



THE EMPEROR'S CHALLENGE ROCKS



Part of the appeal of the Emperor's Challenge is the unique scenery, the incredible views and the magnificent rock formations beside the route. The elite athletes in front of the field may have little time to consider the rocks. However, for most of us who take up the Emperor's Challenge, understanding Babcock Mountain's unusual geological history and the resulting amazing scenery may provide an added dimension of appreciation and enjoyment.

Babcock Mountain is capped by a thick layer of coarse-grained sandstone and conglomerate, once laid down in a high energy fresh-water environment in the Cretaceous Period, roughly 100 million years ago. Beneath this layer are many other, older layers, some of them composed of softer siltstone or softer-still clay. During the building of the Rocky Mountains, the rock layers of the mountain were subjected to immense forces and became tilted at an angle of about 15 degrees to the horizontal. At some point the top layers including the thick sandstone slid down along these layers of clay (geologists call this "translational movement") and slowly slid off the edge of the mountain in many places. At the top end of the mountain, this unusual process caused what locals call the Rift Valley, where a huge mass of rock broke off and began to slide down.

The race route passes twice through the Rift Valley with its tarns; in some years snowfields are still present here on race day. The areas where the sandstone rocks slid off the edge of the mountain give rise to the spectacular hiking trail destinations of the Boulder Gardens and Shipyard-Titanic. The race route passes below the Boulder Gardens just after km 2. For those with an extra moment at around km 12.5, stopping to look down off the edge onto the prow of the Titanic and the surrounding Shipyard forms a memorable experience.



In other areas the thick sandstone rocks are up close beside the trail. They often tend to fracture vertically, creating the cracks that have to be jumped over just before km 7. In some places the rocks are composed of thinner layers, and here cross-bedding can often be seen – this tells of river currents slowly depositing their sandy loads.

Impressive fossils have been found in the Cretaceous rocks of Babcock Mountain: theropod dinosaur footprints and bird tracks which are on exhibit in the Dinosaur Discovery Gallery in Tumbler Ridge, invertebrate burrows, and plant fossils including large cones.

Vegetation on the mountain varies from subalpine pine, spruce and fir forests, to meadows, alpine tundra and barren seemingly lifeless patches on windblown plant-hostile surfaces. There is a herd of about fifty goats on Babcock Mountain, a fact not lost on the grizzly bear population. The goats sometimes inhabit the Windy Pits of the old Quintette Mine, just north of the summit ridge.

To the southeast is Anglo American's Trend coal mine. Here the geology is more complex, and the rock layers are nearly vertical; this can be seen in the mine's large open pits. These mines tell of the great Cretaceous forests in which the dinosaurs roamed. Over time this vegetation was compressed and slow-cooked to form the coal beds that led to the creation of Tumbler Ridge, and have contributed to the local economy since the early 1980s.



The Tumbler Ridge Global Geopark became a member of the Global Geoparks Network, supported by UNESCO, in September 2014. There are now 111 Global Geoparks worldwide, but only two in North America. The other is Stonehammer in New Brunswick. A Geopark is an area with geological heritage of international significance. Tourism promotion in a Geopark highlights its geographic character and links this to fossils, archaeology, wildlife, culture and industry. Compared with national or provincial parks which are often top-down government-initiated projects, a Geopark is typically a grassroots, community-driven initiative that depends on local passion and sense of place.

From the summit of Babcock Mountain, just about the whole of the Tumbler Ridge Global Geopark is visible, from the plains in the east to the dinosaur area of Tumbler Ridge to the north, the Murray River Valley and the Hart Ranges of the northern Rockies to the west, and the highest peaks in the region capped by the Bulley and Monkman Glaciers to the south. This area encompasses an incredibly diverse geological and palaeontological history in addition to the magnificent scenery, and has had profound influences on the people who have chosen to call it home or to visit.

Enjoy the race, and enjoy the rocks!

