



Dinosaurs Fried Within Hours of Cosmic Collision, Study Concludes

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posted: 01:45 pm ET

26 May 2004

Most dinosaurs were incinerated in a matter of hours after an asteroid impact 65 million years ago kicked up a global rain of broiling debris, according to a new study.

Anything not underground or protected by water was wiped out.

The research builds on previous studies that concluded the die-off was rapid. The new analysis presents a plausible scenario of swift death, outside experts said, but they caution that the fossil record for an event so long ago cannot discern whether the extinction played out over hours or years.

For more than a decade, most researchers have been convinced that an asteroid was responsible for the death of the dinosaurs. Recently however, a handful have argued that a combination of effects -- an asteroid along with perhaps increased volcanic activity and climate change, or even a second asteroid -- caused a slow demise of the giant animals.

The new study reviewed existing geologic evidence for the known impact and considered interesting patterns in species survival. How did some birds, mammals, crocodiles, snakes and other animals endure the calamity that wiped out larger species?

Take cover

The survivors burrowed underground or were protected from the firestorm by swamps or oceans, says study leader Doug Robertson of the University of Colorado at Boulder. The details were published in the May-June issue of the *Bulletin of the Geological Society of America*.

There's no question over whether an asteroid hit. The roughly 6-mile-wide (10-kilometer) space rock carved out the [Chicxulub crater](#) off Mexico's Yucatan Peninsula. Previous work uncovered a global layer of material that had melted and then hardened when the impact vaporized terrestrial rock. Robertson and his colleagues argue that superheated stuff was blasted from the crater into a suborbital path around Earth, generating a "heat pulse" upon re-entry.

"The kinetic energy of the ejected matter would have dissipated as heat in the upper atmosphere during re-entry, enough heat to make the normally blue sky turn red-hot for hours," Robertson said.

All unprotected creatures were "baked by the equivalent of a global oven set on broil."

Jay Melosh, a University of Arizona scientist who was not involved in the new study, is one of several researchers who have presented similar asteroid-impact scenarios in the past. Melosh said Robertson did some "heavy lifting" on the idea by fleshing it out along with paleontologists.

"I think this is the most likely scenario for the death of the land fauna," Melosh told SPACE.com. He added, however, that the idea does not explain ocean extinctions, "which were pretty extensive also."

Hard to prove

Paleontologist David Fastovsky of the University of Rhode Island agrees that dinosaur extinction appears to have been rapid. It did not take thousands of years, he said in a telephone interview. Fastovsky presented a similar heat-killing scenario more than a decade ago with Brown University researcher Peter Schultz.

Fastovsky said Robertson's team took a useful and unique look at the situation by combining geophysical and paleontological evidence. But he notes that trying to glean precise timing from fossils is like trying to remember what you were doing at a certain moment years ago. The die-off may have taken just hours, he said, but that's not discernable from the fossil record.

"By itself, the fossil record can't distinguish between a minute and a hundred years for something that happened 65 million years ago," Fastovsky said.

That leaves the open the question of exactly how the agony played out, but few doubt the general scenario now.

"Dinosaurs and many other species simply stop to exist," said Benny Peiser, a researcher at Liverpool John Moores University who monitors research on catastrophes and mass extinctions. "Those lucky few that may have survived the hellish impact fires, heat pulse, radiation, and so on would have struggled to cope with a dramatically deteriorating environment, including the probable 'impact winter' that most likely destroyed the food chain."