

6 TIMES
IN 3,500
YEARS

Kautz Creek Mudflow Nature Trail

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Cover: Mount Rainier and Kautz Creek Valley.

U.S. Geological Survey photograph by Austin Post.

Six times in the last 3,500 years, Kautz Creek valley has been swept by mudflows.

This scene is a result of the last one. Here we can watch a forest recover from a natural disaster.

Walk this loop trail, and read the numbered paragraphs at the like-numbered posts.

1. Now you know what happened here. Not a forest fire.

The new trees are growing out of the relics of a forest destroyed by a gigantic mudflow on October 2, 1947.

First there were warm, heavy rains and water rushing down high mountain slopes and ice crumbling off the glaciers. And then . . .



2. Here the mudflow came to rest. How deep is the flood deposit? The streambed below gives a clue.

Kautz Creek has deepened its channel in the years since the mudflow. Though it has uncovered more than fifteen feet of material around some trees, it still has not reached to their roots.

3. This battered stump is all that remains of a large tree that once grew far up in the valley. Can you guess how long it must have stood against the pounding of the flood?

Feel the side of the stump. It tells of the hours of scraping, grinding, and bruising it withstood before being uprooted, swept along, and brought to rest here.

4. People who saw the mudflow say it looked like thick concrete pouring down the valley. Boulders bobbed like corks. Rocks 13 feet across were swept along by the power of the flood.

5. Not all trees were beaten and flattened like the stump you just saw. This Douglas-fir must have fallen during the final hours of the flood and drifted only a short way. Yet the flood had enough force to snap the log when it was lodged between two standing trees. Trees that remained upright during the flood died in the following months, smothered by the thick sand and mud brought by the flood.

But already the scar is healing. Pioneer plants are invading the flood-created desert.



6. LIFE RETURNS!!

The gray-green carpet of mosses and lichens appeared the first spring after the mudflow. These tiny pioneer plants are a hardy lot. They alone were able to survive the heat of direct sun on the dry, sterile mudflow soil.

Then the winds brought cottonwood and alder seeds from the stream sides and fir and hemlock from the nearby forest. Many did



not survive, but some found shade and moisture on the protected side of a rock or log. There they grew.

The first task of the plant community was survival. The second was growth and population of the area. So it is with man's communities. Pioneers and developers make way for settlers.

7. Red alders were among the first settlers here. Their tiny winged seeds are scattered widely by the wind but the heavier seeds of other species of trees could not travel this far in any great numbers.

Alders grow rapidly even where the soil is poor. Bacteria on alder roots take nitrogen from the air and add it to the soil. Firs and hemlocks then grow better in this soil supplied with nitrogen.

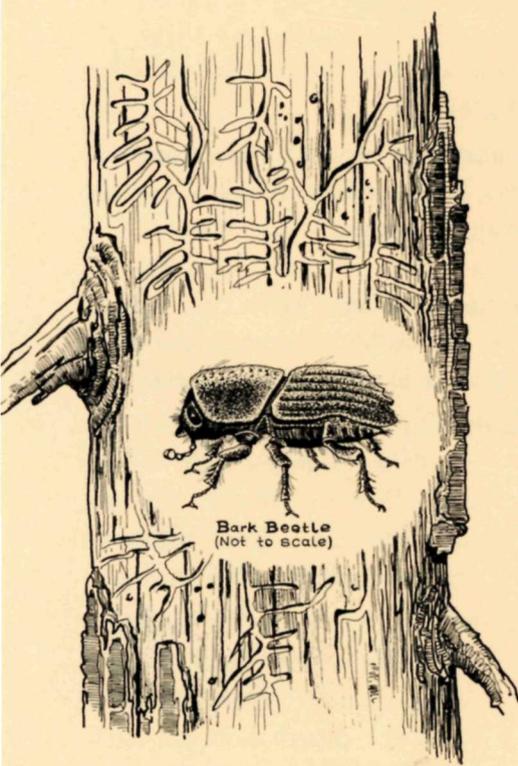


Notice how there are healthier and more varied plants in some places than in others? Do you think the distribution of standing dead trees has anything to do with it?

8. At times seeds were caught in the crevices of standing dead trees. There they found enough shade to keep the temperature low enough so the seeds could sur-

vive and start to grow. These trees also shed bark and leaves as they died, which left a thin layer of litter.

9. Insects and other small animals are vital members of this community. They break down old logs as they bore for food, carry spores of fungi, and scatter seeds. When they die, their bodies enrich the soil.



Bark Beetle
(Not to scale)



Birds arrive. Woodpeckers eat the ants, and bark beetles etc., brown creepers look for spiders and mites, and chickadees inspect the undersides of alder and cottonwood leaves for food. Hawks and owls will come in search of rodents.



Red squirrels perch on logs and stumps and shred Douglas-fir cones, planting seeds as they bury food for the winter. Deer and snowshoe hares eat young alder and willow shoots.

10. As any community evolves, its members begin to compete for resources. In the forest plants struggle for sunlight, water, nutrients, and room to grow. Here, once alders have prepared the soil, Douglas firs take over, growing larger and crowding out the alders.

Next, hemlocks grow in the shade of the sun-loving Douglas-firs. Eventually, only hemlocks will remain. They reproduce best in the deep shade of the forest. Douglas-firs no longer reproduce and a



mature forest develops. It will remain until the next disaster that wipes it out enables the series of changes you see here to start over again.

11. You can see how the forest community is composed of many living things related to each other. The development of the community involves all of its members competing and cooperating with each other.

Eventually this area will be like the forest on either side of the creekbed. The cycle from a deserted flat to a pioneer garden to a complex community of plants and animals will be complete. Come back and see it in 20 years.