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The Taming of the Turkey

by [Emily Underwood](#) on 8 August 2012, 5:00 PM | [0 Comments](#)

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Their bones were buried deep within the Jaguar Paw Temple in the ancient Maya city of El Mirador, Guatemala. Perhaps ritually sacrificed, possibly eaten, seven turkeys met their untimely ends more than 2000 years ago and more than 400 miles from their native range in Central Mexico. Now, in addition to providing clues about ancient Maya culture and trade, their skeletons may help resolve another mystery: When were the turkeys we eat today first domesticated?

Compared to the bald eagle, wrote Benjamin Franklin in 1784, the turkey is "a much more respectable Bird, and withal a true original Native of America." By Franklin's era, archaeologists speculate that Native Americans had been domesticating turkeys for more than 1500 years. One established center of turkey domestication was central Mexico, where the bones of *Meleagris gallopavo*—ancestors of the turkeys we eat today—have been found from as early as about 800 B.C.E. alongside ancient turkey pens and fossilized poop containing traces of corn, suggesting the birds were kept and fed. Early European explorers took Mexican turkeys back to Europe, starting a worldwide turkey craze. But long before Mexican turkeys became a staple of Christmas feasts, they were being traded with the Maya in Central America. Mexican turkeys were originally thought to have been introduced to the Maya after the Maya "collapse" around 1000 C.E. However, the turkey bones at Jaguar Paw Temple date to roughly 1000 years before that, during the rise of Maya society. How did they get there?

One thing is certain, says Erin Kennedy Thornton, an environmental archaeologist at Trent University Archaeological Research Centre in Peterborough, Canada. The turkeys "didn't walk there themselves." Thornton was just starting her Ph.D. when she got the chance to examine the seven turkey skeletons, which were excavated from the El Mirador assemblage back in the 1980s. Like many Native American cultures, she says, the Maya used turkey feathers in ornaments and carved turkey bones into picks, pins, and elaborate tubes. But most ancient skeletons are highly fragmented, so it's difficult to figure out what kind of animal they were from, and what they were used for. "Were they discovered in a temple or a commoner's household? What kinds of cut marks are on the bones?" she says. "It's like a puzzle."

As Thornton studied the turkey bones, she became convinced that they did not belong to the indigenous turkeys that roam Maya territory. Called ocellated turkeys, these birds are small, with blue heads and iridescent blue, green, and copper feathers, she says, "almost like a cross between a turkey and a peacock." She told her adviser Kitty Emery, who is the paper's second author, that the turkey bones appeared to belong to the larger, duller Mexican turkey. Her adviser told her to double check the morphology, warning that although she might be onto something "big," no one would believe her findings without strong evidence. The Maya cultivated many plants for food, but it has long been believed that they only kept one domesticated animal—dogs—for food during the early flourishing of their civilization.

After reexamining the bones, Thornton collaborated with archaeologist Camilla Speller, an expert in ancient DNA analysis at the University of Calgary in Canada, to confirm that the bones belonged to *M. gallopavo*. Only one of the bones yielded enough replicable DNA for analysis, but it was an exact match with *M. gallopavo*, and not the ocellated turkey. Many objects such as jade, obsidian, and pottery were moving between northern Mesoamerica and Maya territory along long-distance exchange networks between 300 B.C.E. and 200 C.E., when the bones are

[ENLARGE IMAGE](#)



Gobble, gobble. Turkey bones found beneath the Jaguar Paw Temple in Guatemala (*main image*) belong not to the native ocellated turkey (*lower right*) but to the Mexican turkey (*upper left*).

Credit: (temple) Museum of Peoples and Cultures/Brigham Young U.; (turkey, left) Mongo/Wikipedia; (turkey, right) George Harrison/USFWS

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dated, says Thornton. However, she says, this is the first sign that living animals may have been transported, too. The fact that Mexican turkeys were being transported between 650 to 950 kilometers outside of their natural range as early as 300 B.C.E., say Thornton and colleagues in a study published today in *PLoS ONE*, suggests that [turkey domestication in Mexico may have begun centuries earlier than previously thought](#).

Thornton notes that more research is needed to know for sure whether the turkeys were actually domesticated. It is difficult to distinguish between domesticated and wild *M. gallopavo* genetically, but she says that the presence of an adult male, female, and juvenile indicates husbandry. And the small bumpy nodules on the birds' ulnas—forearm bones where flight muscles attach—are undeveloped in the turkey skeletons, suggesting that the birds didn't fly much and might have been domesticated. The next step, she says, is to use stable isotope analysis to see if the Mexican turkeys had high levels of corn in their diets—a sign that they were being fed by humans. She also plans to check whether the local ocellated turkeys were being fed corn as well.

"I think they did a good job of making the case that the *Meleagris gallopavo* birds at El Mirador were derived from Central Mexico and were probably being confined," says William Lipe, an archaeologist at Washington State University, Pullman. However, the small sample of DNA concerns him, and he agrees with Thornton that more research is needed: "My guess is that the history of turkey domestication in the New World is fairly complex and that we are just beginning to see some of the outlines of it."

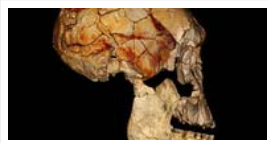
Correction, 9 August: This item has been changed to reflect the dating of early *Meleagris gallopavo* bones. *Meleagris gallopavo* bones have been found from about as early as 800 B.C.E., not 8250 C.E.

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