

About this Issue

In a geologic instant 66 million years ago, dinosaurs largely disappeared from the planet, along with many other plant and animal species. But researchers don't know what exactly caused the mass extinction. The article "[Devastation detectives](#)" describes the current state of evidence for whether a space rock impact, massive volcanic eruptions or some combination of both was responsible for the apocalypse. Dinosaurs didn't disappear entirely, though. A lineage had evolved into birds, some of which survived the extinction event, as described in an infographic titled "[The lucky ones](#)."

These survivors gave rise to all modern bird species. Students can focus on details in the articles, follow connections to earlier articles about paleontology and extinction events, explore cross-curricular connections to other major science topics, and study real fossils and meteorite samples. For additional articles about the dinosaur extinction event and fossilized remains written at slightly lower Lexile levels, see the following *Science News for Students* articles: "[Dino double whammy](#)" (8.3 readability score) and "[Reviving dinosaurs](#)" (8.1 readability score). Also, *Science News for Students* describes "[How a fossil forms](#)" in a brief explainer (6.5 readability score). To access the lower Lexile version of "Devastation detectives," use this [Science News for Students link](#).

Connections to Curricula

History of the Earth
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Evolution
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Fossils
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Climate change
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Geology
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Extinction
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Paleontology
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Phylogeny
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Kinetic energy

What's in this Guide?

- **Article-Based Observation:** These questions focus on reading and content comprehension by drawing on information found in the article "Devastation detectives." Questions focus on what might have caused the mass extinction that largely wiped out the dinosaurs.
- **Quest Through the Archives:** With Internet access and your school's digital access to *Science News*, your students can use this short section to explore the traits of ancient birds and dinosaurs as reported by *Science News* since 1922.
- **Cross-Curricular Discussion:** These questions and extension prompts connect to the articles "Devastation detectives" and "The lucky ones" and encourage students to think in more detail about scientific areas related to the articles. The section is divided roughly by science subdiscipline for educators who would like to focus on a specific topic area. The extension prompts are either more topic-specific or more conceptually advanced. **Biological Sciences** questions involve the topic of evolution and extinction. **Earth Sciences** questions address types of rocks and minerals relevant to the articles. **Physical Sciences/Mathematical Problem Solving** questions concern the energies involved in meteorite impacts. **Engineering and Experimental Design** questions focus on possible methods of averting future large meteorite impacts.

- **Activities:** **Geology of Dino Doomsday** is a hands-on geologic activity for students to study the Cretaceous-Paleogene, also known as the Cretaceous-Tertiary or K-T, boundary. It suggests ways to have students examine real meteorites, meteorite impact material, fossils and rocks from relatively inexpensive sources to understand that geology can provide insight into the Earth's history. **Build a Bird** encourages students to explore "The lucky ones" infographic. Students will analyze the traits of ancient birds and design a hypothetical bird that might survive in a particular ecosystem.

Standards Alignment

Next Generation Science	Common Core
Biological Evolution: HS-LS4-1 , HS-LS4-4 , HS-LS4-5	ELA Standards: Reading Informational Text (RI): 1, 2, 7
Earth's Systems: HS-ESS2-4 , HS-ESS2-7	ELA Standards: Writing (W): 2, 3, 6, 9
Energy: HS-PS3-1 , HS-PS3-2	ELA Standards: Speaking and Listening (SL): 1, 6
Engineering Design: HS-ETS1-2 , HS-ETS1-3	ELA Standards: Reading for Literacy in Science and Technical Subjects (RST): 1, 2, 4, 8, 9
	ELA Standards: Writing Literacy in History/Social Studies and Science and Technical Subjects (WHST): 2, 4, 6, 7, 9