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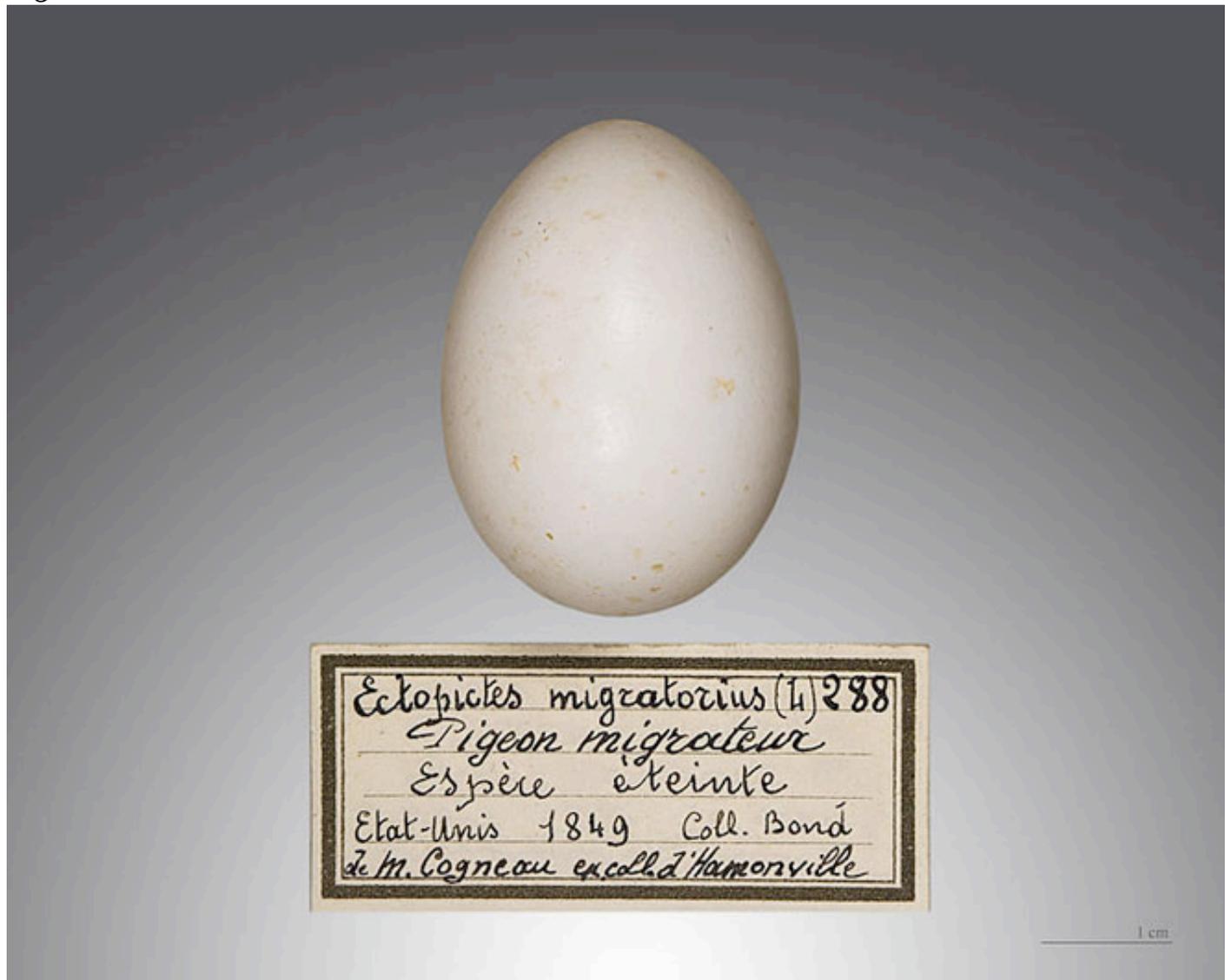
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# The Plan to Bring the Iconic Passenger Pigeon Back From Extinction

By Kelly Servick

03.15.13

8:30 AM



[Muséum de Toulouse/Wikimedia Commons](#)

Twelve birds lie belly-up in a wooden drawer at the Berkeley Museum of Vertebrate Zoology. Bloated with stuffing, their ruddy brown chests resemble a row of sweet potatoes. Slate-blue heads and thin white tails protrude in perfect alignment, except for one bird that cranes its neck to face its neighbor. A pea-sized bulge of white cotton sits where its eye should be. A slip of paper tied to its foot reads,

“*Ectopistes migratorius*. Manitoba. 1884.” This is the passenger pigeon, once the most abundant bird in North America. When Europeans first landed on the continent, they encountered billions of the birds. By 1914 they were extinct.

That may be about to change. Today scientists are meeting in Washington, D.C. to discuss a plan to bring the passenger pigeon back from extinction. The technical challenges are immense, and the ethical questions are slippery. But as genetic technology races ahead, a scenario that’s hard to imagine is becoming harder to dismiss out of hand.

About 1,500 passenger pigeons inhabit museum collections. They are all that’s left of a species once perceived as a limitless resource. The birds were shipped in boxcars by the tons, sold as meat for 31 cents per dozen, and plucked for mattress feathers. But in a mere 25 years, the population shrank from billions to thousands as commercial hunters decimated nesting flocks. Martha, the last living bird, took her place under museum glass in 1914.

Ben Novak doesn’t believe the story should end there. The 26-year-old genetics student is convinced that new technology can bring the passenger pigeon back to life. “This whole idea that extinction is forever is just nonsense,” he says. Novak spent the last five years working to decipher the bird’s genes, and now he has put his graduate studies on hold to pursue a goal he’d once described in a junior high school fair presentation: de-extinction.

Novak is not alone in his mission. An organization called [Revive and Restore](#) is enlisting the support of preeminent scientists—and even the National Geographic Society, which is hosting the TEDx meeting on the topic today, to investigate putting the passenger pigeon back in the sky. The group has chosen Novak to spearhead the project.



A passenger-pigeon flock being hunted in 1875. ([Wikimedia Commons](#))

When the [bird from the Berkeley drawer](#) flew over Manitoba in 1884, it didn’t travel alone.

Passenger pigeons were named for their passage up and down eastern North America in flocks several hundred million strong. To sustain long, strenuous flights, the birds devoured forests and left destruction in their wake. Ornithologist J.M. Wheaton described one flock as a rolling cylinder filled

with leaves and grass. “The noise was deafening and the sight confusing to the mind,” he wrote in 1882. It was easy to tell where the pigeons had roosted: The trees were crippled, their branches cracked off and picked clean of nuts and acorns. For miles, the ground was coated with a layer of feces more than an inch thick.

But the same flocking behavior also led to the bird’s demise. Their nesting sites in the northeastern U.S. were densely packed—as many as 100 nests per tree, each containing a single egg. Pigeon hatchlings were a smorgasbord for predators. Each helpless lump of fat, as heavy as its parents but lacking their aerial skill, would wallow in the nest for a day, then flutter to the ground.

Even before Europeans arrived, hunters shot nests with arrows or knocked them down with poles. But in the mid 19th century, the railroad and the telegraph turned the pigeon into a national commodity. Professional trackers followed the flocks and descended on nest sites. Their tactics were brutal and effective: Firing into the trees brought down thousands of birds in one afternoon. Setting a match to the combustible birch bark forced terrified chicks to fling themselves from their nests. By the late 1850s, flocks were shrinking. By 1889, the population was in the thousands.

Novak remembers learning about the pigeon in school. “I just fell in love with the story of it,” he said. “This absolutely bigger-than-life story of the most abundant bird on the planet going extinct so quickly.” But he wasn’t convinced that animals like the passenger pigeon were gone forever. “I thought that was too absolute.”

As a student at Montana State University Novak studied ecology and evolution with the hope of bringing back extinct animals, but his focus soon shifted toward more modest population studies. “You’re kind of steered away from the science fiction when you go to school,” he says. When he started graduate school at the Ancient DNA Center of McMaster University in Ontario, Novak hoped to analyze genes from the bird that had captivated him as a kid. All he needed were samples from a museum specimen.

## **The great leap backward**



Engraving from painting by James Audubon, 1824. ([Wikimedia commons](#))

The Manitoban pigeon lying in its drawer at Berkeley holds a vast library in its feet. Every cell in its fleshy toe pads contains the 1.5 billion base pairs of DNA that spell out the bird's identity, from the color of its eggs to the sound of its voice. But this DNA has seen better days. It has been broken apart by enzymes and oxygen, zapped with ultraviolet radiation and contaminated by other organisms.

"Whenever you touch it, your DNA gets in the sample," said evolutionary biologist [Beth Shapiro](#) of the University of California, Santa Cruz. "If it sits next to other birds, their DNA gets in the sample." But in the last decade, a set of techniques known as next-generation sequencing has offered a better way to work with less-than-perfect DNA. New machines can analyze hundreds of thousands of short fragments at the same time, speeding up the tedious sequencing process and bringing down its cost. "In the past 10 years, sequencing has gotten approximately 500,000 times more efficient," said biostatistician [Steven Salzberg](#) of Johns Hopkins University. "Nothing in the history of civilization or technology has ever gotten that much more efficient that fast."

Using next-generation sequencing, scientists identified the passenger pigeon's closest living relative: *Patagioenas fasciata*, the ubiquitous band-tailed pigeon of the American west. This was an important step. The short, mangled DNA fragments from the museums' passenger pigeons don't overlap enough for a computer to reassemble them, but the modern band-tailed pigeon genome

could serve as a scaffold. Mapping passenger pigeon fragments onto the band-tailed sequence would suggest their original order.

Eager to crack the pigeon's genome, Novak sent requests to 30 different museums for a toe fragment, and was rejected by all of them. He resigned himself to a thesis focusing on the mastodon, but he continued his pigeon research on the side. In 2011, Chicago's Field Museum of Natural History offered him a sample. He sent the pigeon DNA to a Toronto lab for sequencing, using \$2,500 he borrowed from a friend.

Meanwhile, others were taking note of the revolution in biotechnology, including writer and activist Stewart Brand, best known for the Whole Earth Catalog, the late-1960s counter-culture guidebook. More recently Brand founded the [Long Now Foundation](#), a nonprofit that aims to "provide a counterpoint to today's accelerating culture and help make long-term thinking more common." Brand saw reversing extinction as a conservation method of the future. He and his wife, Ryan Phelan, founder of the consumer genomics company DNA Direct, created a branch of the Long Now Foundation called Revive and Restore. They chose the iconic passenger pigeon as the first experiment.

Revive and Restore hosted a meeting at Harvard University in February of 2012. Attendees included experts like Beth Shapiro, biologist [David Blockstein](#) with the National Council for Science and the Environment, and renowned Harvard molecular geneticist [George Church](#). Shapiro was skeptical of the project's goal from the start, but she decided to add her expertise—and her concerns—to the conversation.

When Novak heard about the meeting, he contacted Church, Phelan and Brand to see if he could contribute. Recognizing his passion, Brand and Phelan invited Novak to help coordinate the project, and he abandoned his graduate program to begin formulating a step-by-step vision of de-extinction. His official title, according to the organization's website, was "passenger pigeon reviver."

When Novak describes his revival scenario, his eyes shine with enthusiasm, but his tone is that of a matter-of-fact classroom lecture. With a wry smile, he presents de-extinction as if the futuristic science were already the stuff of textbooks.

Here is Novak's plan in broad strokes: Sequence the band-tailed and passenger pigeon genomes and find the significant differences between them. Edit the DNA from a band-tailed pigeon germ cell – the type that develops into sperm or eggs – to match that of the passenger pigeon. Implant this cell into the egg of another pigeon, perhaps a rock pigeon, which is easy to work with in the lab. Hope that the germ cell will migrate into the gonads of the developing chick. Allow the chick to grow up, and breed two such birds to create a passenger pigeon.

Sequencing the two genomes is within reach. In March 2013, Novak joined Shapiro in her lab at UC Santa Cruz; he hopes to finish both genomes in about a year. But after that, the going could get rough. Because the last common ancestor of the two species flew about 30 million years ago, their genomes will likely differ at millions of locations, Shapiro says. Scientists will have to figure out which variations correspond to meaningful physical differences. "It's not impossible," she said. "It's just a long time's worth of work." Even in humans, mapping traits to genes is a murky discipline. According to Steven Salzberg, that's not even the biggest barrier. Modifying the genome of one species to match another would be an unprecedented feat of engineering. The most promising method comes from Church's lab, where scientists have developed a technology called [Multiplex Automated Genome Engineering](#) that can make fine-scale alterations to bacterial genomes. Novak hopes Church can make similar modifications at crucial points along the band-tailed pigeon chromosome. But Salzberg cautions that animal genomes are much more complicated than bacterial

ones. At the same time, he's not ready to write off this phase of the project just yet: "If I had to bet, I'd say someday we'll figure it out."

Getting from a strand of passenger pigeon DNA to a living bird is the last big step, Novak says. He will need specialized germ cells, which scientists know how to extract from chicken embryos, but not pigeons. He is investigating a work-around: extracting stem cells from band-tailed pigeons instead, and stimulating them to become germ cells. This feat has never been achieved in birds. However, Novak says, "Someone could make a major breakthrough in next two years."

## A final nesting place



A passenger-pigeon aviary in 1896. ([Wikimedia commons](#))

Surmounting such technical challenges is only phase one of Revive and Restore's plan. Novak hopes to set up a sanctuary of lab-generated pigeon chicks in the bird's original breeding territory. He would then train homing pigeons to pass over the nest site, showing the chicks their ancestral migration route. Novak says passenger pigeons would restore balance to forest ecosystems, clearing brush and fertilizing soil.

This strategy doesn't make sense to Blockstein, who says "quote-unquote" before every mention of de-extinction. He doubts that any small population could survive long enough to reach its original numbers. If it did, he fears the bird would become a pest to farmers, consuming commercial berries and grain. Stanford University bioethicist Hank Greely shares this concern. "You're re-introducing to the same geographic region," he said. "But not to the same environment."

No governing body exists to make decisions about re-introducing an extinct species. Once the science is within reach, Novak says he will work with wildlife management authorities to set up a legal framework.

Beyond the ecological risks, Revive and Restore has a bigger "why" question to answer. The argument that extinction is forever underlies important protections like the Endangered Species Act, Greely says. Why try to rewrite the passenger pigeon's iconic cautionary tale?

One possible answer: to do it responsibly before someone does it recklessly. The genomic tools of de-

extinction may soon be cheap enough for students and DIY types to try on their own, Brand told an audience at the 2012 Aspen Environmental Forum. “I would like to see some kind of framework of how we think about that, before it goes totally amateur.” If an organized effort like Revive and Restore tackles a high-profile and tightly controlled project, it might bring scientists and the public into an important conversation, he argued.

Shapiro, who is no de-extinctionist, sees value in an ambitious goal that unifies scientific disciplines. As Novak strategizes decades into the future, Shapiro still plans to focus on the more down-to-earth population genetics work that has been the focus of her lab. Revive and Restore will pay Novak’s salary while he works with Shapiro, but the project is not supporting her research financially. “I’m thrilled to be along for the ride,” she said. “I will do what I can to bring some enthusiasm and hopefully also some sanity to the problem.”

In Novak’s mind, reviving the pigeon is not just about turning back the clock, but also demonstrating the exhilarating pace of science. “It’s actually going to get people more interested in the idea of conservation, because of how cool it is,” Novak said. Greely doesn’t dismiss this argument. He believes “a sense of wonder” is one of the most compelling cases for de-extinction.

If Novak can convince the public and potential funding sources of that value, the passenger pigeon might do more than ride a wave of new technology; it might propel science forward. Whether or not we ever see another living passenger pigeon, its genetic code remains alive. The birds in their dark museum drawers may be more powerful now than when they swarmed by the billions.

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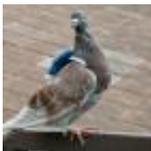
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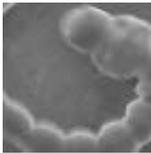


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**Paul Harrap** • a month ago

"Oh, yeah. Oooh, ahhh, that's how it always starts. Then later there's running and screaming."

49 • [Reply](#) • [Share](#)

**NuprinBoy** → [Paul Harrap](#) • a month ago

Jeff, you're Goldbluming...

9 • [Reply](#) • [Share](#)

**peter demestihias** • a month ago

Bring back the Dodo!

33 • [Reply](#) • [Share](#)

**Joeyjoejoeshabadoo** → [peter demestihias](#) • a month ago

and the striped biologist taunter!

0 • [Reply](#) • [Share](#)

[for\\_SCIENCE](#) • a month ago

God creates pigeons. God destroys pigeons. God creates Man. Man destroys God.  
Man creates pigeons. Pigeons destroy Man. Pigeons inherit the Earth.

77 ^ | 3 v • Reply • Share ›

[Fred Maxwell](#) → [for\\_SCIENCE](#) • a month ago

And all of Man's statues!

14 ^ | v • Reply • Share ›

[Kate Garchinsky](#) → [for\\_SCIENCE](#) • a month ago

God created pigeons before man.

0 ^ | v • Reply • Share ›

[JoeBob89](#) • a month ago

Wish they would bring back the Carolina Parakeet (called a parakeet, but actually a parrot). It was the only native parrot in the colonial U.S., and it was a beautiful bird. Would make for a great pet parrot too, I bet. They even mention its tragic extinction in "House of Cards."

22 ^ | v • Reply • Share ›

[Lumpy\\_Space\\_Princess](#) → [JoeBob89](#) • a month ago

"A factor that contributed to their extinction was the unfortunate flocking behavior that led them to return immediately to a location where some of the birds had just been killed. This led to even more being shot by hunters as they gathered about the wounded and dead members of the flock."

:(

11 ^ | v • Reply • Share ›

[Mike Weatherby](#) → [Lumpy\\_Space\\_Princess](#) • a month ago

I have read that hunters would tie one bird to a stump (a stool) and this bird would entice others to come down where they would be shot. Hence the name "Stool Pigeon" .

7 ^ | v • Reply • Share ›

[RTRebuilder](#) → [Lumpy\\_Space\\_Princess](#) • a month ago

Maybe they can leave that particular gene out this time around...

3 ^ | v • Reply • Share ›

[Carolyn Blakeney](#) → [RTRebuilder](#) • a month ago

Or maybe we could leave hunters out this time. Or declare a season on hunters to level the playing field.

5 ^ ⋮ v • Reply • Share ›

**Slick312** → Carolyn Blakeney • a month ago

Hunters are doing the work of population control. When hunting has been banned in areas the herbivore population would explode until there was a mass starvation. Man has upset the natural balance by killing off the predators; we must now replicate that function wisely in order to avoid further damage.

3 ^ ⋮ v • Reply • Share ›

**Etaoin Shrdlu** → JoeBob89 • a month ago

Also in "Alas, Babylon".

0 ^ ⋮ v • Reply • Share ›

**Michael Alexander Anzola** • a month ago

Why waste time on a pigeon, let's bring the T-rex back!!!

19 ^ ⋮ v • Reply • Share ›

**CraigThomler** → Michael Alexander Anzola • a month ago

The T-Rex was just a pigeon. A very large carnivorous flightless pigeon, but a pigeon nonetheless.

16 ^ ⋮ v • Reply • Share ›

**David Canavese** → Michael Alexander Anzola • a month ago

Today a pigeon, tomorrow a T-Rex.

12 ^ ⋮ v • Reply • Share ›

**rosswilliams** • a month ago

"It was easy to tell where the pigeons had roosted: The trees were crippled, their branches cracked off and picked clean of nuts and acorns. For miles, the ground was coated with a layer of feces more than an inch thick."

Next on the list, we can save smallpox from extinction. Restoring wolf populations has brought virulent opposition. I can't imagine this working for very long.

The other question is whether the habitat still exists to support a population even if the science of restoration works. Its doubtful that the last passenger pigeon was killed by humans. Instead, its likely that those huge flocks were necessary for the pigeon to survive.

21 ^ ⋮ 2 v • Reply • Share ›

**Ralph Jones** → rosswilliams • a month ago

"Its doubtful that the last passenger pigeon was killed by humans. Instead, its likely that those huge flocks were necessary for the pigeon to survive."

That's bull!

In 1896, the final flock of 250,000 passenger pigeons were killed by a group of hunters who actually KNEW it was the last flock in existence.

How about the Great Auk? On July 3rd, 1844, a hunter named Sigurður Ísleifsson had strangled the last two known adults in existence while his partner Ketill Ketilsson smashed the last egg the birds had been incubating with his boot. How Nice.

Then there was the Dodo, Tasmanian tiger, Quagga, the Falkland Island wolf, Zanzibar leopard (exterminated because they were believed to be kept by witches), the Caribbean monk seal, Carolina parakeet (exterminated for it's hat feathers), the Atlas bear (Africa's only native bear -killed off just for fun), the Toolache wallaby (hunted down with greyhounds for their fur. How sporting!), The sea mink. (wiped out so fast, it was never studied) and on and on and on...

To suggest we shouldn't at least TRY to undo some of the damage we've done because it may currently be 'inconvenient' (a wolf might eat my sheep!) -or to equate any of these wiped-out animals with reviving a disease like smallpox, is just being willful stupid.

Humanity has been an extinction scourge on this planet.

If there's even a chance one or more of the species we've eliminated can be brought back, we should at least try.

53 ^ · 3 v · Reply · Share ›

**Nathan Smith** → Ralph Jones • a month ago

To be fair, we are responsible for wiping out smallpox.

8 ^ · v · Reply · Share ›

**rosswilliams** → Ralph Jones • a month ago

"In 1896, the final flock of 250,000 passenger pigeons were killed by a group of hunters who actually KNEW it was the last flock in existence."

Actually you are wrong. There were confirmed sitings of passenger pigeons after 1896.

" On July 3rd, 1844, a hunter named Sigurður Ísleifsson had strangled the last two known adults"

That isn't true either. There was a siting in 1852.

Wolves pose almost no real threat. There is more damage done by deer in my area than there is by wolves. Yet there is huge controversy about protecting the wolf population.

Given the damage described above, it is doubtful they would ever be anything other than interesting museum curiosities. AKA zoo animals.

4 ^ | | v • Reply • Share ›

**Mauro Mello** → [rosswilliams](#) • a month ago

Jesus Christ, don't you really understand that "last sightings" CONFIRM the over-hunting or are you just arguing for the sake of being a bore?

2 ^ | | v • Reply • Share ›

**rosswilliams** → [Mauro Mello](#) • a month ago

Try reading the whole discussion again. The issue isn't whether "over-hunting" killed off passenger pigeons. That much is obvious. Its whether restoring a wild population requires massive flocks that destroy whole forests and leave feces an inch thick for miles around. That would be a larger barrier to their restoration than creating a scientific curiosity.

3 ^ | | v • Reply • Share ›

**Orson Olson** → [Ralph Jones](#) • a month ago

Thus spake hubris (before the fall). just sayn.

2 ^ | | v • Reply • Share ›

**oneyedundertaker** → [rosswilliams](#) • a month ago

The Screwfly would also be a decent analog, especially considering the means of both it's and the Passenger Pigeon's demise (intentional human interference with reproduction for pecuniary gain)...also, to the extent we value furry life more than feathery life and feathery life more than scaly life and scaly life more than life with exoskeletons and life with exoskeletons more than plant life and plant life more than fungal life and fungal life more than germ life...Screwflies, unlike Smallpox, are not microbial.

0 ^ | | 1 v • Reply • Share ›

**caribis2** • a month ago

What I learned, and what the following quote from Wikipedia backs up, is that you need a lot of passenger pigeons or they will go extinct. There were thousands of them around when commercial harvesting ended, but they could not re-establish themselves nor could efforts by private citizens with captive flocks. I applaud their effort and would love to see them be

successful at reintroducing an extinct species, but unless they release a few hundred thousand or so into the wild at once their chances seem remote.

"This was a highly gregarious species – the flock could initiate courtship and reproduction only when they were gathered in large numbers; smaller groups of Passenger Pigeons could not breed successfully, and the surviving numbers proved too few to re-establish the species. Attempts at breeding among the captive population also failed for the same reasons. The passenger pigeon was a colonial and gregarious bird practicing communal roosting and communal breeding and needed large numbers for optimum breeding conditions."

10   • Reply • Share ›

**Slick312** → caribis2 • a month ago

So in order to bring them back we need to create enough to ensure an ecological calamity? Great.

4   • Reply • Share ›

**Joeyjoejoeshabadoo** → Slick312 • a month ago

no no... a catastrophe not a calamity

0   • Reply • Share ›

**BillCornelius** → caribis2 • a month ago

There was also a prevalent hunting culture that knew all the tricks to get them to the table.

2   • Reply • Share ›

**david b** → BillCornelius • a month ago

Also there was a zoo culture that was VERY unversed in how to keep animals alive in captivity compared to today. Zoos even in the 50s were hideously primitive. Anyone back in 1914 trying to get a group of pigeons to mate would be at a disadvantage versus the same effort with the same population tried today.

1   • Reply • Share ›

**Full Metal Pizza** → caribis2 • a month ago

But that info is more or less 100 years old.

1   • Reply • Share ›

**Jorj\_X\_McKie** • a month ago

Here's an endangered species I'd like to see again... a Republican that isn't bat shit

There's an endangered species I'd like to see again... a Republican that isn't but still crazy.

26 ^ | 5 v • Reply • Share ›

**Billy Brantingham** → Jorj\_X\_McKie • a month ago

I'd like to see a Democrat that isn't an economic retard. I know they used to exist.

13 ^ | 5 v • Reply • Share ›

**Jorj\_X\_McKie** → Billy Brantingham • a month ago

Economically challenged people have risen to the top of both parties. We're way past the day when Conservatives are actually interested in conserving anything other than their traditional and often ill gotten privileges.

5 ^ | v • Reply • Share ›

**Joeyjoejoeshabadoo** → Billy Brantingham • a month ago

derp ba derp derp doo

2 ^ | v • Reply • Share ›

**Amy Nelson** → Billy Brantingham • a month ago

You think trickle down economics works?

2 ^ | v • Reply • Share ›

**Yannick Richter** → Jorj\_X\_McKie • a month ago

Are there not enough boring political articles? Do we really need to read those same jokes on every unrelated subject? I feel sad for people who have that kind of obsession... For some it's "Oh, I'll make a democrat/republican joke on every subject", for others it's "oh, I'll find a link between this article and the greatness of Jesus"... In any case, it's just annoying, really...

1 ^ | v • Reply • Share ›

**Joeyjoejoeshabadoo** → Jorj\_X\_McKie • a month ago

That's just a mythical creature like the unicorn... everybody knows that

0 ^ | v • Reply • Share ›

**FredMurre** • a month ago

I've frequently done drawing studies of a preserved Passenger Pigeon in the local Nat History museum. I always feel a simmering rage about the entire business. So close there, under glass, but dead and extinct to the world.

Bringing them back at least in small amounts would be a good test of the technology and do a

little bit to restore the reputation of a bird that has become a symbol of the human race's

tiny little bit to paste up the reputation as giant @ssholes the human race has become.

That said, I would also very much like a pet Giant Auk, if those could be tended to after the Passengers are restored.

12 ^ | 1 v • Reply • Share ›

**sedjak6** • a month ago

Reviving them is not going to end up in a scene fro Hitchcock's Birds, folks. We make sure that they have the same congregating trait after revival. If so, then if they do proliferate to the billions (really doubt it) and become a pest then they could be culled again by hunters. Hunters are the ones that should be rejoicing cuz those pigeons were huge.

This is not fodder for some Michael Crichton novel in the making, either. At the same time, we can't be sure 100% that in the breeding process they pick up some undesirable trait that only comes to light when its too late--like a switch on of a latent sequence of brain-thirsty zombie carnivore dinosaur genes. Remember that tweety bird evolved from T-Rex.

One way around this is to knock on Monsanto's door and ask for the Terminator gene. Evolve it to create a flock of Passenger Pigeons that die after a few generations after we have studied them. Then breed them without this gene if it looks good. Or--more humanely and down the road--study the homing instinct and use whatever means like magnetics or radio waves to keep them close to beacons.

We could also start with the much more benign and beautiful Carolina Parakeet also mentioned in the comments. Wouldn't pose such scaling problems as Matilda's flock. With respect to either of these re-breeding programs, we already have a genetics problem in the New World

[see more](#)

5 ^ | v • Reply • Share ›

**Shaun Hall** • a month ago

An extinct bird in the lab is worth two in the bush

4 ^ | v • Reply • Share ›

**Grrrits** • a month ago

Life found a way.

3 ^ | v • Reply • Share ›

**topsey** • a month ago

A more interesting question might be, "What caused Passenger Pigeon flocks to become so big?" Groups of animals so large that they cause damage to the ecosystem are often a sign that the ecosystem is out of balance. For example there are so many Snow Geese now that they are damaging their breeding grounds.

In the case of the Passenger Pigeon perhaps we should be ready to restore their predators if we decide to restore the Pigeons too.

2 ^ | v • Reply • Share ›

**Bill\_Woods** → topsey • a month ago

There's pretty good evidence that in pre-Columbian North America, the pigeon flocks were not nearly as large as they had become by the time European settlers arrived. So the near-extinction of the Indian population by European diseases may have played an important role in the rise of the bird.

Given passenger pigeons' Brobdignagian appetites for mast and maize, one would expect that Indians would also have hunted them and wanted to keep down their numbers. Thus their bones should be plentiful at archaeological sites. Instead, Neumann told me, "they almost aren't there — it looks like people just didn't eat them." Pigeons, roosting en masse, were easy to harvest, as the Seneca hunt [in 1782] showed. "If they are so easy to hunt, and you expect people to minimize labor and maximize return, you should have archaeological sites just filled with these things. Well, you don't." To Neumann, the conclusion was obvious: passenger pigeons were not as numerous before Columbus. "What happened was that the impact of European contact altered the ecological dynamics in such a way that the passenger pigeon took off." The avian throngs Audubon saw were "outbreak populations — always a symptom of an extraordinarily disrupted ecological system."

Mann, 1491: *New Revelations of the Americas Before Columbus*

5 ^ | v • Reply • Share ›

**Peter Middleton** → topsey • a month ago

So Passenger Pigeon for dinner!?

2 ^ | v • Reply • Share ›

**Guest** • a month ago

An extinct bird in the lab is worth two in the bush

2 ^ | v • Reply • Share ›

**oneeyedundertaker** • a month ago

I don't necessarily disagree with the article, I am, however, a little intrigued by the premise these researchers and many of the commenters on here appear to take for granted.

The premise: \*A golden rule: species extinction is always a "bad" thing, period, and species recovery/de-extinction is always a "good" thing, period.\*

I disagree with this as I view it as a false dilemma/binary thinking. I also think the premise

I disagree with this, as I view it as a false dilemma/binary thinking. I also think the premise ignores the fact that humanity is a member of the animal kingdom itself and, as such, is itself a product of evolution and a rightful evolutionary agent of natural selection. Additionally, these extinct species are now, by definition, exotic (i.e., not naturally occurring) and reintroducing them into the environment will entail all the problems of any exotic species introduction.

Certainly our mutual evolutionary heritage doesn't entitle humans to predate Passenger Pigeons for sport (as that is beyond the scope of our license to use the Earth granted by natural selection), but it does entitle humans to reproduce and carry on in a manner consistent with our evolutionary gifts (i.e., intelligence/opposable thumb and resulting alpha predator status, technology, society, population, etc.).

If those evolutionary gifts permit us to breed to the point of 7,000,000,000 extant lives (much like the Passenger Pigeons did prior to their extinction) and allocate resources that would

[see more](#)

3 ^ | 1 v • Reply • Share ›

**Nathan Smith** → oneeyedundertaker • a month ago

Ah, Social-Darwinism applied to actual Darwinism. The circle completes itself. We killed them off. That doesn't mean we have to bring them back, but it's irrelevant. Some people will want to bring them back out of curiosity. Others will want to bring them back out of guilt. Others may like the idea of restoring a healthy ecosystem, and still others may want a population large enough to put it back on the menu. If it goes wrong, the very vulnerability they showed before would let us kill them off again. Yes, they will compete with other birds. Apparently they were pretty good at it. They may also serve a productive role, fertilizing the ground and dispersing seeds.

A related proposal I've seen is introducing elephants into the Western Plains. The idea is that with the better U.S. infrastructure and law enforcement and economy they would have a better chance against poachers but be pretty easy to wipe out if they went all T-Rex on us. They obviously wouldn't be 'natural' but it's an interesting idea. Of course, we could wipe them out, but they might also bring their own diseases which might jump species and be much harder to wipe out.

2 ^ | v • Reply • Share ›

**Joshua Perina** → oneeyedundertaker • a month ago

I think the advantages of having greater living genetic diversity and more behavioral patterns we can study are actually beneficial to us as a species. A factor we didn't understand or couldn't exploit 100 years ago. Now that we can we're putting resources into creating rather than destroying. We marketing it under the "right thing to do" but in reality we do it for the same selfish reasons we destroyed them in the first place.

Whatever the motivation, I feel excited about the idea.

2 ^ ⋮ v • Reply • Share ›

[oneyedundertaker](#) → Joshua Perina • a month ago

That's fine. If the cost/benefit weighs in favor of reincarnating these species, then do it. If the cost/benefit weighs in favor of restoring your 1988 Chrysler LeBaron, then do that too. My issue is with the assumption that \*all\* savable or frankensteinable species should be saved/reincarnated based solely on the faulty premise that saving a species/reincarnating an extinct one is a "good" in itself. Not the case...

1 ^ ⋮ 1 v • Reply • Share ›

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