RAGBRAI Geo-pedia

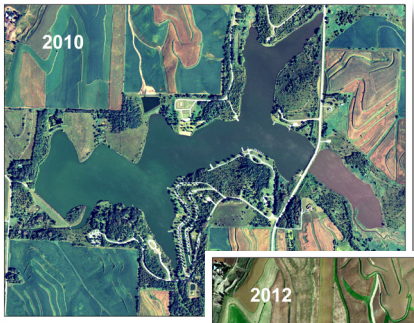
Lake Restoration Program

Prairie Rose Lake is a 173-acre constructed lake with a watershed to lake ratio of 24/1. Problems at the lake centered on low fish populations, historic lake siltation, and poor water quality. Lake improvements in recent years include; jetties and fish structure (1998), sediment basin and shoreline riprap (2001), and sediment basins (2004). Local efforts have accomplished significant work in the watershed and identified additional work for completion. Through the Prairie Rose Water Quality Project, there was over 225,000 feet (40 mi.) of terraces, grassed waterways, and nutrient management plans added to the watershed reducing sediment and nutrient delivery to the lake by 60%.

Since the lake was dewatered in July 2011...

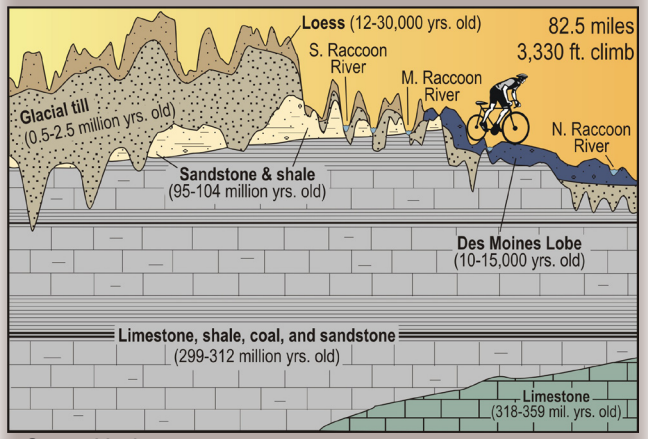
- 60,000 cubic yards of sediment was removed by mechanical dredging and the shoreline was stabilized,
- The spillway was modified to keep unwanted fish from entering the lake from downstream, and
- Additional fish habitat and shoreline access was added.

In September 2012 the lake began to refill. The final phase involving hydraulic dredging will take place in the fall of 2013. Below are before and after aerial photos of the lake.



COVER PHOTO: *Entrance sign to Springbrook State Park, which is located on the boundary between the Des Moines Lobe and the Southern Iowa Drift Plain.*

Day 2 Milestones



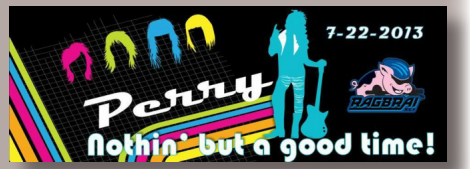
Start: Harlan

Prairie Rose St. Park: 8.5 miles (Karras Loop)

Missouri-Mississippi Drainage Divide: 34 miles

Des Moines Lobe / Spring Brook SP: 54 miles

Finish: Perry – 82.5 miles



For More Information...

"The Natural History of Springbrook State Recreation Area" - Geological Society of Iowa Guidebook No. 66 (1998)
ftp://ftp.igsb.uiowa.edu/igspubs/pdf/GSI-066.pdf

Surficial geologic map of the Des Moines Lobe of Iowa, Phase 4: Dallas County (2002)
ftp://ftp.igsb.uiowa.edu/igspubs/pdf/ofm-2002-2.pdf

Lake Restoration Program and Water Quality Improvement
www.iowadnr.gov/Environment/WaterQuality/LakeRestoration.aspx

RAGBRAI

Day 2

Monday, July 22

2013

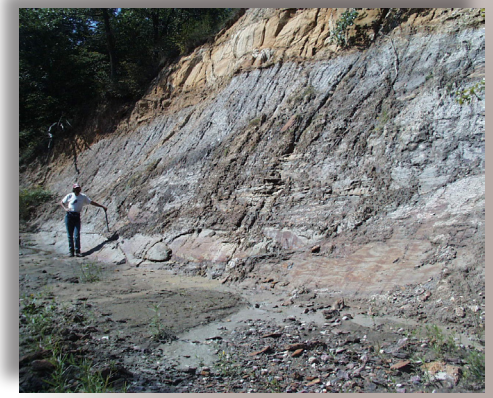
Learn about the Land

Iowa DNR - Geological and Water Survey
109 Trowbridge Hall
Iowa City, IA 52242
www.igsb.uiowa.edu

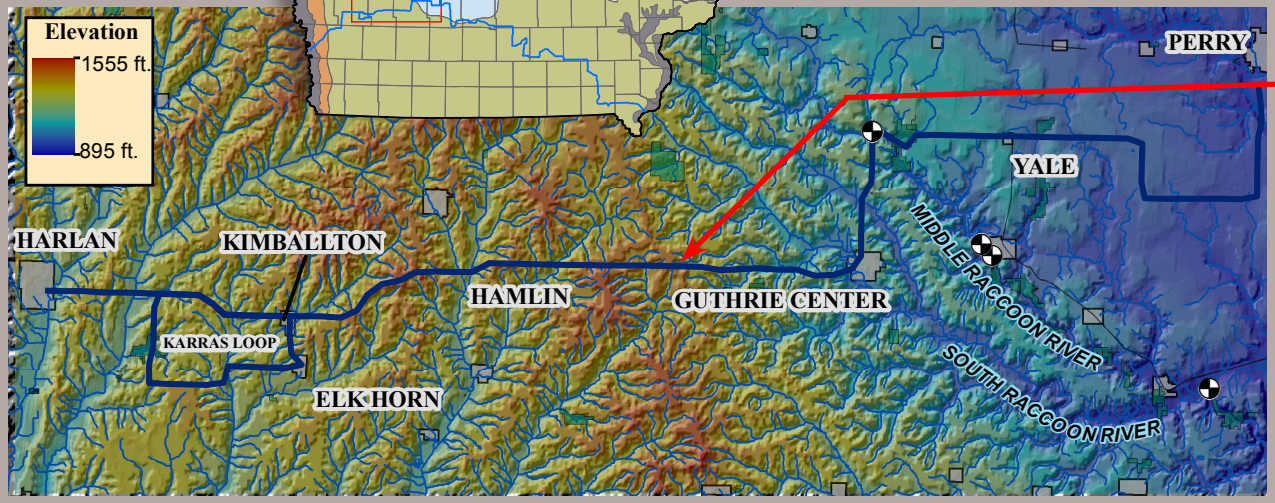
US Geological Survey - IA Water Science Center
400 S. Clinton St.
Iowa City, IA 52240
http://ia.water.usgs.gov

Iowa Limestone Producers Association
5907 Meredith Dr., Suite A
Des Moines, IA 50322
www.limestone.org

Initially called "King's State Park" (after the original landowner), **Springbrook State Park** beautifully marks the boundary between two strikingly different landform regions of Iowa - the Des Moines Lobe and the Southern Iowa Drift Plain. The park is one of the few locations to see Cretaceous sandstone cliffs, cut out relatively recently by the Raccoon River some 13,500 years ago during the melting of the Des Moines Lobe.



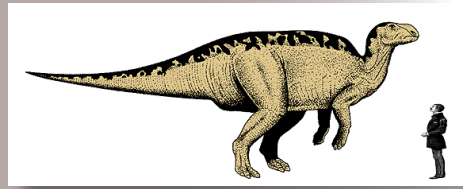
Traversing central and northern Guthrie County brings riders through the heart of central Iowa's Dakota Country. Say what? Yes that's right - that is - the **Dakota Formation**, originally named in 1862 for sandstone exposures along the Missouri River bluffline in Dakota County, Nebraska. These 100 million year old (*Cretaceous*) sandstones and shales were deposited by ancient southwest-flowing rivers draining into the vast *Western Interior Seaway* that stretched from Iowa to Utah. Sandstone exposures south of Guthrie Center and along the Middle Raccoon River bluffs at Springbrook State Park display crossbeds, structures formed by migrating sand dunes and ripples along the floor of the ancient river channels. The sandstones of the Dakota Formation are known as the Dakota aquifer, and serve as a primary source of water for much of western Iowa.

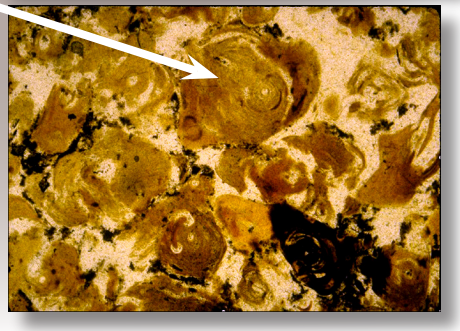


Although not the highest point above sea level on this year's ride, the **drainage divide** between the Missouri River and Mississippi River watersheds occurs just west of Guthrie Center.

Crossing from the Southern Iowa Drift Plain (SIDP) onto the Des Moines Lobe (DML) near Springbrook State park, riders will be keenly aware that the slope of the land is much greater early in the day compared to later. This is a testament to the **power of erosion** over time, as the two landform regions reflect the length of time erosional processes have been active. Erosion has been working the landscape of the SIDP region for more than 500,000 years, whereas in the DML area, erosion has only been operating since the last glaciation a mere 12,500 years ago. Current land use reflects the glacial history and erosion with row crops of corn and beans dominating the landscape in the level, poorly drained DML region, compared to a greater mix of crops, pastures, and trees in the SIDP region. Interestingly enough, despite considerably more land devoted to cropland in the DML region, increased erosion and sediment loss occurs in the SIDP region due to the greater relief.

In 1982, Iowa Geological Survey geologists discovered a fragment of fossil dinosaur bone in ancient river gravels of the Cretaceous Dakota Formation in Guthrie County. The microscopic structure of this fragment (shown at right) revealed a densely vascularized dinosaur bone. The bone was probably from a large **ornithopod dinosaur** that inhabited the region. Reaching a length of 32 feet, these plant-eating giants browsed the lush subtropical forests and swamps. Four additional dinosaur bones have been found in Iowa, but all were from glacial gravel deposits and may have been transported into the state. The Guthrie County bone was from a dinosaur that surely lived in Iowa.





Printed on recycled paper