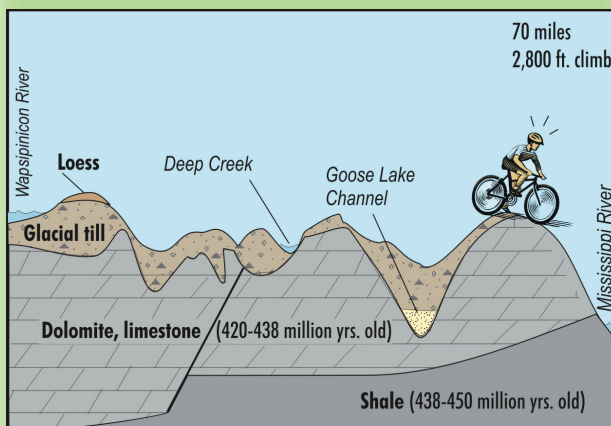


## RAGBRAI Geo-quiz

- When the 1.7 billion year old Sioux Quartzite is used for paving roads in NW Iowa it gives them a \_\_ color.  
a. white b. blue c. pink d. black
- What percent of Iowa's electricity is generated by wind?  
a. 5% b. 10% c. 15% d. 20%
- Approximately 16,000 years ago, an extension of the Laurentide Ice Sheet surged from Canada into north-central Iowa and deposited the \_\_.  
a. Loess Hills b. Des Moines Lobe c. Fremont Channel
- A \_\_ is a ridge or escarpment composed of glacial drift (clay, sand, gravel, boulders) that marks the maximum extent of a glacial advance.  
a. moraine b. crevasse c. mole hill d. erratic
- The Midcontinent Rift System represents a giant \_\_ in the Earth that formed in western Iowa about 1 billion years ago.  
a. crater b. moraine c. mountain d. crack
- Limestone is used in all of the following EXCEPT \_\_.  
a. antifreeze b. water purification c. antacids d. roads
- Iowa's only nuclear power plant is located near which Eastern Iowa town?  
a. Anamosa b. Palo c. Lost Nation d. Garrison
- Cornell College sits atop what prominent glacial feature?  
a. Kame b. Terminal moraine c. Ice volcano d. Paha
- The rock exposures in Wapsipinicon State Park are composed of \_\_.  
a. granite b. limestone c. gypsum d. dolomite
- The Goose Lake Channel represents the ancient path of which river?  
a. Missouri b. Maquoketa c. Mississippi d. Iowa

ANSWERS: 1.c, 2.d, 3.b, 4.a, 5.d, 6.a, 7.b, 8.d, 9.d, 10.b

## Day 7 Milestones



**Start:** Anamosa

**Iowan Surface:** 19.5 - 33.5 & 62 - 70 miles

**Plum River Fault Zone:** 21 miles

**Goose Lake Channel:** 54.5 - 55.5 miles

**Iowa City - Clinton Fault Zone:** 66 miles

**Finish:** Clinton - 70 miles

**For More Information...**

USGS Science Education  
<http://education.usgs.gov/>



New Perspectives on the Paleozoic History of the Upper Mississippi Valley: an Examination of the Plum River Fault Zone

<ftp://ftp.igsb.uiowa.edu/igs pubs/pdf/GB-08.pdf>

Large Floods in the United States: Where They Happen and Why  
<http://pubs.usgs.gov/circ/2003/circ1245/>

Books about Iowa's Land:

Landforms of Iowa

by Jean C. Prior, University of Iowa Press, 1991

COVER PHOTO: One of the lighthouses that can be seen dotting the banks of the Mississippi River along Riverview Park in Clinton, Iowa.

# 40th 2012 RAGBRAI

## Learn about the Land

Saturday, July 28

# Day 7



**Iowa DNR - Geological and Water Survey**

109 Trowbridge Hall  
Iowa City, IA 52242  
[www.igsb.uiowa.edu](http://www.igsb.uiowa.edu)

**US Geological Survey - IA Water Science Center**

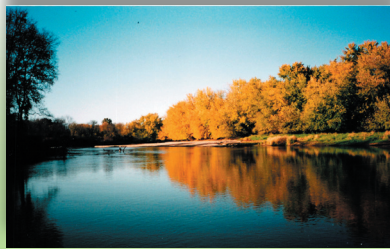
400 S. Clinton St.  
Iowa City, IA 52240  
<http://ia.water.usgs.gov>

**Iowa Limestone Producers Association**

5907 Meredith Dr., Suite A  
Des Moines, IA 50322  
[www.limestone.org](http://www.limestone.org)

## Legendary River

The last leg of your RAGBRAI journey will take you in and out of the beautiful **Wapsipinicon River** valley. The Wapsipinicon River's name is buried in Indian legend. There are multiple accounts published in the late 19th and early 20th centuries that involve a beautiful Indian maiden named Wapsi and the son of an Indian chief named Pinicon, (or vice-versa) who lived, loved, and; whether by a jealous former lover or from a taboo intertribal affair, died along the river's banks. Though interesting folklore, the romantic Indian legends are not well-founded historically. The literal translation of the beautiful name is "White Potato River" or "Swan Apple River". The translations refer to the white artichokes which were once plentiful along the banks of the river, though since long vanished.

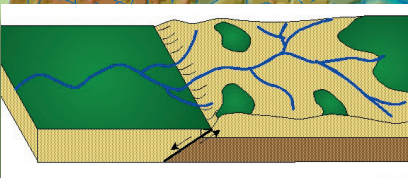
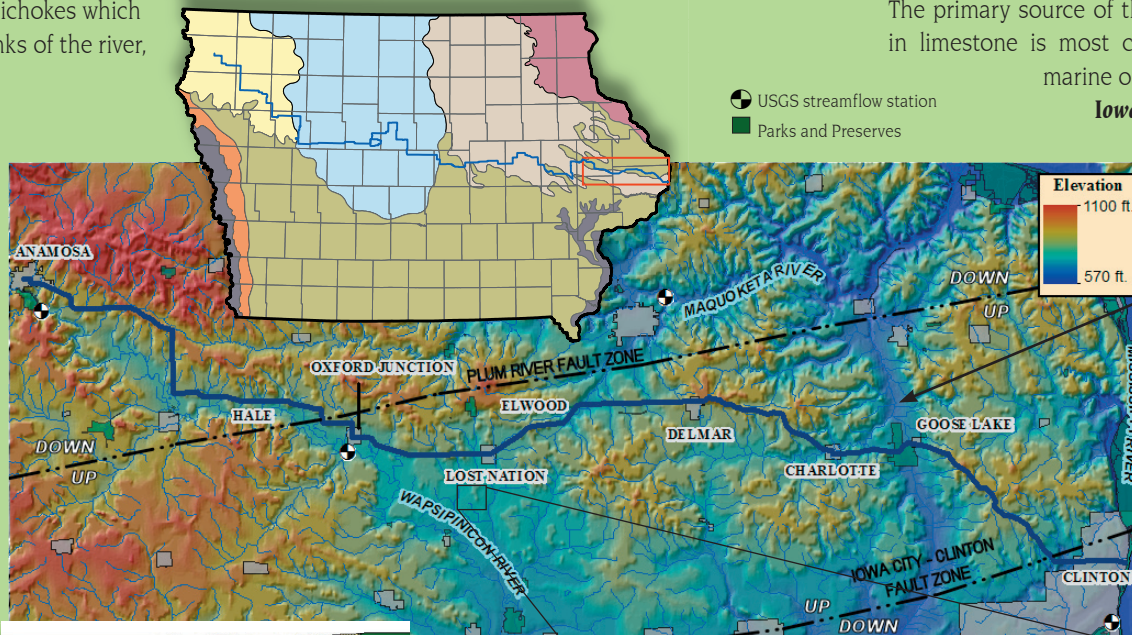


## Manikowski Prairie

Just northeast of Goose Lake is **Manikowski Prairie State Preserve**. This is a limestone prairie, where the soil is very thin and bedrock is at or near the surface. The vegetation is typical of a dry-prairie with more than 40 plant species including a great show of shooting stars in the spring. The prairie rests on a wide valley wall that was at one time an ancestral channel of the Maquoketa River.

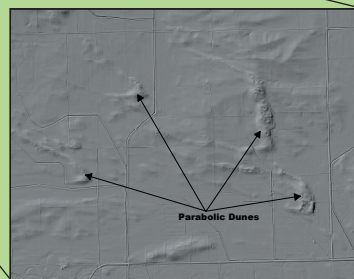
## Not My Fault!

The **Plum River Fault Zone** is a 112 mile-long, east-west trending zone of high-angle faulting that extends from Cedar Rapids on the west across eastern Iowa to Sabula, then into Carroll County, Illinois, to near the town of Lanark. The fault was intermittently active for over a billion years, most recently between the Ordovician and the Pennsylvanian (about 475 to 300 million years ago) when about half of its total vertical movements of about 1,100 feet occurred. Rocks south of the fault zone were lifted up with respect to those on the north. There may have been as much as 33 feet of movement along the Plum River Fault Zone in the last 300 million years, but the fault has not been active in historic times. A related, parallel fault zone, the **Iowa City - Clinton Fault Zone**, is located about 15 miles south of Plum River Fault Zone. It shows an opposite displacement (up to the north) indicating that the zone of rocks between the faults is a giant uplifted block.



## 'Dunes' & Don'ts

South of the town of Lost Nation lies a neighborhood of rare positive topographic features called **parabolic dunes**. These eolian sand features are oriented with the nose in the downwind direction. In the case of these dunes, that is southeast. It is believed that these dunes formed during the late Pleistocene, with activation into the Holocene. Parabolic dunes form when longitudinal dunes have a blow-out and the sides remain anchored by vegetation. Since the center of the dune is left exposed to the wind, the front of the dune migrates downwind.



## What is Limestone?

Limestone is one of the most common rock types in Iowa. It is a **sedimentary** rock composed largely of the mineral *calcite* (calcium carbonate:  $\text{CaCO}_3$ ). Limestones often contain variable amounts of silica in the form of chert or flint, as well as varying amounts of clay, silt and sand as disseminations, nodules, or layers within the rock. The primary source of the calcite in limestone is most commonly marine organisms.



## Iowa Limestone Producers Association

## Changing Channels

The **Goose Lake Channel** is an abandoned river channel that runs for 20 miles in a southerly direction from the Maquoketa River valley north of Spragueville in Jackson County, into Clinton County and through the town of Goose Lake, then to the Scott County line where it intersects the Wapsipinicon River valley. The channel is incised into the Silurian dolomite bedrock and averages about a mile in width except where it briefly reaches about 3 miles wide north of Preston as it eroded the soft Maquoketa shale just south of the Plum River Fault Zone. For many years it was believed to have been created when ice of the Illinoian glacier blocked the Mississippi River forcing it to cut a new channel through this area. However, work by Rick Updegraff at the University of Iowa proved in 1981 that the Goose Lake Channel was instead cut by the Maquoketa River as it wound its way south to the Cleona Channel. The Cleona Channel was a true ancient Mississippi River channel that hosted the river on several occasions, as recently as about 250,000 years ago. The Goose Lake Channel currently contains two small creeks, Deep Creek and Brophy Creek.