Wesley Street

GRY 300

Lost Hill Park Natural Resource Area and South Dry Sac River

Lost Hill Natural Resource Area is a park immediately north of Springfield, MO. It is currently a part of the Springfield Greenways Trails which link sections of Springfield. It is the location of a couple of interesting features which are typical of karst topography in the Ozarks. Using ArcMap and LIDAR data, I created a map of the current river and its former course.

The first feature is the losing stream, the South Dry Sac River. This river is a stereotypical losing stream. A losing stream loses water through the ground and into the water table. This manifests itself in stream appearing and disappearing along the river's path. These are discussed in Dr. Rafferty's book and almost any other reference to karst topography. (Rafferty, 2001) In fact the losing stream characteristic is where the "dry" in the name Dry Sac comes from.

At the rivers peak, water can be close to the bridge, where Farm Road 151 crosses the river valley. The water also stretches across the valley which in some spots is more than three hundred feet. In the summer, the stream will dry up almost completely. The stream reappears as springs along the river's course. When one stands in the valley in the summer, it is hard to imagine the volume of water carried down river during the summer.

This summer was an unusually dry one. When the class first went out to the Dry Sac River for water testing at the beginning of June the river was already dried up. This usually

doesn't happen until July; however, Springfield had 1.5" less rain than average in May and more than 3.5" less in June. (NOAA) As a result there was never a flowing stream on any of the four times we went out for water testing.

The second feature is the "lost hill" which is a result of meandering streams. "*The streams of the Ozarks are distinctive. Though they deeply entrench the plateau surface, they follow meandering courses.*" (Fenneman, 1938) It is theorized that the meandering course results from when the Ozarks was a low lying plain. Meandering rivers have a feature that characterizes these rivers, the ox-bow lake. The two corners of the horse shoe shaped meander eventually meet and form a "meander cut off," leaving the isolated lake.

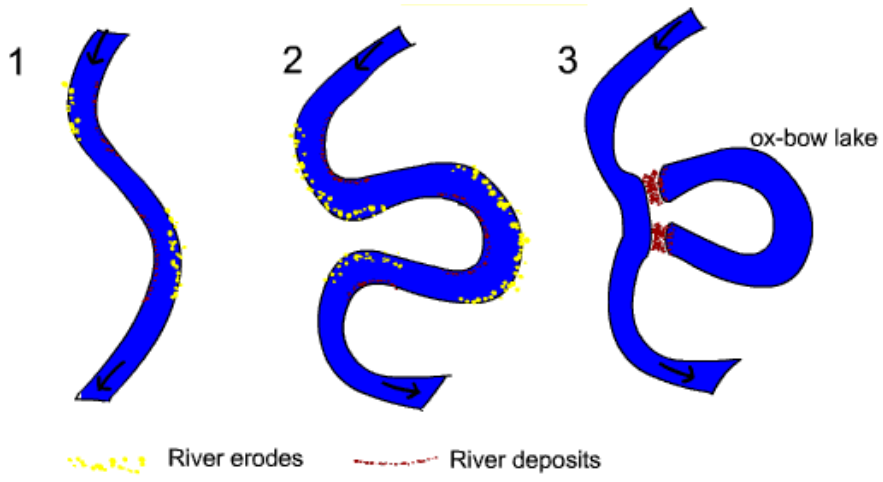


Figure 1 - http://www.scalloway.org.uk/phyl7.htm

In the Ozarks, the ox-bow lake does not often form. The result is usually a dried up river bed. However, because of the topography and geology of the Ozarks, the center of the ox-bow lake is a hill. When the meander cut off isolates the hill, it is isolated from the rest of the ridge or line of hills it was formerly a part of. Because of this separation, these hills are called "lost hills" because of the rarity of a lone hill.(Sauer, 1920) The only other reference to a lost hill

found, was in *The Geography of the Ozark Highland of Missouri* by Carl Sauer. Sauer also says that lost hills can be found where two streams meet. They sometimes widen and connect upstream of the original point and cut a hill off from its original ridge also. (1920)

I had never heard of a lost hill until I started this research. I was unable to find any historical information about the immediate area, so I began looking at the physical geography. When I imported the LIDAR data in to ArcMap, it was immediately obvious that the South Dry Sac River used to meander in the location of Lost Hill . The river bed appears as a black scar across the landscape. The current river bed appears as a solid black and the valley it forms is just slightly lighter in color.

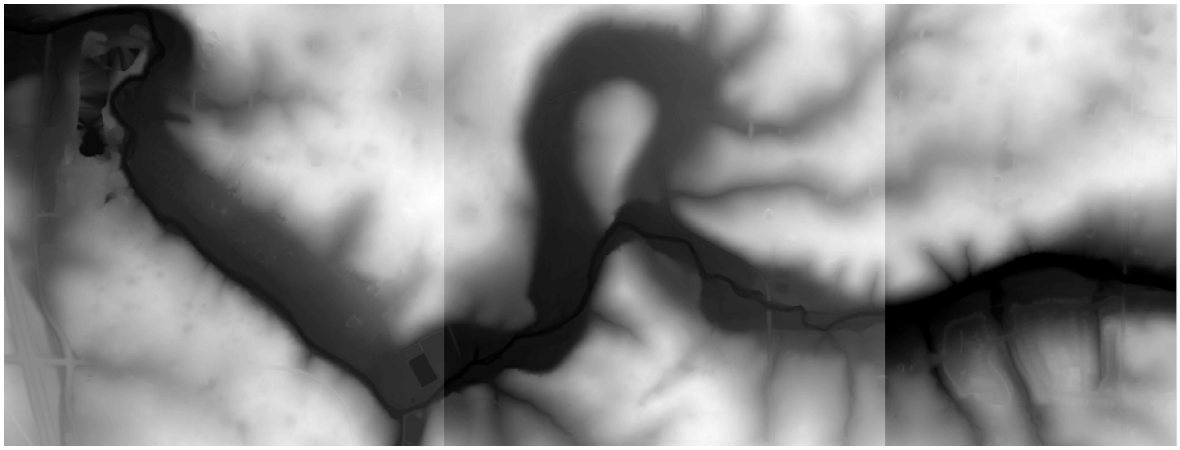
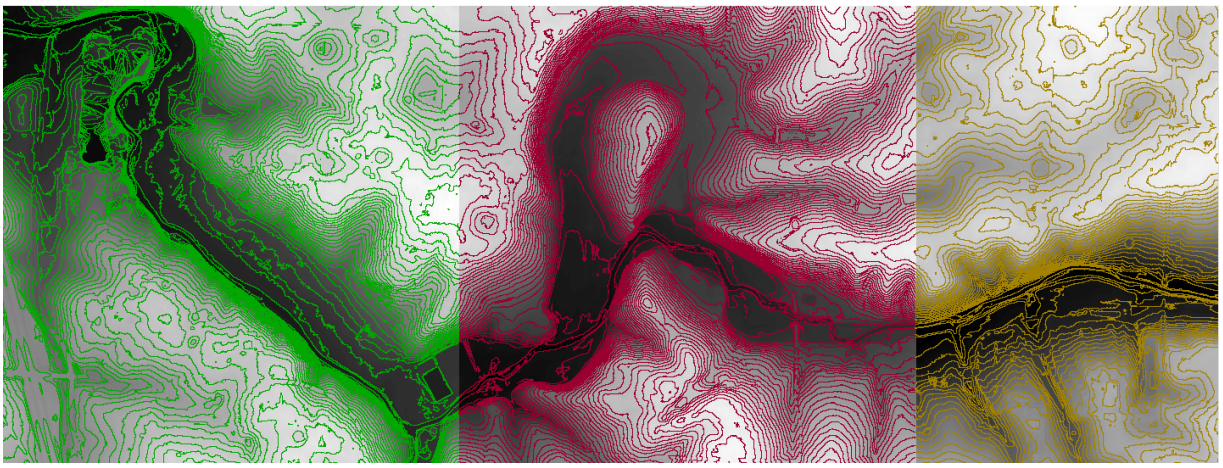


Figure 2 – Screen shot of LIDAR data

I used three LIDAR images to create a topographic map of the area with contours at a 5 meter interval. Also, I highlighted the current river valley and also highlighted the former river bed. The hill remains at the center of the horseshoe. I then added road and stream information from the City of Springfield to finish the map.



This project was difficult because of a lack of information. There is current park information listed by the Springfield Park Board and other sources. I was unable to find any historical information about this area. Also, I was only able to find two references to a lost hill, one in Rafferty's book and the other in Sauer's. Sauer's original text is apparently the source for this feature in Rafferty's. Sauer seems to have heard this name used regionally to describe this phenomenon.

By using technology we are able to look into geological and geographical history. I did not know until this project that a "lost hill" even existed. In retrospect it seems common sense that this should happen but it is not stereo typical of a meandering river. It seems that a combination of the Ozarks location, terrain, and geology has created this land form.

Bibliography

Books

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Milton D. Rafferty, *The Ozarks Land and Life,* (Fayetteville: The University of Arkansas Press, 2001)

Websites

"Lower Course Landforms," http://www.scalloway.org.uk/phyl7.htm

"National Weather Service (NOAA)," http://www.crh.noaa.gov/sgf/