

Raising the Dead

Should scientists bring extinct
species back to life?



Imagine coming face-to-face with a woolly mammoth, a passenger pigeon, or a Tasmanian tiger. Those species are extinct, but scientists say it may be possible to bring them back to life.

How? Scientists would need to obtain the DNA of an extinct animal, then insert it into the egg of a living relative. For example, to re-create a woolly mammoth, which died out 3,700 years ago, scientists would take DNA from a preserved mammoth and place it in the egg of a female elephant, its closest relative. They would then put the fertilized egg inside the elephant. The hope is that the elephant would give birth to a baby mammoth.

In 2003, scientists in Europe were the first to revive an extinct species, the bucardo, a wild goat with long, curly horns that had died out in 2000. The resurrected bucardo lived for only 10 minutes, but the experiment was a breakthrough in de-extinction research.

Now scientists are trying to bring back other extinct species, including the woolly mammoth and the passenger pigeon.

But many researchers doubt that de-extinction is possible because the process is so complicated. Other's say that reintroducing long-gone animals could hurt today's **ecosystems**.

Even if scientists *could* bring back extinct species, *should* they?

YES

It's Our Responsibility

Michael Archer is a paleontologist at the University of New South Wales in Australia. He says humans have a moral responsibility to bring back certain extinct species because it's our fault many of them died out. Archer is leading the team that's trying to bring back the gastric-brooding frog, which died out in the 1980s because of habitat loss and pollution.

"If we are the reason those species went extinct, then we have an obligation to use technology, if we can, to 'de-extinct' them," he tells *JS*.

Reversing extinction might also benefit ailing ecosystems. The extinct Shasta ground sloth once lived in what is now the southwestern United States. The cow-sized sloth helped disperse the seeds of the Joshua tree, which could die out as a result of the animal's absence, says Chris Clarke, who is writing a book on the desert tree.

Resurrecting the Shasta ground sloth could help save the tree and the many animals that rely on it for food and shelter, including jackrabbits and ground squirrels, says Clarke.

Stewart Brand is the co-founder of Revive & Restore, a California organization that supports de-extinction research. He says that resurrected animals would be "beacons of hope." Their reappearance would excite people and inspire them to support the conservation of existing species, he says.

Of course, bringing extinct animals back to life would just be really cool, say Hank Greely and Jacob Sherkow of Stanford University in California.

"This may be the biggest attraction and possibly the biggest benefit of de-extinction," they wrote in a recent paper in *Science* magazine. "It would surely be very cool to see a living woolly mammoth."



DID YOU KNOW?

The new movie *Jurassic World*, which hits theaters this summer, features a resurrected dinosaur attacking humans. But fear not: Scientists say it's not possible to bring dinosaurs back from the dead because their DNA is too old.

NO

It's Unethical

Brian Switek, a writer for *National Geographic*, says long-gone species would have a hard time fitting into the modern world. The northern grasslands, which the woolly mammoth inhabited thousands of years ago, have since been replaced by forests and tundra. "To bring back a species that no longer has a place in the world would be irresponsible," he writes. "Should we really strive to bring back an animal that might only exist in zoos?"

Other experts say that reintroducing extinct species could upset today's ecosystems. One leading candidate for resurrection is the Smilodon (*left*), a ferocious 600-pound sabertoothed cat that hunted large animals, including horses, camels, and bison, in the western United States. If Smilodon were returned to the wild, those animals would be in danger, some experts say.

David Ehrenfeld, a biology professor at Rutgers University in New Jersey, says de-extinction research diverts money and attention from current conservation projects. Tens of thousands of species are in decline or on the verge of extinction because of overhunting, climate change, pollution, and habitat loss. Ehrenfeld worries that if scientists can bring back extinct animals, no one will care about keeping endangered species from becoming extinct in the first place.

One of the most threatened species is the African elephant. To satisfy a large demand for ivory in Asia, poachers killed more than 100,000 elephants from 2010 to 2013, according to a new study led by researchers at Colorado State University.

"Brave conservationists are risking their lives to protect dwindling populations of elephants from armed poachers," says Ehrenfeld. "And we're talking about bringing back the woolly mammoth?"

