

Tanigawa's Unique Topography, Geology, and Plant Life

The topography of the Tanigawa Mountain Range is marked by steep valleys, avalanche chutes, and snow-filled nivation hollows. The range was uplifted by tectonic activity beginning some 4.4 million years ago, after which glacial movement formed the sharp valleys of Machigasawa, Ichinokurasawa, and Yūnosawa. Embankments of accumulated rock and unconsolidated debris, called moraines, formed on the valleys' lower slopes and are evidence of the glaciers that carved them.

Since the formation of the mountain range, a variety of factors have eroded the mountains' eastern face, creating a dramatic contrast between the gentle, sloping western face and the sheer, barren face on the opposite side. Fierce, moisture-laden winds that blow in from the Sea of Japan are forced upward by the mountains and dump that moisture on the far slope as snow. This snow and ice is picked up by the tempestuous winds that blow off the ridge, and together with dirt and sand from the mountain, it buffets the slope that faces Gunma Prefecture, wearing away the rock. Over many thousands of years, this process has eroded the mountains' face to a steep, bare incline, while leaving the Niigata-facing side as a gentle curve.

The Tanigawa Mountain Range is composed of various kinds of rock. Its base is formed of serpentinite and plutonic rocks (such as granite, granodiorite, and porphyritic granite). This serpentinite often contains fragments of schist and veins of talc, which can be identified by its lustrous surface and whitish, snakeskin-like pattern.

The geology of the Tanigawa Mountain Range restricts the shape of the landscape, and by extension, the plant species that can live there. Few plants can survive in the harsh alpine environment; the mountains' faces are steep and composed largely of serpentinite, which degrades into soil that is shallow, dry, and lacks important nutrients. The harsh winds at the ridgeline regularly create freezing, typhoon-like conditions. The resulting environment is a dry, windswept shrubland called a "heath," where only small shrubs and grasses, particularly those with long roots or other special adaptations, can survive.

A relative of edelweiss called *hosoba hina-usu yukisō* (*Leontopodium fauriei* var. *angustifolium*) grows along the ridgeline. Its leaves are covered in fuzzy, felt-like hairs that condense the air's moisture into water. The alpine azalea, cowberry, and *komeba tsuga-zakura* (a species of *Pieris*; *Arcterica nana*) grow in cracks high on Mt. Tanigawadake and carpet the rock surface to reduce their exposure to the strong winds and prevent loss of vital moisture.