



Geology of Katmai National Park and Preserve

Volcanism is a major geological process in Katmai, and its effects are readily apparent in the landscape. The Aleutian Range is part of the "ring of fire" of volcanically active areas that rim the Pacific Ocean, a result of the Pacific plate being thrust under the surrounding continental plates. Many mountains of the Aleutian Range, which rises abruptly 7,000 feet above the Shelikof Strait coastline, are active volcanoes. Mount Trident last erupted in 1968, and both Mount Trident and Mount Martin still emit steam.

Volcanic activity was the reason for Katmai's initial establishment as a national monument in 1918. On about June 1, 1912, the inhabitants of Katmai Village, Savonoski, and several seasonal fishing camps began to experience an unusual number of earthquakes. By June 4, the earthquakes were accompanied by strange sounds and had reached such an intensity that they could be felt 130 miles away. On the afternoon of June 6, there was a thunderous blast as an immense column of smoke billowed from Novarupta Volcano, raining 7 cubic miles of incandescent ash and pumice over a wide area. The Ukak River valley was buried, as much as 700 feet deep in places, by ash that literally flowed from the volcano, turning the valley into a large plain where vaporized streams, rain-water, and gases formed countless steaming fumaroles. The eruption withdrew material from beneath nearby Mount Katmai, whose summit then collapsed. As water collected in the caldera, it formed a crater lake. Robert Griggs led expeditions, sponsored by the National Geographic Society, to photograph and study the results of the eruption. Awed by the sight of the Valley of Ten Thousand Smokes, he was instrumental in securing designation of the area as a national monument.

Although the ash has cooled and virtually no fumaroles are still steaming, the Valley of Ten Thousand Smokes remains a major scenic attraction for park visitors. The 3- by 12-mile area of ash has few plants, yet it is richly colored in shades of yellow, red, and tan, and is dissected by river channels up to 100 feet deep but, in places, only 5 to 10 feet wide.

The effects of glaciations are also readily evident in Katmai. Glaciers up to 4 miles long and 12 miles wide enhance the beauty of the mountain landscape. Several lakes in the park are dammed by the moraines left by large glaciers that long ago carved meandering river canyons into wide, straight valleys.

In general, the Katmai bedrock is composed of sedimentary rocks of Jurassic, Cretaceous, and early Tertiary age that are intruded by Jurassic and Tertiary igneous rocks. Fossiliferous rocks are abundant in some areas. The park is bisected by a major fault, the Bruin Bay fault, where younger rocks to the southeast are being thrust beneath older rocks to the northwest.