

**Geologic Features of the Snow Camp Trail (1103)
Siskiyou National Forest**

More information about this trail can be found at:

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Information about the 2002 Biscuit Fire:
www.biscuitfire.com

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View from Snow Camp of the Kalmiopsis Wilderness and the area burned by the 2002 Biscuit Fire.

The Snow Camp Trail is a great place to explore the resources of the Siskiyou National Forest. This trail offers scenic views of the area's geology and intriguing rocks to explore as you hike. There is evidence of ancient mountain building events, but you can also see dynamic recent landslides. The Biscuit Fire of 2002 has made the landscape even more interesting. The soils and rocks of the Snow Camp area are more exposed and the ecology of the area has been significantly changed. More information about the trail can be obtained at the Chetco Ranger District in Brookings, OR (see back panel).



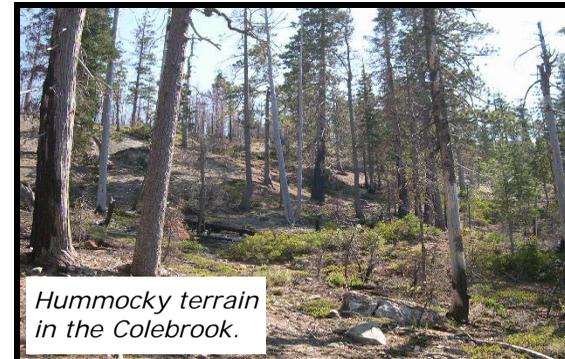
Forest Service
Pacific Northwest Region
Siskiyou National Forest

Along the Snow Camp Trail

Before you even start your hike, you can see interesting soils on the **3680 Road** from Gold Beach to Snow Camp. The bedrock here is the igneous rock **peridotite**. Peridotite has a high iron content, so the soils here are reddish from iron oxides. The hardened soils along the road are laterites, which are usually found in the tropics. They formed during Miocene time (from 24 to 5 million years ago) when the climate here was much hotter and wetter. These ancient soils are very high in iron and nickel, and were mined in the 20th century to make steel. Red soil on the trail is a good clue that you are walking on peridotite.

If you start from the **Fairview Campground** trailhead, you will be in the Colebrook schist. The Colebrook was an organic-rich mud that was transformed under temperature and pressure into a metamorphic rock. The rock is gray and has shiny planes of parallel-oriented minerals. If you pick up a piece, you may also see the small folds and fractures typical of the Colebrook.

The terrain around the campground at Fairview Meadow is hummocky and uneven. The Colebrook is prone to landslides and when the rock fails, it forms this bumpy land surface.



Hummocky terrain in the Colebrook.

Between Fairview Meadow and **Snow Camp Meadow**, the trail passes from schist into peridotite. You can tell there is a change because the ground here is rockier and the soils are more vivid colors. The peridotite soils also support different plant communities than the schist.

The weathered surface of peridotite is brown to red and very rough (due to differential weathering of the minerals). The fresh surface has coarse green crystals. Some areas of the peridotite have been **serpentinized**, or altered to soft green minerals.

These minerals are green and shiny - serpentine means "snake" because the rock looks like a snake's skin. Serpentine soils are greenish gray, so you can find them by looking for gray patches on the ground. The patches are sparsely vegetated due low nutrients. *Serpentinite* is the official state rock of California and is found in the California and Oregon Siskiyou.

The *Darlingtonia californica* plant (also known as cobra lily or pitcher plant) flourishes in serpentine areas because it grows in wet, nutrient-poor soils. This carnivorous plant entices insects into its top and digests them in the stalk. Check for this plant between the Snow Camp Lookout Trail and Cedar Camp.



Darlingtonia on the Snow Camp Trail.

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South of the peridotite area there are some sedimentary rocks well exposed along the trail (see Figure 2). These rocks are the **Dothan Formation**, which formed in the sea at the edge of the continent. It has also been metamorphosed, but less than the Colebrook. The Dothan is 10,000 to 18,000 feet thick in some parts of the Forest, but here it has been fractured and deformed so you only see part of it. The Dothan weathers to sandy tan or yellow soils.

There is an interesting outcrop located between Snow Camp meadow and **Trail 1103A to Snow Camp Lookout**. There are columns of greenish gray rock and if you look closely you will see that some of the minerals have dissolved, leaving many small holes in the rock. This weird outcrop is located within the Dothan Formation. These could be sedimentary rocks that have been altered or possibly volcanic rocks. They are cropping out because they are more resistant to the processes of erosion that have removed the surrounding rock.

Snow Camp Mountain itself is made of peridotite with a layer of **gabbro** on the south flank. Gabbro is an igneous rock like peridotite, but lighter in color. It looks like it is made of salt and pepper crystals. The ½ mile trail up to Snow Camp Mountain Lookout passes through the gabbro layer (see Figure 2).



A piece of gabbro from Snow Camp.

Plate Tectonics of the Snow Camp Area

The interesting geology of the Snow Camp Area is due to regional plate tectonics. Both the peridotite and gabbro you see along the trail are part of an **ophiolite**. If you sliced through the ocean floor like a cake, you would get a sequence of rocks that resembles an ophiolite. An ophiolite cake has several layers, but you could think of the gabbro as the frosting on top of the peridotite. These oceanic rocks are exposed on land when tectonic forces push continental crust and oceanic crust together. Ophiolites in mountain chains are a result of this collision.

The earth's crust, mantle, and core all have different mineral composition. The peridotite layer of the ophiolite is rock from the mantle, which is usually 5-8 kilometers below the ocean floor (see Figure 1). The peridotite of the Snow Camp area gives us an exciting chance to see what the mantle looks like. Peridotite and serpentine are *ultramafic*, meaning they have high iron and magnesium content which gives them their dark color. Gabbro forms in the earth's crust and is lighter in color.

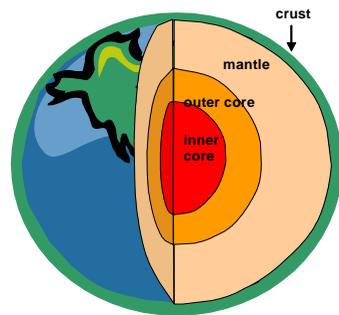


Figure 1. Cross section of the earth with crust, mantle, outer core, and inner core.

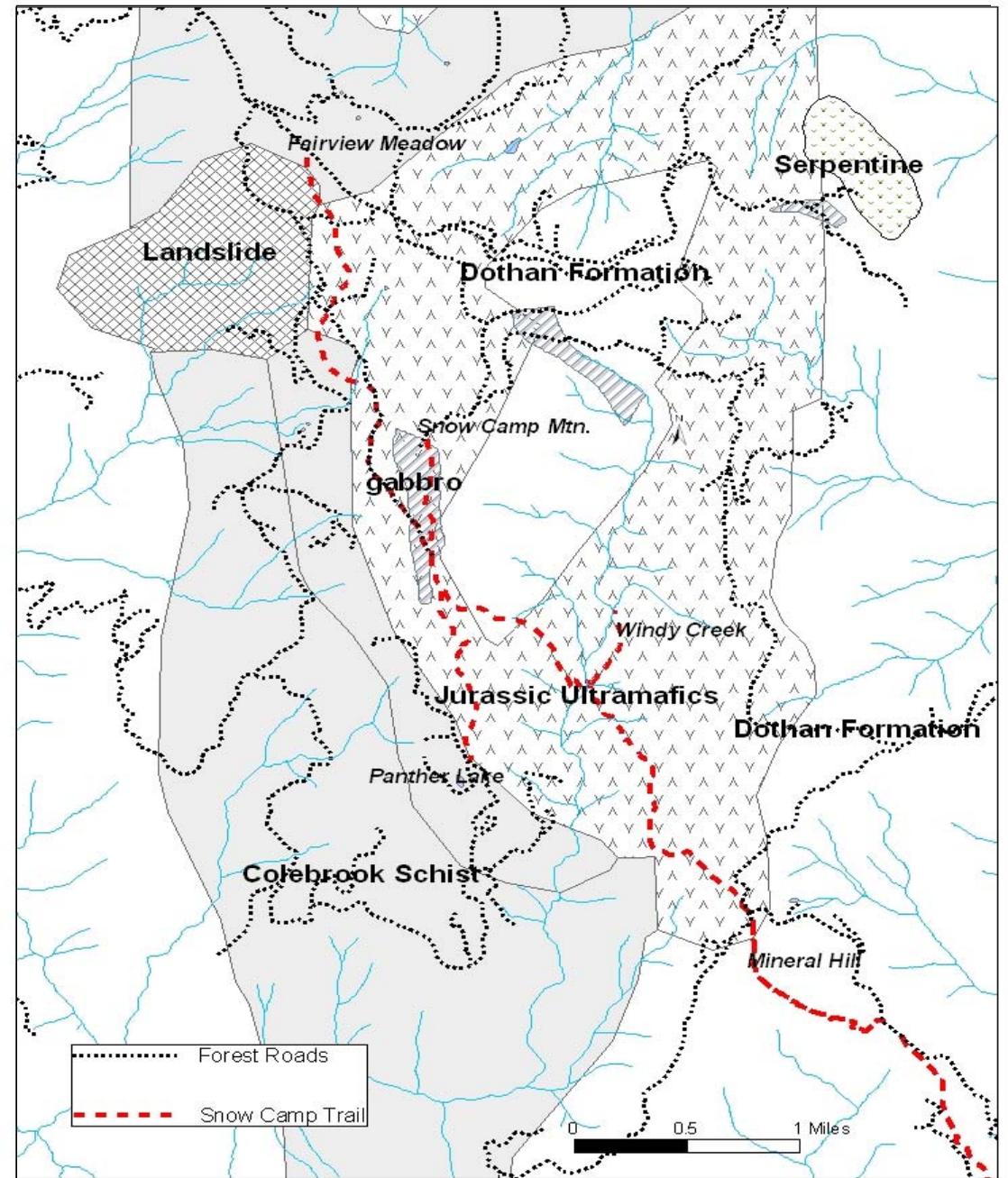


Figure 2. Geologic Map of the Snow Camp Trail. This map shows the different rocks that you will pass through as you hike in the area. This map shows only 1 serpentine area in the peridotite, but there are other serpentine areas—see if you can find some along the trail.