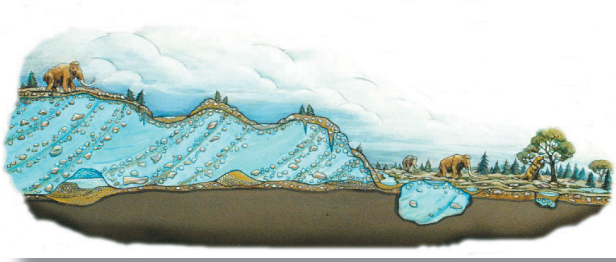


RAGBRAI Geo-pedia

At times during the **Pleistocene Epoch** (~2,600,000 to 12,000 years ago) Iowa's landscape resembled modern-day Greenland. The **Laurentide Ice Sheet** covered perhaps several million square miles of North America. Large land mammals such as giant sloths, woolly mammoths, and giant beavers roamed the land in a fight for survival in an icy, arctic world. Nearly every square mile of Iowa's surface has been impacted by glaciers.



Glacial Terminology

Crevasse - cracks in the surface of a glacier or ice sheet due to extensive flow stresses. Crevassees may form at the base of the glacier or near the surface.

End moraine - a moraine that marks the greatest extent of a glacial advance. A moraine is a ridge or escarpment composed of glacial drift (clay, sand, gravel, and boulders).

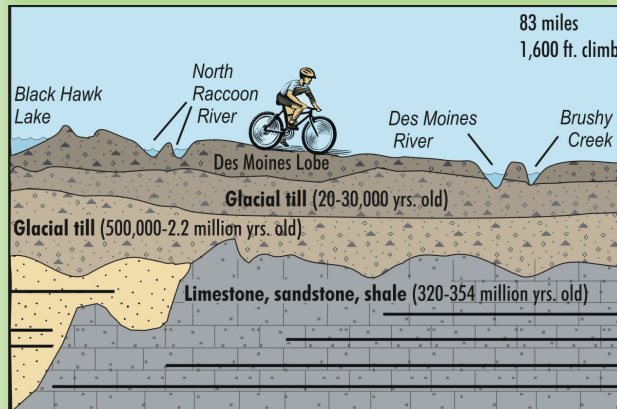
Hummocky topography - topography consisting of randomly arranged knobs (hummocks) that are separated and defined by intervening low-lying areas that are part of linked-depression drainage systems.

Till - sediment released directly from the glacial ice that has not undergone subsequent disaggregation and resedimentation. Till can be deposited by several different glacial processes, including lodgement, melt-out, and deformation. Till on the Des Moines Lobe is melt-out till, till deposited by a slow release of glacial debris from ice (not deformed).

Loess - wind-blown sediment dominated by grains in the silt size fraction. In Iowa most loess originated from wind erosion of valley train outwash.

COVER PHOTO: Cluster of poorly drained hollows on the Altamont Moraine in Dickenson County. "Landforms of Iowa" (Photo by Doug C. Harr)

Day 3 Milestones



Start: Lake View

North Raccoon River: 15 miles

Altamont Moraine: 16.5 miles

Glacial Lake Wright: 38 - 44 miles

Finish: Webster City – 83 miles



For More Information...

Boone River

<http://www.nature.org/ourinitiatives/habitats/riverslakes/placesweprotect/mississippi-river-priority-site-boone-river.xml>

Raccoon River Watershed Association
www.northraccoon.org

Surficial Geologic Map of the Des Moines Lobe of Iowa, Hamilton and Webster Counties
<ftp://ftp.igsb.uiowa.edu/igspubs/pdf/OFM-2000-1.pdf>

Dolliver Memorial State Park
http://www.stateparks.com/dolliver_memorial_state_park_in_iowa.html

Books about Iowa's Land:

Iowa's Geologic Past

by Wayne Anderson, University of Iowa Press,
1998

40th 2012 RAGBRAI

Learn about the Land

Tuesday, July 24

Day 3



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>

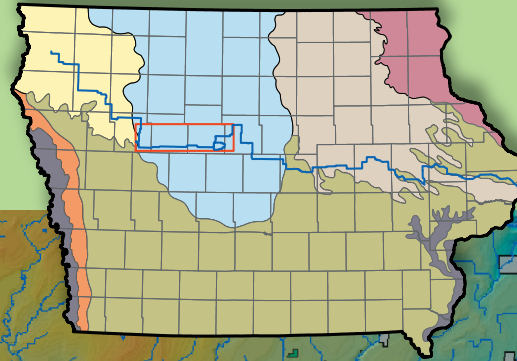
Iowa Limestone Producers Association

5907 Meredith Dr., Suite A
Des Moines, IA 50322
www.limestone.org

Great Glacial Lakes!

Yesterday (Day 2) you rode just south of Storm Lake and ended at Black Hawk Lake. These lakes both formed in a similar way and are called **kettle lakes**. They formed at the margin of the Des Moines Lobe ice sheet when massive chunks of ice broke off and melted in place. They remain there adjacent to the Bemis Moraine since their formation, about 12,500 years ago! As you ride east out of Lake View you may notice discontinuous, east-west trending ridges. These are remnants of vast **crevasses** that formed near the edge of the ice sheet as it advanced southward, collecting debris and depositing it in ridges perpendicular to the ice movement. The ride between Lake View and Lake City takes you over the low relief Bemis Till Plain. After crossing the North Raccoon River in Lake City, prepare to ascend over 60 feet as you scale the Altamont Moraine (just as you did on Day 2 west of Nemaha). A few miles east of Gowrie you will enjoy the relatively flat expanse of Glacial Lake Wright. This shallow lake developed behind the Altamont Moraine as the Des Moines Lobe stagnated and melted about 13,500 years ago.

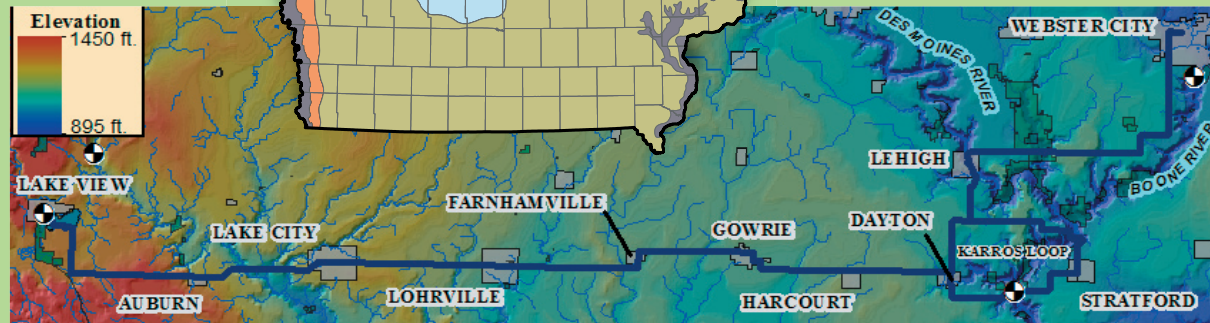
-  USGS streamflow station
-  Parks and Preserves



Webster City - a 'Boone' Town

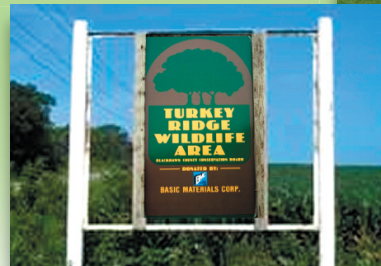
The Boone River is a tributary of the Des Moines River in north-central Iowa. It is 111 miles (179 km) long and drains an area of 895 square miles (2,320 km²). The Boone River rises near the town of Britt in western Hancock County and flows generally southwardly through Wright, Hamilton, and Webster counties, past Goldfield and Webster City.

In 1985, The Iowa DNR designated the lower 26 miles (42 km) of the Boone River from Webster City to its mouth as a **"Protected Water Area."** This stretch of the river cuts through a wooded valley and allows canoeing and fishing for smallmouth bass, channel catfish, walleye, northern pike, and flathead catfish.



Mines to Recreation

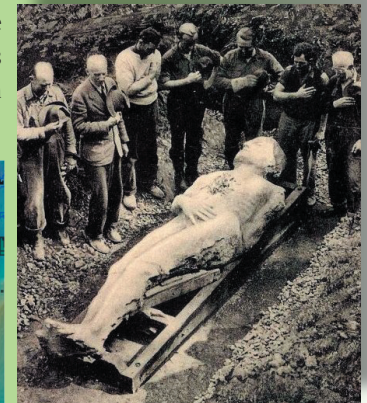
The involvement of the limestone producer doesn't end with extraction of usable materials. The careful planning and management of stone and aggregate resources also extends to the future reclamation and reuse of the land. Today, many of Iowa's public recreational areas are former aggregate mining operations.



A 'Giant' Hoax

In 1868, a New York atheist named George Hull executed one of the biggest hoaxes in US history. Inspired by a passage from Genesis 6:4 that he heard at a Methodist revival stating that *giants once lived on Earth*. Hull acquired a 4.5' by 10' block of gypsum from a quarry near Ft. Dodge, IA and had it shipped to Chicago. There a stonecutter carved it into the likeness of a man. Hull used various stains, acids, and other methods to impart the appearance of centuries of weathering on the carving. Hull brought it to his cousins' farm in New York State and buried it for a year. Then he hired two men to dig a well on his cousins' property where they discovered the "petrified giant." A tent was set up over the giant and Hull charged 50¢ per viewing. Although archaeologists and geologists

pronounced the giant a fake, some Christian fundamentalists defended its authenticity. With about \$2,800 invested in the giant, Hull ultimately sold it for \$23,000. Today the **Cardiff Giant** is on display at the Farmer's Museum in Cooperstown, NY. A replica is on display at the Ft. Dodge Museum.



Not so Secret Society

The **Geological Society of Iowa** (GSI) is a non-profit corporation whose objective is to advance the science of geology, especially Iowa geology. Anyone with an interest in geology or earth science can join GSI. GSI publishes newsletters informing members about newsworthy geological happenings in Iowa and elsewhere, GSI business, and details of upcoming field trips and meetings. GSI generally conducts two field trips a year, one each in the spring and fall. The spring field trip usually coincides with the spring meeting of the Iowa Academy of Science. If you are interested in earth science; geology; fossil, mineral, or rock collection; or even camaraderie with such a group, consider joining the Geological Society of Iowa. More information and downloadable copies of all GSI field trip guidebooks are available at www.iowageology.org.

