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Asteroid Smashup May Have Wiped Out the Dinosaurs

Simulations point to an asteroid collision that sealed the dinosaurs' fate before their reign was half over

By JR Minkel
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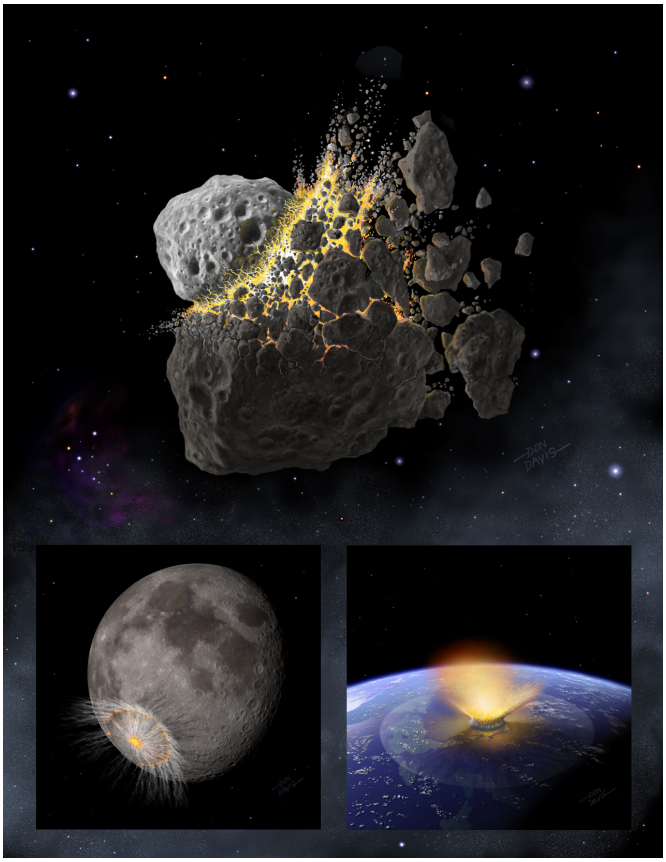


DINOSAUR KILLER: The collision of two asteroids [*top*] around 160 million years ago may have loosed rocks that slammed into Earth [*lower right*], causing the famed K-T mass extinction, and the moon [*lower left*], leaving the crater Tycho.

The rock that blasted a 112-mile-wide crater in Mexico's Yucatán Peninsula and probably killed off the dinosaurs 65 million years ago may owe its origin to the breakup of an asteroid nearly as big as the crater itself.

Using computer simulations, researchers reconstructed the trajectories of several thousand asteroids between Mars and Jupiter that are clustered near a 25-mile-wide rock called 298 Baptistina.

They report that this so-called Baptistina family must have come from the collision of a 37-mile-wide asteroid with one measuring 106 miles wide—the parent of 298 Baptistina—some 160 million years ago.

The explosion would have showered the space around Earth and the moon with asteroids, doubling the overall rate of Earth and lunar impacts for the next 100 million years or so. Among the shower would hurtle dozens of "dinosaur killer" asteroids six miles wider or larger, approximately one of which should have struck Earth, according to results published in *Nature*.

"The one crater that sticks out is the Chicxulub Crater," says William Bottke, assistant director of space studies at the Southwest Research Institutein Boulder, Colo., and lead author of the *Nature* report describing the findings.

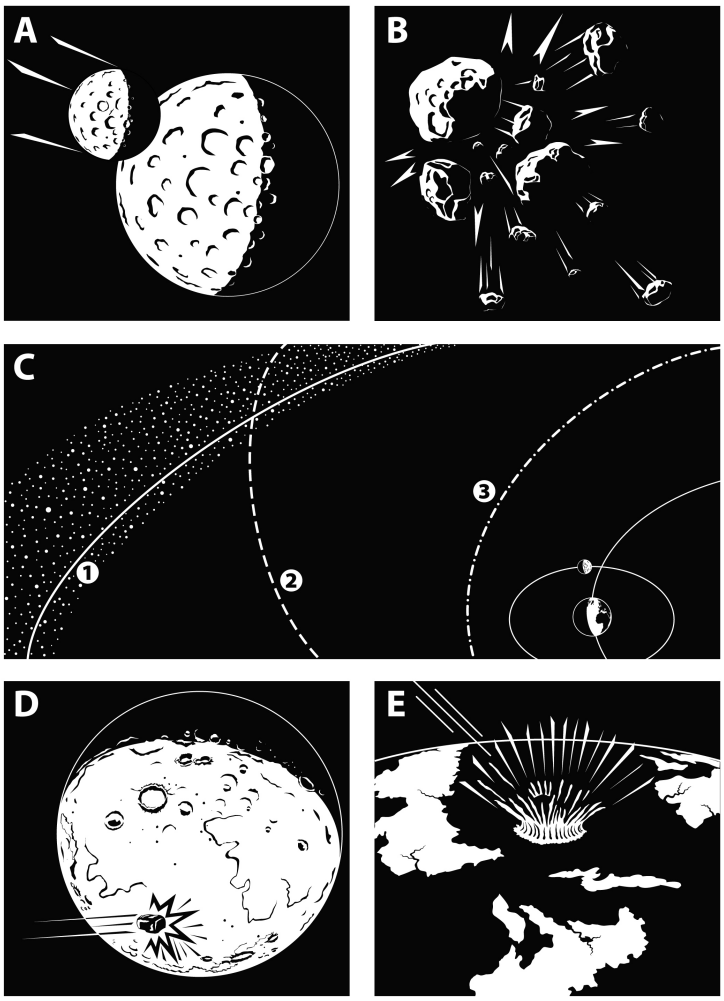
Many researchers believe that whatever meteorite or comet punched out the crater in

the southern tip of Mexico probably flung up a cloud of dust that killed 75 percent or more of plant and animal species, including the dinosaurs, by choking off the sunlight that supports the food chain. The die-off, known as the K-T extinction, was the biggest mass extinction of the last 250 million years.

Bolstering their statistical argument, Bottke and his colleagues cite ground-based chemical scans of 298 Baptistina that indicate it consists of a substance similar to carbonaceous chondrite, a rare material found in some asteroids.

"This is front page news," say geologists Philippe Claeys and Steven Goderis, both at Vrije University in Brussels, in an editorial accompanying the paper, "as a [six-mile-] sized carbonaceous chondrite is most probably the projectile that formed the Chicxulub Crater."

The chondrite, which is rich in water and carbon compounds, cropped up in samples dug from beneath Chicxulub. However, Bottke and colleagues note that it turns up in fewer than 30 percent of the usual assortment of near-Earth asteroids and comets—the other possible source of a dinosaur killer.



STEP-BY-STEP MASS EXTINCTION: An alternate depiction of the collision (A) and breakup (B) of two asteroids, the drift of their fragments (C) and the resulting impacts with the

Based on the estimated frequency of Earth impacts from such objects, his group concluded there is more than a 90 percent likelihood that the Chicxulub Crater resulted instead from the Baptistina hail.

The researchers say the same bombardment may also have blasted the 53-mile-wide lunar crater Tycho, formed about 109 million years ago during the shower's calculated peak.