The Geological Origins of Tsuta

The Collapse of Mt. Akakura

An avalanche of debris from Mt. Akakura formed the landscape of the Tsuta area in a massive geological event that reconfigured the entire valley. Mt. Akakura is one of seven peaks that make up the Minami Hakkoda Mountains, created by volcanic activity between 800,000 and 300,000 years ago. The huge rocks on the upper reaches of the mountain were extremely unstable, contributing to the collapse.

The Earth-Shaking Event

What triggered the cataclysm is a mystery. It could have been caused by an earthquake or an explosion of steam that had built up underground. Whatever the cause, at some point between 100,000 and 15,000 years ago the eastern slope of Mt. Akakura collapsed, and rock, gravel, and volcanic ash rushed downhill. Such debris avalanches can reach speeds of up to several hundred kilometers per hour. Once the dust had settled, between 100 and 300 million cubic meters of debris were spread over an area of more than 11 million square meters.

The Aftermath

The debris from the avalanche instantly transformed the valley, leaving protruding hills of rock. These hummocks blocked waterways and created shallow hollows that would be filled by rain, snowmelt, and underground springs. Eventually, the hollows formed the six swamps of Tsuta that dot the Bird Sanctuary Trail. For some time, however, the area was desolate and devoid of much life. The surface was a chaotic mix of gravel, volcanic ash, and matrix—rock that is embedded with a variety of minerals and other materials.

Visible Remains

The remains of that event so many millennia ago are still evident throughout the Tsuta Forest. The debris avalanche consisted of rocks that were originally formed from slow-moving lava and fast-moving pyroclastic flow due to volcanic activity on Mt. Akakura between 800,000 and 300,000 years ago. These rocks were captured by the avalanche and transported here. Deformation of the deposit is still taking place today; researchers have noted movement of several centimeters a year in some areas along the slope.