

## LARGE ORDOVICIAN CEPHALOPODS FROM MICHIGAN'S UPPER PENINSULA

**SHELL, Ryan**, United States Department of Agriculture, Forest Service, Milwaukee, WI 53202 and  
**PETERMAN, David**, Department of Geology and Geophysics, University of Utah, 5002 W Shooting Star Ave, West Jordan, UT 84081-4723

The Ordovician rocks on the north-central portion of the North American craton produce many examples of nautiloid and endoceratoid cephalopods which grow to lengths far in excess of almost all modern members of the Cephalopoda. Initial surveys of invertebrate fossils from Middle to Late Ordovician rocks in Michigan's Upper Peninsula yield similar occurrences in this region, though many specimens are now lost. Cephalopod fossils estimated to be greater than 1.5 meters or more in length are known both from the Black River Group (probably *Endoceras*; pre-Richmondian invasion) as well as the Stonington and Big Hill Formations (*Endoceras*, and two unknown members of the Nautiloidea; post-Richmondian Invasion). Furthermore, somewhat large taxa that were part of the Richmondian Invasion (e.g., *Gorbyoceras*) are common in the two younger units examined. These cephalopods assumed higher trophic roles during this time, which could have greatly influenced food web dynamics and the extinction of endemic taxa in the Michigan basin. Ongoing stratigraphic and biogeographic analyses may improve our understanding of invasion pathways in this region and the ecological impact of this event. Additionally, some specimens from the Big Hill Formation preserve color patterns, which could inform on the orientation and swimming capabilities of these cephalopods and provide important context to their modes of life. Localities exposing the Black River Group, Trenton Group, Stonington Formation, and Big Hill Formation are unique paleontological resources due to the information they contain, and the exceptional preservation observed in some areas. They may continue to be useful in understanding the evolution of Ordovician ecosystems in the Michigan Basin. Fossil assemblages in northern Michigan may yield further insight into these cephalopods as well as other groups.