Rejuvenation of Yellowstone defies predictions of 'blighted wasteland for generations to come' **By MIKE STARK  
Gazette Wyoming Bureau**

YELLOWSTONE NATIONAL PARK, Wyo. - This place was supposed to be dead.

After the fires of 1988 finally were extinguished by rain and snow, the blackened landscape looked destroyed. Some spots, observers said, were cooked beyond the point where soil again would host plants and trees.   
 Roy Renkin is at the edge of one of those places: a flat stretch near Norris Geyser Basin where wind blew down hundreds of lodgepole pine trees, which then roasted in some of that hot summer's hottest fires.

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"There was all sorts of talk that this place was sterilized. I remember walking out here after the fires and it was like walking on the moon," says Renkin, a fire ecologist at Yellowstone. "Every step put up this little cloud of ash."   
 He climbs nimbly over felled trees and around young green lodgepoles about waist-high. The soil once deemed dead is home to a burgeoning young forest full of healthy trees, plants and plenty of rodents, bugs and birds. Renkin pats a young tree. "These guys are enjoying life. They're really robust," he says. He pushes farther into the tangle of old trees and new. "Let me show you," he says excitedly. "This is what really blows me away."   
 He stops at a blackened log and crouches to touch a skinny, 3-inch stem growing in the shadow. "Populus tremuloides," he grins. "Aspen."   
 The tiny aspen may not seem like much, but it's not supposed to be here. It and thousands of others like it scattered throughout the park represent an extraordinary consequence of the fires. Most likely, the seeds were blown in the wind during and after the fires and found a home miles away in the soil of burned areas, places where they were never known to grow before. The seedlings were some of the first evidence that aspen, a key food source for elk, could reproduce by seed rather than the underground root system that connects clusters of aspens.   
 The discovery is one of many that have left scientists and visitors marveling in the aftermath of the most ferocious fire season in Yellowstone in recorded history. For Renkin, the past 15 years have been a once-in-a-lifetime chance to work in a giant natural laboratory documenting how a complex and thriving ecosystem responds to a major fire.   
 "Man, I learn something new every day," Renkin says, tromping over more downed logs. "To be able to watch how things come back here has been phenomenal. It boggles the mind."

### 'Outburst of organic life'

The aftermath of the Yellowstone fires, one senator predicted in 1988, would be "a blighted wasteland for generations to come."   
 But what resulted was something entirely different. The wildfires prompted what pioneering naturalist John Muir once called "an outburst of organic life." In the spring of 1989, new green growth was already starting to carpet the blackened forest floors of Yellowstone. Within a few years, grasslands were replenishing themselves and new forests of lodgepole pine and other trees were shooting up among the charred remains of their ancestors.   
 The new growth is part of a fire cycle that has repeated itself in Yellowstone for countless generations. Fire spawns changes, direct and indirect, that ripple through the ecosystem. "In an ecological setting, you tug on one little string and a whole bunch of things - even distantly - can start to wiggle," said John Varley, Yellowstone's chief of resources, a few years after the fires.   
 Although fire killed many thousands of trees in 1988, most plants only had their tops burned off; the underground root systems survived. The fire was hot enough kill seeds in only about 0.1 percent in the park; most others endured, waiting for moisture. Where there was water, regrowth started sometimes within hours. Elsewhere, in drier soils, it didn't kick in until spring.   
 Wildland fires release carbon, nitrogen and phosphorus - all elements for fostering new growth. And when big trees are burned away, the forest floor gets more sunlight, allowing plants and new trees to flourish.   
 The recovering forest also is a boon to wildlife. Rodents that eat seeds and insects have more to eat in burned areas. Hawks and other hunting birds have an easier time finding prey in the newly opened landscape. Bluebirds find more places to nest, woodpeckers have more food sources in burned snags while elk and other ungulates get better forage.   
 In 1988, more than 300 large animals, mostly elk with some deer and bears, were killed by fire. Many more struggled during the next winter. The animal populations, though, bounced back within a few years, except for moose, which declined where old-growth habitat was lost.   
 In the long view, the fires played a key role in reinvigorating new forests in Yellowstone, recycling nutrients and creating a landscape mosaic that included burns, partial burns and areas untouched by flames. Nowhere in Yellowstone, Renkin says, is there an area burned so severely that nothing has grown. "I'm not aware of any," he says. "I don't see anywhere in the park where these areas are just disasters."

### Rebirth in the 'barbecue'

Don Despain has been roaming Yellowstone and the surrounding area as a scientist for more than three decades. His life and his life's work have been entangled with fire in Yellowstone for nearly as long. He was one of the early advocates for allowing some wildfire to return to the park as a natural part of the system.   
 A native of Lovell, Wyo., Despain is a plant ecologist, fire behavior expert and a curious student of nature who has followed fire in Yellowstone both as a firefighter and a scientist. "I recognized quite quickly that fire was a major part of the ecosystem here," he said.

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| image BOB ZELLAR/Gazette Staff **A cow elk grazes in an area burned in the 1988 fires along the Madison River.** |

Like Renkin, Despain, who now works for the U.S. Geological Service, has been meticulously monitoring the aftermath of the 1988 fires. Early on, Despain compared some of the burned areas to the bottom of his barbecue pit. Touring those areas 15 years later, Despain points out that the landscape is returning to what it looked like before the fires.   
 "Fire doesn't destroy much, especially in an ecosystem sense," he says, standing among blackened lodgepoles and their fledgling offspring near Canyon. "Over time, I've decided fire is pretty superficial in the larger picture. This was a lodgepole pine forest and it's still a lodgepole pine forest. The fire doesn't change that."   
 Some believed that fires burning at 1,200 degrees would cook the soil so that it could forever transform forests into meadows. "But it didn't create any meadows," Despain says. "Fire just isn't enough of a factor to cause that kind of a change."   
 Over the years, the post-fire recovery has depended less on how severely it was burned and more on the characteristics of the land before it burned. Soil is a key factor. The fires didn't change the soil types, Despain says, so it didn't change what kinds of plants and trees would grow from the ashes.   
 Other factors, such as climate and elevation, play a role in how a burned forest rejuvenates, he said. Nearly all of the burned forests in the park have restocked themselves with seedlings in recent years. In some places, hundreds of trees pack each acre in competition for sun and water. Elsewhere, the trees are more spread out.   
 Meanwhile, Douglas fir, Engelman spruce and whitebark pine have also returned along with fireweed and other plants that thrive off changes in the landscape and recycled nutrients. Over time, Despain says, the complex combination of characteristics at each burned area will foster a forest or a meadow or something similar to what was there before the summer of 1988. And eventually it will become primed for another fire.   
 In our short lifespans, those cycles of fire seem violent and destructive, robbing us of what we think Yellowstone should look like. But in the perspective of geologic time - in which an ecosystem evolves over thousands or even millions of years - catastrophic fires and the subsequent recovery are small steps in a very long journey.   
 "If we lived to be a million years old," Despain says, "we'd see fires come and go like we see winters come and go."   
 What happened in Yellowstone during the summer of 1988 presented the humbling lesson that fire, in some cases, can't and won't be controlled. People will continue to have an uneasy relationship with fire, but to ignore its role in the Yellowstone ecosystem is to ignore one of the principal architects of its awesome beauty.   
 "Sooner or later it's going to burn again," says Phil Perkins, who fought the 1988 fires and is now the Yellowstone's fire management officer. "That's the way it's supposed to be."

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