Editorial: De-extinction: Resurrecting the past to save the future?

Technological advances are making it easier for scientists to analyze DNA collected from extinct species like the woolly mammoth. Pictured here are tusks from a woolly mammoth, believed to have lived more than 20,000 years ago, on a reindeer sled in Siberia. (Francis Latreille / Nova Productions)

By **Editorial Board**

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A passenger pigeon flits by your window, its coos joining the cacophony of bird songs as day breaks. A hemisphere away, woolly mammoths lumber over the Siberian steppe, devouring vast stretches of sedge. In western Europe, aurochs, a species of cattle memorialized by prehistoric cave paintings in Lascaux, lazily soak in a summer day on a French hillock overlooking the Rhone.

Not exactly pages from a "Jurassic Park" script. An auroch just doesn't stir the blood like a velociraptor does. But, as science charges into the era of genetic manipulation, the notion of bringing back species that existed thousands or tens of thousands of years ago may not be that far off.

That begs an obvious question. Why? Besides being able to say we can do it, besides the visual thrill of seeing a mammoth or Steller's sea cow in the flesh — what's the utility of the fast-developing subcategory of science

known as de-extinction?

Before we get there, a few words about the science behind the idea. This isn't about cloning, which requires a living cell to begin the work. Bringing back an extinct species — mammoths, for example — involves inserting mammoth genes into the genome of a close living relative, in this case, the Asian elephant. (There's no short supply of mammoth genes, which can be found in DNA fragments extracted from mammoth bones plentiful in Siberia.) The result would be a hybrid: an Asian elephant with mammoth traits — thick long hair, for example — and cold-resistant blood. The same can be done with passenger pigeons, using their closest relative, the band-tailed pigeon.

In the case of aurochs, the process is even simpler. Through a protocol called back-breeding, an auroch — or at least a facsimile — can be created by selecting cattle with physiological and behavioral traits that most closely resemble an auroch, then breeding offspring over a span of generations until something very close to an auroch is produced. A Dutch effort known as the Taurus program already is doing this, and its scientists say in about seven to 10 years, they should have their auroch doppelganger.

De-extinction has its critics, of course, who huff that bringing back an extinct species is not only extremely expensive, but rather pointless. And there's the obvious hand-wringing about tinkering with the finality of nature. By bringing back mammoths or passenger pigeons, do you cause a Rube Goldberg-like cascade of consequences for existing species?

The goal isn't necessarily to create some sort of Jurassic Park habitat where woolly rhinos and mammoths could be ogled. What if the aim was to ensure the survival and thriving of existing species? That's the argument made by Beth Shapiro, a leading de-extinction expert and author of "How to Clone a Mammoth: The Science of De-Extinction." De-extinction shouldn't be about reviving the heyday of mammoths and saber-toothed cats, she says. It should be about using the know-how to create elephants with mammoth traits — the shaggy hair, the tolerance for colder climates. That would help Asian elephants, an endangered species in a habitat made increasingly smaller by man's encroachment.

Shapiro writes that she believes "de-extinction technology has great potential to become an important tool for conserving species and habitats that are threatened in the present day." Resurrecting the past to help save the future — now that's a script we like.

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