

Fossils record ancient migrations and trilobite orgies

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Few specimens inspire greater thrills among fossil collectors than a complete trilobite. These ancient arthropods – relatives of lobsters, spiders and insects – went extinct more than 250 million years ago, but are sometimes found in beautifully preserved condition. In rare instances, an entire population of trilobites is found fossilized together. Carlton E. Brett finds evidence for ancient environment and behavior in these mass graves.

Brett, University of Cincinnati professor of geology, will present his findings March 20 at the Geological Society of America regional meeting in Pittsburgh, in a paper co-authored with Adrian Kin of Poland's Institute of Geological Sciences at Jagiellonian University, and Brenda Hunda of the Cincinnati Museum Center.

In a quest that has taken him from Oklahoma to Morocco and Poland, Brett has analyzed multiple examples of mass trilobite burial. A smothering death by tons of hurricane-generated storm sediment was so rapid that the trilobites are preserved in life position. These geologic "snapshots" record behavior in much the way that ancient Roman life was recorded at Pompeii by volcanic ash.

Burial was rapid, Brett said, but also somewhat delicate. Trilobites, like other arthropods, shed their hard exoskeletons from time to time.

"We find molted pieces lying immediately adjacent to each other," he said. "This is proof that the sediments were not significantly disturbed

after burial."

Like modern crabs and lobsters, trilobites appear to have gathered in large groups for protection when they shed their protective exoskeletons. During molting, there was safety in numbers. And, like their modern cousins, trilobites seem to have used these molting gatherings as opportunities for mating.

The mass burials preserve large groups of similar-sized – and therefore similarly aged – specimens, segregated by species and, after molting, "naked."

"It's an orgy," Brett said.

Brett and colleagues found evidence of another behavioral connection to modern arthropods – long chains of trilobites apparently fossilized in mid-migration.

"The recent discovery of rows of more than a dozen specimens provides the oldest evidence of migratory queues similar to those seen in modern crustaceans," Brett said.

Taken together, the mass burials record an array of communal behaviors in ancient trilobites, comparable to those seen in some living crustaceans.

Provided by University of Cincinnati

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