

10) Learn About Lichen: The “moss” draped on the branches of the trees here is not moss at all, but a lichen. Lichens are colonies of two organisms – a fungus and an algae – that live together. The fungus provides support and some minerals; the algae produces the carbohydrates that they both need. A lichen gets its nutrients and moisture from the air. A lichen is not a parasite although it seems to grow best on dead or unhealthy trees. Those kinds of trees provide more opportunities for exposure to the air, sunlight and moisture than trees with thicker crowns. A good way to remember the composition of a lichen is the verse: *“Freddy fungus and Alice algae took a like’n to each other.”*

11) There’s Life in Dead Trees: Just like the log we saw earlier, standing dead trees, or snags, also have an important role in the forest.

Many wildlife species use them for nesting, roosting, perching, or even territorial displays. Woodpeckers, for example, find that they are a good source of insects to eat. Raccoons might use the hollow insides for a den. Bears might do the same in very large snags. Boreal owls (like the one pictured) may use them for a perfect nesting site. Look closely at this snag for evidence of animals, including insects!



12) The Boneyard: Where do ski lift parts, rollers, and snow guns go in the summer? To the boneyard, of course! Although not necessarily ‘natural’, this equipment is interesting to look at but we ask that you not climb on any of it as it could be dangerous.

13) A Forest is Constantly Changing: Trees die and become snags or downed logs and as they decompose, they return nutrients to the soil where eventually new growth will appear.

The seedlings seen here found a perfect spot in the sun to germinate and grow. As they get larger, the stronger ones will out-compete the others and grow to be as big as the large trees we see around us. Using the clues we gave you at station #6, can you tell if these are fir or spruce seedlings?

14) Historic Inland Seas: The slabs of rock seen here are sedimentary limestone and are evidence of a great inland sea which split the continent of North America. About 100 million years ago, all or parts of 19 states, including all of Colorado, most of Canada, and half of Mexico were under water. This limestone formed as a result of occasional fringing coral reefs. Search around and you may even find fossils of ancient sea creatures that are now 10,000 feet above sea level!



We hope you enjoyed this self-guided nature tour. This trail is just one of many at Purgatory and the greater San Juan National Forest. More information can be obtained by contacting the San Juan Mountains Association (SJMA). SJMA promotes responsible care of natural and cultural resources through education and hands-on involvement that inspires respect and reverence for our lands. We have a participating agreement with the San Juan National Forest to develop educational programs, publications, and volunteer projects, as well as provide interpretive services. Our offices provide free information as well as a variety of items for sale including maps, books, t-shirts, and toys.

Contact SJMA~ 970-385-1210
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Brush Rake Trail Nature Hike

To reach Brush Rake Trail, take Chair 4 to the top. When you exit the lift, walk towards the road. Go right on the road until you see the red "Self-guided Nature Hike" sign on the right. Then follow the numbered signs along the way. Please sign the register before beginning your hike which is a 1.7 mile loop. Don't forget water. Wear sturdy shoes and bring rain gear. Go at your own pace and enjoy the beautiful mountain air and scenery!

1) Water is Life: The majority of our water comes from melting mountain snow with summer thunderstorms providing additional moisture. This brook is fed by snow-melt that runs off or soaks into the soil to emerge later from ground seeps and springs. This brook is west of the Continental Divide and its water flows into the Colorado River in Utah by way of the Animas and San Juan Rivers.

2) What's in a Log?: We've all seen downed logs before, but have you ever stopped to think about their importance in the forest? Logs provide habitat for lots of animals living in the forest, such as ants, termites, mice, pillbugs, millipedes, snakes and salamanders. If you want to check them out, find a small log and very carefully roll it over. After investigating, please roll it back so those animals still have a home.

3) The Earth is Alive: Complex geological processes have formed the San Juan Mountains over eons. This rock outcrop is shale, a sedimentary type of rock formed by the deposit of clay eroded from the Ancestral Rocky Mountains about 300 million years ago.

In front of you is Engineer Mountain, 12,968 feet high. The horizontal bands of rock that form the base of Engineer Mountain are also sedimentary. The vertical columns of rock at the top of Engineer Mountain were formed by the cooling of molten rock that was forced between the sedimentary layers at least 40 million years ago.

4) Look Out Below!: Although you may not see many animals in this forest, we can often find evidence of them. Here you see evidence of a small mammal – the holes in the ground could be homes of pocket gophers, chipmunks, or even golden mantled ground squirrels. While you're walking, look for other evidence of animals, such as tracks, chewed leaves or twigs, and scat (a.k.a. animal droppings!)

5) Underground Connections: In front of you is Grayrock Peak, 12,504 feet high. The structure is similar to Engineer Mountain. On the lower flanks of the mountain you can see groves of light green aspen trees and stands of darker green spruce and fir. Although aspen trees produce copious seeds, aspen here in the west reproduce almost entirely from the roots. Because of this, an entire hillside like the one in front of you may be a single genetic organism. Aspens also grow best after a disturbance such as a fire and may dominate an area for many years.

6) Tree Trivia: The forest at this elevation is made up primarily of Engelmann spruce and sub-alpine fir. How can you tell them apart? The easiest way is to check the needles. **S**pruce needles are **s**pikey to the touch and **s**quare in cross-section – you can roll them between your thumb and forefinger. **F**ir needles are **f**lat and **f**riendly – not sharp to the touch. In addition, spruce cones hang down from the branches and last all winter; fir cones stand straight up on the branches and disintegrate during the winter. Both of these trees have narrow crowns made up of short branches – they are adapted to easily shed the heavy snow loads of this deep snow country.

7) Share the Trail: You are walking on the Brush Rake Trail which is a multi-use trail. You may see mountain bikers here as well as other hikers. Other trails in San Juan National Forest may also be used by motorcycles and horseback riders. Remember to always be courteous to other trail users, and 'share the trail'.

8) Stop and listen: Close your eyes, and cup your hands around your ears. How many different birds, or just natural sounds can you hear? Many times we hear more birds than we can actually see. Common

birds at this elevation include: gray jays, mountain chickadees, northern flickers, and Stellar's jays.

9) Magical Mountains: The mountains in front of you are called the Twilight Peaks. The peaks you see are all above 13,000 feet. These mountains were formed about 65-70 million years ago by violent faulting and thrusting that caused ancient rocks deep in the earth to be pushed up through the overlying layers of sedimentary rock. The remains of those sedimentary rocks have eroded away leaving the 1.75 billion year old rock we see today. The rock outcrops at the bottom of the peaks were smoothed by glacial ice that extended all the way to the north edge of Durango 20,000 years ago. The glacier had melted by 12,000 years ago.

