the western bluebird was a rare visitor in the Blackfoot-Clearwater Wildlife Management Area near Ovando. Today the bird is common throughout the entire Blackfoot Valley.

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Breeding for a year or two to help their parents raise their young and then inherit a part of their territory (and thereafter nest near his birthplace), or disperse and compete for a territory in a new area. We found that the strategy a male pursues depends closely on his aggressiveness. Belligerent males are more likely to leave their home ground and disperse to new areas to breed, while peace-loving males remain in their natal population and eventually acquire a territory near relatives. 

Dispersing to new areas with a low density of other western bluebirds means that aggressive males acquire larger territories than they would have obtained in a crowded natal area. And nonaggressive males, despite being less competitive, can still obtain a territory from their parents and start a family of their own if they stay near their birthplace. 

What's more, the gentle males are superb providers, something essential during late-spring snowstorms that are common in western Montana and natural nesting cavities, created by wildfire, were replaced with thousands of more or less permanent nest boxes. Unlike natural cavities, nest boxes are a "constant habitat." With trees no longer dominating the valley floors as in centuries past and no periodized "re-setting" of the cycle by natural wildfires, the dynamics of coexistence between these two species have fundamentally changed.

**BOXED OUT**

Without question, nesting boxes have been a boon to bluebirds. Without them, we'd see very few western bluebirds in Montana. But they have had unintended consequences. The constant nature of the man-made structures, replaced by bluebird fans as soon as they break down, has disrupted the natural cycle of repeated colonization. Many lower-elevation valleys in western Montana are now home to stable populations of western bluebirds that have permanently replaced mountain bluebirds. For the time being, it seems that western bluebirds will dominate low elevations and most mountain bluebirds will be restricted to high country.

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