Surrounded by Mountains

The Gallatin Valley is one of the most picturesque and agriculturally productive valleys in Montana. From here, you can see four prominent Montana mountain ranges: the Bridger Range (east), Gallatin Range (south), Spanish Peaks (southwest), and the Big Belt Mountains (north). Each range has its own unique geology and topography. The high peaks of the Gallatin Range are carved from volcanic rocks and volcanic-derived mudflows that erupted during the Eocene, approximately 45 million years ago. The Spanish Peaks expose metamorphic rocks that date back to the Earth's early history, over 3 billion years ago. Ancient metamorphic rocks are also exposed in the Tobacco Root Mountains, with the added bonus of a much younger granitic pluton exposed in the center of the range. The Elkhorn Mountains are composed of a thick succession of volcanic rocks that erupted about 75 million years ago, during a time when Montana was experiencing extensive mountain building – the birth of the Rocky Mountains.

The uplift of the Rocky Mountains spanned tens of millions of years from the Cretaceous to the early Cenozoic and was driven by tectonic compressional forces along the western plate boundary of North America, affecting all of western North America from Alaska to Mexico. When mountain-building ended around 50 million years ago, the landscape of southwest Montana did not look like the spectacular, snow-capped mountains we see today. Glaciers later carved the Rockies into the jagged peaks we see today. Over the last 50 million years, western Montana experienced several phases of regional extension and block-faulting, resulting in the creation of modern Basin-and-Range topography. The crest of the Bridger Range arch slowly down-dropped one earthquake at a time to form the modern Gallatin Valley. Thick layers of mid- and late Cenozoic sedimentary rocks and more recent stream deposits have been deposited in the Gallatin Valley, producing the fertile landscape that Native Americans called the "Valley of Flowers" – the Gallatin Valley.

Wheat, ca 1910, Albert Schlechten Farm near Anceney, Montana

Photograph by Albert Schlechten

Museum of the Rockies Photo ArchiveHarvesting

Geo-Facts:

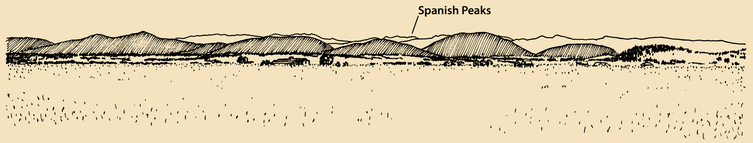
- From the summit of Sacagawea Peak (9,596 ft.) in the northern Bridger Range, you can see even more ranges in a spectacular 360° panorama of southwest Montana.
- A pluton is an intrusive igneous rock body that crystallized from magma slowly cooling below the surface of the Earth. Its name comes from Pluto, the Roman god of the underworld.
- One of the richest gold strikes in Montana history was made at Confederate Gulch in the Big Belt Mountains in 1864. Miners extracted at least $15 million in gold from the gulch until the boom went bust in 1870.

Geo-Activity:

- See how many of the mountain ranges listed above you can identify from where you are standing. Remember that each mountain range was formed in a different way at a different time in the past. What kinds of things can you pick out that make these mountains look different from each other? Do some have jagged peaks while others are more rounded?

View to the North

View to the East



View to the South