Location and directions:

Old Fort Point is a hill in the middle of the Athabasca Valley, just across the river from the town of Jasper.

From Connaught Drive in downtown Jasper, turn south at the traffic lights onto Hazel Avenue and cross the railway tracks. Continue southward across Highway 16, where Hazel Avenue becomes Highway 93A. Keep going for a short distance, where a sign indicates a left turn to Old Fort Point. Follow to an old iron bridge over the Athabasca River. Park on the other side. Several major trails originate here, at the base of the hill. The quickest route to the summit begins with a set of stairs.

Street distance to the parking lot is 1.9 km. GPS coordinates: N52° 52.260', W118° 03.710'. The summit of Old Fort Point is at N52° 52.148', W118° 03.337'. Parking lot elevation: 1030 m above sea level, summit elevation: 1150 m.

Rock made by undersea landslides

Deposited about 608 million years ago, in the Ediacaran Period, this rock once lay near the bottom of the sedimentary stack in Jasper National Park. It was pushed up from perhaps 10 km down during the building of the Canadian Rockies 100–55 million years ago.

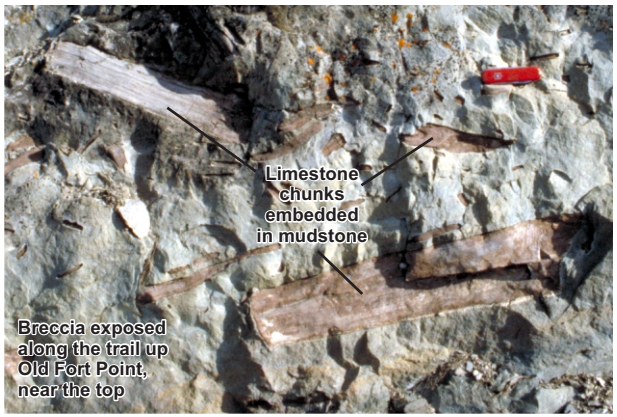
The rock in Old Fort Point is mostly tan-colored or greenish **mudstone**, which is fine-grained like shale, but mudstone also contains particles that are larger than the clay-size bits that make up shale. Pieces of pinkish or purplish-gray limestone are embedded in the mudstone. This is **breccia** ("BRETCH-ya"), which is like conglomerate, but with angular, chunky stones in it rather than rounded ones.

Breccia is uncommon in the Canadian Rockies. This breccia is doubly unusual, because many of the chunks have clearly been **curved**.

Here's what we think happened.

First, layers of lime mud were deposited on the seabed, in rather deep water (over 300 m) close to an underwater slope. Then, before the lime mud could harden to limestone, some of it slipped down the slope in an underwater landslide. As the layers began to move, many of them broke up.

When the slide came to rest, the broken beds lay in a tangled mass of leathery lime-mud chunks, separated from one another by more mud. Many of the pieces were still intact, but they had been bent and twisted. The whole works hardened to breccia, as we see it today at Old Fort Point.



Rock that cleaved and rock that didn't

Mountain-building pushes rock around. Pressures can be great. When shaly rock has been squeezed hard, the result is what you see in the road cut by the bridge: **cleavage**.

By that we mean zillions of parallel surfaces within the rock, all angled the same way, along which the rock cleaves (splits).

Cleavage typically doesn't follow the original layering. It cuts across the layering at an angle. Cleavage lines make the original layering hard to pick out. But at Old Fort Point we can still see the layering here and there. Look for purplish layers of limestone, not broken up and not affected by the cleavage. The greenish mudstone layers between the limestone layers have been heavily cleaved. They show the lines of cleavage at a steep angle to the actual layering.

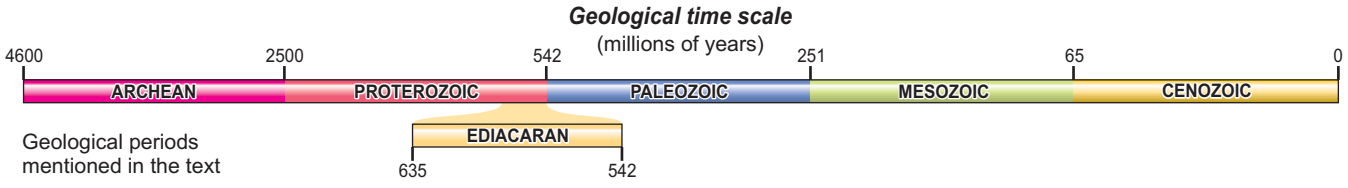
Erratics

If anyone were to doubt the fact that moving glacial ice had carved Old Fort Point (see the Geovista brochure *Old Fort Point Distant View*), that person would surely be convinced by what the glacier passing over this hill thousands of years ago left behind: **erratics**.

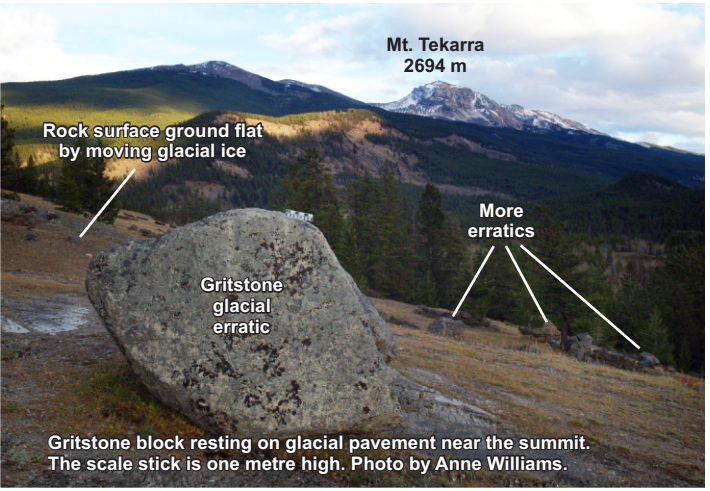
These are pieces of rock, some the size of automobiles or even larger, that have been picked up by moving ice in one place and deposited in another, usually when the glacier melts.

You can see textbook erratics beside the trail up Old Fort Point. Some are boulders of **quartzite**, which is very hard sandstone, while others are boulders of **gritstone**, which is a coarse type of sandstone and also pretty hard. Quartzite and gritstone layers are common farther up the valley, but not at Old Fort Point.

The erratic in the photo overleaf—the highest one, found just below the summit—sits on a flat, glacially ground bedrock surface. If you look closely at this surface, you can see deep scratches carved into it by rock fragments, including erratics, that were embedded in the moving ice.



Erratics continued



Gritstone block resting on glacial pavement near the summit. The scale stick is one metre high. Photo by Anne Williams.

Bighorn sheep on Old Fort Point

These animals are used to people and surprisingly tolerant. You may get wonderful photos of them. The sheep are no danger to us, but do give them enough room to carry on their activities. If a sheep moves away from you, back off. You are too close. Remember, the national park exists to protect wildlife. As good environmental stewards, we should not be harassing animals in a national park, even unintentionally.

Want to know more?

Consult these publications and websites:

• Gadd, Ben (2008) *Canadian Rockies Geology Road Tours*, page, 426–429 (more about the mountains seen from Old Fort Point)

• —— (2009) *Handbook of the Canadian Rockies*, pages 63–66 (the ancient undersea landslides, slaty cleavage and the Old Fort Point Formation), 384 (fescue grass) and 654–656 (bighorn sheep)

• —— (2011) *Old Fort Point Distant View GeoVistas Brochure*, Canadian Federation of Earth Science

All GeoVistas brochures, including this one, are available for free download from:
www.earthsciencescanada.com/geovistas

Please refer to this publication as:

Gadd, B., L. S. Lane and J. Bartram (2011) *Old Fort Point Up Close GeoVistas Brochure*, published by the Canadian Federation of Earth Sciences.

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Photo by Anne Williams

Jasper National Park
Old Fort Point Up Close

Rock ancient and unusual, boulders that went for a ride

When you walk up the short but steep trail to the top of Old Fort Point, below your feet lies the oldest rock in Jasper National Park. It's peculiar stuff. Boulders seen along the way are strangers, too.

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