



## About *Elegantocrinus*

- *Elegantocrinus hemisphaericus*, the Elegant sea lily, is a crinoid, a group of animals that are related to starfish and sea urchins.
- *Elegantocrinus* was first discovered at Crawfordsville, Indiana in 1865.
- the current scientific name of *Elegantocrinus* was given in 2009 by Bill Ausich and Tom Kammer, both alums of Indiana University.

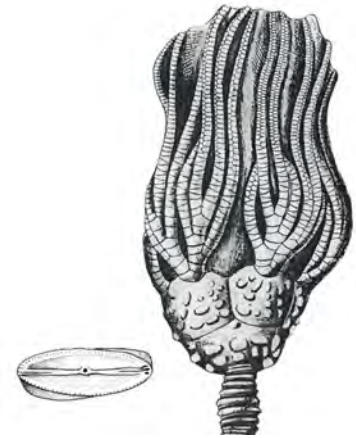


Figure 1. Cup and arms of *Elegantocrinus hemisphaericus* (right) and an isolated columnal showing the characteristic oval shape (left). (from Moore and Laudon, 1943)

## About crinoids in general

- crinoids are found in almost every bedrock unit in Indiana, including the famous Indiana Limestone.
- "sea lily" is the common name for crinoids, which are still living in today's oceans.
- crinoids belong to the group Echinodermata, which includes living starfish, sea urchins, and sea cucumbers in addition to crinoids.
- the bodies of crinoids are almost like upside-down starfish with a stalk, with arms that point upwards and stalk that attaches them to sea floor.
- crinoids are rare today, and mostly live in deeper waters, but were very common in the Paleozoic Era, which is when the bedrock of Indiana was formed.
- the most common crinoid fossils are isolated disks ('columnals') that made up their stem. After crinoids die, their disks tended to be scattered by the currents, which is why the animals are usually found as pieces.



Figure 2. A living crinoid with its arms spread (photo by Charles Messing).

## About Crawfordsville and other Hoosier crinoids

- Crawfordsville, Indiana is world-renowned for its exquisitely complete crinoid specimens, which helped make the state famous in the paleontological world.

- the Crawfordsville site formed in still waters, which is why the crinoids there are so complete.
- nearly 100 species of crinoid have been identified at Crawfordsville, and there are probably almost twice that many known from the entire state.
- Crawfordsville crinoids, including *Elegantocrinus*, have been exhibited in museums and studied by scientists around the world, including the Smithsonian Institution, the Natural History Museum in London, the Paleontological Institute in Moscow, and the National Museum of Natural History in Paris.
- Monroe Lake is another important site for crinoid research. Much of what we know about the ecology of the ancient crinoids was learned here and at Crawfordsville.
- Indiana University has historically been a paleontological center for crinoid research, especially the late Prof. Gary Lane, who studied the crinoids at Crawfordsville and Monroe Lake with his students, making very important paleontological contributions with that work.
- The Waldron Shale sites in eastern Indiana are another important source of crinoids, particularly for an unusual one called *Eucalyptocrinus*.



Figure 3. Crinoid quarry at Crawfordsville in 1906.

### About the Borden Group rocks

- *Elegantocrinus* is from the Borden Group rocks, which outcrops from north to south across the state, including at Crawfordsville, Indianapolis, Bloomington (especially Monroe Lake), Brown County, and the Knobstone Trail.
- Borden Group and *Elegantocrinus* are from the geological period known as the Mississippian, which spans the time 340-350 million years ago.



Figure 4. Bedrock of Indiana colored by geological age. Borden Group and other Mississippian aged rocks are light green.

- the rocks of the Borden Group were laid down by a giant river delta, similar to the current Mississippi River delta in Louisiana. The rivers of the Borden delta flowed from the then newly formed Appalachian Mountains.

### *More information*

- **Indiana Society of Paleontology** page on the proposed state fossil  
<http://www.indianasocietyofpaleontology.org/state-fossil.html>
- **500 Earth Sciences Club** and photo of a beautiful *Elegantocrinus* specimen  
<http://www.500earthsciencesclub.org>
- **Video of a living crinoid crawling** across the sea-floor from Thomas Baumiller at University of Michigan  
<http://www.lsa.umich.edu/paleontology/research/tomaszbaumiller>
- **Crinoid Pages** from Charles Messing  
<http://www.nova.edu/ocean/messing/crinoids/index.html>
- **Crinoids from Crawfordsville** from the Virtual Fossil Museum  
[http://www.fossilmuseum.net/Fossil\\_Sites/crinoidscrawfordsville/crawfordsvillecrinoidssite.htm](http://www.fossilmuseum.net/Fossil_Sites/crinoidscrawfordsville/crawfordsvillecrinoidssite.htm)
- More information on crinoids and Indiana paleontology from the ***Paleontology and Geology of Indiana*** course at Indiana University  
<http://www.indiana.edu/~paleoind/>
- **IU Paleontology Collection**, a scientific research collection housed at Indiana University, which includes many crinoid specimens  
<http://www.indiana.edu/~palcoll/>
- **IUB Department of Geological Sciences**  
<http://geology.indiana.edu>
- **Indiana Geological Survey**  
<http://igs.indiana.edu>