

West

East

# The Four Lost Rivers and Creeks of Eastern Idaho, and Their Surrounding Mountain Ranges

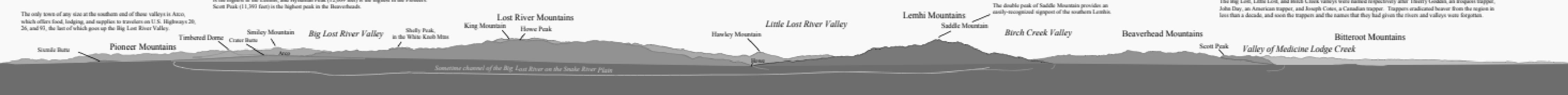
A panoramic view looking north from the "Geological Site" pull-off on U.S. 20 at Mile 273 in northern Bingham County

East

Idaho's highest peaks are all in the Lost River, Lemhi, and Pioneer Mountains. Howse Peak (12,668 feet) is the highest in the Lost River, Diamond Peak (12,197 feet) is the highest in the Lemhi, and Hyndman Peak (12,009 feet) is the highest in the Pioneers. Scott Peak (11,393 feet) is the highest peak in the Beaverheads.

The only town of any size at the southern end of these valleys is Arco, which offers food, lodging, and supplies to travelers on U.S. Highways 20, 26, and 93, the last of which goes up the Big Lost River Valley.

The western three of these four valleys were first known to Europeans by the names of the trappers of the early 1800s. The Big Lost, Little Lost, and Birch Creek valleys were named respectively after Thierry Goddin, an Ingois trapper, John Day, an American trapper, and Joseph Cotes, a Canadian trapper. Trappers eradicated beaver from the region in less than a decade, and soon the trappers and the names that they had given the rivers and valleys were forgotten.



Four rivers and streams used to flow onto the Snake River Plain and then sink into that plain's basaltic bedrock, rather than flow to the Snake and ultimately to the sea. From west to east, and from left to right in this view, these four were the Big Lost River, the Little Lost River, Birch Creek, and Medicine Lodge Creek.

These four rivers and streams emerged southward from their respective valleys, and their paths onto and across the Snake River Plain are shown schematically above.

The flow of the Big Lost River, which has the largest and highest drainage basin of the four, was so great that the river wandered eastward across the Snake River Plain to near the mouth of Birch Creek Valley before the last of its water sank into the subsurface.

The water of these four rivers and streams then flowed as groundwater through fractures in the basalt of the Snake River Plain and emerged decades later in the Thousand Springs area near Hagerman, Idaho, more than 100 miles to the southwest and 1800 feet lower.

In their respective valleys, the four rivers and streams flowed freely, supporting diverse wildlife and vegetation, so that the river banks were lined with trees. In the early 1900s, hotels in Arco advertised fishing opportunities to fishermen from around the nation.

Today, the water that would flow in these rivers and streams is consumed by irrigation up each of the four valleys, so that surface flow almost never comes onto the Snake River Plain today. Wells for irrigation lower the water table, leaving the riverbeds dry, and in the Big Lost River Valley a dam above Mackay holds back flow, both to lessen spring flooding and to reserve water for summer irrigation.

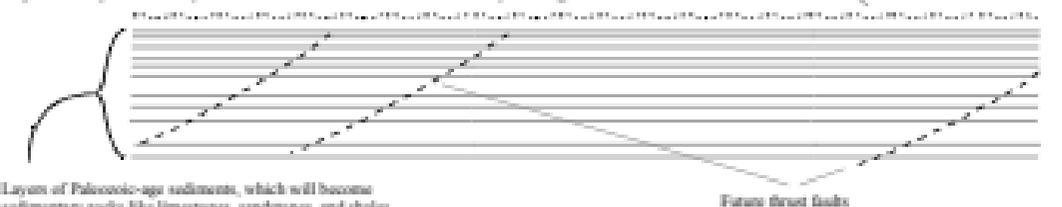
Irrigation in these valleys of lost rivers and streams supports growth of hay and barley. The hay is mostly trucked to feedlots for beef cattle, and the barley largely goes to production of beer. Irrigation also supports the raising of some cattle in each of the valleys.

As the result of these diversions, dead trees and dry gullies mark the downstream portions of the channels through which the four rivers and streams flowed for millennia. One example is at the rest area on U.S. Highways 20 and 26 east of Arco, where a single dead tree stands beside a channel that is commonly dry.

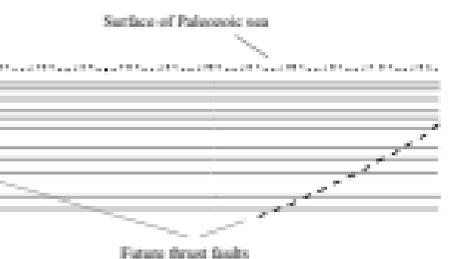
Today, these are "lost rivers" in two senses: they were always "lost" in the hydrological sense that their water disappeared into the Snake River Plain, and now they are "lost" in the historical sense that they no longer flow and support wildlife in the lower reaches of their respective valleys.

## Very generalized cross-sections (vertical profiles) through time:

Deposition of sediments from ancient seas near 600 to 300 million years ago:

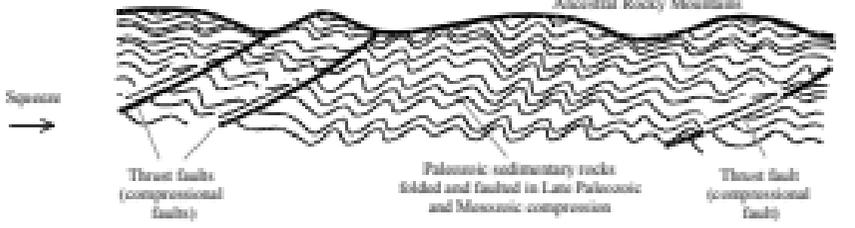


Five mountain ranges can be seen north of the Snake River Plain: the Pioneers far to the west, the Lost River, the Lemhi, the Beaverheads, and the Bitterroots far to the east. These mountains consist mostly of sedimentary rocks deposited hundreds of millions of



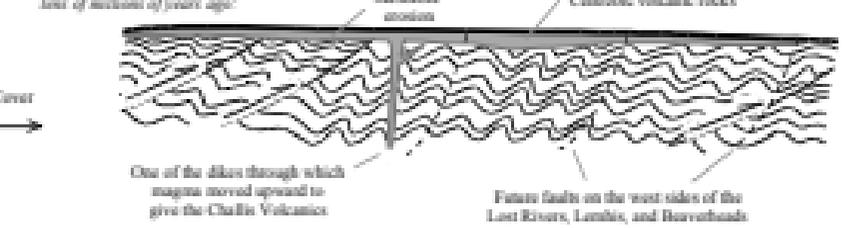
years ago, in times of high sea level and when the western margin of North America was not as elevated as it is today. These layers of rock were compressed to give folds and thrust faults, and more generally to create the Ancestral Rockies of 300 to 180 million years ago.

Tectonic compression 300 to 100 million years ago, and subsequent erosion: Ancestral Rocky Mountains



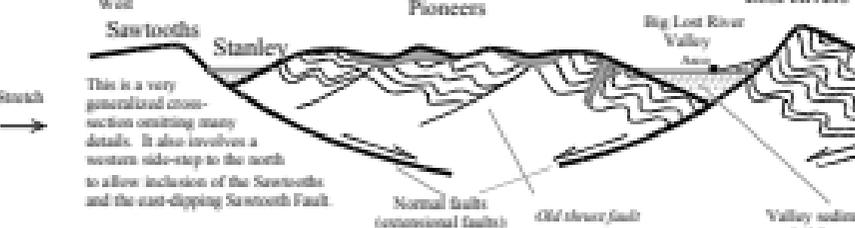
About fifty million years ago, a vast outpouring of volcanic material that is called the "Challis Volcanics" was erupted onto the landscape of much older folded and faulted sedimentary rocks. Amalgaque canyon provides views of brown volcanic rocks over the older tilted layers of gray limestone.

Eruption of the Challis volcanic arc of millions of years ago:



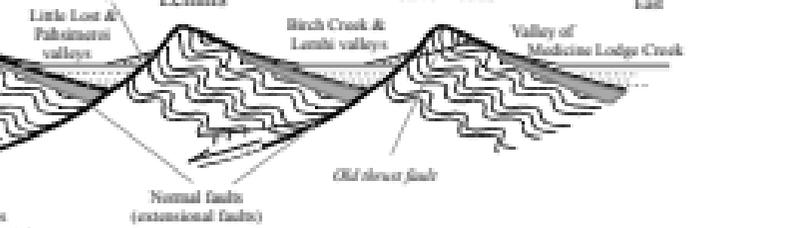
In the last few million years, the crust of western North America has been stretched as the westernmost part of the continent in California began to be dragged west with the Pacific Plate. The old Ancestral Rockies were pulled apart along curving normal

Today: West



In the last million years, lava flows from the Snake River Plain (below) have occasionally invaded the southern ends of the valleys (as with the Lost River Lava Flow) or leaped up onto the southern ends of the mountains (as with Sunset Crater and Crater Butte).

Today: East



In the last million years, lava flows from the Snake River Plain (below) have occasionally invaded the southern ends of the valleys (as with the Lost River Lava Flow) or leaped up onto the southern ends of the mountains (as with Sunset Crater and Crater Butte).