

2022 PROGRAM

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JOINT NORTH-CENTRAL- SOUTHEASTERN SECTION

7–8 April
Cincinnati, Ohio USA

<https://www.geosociety.org/nc-mtg>

Cincinnati skyline at night
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[Start](#) | [Grid View](#) | [Author Index](#) | [View Uploaded Presentations](#) | [Meeting Information](#)

Joint 56th Annual North-Central/ 71st Annual Southeastern Section Meeting - 2022

Paper No. 47-15

Presentation Time: 1:30 PM-5:30 PM

DIVERSITY AND PALEOECOLOGY OF A NEW ORDOVICIAN (KATIAN) CRINOID FAUNA FROM THE NEUVILLE FORMATION, SOUTHERN QUÉBEC, CANADA

BROWER, James C.¹, COURNOYER, Mario², IELLAMO, John², WRIGHT, David³, COLE, Selina³ and **AUSICH, William**⁴, (1)Heroy Geology Laboratory, Syracuse University, Syracuse, NY 13224, (2)Museum of Paleontology and Evolution, 541 Congregation Street, Montreal, QC H3k 2J1, Canada, (3)Department of Paleobiology, National Museum of Natural History (Smithsonian Institution), Washington, DC 20560, (4)School of Earth Sciences, Ohio State University, 155 S Oval Mall, Columbus, OH 43210-1398

The Neuville Formation preserves a diverse echinoderm paleocommunity, including a moderate diversity crinoid fauna. Disparids and cladids dominate the fauna comprised of at least two diplobathrid camerates, five disparids, and four cladids. Crinoids were preserved in multiple obrusion deposits that resulted in exquisite preservation. Complete specimens (arms to holdfasts), including juveniles and adults, are known for most species, and numerous biotic interactions among crinoids are also preserved. The Neuville fauna is a unique Katian crinoid assemblage compared to other contemporary faunas, such as those in the Cincinnati Basin and southeast Ontario. It lacks monobathrid camerates, hybocrinids, and flexible crinoids, all of which are typically abundant in Katian crinoid faunas. The Neuville paleocommunity shares several genera and species with the Katian of the Cincinnati region, but it also contains genera not present in the Cincinnati region as well as new species. Among disparids, Neuville specimens exhibit a gradient of morphological features intermediate between *Ectenocrinus* and *Drymocrinus*, possibly representing hybrids or a species complex, and require further evaluation.

Session No. 47--Booth# 22

[T3. Under the \(Ancient\) Sea: Marine Life from the Coastal to Great Plains \(Posters\)](#)

Friday, 8 April 2022: 1:30 PM-5:30 PM

Junior Ballroom B (Duke Energy Convention Center)

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[Back to: T3. Under the \(Ancient\) Sea: Marine Life from the Coastal to Great Plains \(Posters\)](#)

[<< Previous Abstract](#) | [Next Abstract >>](#)

DIVERSITY AND PALEOECOLOGY OF A NEW ORDOVICIAN (KATIAN) CRINOID FAUNA FROM THE NEUVILLE FORMATION, SOUTHERN QUÉBEC, CANADA

James C. Brower¹, Syracuse University; Mario E. Cournoyer, Musée de paléontologie et de l'évolution, Montréal, Québec, Canada; John Iellamo, Musée de paléontologie et de l'évolution, Montréal, Québec, Canada; David F. Wright, National Museum of Natural History, Washington, D.C., Selina R. Cole, National Museum of Natural History, Washington, D.C.; William I. Ausich, The Ohio State University, Columbus, OH

Abstract

The Neuville Formation preserves a diverse echinoderm paleocommunity, including a moderate diversity crinoid fauna. Disparids and cladids dominate the fauna comprised of at least two diplobathrid camerates, five disparids, and four cladids. Crinoids were preserved in multiple obruion deposits that resulted in exquisite preservation. Complete specimens (arms to holdfasts), including juveniles and adults, are known for most species, and numerous biotic interactions among crinoids are also preserved. The Neuville fauna is a unique Katian crinoid assemblage compared to other contemporary faunas, such as those in the Cincinnati Basin and southeast Ontario. It lacks monobathrid camerates, hybocrinids, and flexible crinoids, all of which are typically abundant in Katian crinoid faunas. The Neuville paleocommunity shares several genera and species with the Katian of the Cincinnati region, but it also contains genera not present in the Cincinnati region as well as new species. Among disparids, Neuville specimens exhibit a gradient of morphological features intermediate between *Ectenocrinus* and *Drymocrinus*, possibly representing hybrids or a species complex, and require further evaluation.

FAUNAL COMPARISONS

	CAMERATES										DISPARIDS										PODOCYRINIDS				EUCALYPTIDS				FLEX.					
	DIPLOBATHRIDS					MONOBATHRIDS					DIPLOBATHRIDS					DISPARIDS					PODOCYRINIDS		EUCALYPTIDS		FLEX.									
	Archeocrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus	Chelonicrinus				
Neuville Fm. (Québec)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Cincinnati - OH, IL, KY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Ottawa Fm. Ontario	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Bobcaygeon-Verulam (Ont.)	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Hull Mr., Ottawa Fm. (Québec)	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Anticosti Island (Québec)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
West Formation (New York)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Illinois, Iowa, Wisconsin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

KEY ASPECTS OF FAUNA

1. Tiering structure revealed by multiple taxa with complete columns
2. Unique Katian crinoid fauna
3. Evidence for hybrids or species complex between "*D.*" *geniculatus* and *E. simplex*
4. Many biotic interactions preserved in fauna
5. New species present

"Drymocrinus" geniculatus



Intermediate morphologies



Ectenocrinus simplex



Cheirocystis anatifformis

THE NEUVILLE CRINOID FAUNA AND TIERING STRUCTURE, AS KNOWN

Cincinnatiocrinus n. sp.

Compsocrinus sp.

Plicodendrocrinus n. sp.

Dendrocrinus simcoensis

Merocrinus curtus

Cincinnatiocrinus varibrachiatus

Ectenocrinus simplex

"Drymocrinus" geniculatus

Rhaphanocrinus n. sp.

Plicodendrocrinus proboscidiatus

Iocrinus trentonensis

Ectenocrinus simplex

Cheirocystis anatifformis

Undetermined solutan

Sediment-Water Interface

xxxxocrinus sp. on *Ectenocrinus simplex*

Euptychocrinus n. sp. on *"Drymocrinus" geniculatus*