Excerpted from:

Mount St. Helens  
Disobeying the Rules of Recovery   
by Sharon Levy  
  
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Between the lip of the Mount St. Helens caldera and the blue edge of Spirit Lake lies an expanse of barren pumice. Twenty-one years ago, this mountainside in the Cascade Range of southern Washington was cloaked in old-growth forest, which enfolded the lake. Now the landscape has been blown wide open, and thousands of tree carcasses float on the water's surface, bleached by the sun, snow, and wind.  
 On the morning of May 18, 1980, St. Helens erupted, belching ash into the air and sending a blast of hot gas, rock, and mud down the side of the mountain. The blast broke five-hundred-year-old trees as if they were matchsticks. Six hundred square kilometers of forest were devastated; even where the trees survived, the ground was coated with a thick layer of ash.  
 When ecologists arrived to study the recovery of life on the volcano, they expected to find a moonscape where nothing had survived. But the mountain didn't meet expectations. "Every time you turned around, from the first hour of our observations, there was some new stratagem by which nature had persisted," recalls Jerry Franklin, a forest ecologist at the University of Washington at Seattle. "We were repeatedly struck in the face by the realization that hey, this place is alive."  
 Accidents of timing, weather, and topography had powerful effects on ecosystem recovery. Plants and animals that survived the blast while sheltered under spring snowbanks were alive and functioning immediately after the eruption. Wind-blown seeds that happened to lodge in cracks in the volcanic rock germinated and grew - including some species that had not been expected to return for years. The chance whims of the wind governed many of the early events in the recovery.  
 Long before plants could begin to recolonize the pumice plain above Spirit Lake, live insects and spiders rained down from the sky. John Edwards, a zoologist at the University of Washington at Seattle, found that representatives of 70 different insect families and 43 species of spider blew in on the wind during the first years after the eruption. The young of these species disperse by taking to the air and letting the wind determine their fate. Many land in inhospitable places such as alpine snowfields, or the blasted landscape of Mount St. Helens. Most of these unlucky animals die, but they don't go to waste. Within eight weeks of the eruption, Edwards saw carpenter ants and spiders preying on hapless insects that had fallen onto the mountain.  
 Lupines were the dominant plant pioneers on the pumice plain; mosses and lichens couldn't survive the heat or the drying effects of volcanic ash. Because they are able to fix atmospheric nitrogen, lupines were expected to act as nurse plants, creating soil that could sustain other species. This did happen eventually, but early on, the fallout of insects and spiders brought far more nutrients to the blast zone.  
 "At first, fallout was definitely the most important source of nutrients" says John Bishop, a botanist at Washington State University at Vancouver. "The same insect rain continues today, but its importance has diminished." As the ecosystem develops, plants grow up and create habitat for insects that live and breed on the mountain. The nutrient input from fallout, which seemed dramatic when the community was starting from zero, is now dwarfed by the production of living things native to the blast zone.  
 Bishop, who first came to Mount St. Helens ten years after the eruption, studies the ecology of the lupine patches. On the pumice plain, the gray of barren rock is now interrupted by lush carpets of lupine. On a windy summer day, the same breeze that blows puffs of ash out of the caldera carries the sweet smell of thousands of purple blossoms.  
 Bishop has found that the lupines form a stage whereon dramas of competition and survival play out. Lupines flourished in the blast zone for the first few years after the eruption, outcompeting most other plants and unfettered by pressure from herbivores. The first lupine seed germinated on the pumice plain soon after the eruption, but the insects that feed on lupines didn't arrive for about six years.   
 When the herbivores did arrive - principally caterpillars that eat lupine leaves, roots, or seed pods - their populations exploded. "The caterpillars were probably escaping their predators for quite a while," says Bishop. "So the caterpillar population would explode to the point where they'd suppress the lupines, and the lupine population would start to crash." Lupines were in decline when they were rescued by the arrival of predatory spiders and parasitoid flies, which lay their eggs on caterpillars, leaving their young to hatch out and devour their herbivorous host. Now that caterpillar populations are controlled by predators, lupines are going strong again.  
 "When we showed that herbivores were limiting lupine growth, that was a very novel result," says Bishop. "There's been skepticism that insects may actually regulate plant populations. In primary successional systems, no one thought that herbivores could be that important."  
 Farther down the mountain, below the pumice plain, the 1980 blast flattened trees or left them standing dead, and the soil was buried under a thick layer of ash. In this area, called the blow-down zone, some unexpected survivors have been critical to the recovery.  
Charlie Crisafulli, an ecologist with the U.S. Forest Service who has been working on Mount St. Helens since 1981, has learned a new way of looking at the animals he studies. "St. Helens was surprise after surprise," he says. "What the mountain has told us in many ways is that we lack a basic understanding of many species' natural histories, their tolerance limits, and their dispersal capabilities."  
 The trees of St. Helens have taught scientists some profound lessons - even in death. At first it was feared that thousands of dead old-growth Douglas firs, which lay scattered everywhere in the blow-down zone, would impede the forest's recovery. This was one reason why the U.S. Forest Service had some areas salvage logged after the eruption.  
That proved to be another false assumption. The dead wood has nourished new plant growth and provided habitat for insects, small mammals, and birds, speeding ecosystem recovery. The insights Jerry Franklin and other forest ecologists have gained on Mount St. Helens have changed the way forestry is practiced in the Pacific Northwest. Clear-cut logging was once the standard practice. Now, on federal lands, 15 percent of the timber in a harvest area must be left behind - dead or alive.  
 Today the blow-down zone on St. Helens is bursting with life. Hairy woodpeckers and northern flickers fly among the snags, feasting on insects. Pacific silver fir and western hemlock, some of which had spent decades growing slowly in the shadow of the great Douglas-fir forest, were shielded by snow on that day in May 1980. In the open sun among the fallen old-growth trees, they now shoot towards the sky: many that were inches high at the time of the blast stand 20 feet tall. If the mountain stays quiet for a couple of hundred years, a new forest, different but as grand as the one the volcano blasted away, will rise here.

