

JUST WHEN YOU THOUGHT IT COULDN'T GET ANY CRAZIER: ANOTHER WILD ASS IDEA ON THE ORIGIN OF THE GRAND CANYON

by Wayne Ranney

The Grand Canyon always attracts big ideas. The huge space, long vista's, and profound depth seem to exert an ever-present pull on those who like to think outside the box. So perhaps no one should have been surprised when a geologist familiar with the debate about the origin of the Grand Canyon came up with one of the most expansive, far-reaching ideas I have ever heard regarding the evolution of the Colorado River. It involves deposits located as far away as the headwaters of the Missouri River in Montana, the Saskatchewan prairies, even the coast of Labrador. Just to be clear, the coast of Labrador is located in *eastern Canada across from Greenland*. Hang on folks!

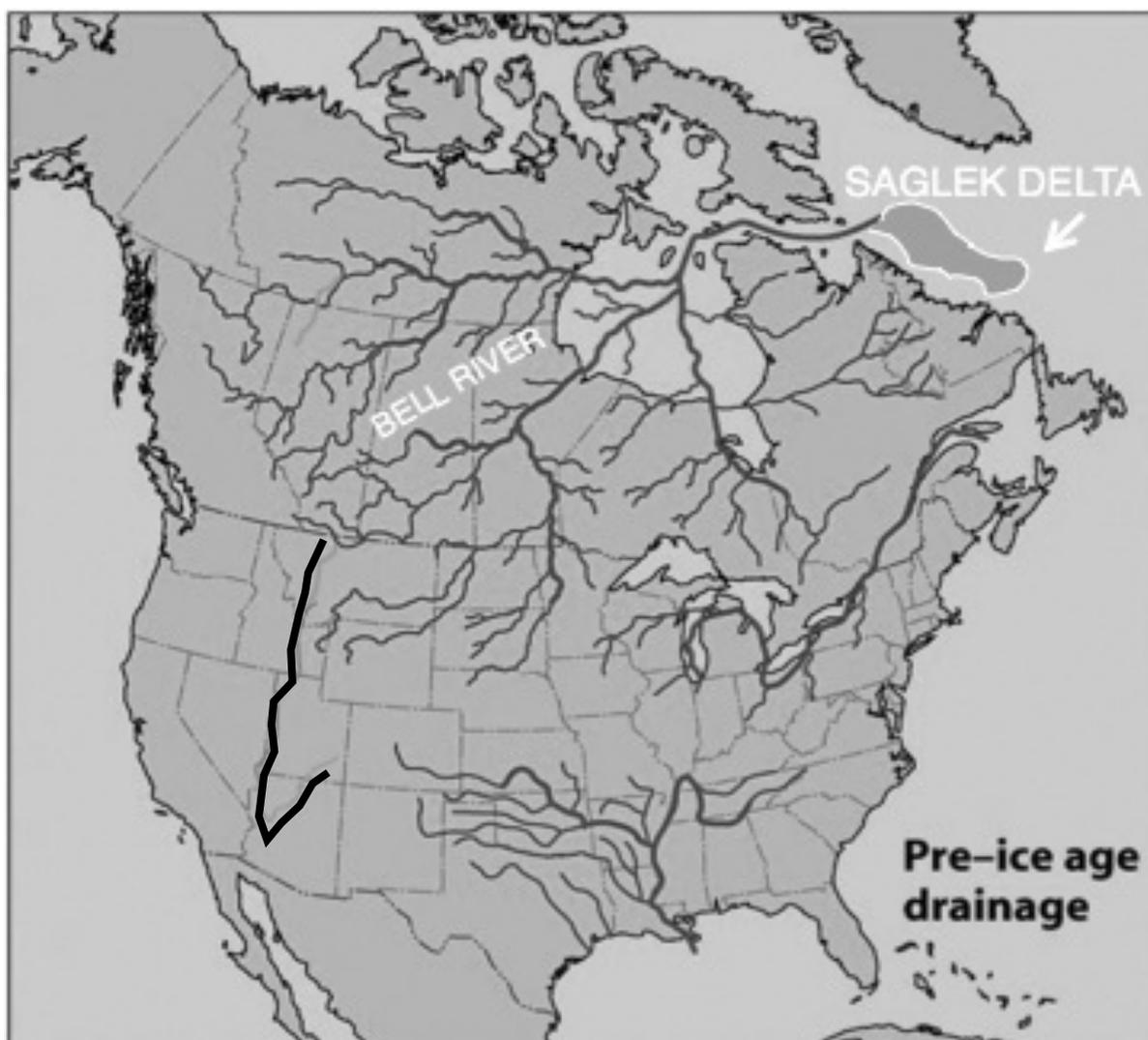
Dr. Jim Sears of the University of Montana has a long connection to Grand Canyon, having completed geologic studies at Northern Arizona University in 1971. These days he is looking at gravel deposits in western Montana that are between 16 and 4 Ma (million years old) containing clasts (pebbles) that may be derived from sources in southern Nevada or western Utah. He suggests that the gravel may have traveled to Montana through rift valleys that formed when faulting created the Basin and Range. The clasts get progressively smaller to the northeast, suggesting to him that the streams that carried them may have drained to the prairies in Saskatchewan or perhaps even further.

That's because back in 1895, a Canadian geologist recognized that a huge drainage system (called the Bell River after its originator, Robert Bell), previously existed in North America, before Ice Age glaciation completely reorganized it. This continental-scale river system drained about 90% of modern-day Canada from the northern Great Lakes, to eastern British Columbia. Its southern headwaters were located in Nebraska, Wyoming, and Montana and ran toward Hudson Bay and Hudson Strait. Recently released data from oil company drill cores shows that sediment from the Bell River system ended up in the Saglek basin off the coast of Labrador (see map on back). These cores also contained river-transported pollen fossils derived from rocks between 300 and 220 Ma. The most likely source rocks for the fossils may be Grand Canyon's Supai Group or the Chinle Formation, which used to be here.

What Sears proposes is a major extension of the Bell River system, much longer than what was originally conceived. He linked the aforementioned gravel deposits in Montana with those in the Saglek Basin in Labrador *and* their source area in southern Nevada. He then extended that drainage eastward to the Grand Canyon and north to the central Colorado Plateau at the foot of the western slope of the Rocky Mountains. In making this far-flung connection, Sears piggybacked on other evidence showing that eastern Grand Canyon may have been partially carved between 25 and 16 Ma. Sears is suggesting that the drainage may have originated near present-day Moab, winding through a sub-section of Grand Canyon to rifted valleys in Nevada, that carried sediment towards Montana, Saskatchewan, the area of Hudson Bay and Hudson Strait and the Saglek basin in the North Atlantic.

Sears further proposes that this extensive arm of the Bell River may have carved the Esplanade surface in central and western Grand Canyon. He notes that this well-known bench may correlate with remnants of a less obvious bench found on the top of the Redwall in eastern Grand Canyon (think Cheops Pyramid above Phantom Ranch or Horseshoe Mesa near Grandview). Just to be clear, Sears is no crack-pot researcher who pulled this bunny out of some top-hat. He's been gathering data for decades and finally had enough info to spring the idea last November at the Geological Society of America Annual Meeting in Denver.

Is this yarn worthy of a mention in your repertoire of Grand Canyon origin stories? I think it might be, along with the map of the former drainage in Canada. I used to think that ideas on the origin of the Colorado River and Grand Canyon would necessarily be restricted only to areas within the United States. Obviously I was thinking too small.



Map showing the extent of the Bell River in North America before reorganization after the Ice Age. The heavy black line in Montana, Idaho, Utah and Arizona shows the proposal by Jim Sears to extend the drainage to Grand Canyon. (Image modified from Jim Sears). See the full article at: <http://www.geosociety.org/gsatoday/archive/23/11/article/i1052-5173-23-11-4.htm>.