

Ancient humans brought bottle gourds to Americas from Asia

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Thick-skinned bottle gourds widely used as containers by prehistoric peoples were likely brought to the Americas some 10,000 years ago by individuals who arrived from Asia, according to a new genetic comparison of modern bottle gourds with gourds found at archaeological sites in the Western Hemisphere. The finding solves a longstanding archaeological enigma by explaining how a domesticated variant of a species native to Africa ended up millennia ago in places as far removed as modern-day Florida, Kentucky, Mexico, and Peru.

Image: The bottle gourds pictured above were used for transport by Hopi and Navajo tribes in the 19th century American Southwest. (Photo:

Stephanie Mitchell)

The work, by a team of anthropologists and biologists from Harvard University, the Smithsonian Institution's National Museum of Natural History, Massey University in New Zealand, and the University of Maine, appears this week on the Web site of the Proceedings of the National Academy of Sciences (PNAS).

Integrating genetics and archaeology, the researchers assembled a collection of ancient remnants of bottle gourds from across the Americas. They then identified key genetic markers from the DNA of both the ancient gourds and their modern counterparts in Asia and Africa before comparing the plants' genetic makeup to determine the origins of the New World gourds.

"For 150 years, the dominant theory has been that bottle gourds, which are quite buoyant and have no known wild progenitors in the Americas, floated across the Atlantic Ocean from Africa and were picked up and used as containers by people here," says Noreen Tuross, the Landon T. Clay Professor of Scientific Archaeology in Harvard's Faculty of Arts and Sciences. "Much to our surprise, we found that in every case the gourds found in the Americas were a genetic match with modern gourds found in Asia, not Africa. This suggests quite strongly that the gourds that were used as containers in the Americas for thousands of years before the advent of pottery were brought over from Asia."

The researchers say it's possible that the domesticated gourds - differentiated from wild bottle gourds by a much thicker rind - were conveyed to North America by people who arrived from Asia in boats or who walked across an ancient land bridge between the continents, or that the gourds floated across the Bering Strait after being transported by humans from their native Africa to far northeastern Asia.

"This finding paints a new picture of the founding of the Americas," says co-author Bruce Smith of the Smithsonian Institution. "These people did not arrive here empty-handed; they brought a domesticated plant and dogs with them. They arrived with important tools necessary to survive and thrive on a new continent, including some knowledge of and experience with plant domestication."

Thought to have originated in Africa, bottle gourds (*Lagenaria siceraria*) have been grown worldwide for thousands of years. The gourds have little food value but their strong, hard-shelled fruits were long prized as containers, musical instruments, and fishing floats. This lightweight "container crop" would have been particularly useful to human societies before the advent of pottery and settled village life, and was apparently domesticated thousands of years before any plant was domesticated for food purposes.

Radiocarbon dating indicates that bottle gourds were present in the Americas by 10,000 years ago and widespread by 8,000 years ago. Some of the specimens studied by the team were not only the oldest bottle gourds ever found but also quite possibly the oldest plant DNA ever analyzed. The newest of their archaeological samples, a specimen found in Kentucky, was just 1,000 years old - suggesting the gourds were used in the New World as containers for at least 9,000 years.

Tuross and Smith's co-authors on the PNAS paper are David L. Erickson of the National Museum of Natural History, Andrew C. Clarke of Massey University, and Daniel H. Sandweiss of the University of Maine. Their work was supported by the Smithsonian Institution and the National Museum of Natural History and by Harvard's Department of Anthropology and Peabody Museum of Archaeology and Ethnology.

Source: Harvard University (By Steve Bradt)

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