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**Birds in the black: Through following avian wildlife, a UM scientist has discovered that burned forests play a critical role in the health and diversity of the Western landscape**

***By MICHAEL JAMISON of the Missoulian***

WEST GLACIER - Back in the summer of 1988, when research scientist Richard Hutto started asking questions about the possible benefits of wildfires, the time wasn't exactly ripe for a reasoned discussion.

Yellowstone National Park was going up in smoke, national forests looked like war zones, and the public was clamoring for more wildland firefighters, more firefighting dollars and more protection from blazes. Headlines nationwide screamed out adjectives such as "torched," "blackened" and "destroyed."

"What I wanted to know," Hutto said, "was what in the world is a burned forest worth? Is there any value at all in all that destruction?"

With support from the National Geographic Society, Hutto set off on his search for answers, a search that would follow the unlikely path of the black-backed woodpecker. After visiting some three dozen sites burned in 1988, "one of the most interesting things that popped up right away was the fact that there was a whole lot of life out there," he said. "It wasn't the biological desert we were told it would be."

Hutto, like most of America, "was raised to believe all fires are bad."

The problem, he said, is that science and society never made the distinction between a fire that claims lives and property and a fire that burns across the West's wild landscapes.

"We use the same language for both," he said, and generally it's the language of the negative - fire as foe, not friend.

But it didn't take long for Hutto to find 100 separate species booming the year after the burn. Surprisingly, many of those were found only in severely burned forests - the blacker the better.

He focused his work on black-backed woodpeckers, birds that seemed to flock to fire like moths to the flame.

"I'd never seen them anywhere else, essentially," said Hutto, a professor of fire ecology and ornithology at the University of Montana.

And so for the next 15 years, he tracked the birds through forests - and through the scientific literature. He pored over studies of vegetation types, looking for lists of birds that appeared frequently in certain sorts of habitats. In all, he found 15 avian species that seemed to prefer recent burns to all other forest types.

But again, the most extreme was the black-backed woodpecker, "which actually seemed to require burned areas," Hutto said.

All the studies were anecdotal, though. What he needed was hard evidence.

For a decade and then some, Hutto helped craft and conduct systematic bird surveys on Forest Service lands, "in every kind of vegetative type out there."

The results supported his suspicions: Black-backed woodpeckers only gather in substantial numbers in areas hit hard by wildfire.

The next step, he said, was to figure out what sort of burn the birds need. He considered what sort of forest was on the ground before the burn, computed the severity of the fire, crunched data on whether the land was logged or left to nature after the burn.

Again, he was surprised.

"We found the severity issue is really interesting," Hutto said. "Severity is a big, big deal. A fire is not a fire is not a fire. There are species that are very particular about what kind of fire they like."

Western tanagers, for instance, thrive in low-severity fires. Juncos prefer medium-severity burns. Black-backed woodpeckers, mountain bluebirds and olive-sided flycatchers like their forests well done. And the woodpeckers generally prefer thick-barked trees, ponderosa pine and Douglas fir, trees that withstand all but the hottest fires.

Perhaps not surprisingly, the species that really like severely burned forests tend to be species that are tough to find, species whose populations are not what you'd call robust.

Hutto suspects that might have something to do with national wildfire policy, beginning with the big burns of 1910. Some three million acres went up in smoke that year throughout Montana and Idaho, prompting an aggressive firefighting policy aimed at snuffing every blaze.

Species that for millennia had evolved with fire, were actually dependent upon fire, did not fare so well under the post-1910 policy, Hutto suspects. It's tough enough to live in a narrow niche. It's even tougher when forest management eliminates that niche.

It wasn't until about the time that Hutto first started asking questions about fire and ecology that the scientific community was willing to give fire its due. It was, they concluded, a natural force that could be used as a tool for managing forests on the landscape level.

In 1983, the first fire was quietly left to burn in the Bob Marshall Wilderness, a lightning strike that grew finally to 230 acres.

"It was a huge moment for people who had been taught for decades that all fires are bad and should be put out immediately," Dale Luhman told the Missoulian last year. Luhman is resource assistant for the Forest Service. "But it came as part of a professional recognition that sometimes fire is good, that it's a necessary and natural process in healthy forests."

Most folk know about lodgepole pine and their serotinous cones that open only under the heat of wildfire. But beyond the lodgepole, almost all Western landscapes are fire-adapted to some degree, from the soil beneath to the plants and animals above.

Western larch, for instance, hate the shade. They need a fire to create a clearing, and then they have about three to five years to take root before the window of opportunity is shaded over by competitors.

Fire is also critical for red-stemmed ceanothus, a plant whose seeds can lay dormant for centuries while waiting for the flames. It's a favorite of deer and elk and moose, popular big-game species that gobble it down like so much leafy ice cream.

Spirea loves fire, as does fireweed and arnica and dragontail mint and pine grass. Bicknell's geranium, like ceanothus, only appears in burns.

Then there's the mysterious boreal toad, which some scientists believe might be another in the growing list of known fire-dependent species. Turns out, the toads like to bask in the sun and tend to produce bumper crops of tadpoles once the canopy is burned away.

Researchers studying the toads think that fire suppression might be a major cause of the toad's decline in recent decades. It is an argument not lost on Hutto, who believes his woodpeckers and other species might be few and far between in part because their blackened habitat has been greatly diminished by way of fire suppression.

For the black-backed woodpecker, Hutto figures it all comes down to beetles, particularly beetles that specialize in burned areas.

"Their biology is amazing," he said. Some bugs have infrared detectors built into their thorax, detecting the heat of a wildfire from 100 miles away. Others have antennae that can sniff out smoke.

"They evolved that way because fire has been a natural part of the process for so long," he said. "The world is built around these big fires. The diversity of life needs wildfire."

The beetles generally move into trees killed or weakened by the blaze, and the birds move in to eat the beetles.

Some bugs, like some birds, prefer low-intensity fires. Others want a more charred wood. It means all the fire types are important, Hutto said, including the red-hot, high-intensity burns that run fast across the forest, scorching everything in their path.

"The birds," he said, "that's just scratching the surface. If the public knew how special these burned areas are, our perception might change. We might change the way we think about fire."

Hutto's been convinced by the "big mixed flocks of woodpeckers you see in the winter. You only see that after a fire. We still have no idea how important these areas are for supporting the wintering population."

He figures they're migrating to the wildland fires even as the flames create their future habitat, drawn by the towering columns of smoke that can spiral 30,000 feet into the sky. They work the bugs for a few years, until another smoke column appears on the horizon, following the flames like so many morel mushroom pickers.

To help pin down where they live when fire is absent, other scientists are sampling blood from black-backed woodpeckers, hoping to map the birds' genetic distribution by way of DNA analysis.

"We know they're semi-nomadic, in a sense," Hutto said, "but we don't really know how far they range or how much overlap there is between populations."

The more he understands the woodpeckers, he said, the more science will understand the role of fire. His woodpeckers are a tool, he said, a way to tease out the mysteries of habitat and life cycles.

Hutto hopes the answers to his questions might someday inform the way we log burned areas after a fire - the way we value a burned landscape. It is no less fragile a habitat type than is a wetland, he said.

"Personally, I've come to think we need to change our thinking on salvage logging," he said. "There are other values in the forest. In fact, a burned area is probably the most sensitive place you could be working in."

And yet current forest policies often exempt fire salvage logging from rigorous environmental review.

"The public really hasn't caught on to this yet," Hutto said. "People still want to get the cut, get the trees they see as wasting away. They want the economic value."

But there are values, he said, far older and more fundamental that are too often ignored.

"We talk about forest restoration after a fire," he said, "but it just got restored. That's what fire does. We know that, but we can't seem to get the message out.

"Until you start thinking like a black-backed woodpecker, you just ain't going to get it."

Reporter Michael Jamison can be reached at 1-800-366-7186 or at **mjamison@missoulian.com**.

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