

# DEVONIAN FOSSIL GORGE



IN THE

## CORALVILLE DAM EMERGENCY SPILLWAY

JOHNSON COUNTY, IOWA

### FRONT COVER

Detail of a diorama in Iowa Hall on the University of Iowa campus, showing an undersea view of corals, crinoids, a cephalopod, and other Devonian animals as they would have looked 375 million years ago.

Photo courtesy of the University of Iowa  
Museum of Natural History



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Educational Materials: EM-42 (2010)

The Coralville Dam's emergency spillway serves as a safety valve to release excess water and protect the dam if Coralville Lake levels rise too high. The spillway has served that function twice in its history, once in 1993 and again in 2008. During the 1993

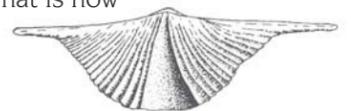
event, the flood waters swept away a campground and picnic facilities and first exposed the rocks of the gorge. It was then given the name "Devonian Fossil Gorge." The flooding in 2008 widened the gorge and swept away loose rocks and vegetation to expose additional rocks and fossils.

The limestone rocks exposed at the Devonian Fossil Gorge are of middle Devonian age (about 375 million years old) and include the Rapid and Solon members of the Little Cedar Formation. During this time, Iowa and much of North America lay at tropi-



The University of Iowa's diorama at Iowa Hall shows a Devonian coral reef. The diverse marine life associated with this reef contains life forms recognized today as fossils in Iowa's limestone deposits.

cal latitudes just south of the equator, and the Devonian sea covered most of what is now the United States.



Composed of the fossilized remains of shells, disintegrated algae (mud), and other parts of animals living in the shallow tropical seas that covered the region during the Devonian period, this limestone was deposited across most of Iowa. Since then, it has been eroded away from northeastern Iowa and buried by younger rocks in the west and southwest parts of the state. The rock exposures at Devonian

Fossil Gorge are unique because they have bedding planes that show the sea floor in layers much as it was deposited. Most rock exposures in Iowa, road cuts for example, are vertical cuts through the original bedding planes.

Visit the Coralville Dam's Visitor Center, operated by the U.S. Army Corps of Engineers, for additional information, to view flood videos, and to see fossils and other displays.

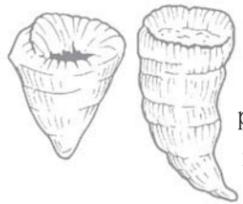
www.mvr.usace.army.mil/coralville/default.htm  
Phone: 319-338-3543 ext. 6300





This view of Iowa Hall's diorama shows a Dunkleosteus, a giant arthrodire fish that grew up to 30 feet in length and was the largest animal on earth 375 million years ago. A portion of the skull of one of these creatures was found in the Devonian Fossil Gorge and can be seen at the Coralville Dam's Visitor Center.

**FOSSILS** of many types of animals are found in the limestone rocks exposed at Devonian Fossil Gorge. The most common are described here.

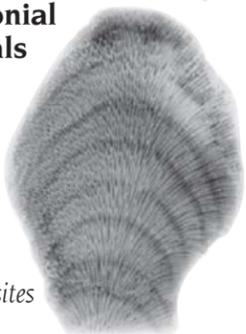


**Corals** found at the Gorge lived in a shallow, clear, warm tropical sea environment. The two principle types are colonial (that lived in connected colonies) and solitary (single animals).

Hexagonaria



Colonial corals



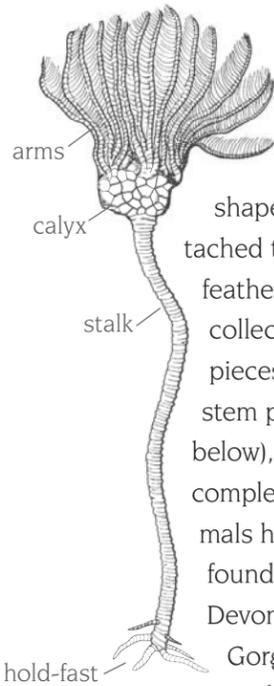
Favosites



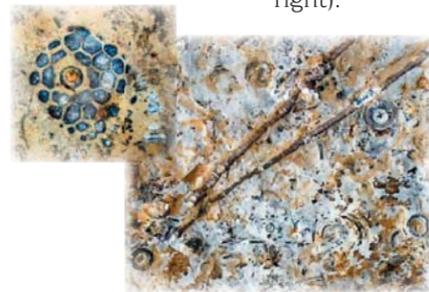
**Brachiopods** are shelled animals that lived attached to the sea floor. Typical species include *Spinatrypas* (left), atrypids (upper right), and orthospirifers (lower right).



**Worms** left burrows in muddy sediments (below).



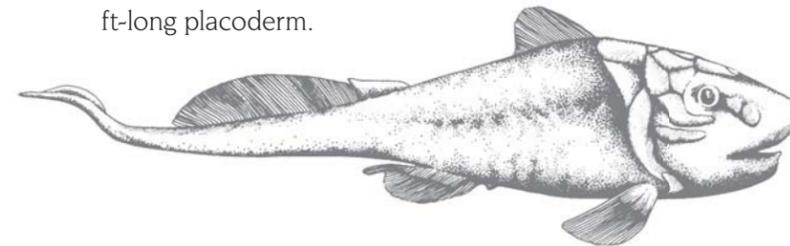
**Crinoids** are animals that lived attached to the sea floor by a long stalk made of small disk-shaped plates. A calyx (head) was attached to the top of the stalk and long feather-like arms attached to the head collected food. They usually fall to pieces after death (crinoid calyx and stem pieces, below), although complete animals have been found at the Devonian Fossil Gorge (photo right).



**Bryozoans**, like corals, live attached to the sea floor. They are colonies of hundreds of animals that have branching forms and can be identified by their tiny pores.



**Placoderms** were primitive fish (below) partly covered by bony plates that gave them an armored appearance. This fossil jaw (above) belonged to a 2 to 3 ft-long placoderm.



**Cephalopods** (illustration below) were the shelled relatives of today's squids and related animals. Their shells were segmented (chambered) and cone-shaped (photo right) and usually only portions are preserved at the Gorge.



**Stromatoporoid sponge**



These sponges

had hard skeletons.

**Calcsponge**



**STRUCTURES on view at the Devonian Fossil Gorge**

**Karst** describes the dissolution of limestone by groundwater moving along fractures. Many karst features are seen at the Devonian Fossil Gorge, including dissolution along bedding planes (below) and along vertical fractures (right).



**Faults** are fractures along which rocks have moved. There are many faults present at the Devonian Fossil Gorge (seen as linear fractures in the rock) including one that moved about 10 feet (above). Linear scratches (slickensides) indicate fault movement (right).



**Folds** are the bending of rocks produced by tectonic forces. The folds at the Devonian Fossil Gorge were probably produced about 310 million years ago.



Dunkleosteus photo courtesy of the University of Iowa Museum of Natural History. Hexagonaria photo by M.A. Stainbrook, 1940, Journal of Paleontology. Favosites and Stromatoporoid photos by Shirley Trier, 1993 University of Iowa thesis. Trilobite images by Marv Houg. Bryozoan illustration by E.O. Ulrich, 1890, Illinois Geological Survey. All other non-credited visuals by Iowa Dept. of Natural Resources.