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Jurassic Pigeon: A Drive to Revive Extinct Species

Extinct species are gone forever. Or are they? For some time now the dream of re-creating something like a mammoth from its DNA has been floating about on the fringes of the scientific world (and in movies like "Jurassic Park") without being taken seriously.



WSJ columnist Matt Ridley discusses a new effort to clone vanished species and bring about their "de-extinction" with WSJ Weekend Review editor Gary Rosen.

Now, however, the science is getting serious. A new organization, Revive and Restore, under the auspices of the Long Now Foundation (a hip think tank), with the help of National Geographic and TED (a hip conference organizer), is setting out its stall at TEDxDeExtinction, a meeting in Washington, D.C., on March 15.

The founders of Revive and Restore aren't mainstream scientists, but they're not people to be taken lightly, either. Stewart Brand and Ryan Phelan are a husband-and-wife team with a track record of starting unusual

but successful organizations—in his case, the Whole Earth Catalog and the Global Business Network; in hers, the consumer-focused startups Direct Medical Knowledge and DNA Direct. They've attracted the interest of the pioneering Harvard University DNA sequencing and synthesis expert George Church.

Their argument is that it's time to start tentatively trying de-extinction and thinking through its ethical and ecological implications. There are already projects under way to revive extinct subspecies like the European aurochs (a type of wild cattle) and the Pyrenean ibex, or bucardo. In the latter case, when the last female (Celia) was killed by a falling tree in 2000, her tissue was cloned. At least one fetus survived to term in a surrogate mother goat, but it died soon after birth.

A full species that's been extinct for decades like the thylacine (Tasmanian tiger) or the passenger pigeon—the last one of which, Martha, died in the Cincinnati Zoo 99 years ago—will be a taller order, since the DNA from long dead specimens is fragmented. Yet Ben Novak, a young researcher working with the ancient-DNA expert Beth Shapiro at the University of California, Santa Cruz, has extracted passenger pigeon DNA from the toe pad of a museum specimen and sequenced it. Dr. Church hopes to use one of the newly invented letter-by-letter

gene-replacement techniques, such as Talens or Crispr, to transform the genome of a related species called the band-tailed pigeon into that of a passenger pigeon.

There's little doubt that this will succeed. Until recently the next step looked harder—to persuade another species to lay a passenger pigeon egg. But now Michael McGrew of the Roslin Institute in Scotland and colleagues at Dubai's Central Veterinary Research Laboratory have extracted chicken germ cells and put them into ducks so that the duck produced chicken sperm. The "chimeric" duck then mated with a chicken and produced normal chicken chicks. So a pair of chimeric ducks or chickens could in theory produce passenger pigeon chicks.

Of course, that's where the ecological and ethical fun starts. Some ecologists are opposed to the whole idea, fearing that it will make people less concerned about species extinction. Mr. Brand counters that the project should redouble the urgency of preserving habitats for extinct species to reoccupy. Others worry that the passenger pigeons won't have parents to teach them where to migrate. But the restorers of endangered species like whooping cranes and California condors have surmounted such hurdles. Hand-reared cranes are taught to migrate following microlight aircraft.

Ms. Phelan emphasizes that there's plenty of time to get it right. It will take years to re-create the birds perfectly and more years to build their population through captive breeding. Further time will be needed to ensure that their old habitat (and the inevitable regulators) will welcome them. Perhaps the passenger pigeon might turn into a pest. It was once probably the most numerous bird in the world, with flocks that darkened the skies for hours. What a nice problem that would be to have again.

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