

An illustrated **rock-hunters** guide to Hurricane Creek

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For The Chieftain

Autumn, when streams are low, is an ideal time to go looking for geology. Creeks and rivers carry samples of every kind of rock in the Wallows down to us. Tumbled and rounded, only the hardy ones survive. But in the dry portions of stream beds, you can find virtually every kind of rock in the Wallowa Mountains.

Each individual stone tells a story. Some bear witness to monstrous ancient volcanic explosions. Others tell of languid seas and vanished life. There are faults in some rocks. Ancient floods in others.

And in each rounded river rock, there is the haunting memory of time. You hold in your hand not just a rock, but a stream, a beach, a torrid lava flow, all from so long ago that all human memory fails.

Fortunately, geologists and rock-hunters are good detectives and good story-tellers. This guide will help you determine what kind of rock you have found, and what story it tells.

What are the Wallowa Mountains made of?

Five different types of rock comprise the Wallowa Mountains. Examples of all of them can be found in Hurricane Creek and in the ephemeral streams and glacial gravels that occupy most of the valley floor. The photos below are all rocks from Hurricane Creek. Each is unique. Each tells a story. The rocks that you will find will be somewhat different, but will belong to one of these rock types. Happy hunting!

From youngest to oldest, they are:

COLUMBIA RIVER BASALTS: (Igneous, volcanic)

About 14-16 million years old. Youngest rocks in Wallows. Erupted from vents (fissures, or “dikes”) now exposed in the Wallowa Mountains. These lavas inundated the Columbia Basin. (They are 3 MILES thick beneath Hanford.) Some flowed all the way to the Oregon Coast. Today, they are exposed at Haystack Rock, Point Lookout, Depot Bay and many other places. Along Hurricane Creek, Columbia River basalts occupy the top of Hurricane Divide and form Twin Peaks and Sawtooth. Basalt is not abundant in Hurricane Creek, and much of what you find has come from the basalt dikes. ID: Dark red-brown to reddish on weathered surface. Black on fresh surface. May contain holes (gas vesicles).

‘GRANITES’ (Actually granodiorite and tonalite) (Igneous, plutonic/intrusive)

About 100-130 million years old. Light-colored rocks with “salt and pepper” appearance. Intruded into the older rocks of the Wallows. The “granites” form the core of the Wallows — the Lakes Basin, for example. Formed by melting of the lower crust and of the older greenstones and sedimentary rocks. ID: Light-colored, salt/pepper appearance. Sparkly dark minerals. Proportion of light and dark minerals will vary from one rock to another.



SANDSTONE AND SHALE: (sedimentary; slightly metamorphosed.)

180-210 million years old. When found as rocks in or along Hurricane Creek, these are usually quite hard and have a “banded” appearance. They are often dark gray and/or tan. They form the tops of Chief Joseph Mountain and Hurwall Divide. They were intruded by hot granite magmas, which “cooked” them, fusing the sand-grains and clays and producing a harder rock than the original sandstones and shales.

LIMESTONES: (AKA, Marble) (sedimentary, but metamorphosed to a soft marble in many cases.)

220-230 million years old. These rocks formed as parts of reefs or extensive banks of carbonate sand (Think Bahamas Banks). They may have a banded or “marbled” appearance, but often are simply a soft, rounded gray or white rock. The enlarged crystals of calcite that form the rock may provide a “sparkly” appearance. Some marbles may contain recognizable fossils. Because these are soft rocks, they tend to be well-rounded and relatively small.



VOLCANIC GREENSTONES: (Igneous, volcanic rocks that have been metamorphosed.)

230-270 million years old. Formed as lava flows and related processes on volcanic islands far off the Idaho coast a long, long time ago. Metamorphosed during collision with North America about 120 million years ago and also by heat of Wallowa granite intrusions. Today these rocks are the foundation of the Wallows and are very prevalent in Hells Canyon. Dark gray-green, or gray with a greenish cast. Along Hurricane Creek, many greenstones were initially formed as volcanic debris flows, explosive ash eruptions, and stream sediments on the ancient volcanic peaks. Others were actual lava flows. Their appearance is highly variable, but they all have a characteristic yellow-green to gray-green color. May include lighter yellow-green veins, blobs or stripes.