

News

11-Million-Year-Old Fossil Leads to Discovery of New Bird Species

The fossil sat in the collection of the American Museum of Natural History in New York, unidentified, for nearly 100 years.

by Elaine Velle
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Fossil of *Centuriavis lioae*, American Museum of Natural History (photo by Mick Ellison, courtesy Bruce Museum)

In 1933, an 11-million-year-old fossil was discovered in a Nebraska quarry. It traveled across the country to New York's Upper West Side, where it sat in the collection of the American Museum of Natural History (AMNH), unidentified for nearly 100 years.

Then, in 2021, a team of paleontologists at the Bruce Museum in Greenwich, Connecticut, began studying the remarkably well-preserved fossil. Their findings, published October 19 in the *Journal of Paleontology*, include the discovery of a new species — the *Centuriavis lioae*, one of the earliest representations of the modern fowl fauna.

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Centuriavis lioae is a relative of today's grouse and turkeys, and likely diverged before those two species became distinct. The study also confirmed an extant hypothesis: Today's grouse and turkeys developed from a single lineage that arrived in North America from Asia.

Daniel Ksepka, a curator at the Bruce Museum who spearheaded the study along with curatorial associate Kate Dzikiewicz, explained that when *Centuriavis lioae* roamed current-day Nebraska, the state had an ecosystem closer to a savannah than its prairies of today, inhabited by animals such as rhinoceros and camels.



Wild turkeys, relatives of the *Centuriavis lioae* (photo by Dr. Daniel Field)

Ksepka said it's not uncommon for fossils to remain in museum storage, untouched for decades.

"I've seen fossils sitting in newspaper from the Civil War," Ksepka told Hyperallergic, explaining what he called paleontology's "bottlenecks." While many fossils are collected and taken back to museums, he adds there are very few preparators, the highly trained specialists who Ksepka said loom large in the popular imagination of paleontology — scientists who finely dust away the rock enveloping an ancient skeleton.

But Ksepka said that even after a fossil has been prepared, the field faces another bottleneck: finding someone to actually study it.

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"There just aren't that many paleontologists in the world," said Ksepka, adding that another difficulty lies in the specificity of those scientists' area of study. There are even fewer who specialize in, for example, ancient birds.



The 11-million-year-old fossil was incredibly well-preserved. (image courtesy Daniel Ksepka)

Although the fossil is millions of years old, the team will need to unearth more *Centuriavis lioae* bones in newer and older rock layers to determine exactly how long the species survived. Ksepka estimates the ancient bird went extinct due to a cooling climate. When the area transitioned into a prairie ecosystem around eight million years ago, species that were well-adapted to the savannah were replaced by ones better suited for the prairie — like the grouse.

Ksepka and his team, however, did not just discover a new species: They also investigated *Centuriavis lioae's* brain. The scientists used CT scans to model the negative space inside the fossil's skull, then identified which parts of the bird's brain were more and less developed. *Centuriavis lioae* had a large optic lobe, suggesting it had good vision, but a small olfactory bulb, suggesting it had a poor sense of smell.

Now, the fossil is back at AMNH, and since *Centuriavis lioae* has been named a new species, Ksepka says it's unlikely it will ever leave the collection.

For Ksepka, the published study wraps up a decades-long fascination with this particular fossil, which he called "beautiful." Ksepka first found it at AMNH in 2007 while completing his PhD at nearby Columbia University.

Centuriavis lioae ("Lio's century bird") is named for the Bruce Museum's Managing Director and Chief Operating Officer Suzanne Lio. Ksepka said the team of scientists can't name something after themselves, but that Lio has been a positive force for the museum's programming and staff.

"She's just a really terrific person," Ksepka said. Now, there's an 11-million-year-old bird to prove it.

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Elaine Velle is a writer from New Hampshire living in Brooklyn. She studied Art History and Russian at Middlebury College and is interested in art's role in history, culture, and politics. **More by Elaine Velle**

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