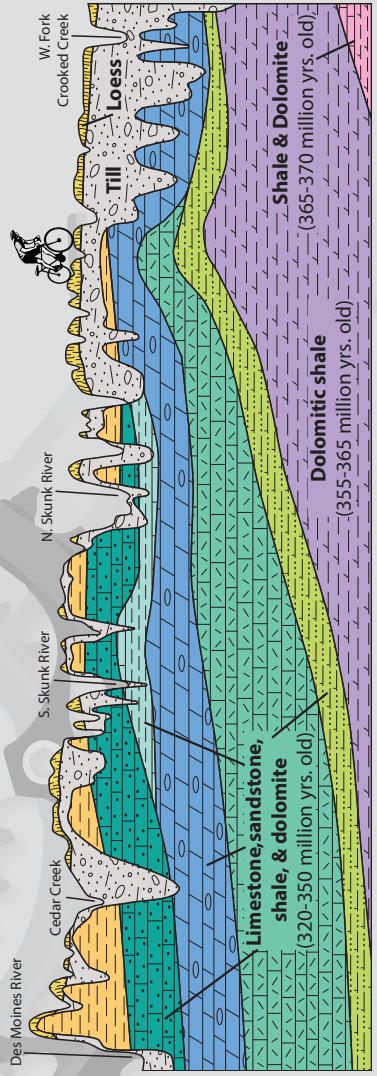
Mahaska County Mammoths

One farmer's creek side stroll in 2010 has developed into one of the most productive sites for mammoth remains in Iowa. A Mahaska county citizen was walking along a creek bank and noticed an unusual object sticking out of the bank, a femur from a mammoth. Since 2012, volunteers from different organizations have helped unearth numerous remains from the site. Researchers looked at bones such as the teeth, tusks, and vertebrae and were able to distinguish three separate mammoths, a rare situation in Iowa. Radiocarbon dates from the site put the date of the remains between 14,000 and 16,000 years ago. Currently, the site is being managed by the Mahaska County Conservation Board.

* Cover photo: A mammoth tooth found in Mahaska County. Photo courtesey of the University of Iowa Museum of Natural History.



Daily Geology: This section of the route will have the most bedrock exposures of any day. As you ascend the east side of the Des Moines River valley, keep an eye out for Pennsylvanian outcrops. Fossil plants, pyrite (aka fool's gold), and concretions may be found eroding from road cuts. The South and North Skunk rivers offer your first glimpse of Mississippian bedrock. Occasional brachiopod and coral fossils might be found in the limestone. If you're lucky you might find a geode, although most geode-bearing outcrops are found farther down the Skunk River.

RAGBRAI

Day 6

2016

Friday, July 29

Learn About the Land

IOWA GEOLOGICAL SURVEY

IIHR Hydroscience & Engineering

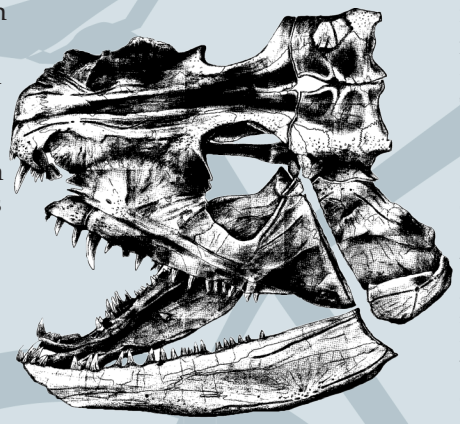
USGS science for a changing world

IOWA LIMESTONE PRODUCERS ASSOCIATION
Your limestone resource since 1945!

DNR

The Delta Tetrapod

In the spring of 1985, geologists Robert McKay of the Iowa Geological Survey and Patrick McAdams of the William Penn College of Oskaloosa, Iowa, were investigating the Mississippian strata in an inactive quarry nearby the little town of Delta, southwestern Keokuk County, Iowa. They were unaware that they were on the way toward a scientifically important discovery. When the geologists arrived, they found a large concentration of fossil bones was in the quarry. This discovery was first reported in publication Nature in 1988. Seven years later, this fossil animal was named *Whatcheeria deltae*, a new genus and species of early tetrapod, a land-living vertebrate. The genus name is from the town of What Cheer, and the species name Delta is from the town closest to the quarry where the type and all other known *Whatcheeria* specimens were collected. Now, this fossil animal has been commonly known as the Delta tetrapod and the rock layer containing the fossils has been referred to as the Heimstra Quarry bone bed which also contains several other tetrapods and fish and plant fossils.

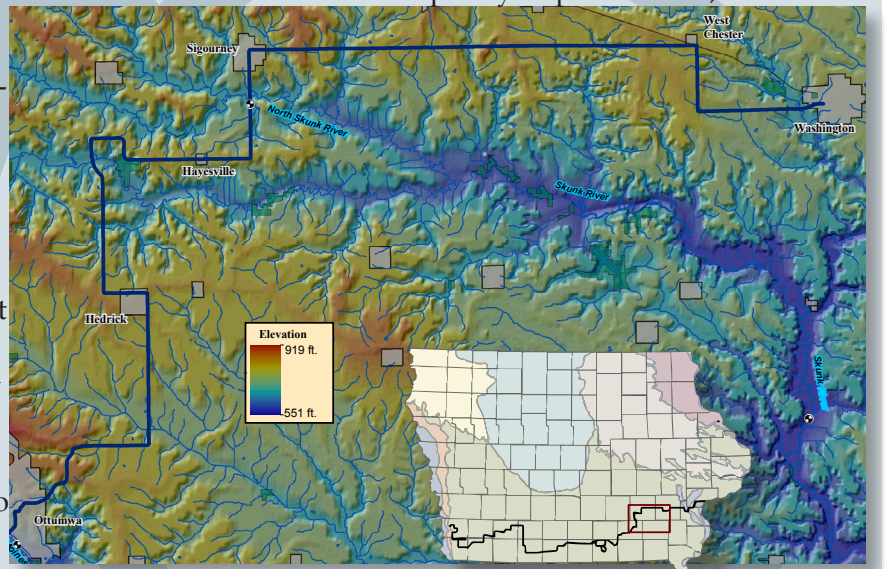


The English River Watershed

The English River watershed is a 630 square mile area extending from the southern tip of Grinnell to the Iowa River at Riverside. There are about 21,000 residents in the watershed, 20 percent of whom are rural residents. The English River Watershed Management Authority (ERWMA) was established in 2013 to bring communities, counties, and conservation districts together in addressing local flood reduction and water resource concerns. The ERWMA consists of 12 member organizations made up of towns, counties, and conservation districts.

In the fall of 2015, the ERWMA completed a 2-year watershed assessment and comprehensive planning project. The English River Watershed Improvement and Resiliency Plan includes a summary of findings, and recommendations for future water quality improvements, disaster resiliency, and capacity-building initiatives.

The English River Watershed is also one of nine Iowa watersheds included in the Iowa Flood Center's new "Iowa Watershed Approach" project, a statewide HUD-funded project that will provide research, engineering/design, and up to 75% cost-share for participating landowners to implement practices that can greatly help improve their watersheds. To learn more about the English River WMA and its projects, please visit www.EnglishRiverWMA.org.



USGS streamflow station

Parks and preserves

Cities and towns

Project AWARE

While thousands of people descend each July on Iowa to participate in RAGBRAI, hundreds of Iowans spend their July vacation getting their feet wet and muddy on a river cleanup event called Project AWARE. Project AWARE (A Watershed Awareness River Expedition) is the weeklong Iowa Department of Natural Resources annual volunteer river cleanup. Since 2003, more than 3,700 participants have cleaned up over 1,000 river miles across Iowa and removed 337 tons of trash, of which 76% has been recycled. Earlier this month, Project AWARE celebrated its 14th year, with more than 300 volunteers removing garbage from a 53-mile stretch of the Des Moines River in southeast Iowa. As part of Project AWARE, volunteers clean up a different strech of an Iowa river each year. As the longest interior Iowa river, the Des Moines has played host to Project AWARE three times so far: 2004, 2012, and 2016. Each time, volunteers gained a new and unique water experience.

Iowa Rocks!!

If it can't be grown it has to be mined

Everything we have and everything we use comes from our natural resources