



## “Musing from the Hill” by Susan Crossett

as seen on the *Dunkirk Observer* on Fridays  
and the *Jamestown Post-Journal* on Saturdays



### Extinction, Continued

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Let me continue my copying from my alumni magazine, “CALIFORNIA, Fall 2021”:

Starting with the toe pad tissue of nine preserved specimens in the Royal Ontario Museum, a number of experts from round the world met to discuss the issue. “Any work that we would do would never be just simply about reviving an extinct species as a curiosity; it would be about restoring an ecosystem.”

The fact is, humans have made a huge hole in nature in the last 10,000 years. We have the ability now, and maybe the moral obligation, to repair some of the damage.

When an audience was asked if they wanted extinct species back, the applause was tentative.

But when Santa Barbara ecology professor Douglas McCauley first heard about de-extinction, it all seemed to him theoretical at best. Entrepreneurs, rather than scientists, seemed to be controlling the narrative, and without a sufficiently critical lens. “It seemed like we were headed on a trajectory where we were making oddities for zoos rather than restoring ecosystem function.” By the time McCauley's paper was published, Ed Green and his team at UC Santa Cruz had sequenced the whole genome.

To be clear, he wasn't literally splicing together pieces of DNA, but rather a digital facsimile.

Described as “molecular scissors,” CRISPR allows scientists to make very precise cuts in DNA and insert new genetic material – a tool with obvious implications for de-extinction science. “The big-idea concept is that



we take the genome of the band-tailed pigeon, or some close relative,” says Green, “and bit by bit, turn by turn, tweak this into a passenger pigeon. It would be like taking your Toyota and swapping out parts until you have a Honda – if Hondas were extinct.”

Green makes an important point: Rather than a true passenger pigeon, the final product of this revival project would be a sort of band-tailed-passenger hybrid. Similarly, the Woolly Mammoth Revival Project is planning to make what would be essentially a hairy, cold-adapted Asian elephant.

Semantics aside, what if these Franken-animals don't look, or behave, quite as expected?

As Green says, “We'll find out when we make a passenger pigeon.”

In his paper, he articulates three main rules for proceeding: The species must be functionally unique and play a critical and irreplaceable role in their ecosystem. Passenger pigeons, it seems, fit this bill. As migratory birds, they aided in forest maintenance and may have contributed to seed dispersal as well. By breaking branches and disturbing tree canopies, they supported a diverse and constantly regenerating habitat. In its absence, native plant and animal species have declined. McCauley's second rule: The best candidates for de-extinction are the recently extinct or even not-yet extinct.



When the passenger pigeon was numbering in the billions, the Eastern Seaboard of the United States had dominant forests of chestnut. If American chestnut trees were a major source of food for the pigeons, could they survive without them. “If there's no place for animals to live, then what's the point?”

It's believed that the restoration of the passenger pigeons would actually be restorative, helping to reverse the cycle of habitat degradation.

McCauley's third and final rule: Candidate species must be able to reach a population

sizable enough to actually have an impact on the ecosystem. “Can you actually recover them to meaningful levels? If you can't, perhaps you shouldn't start.”

It's worth noting that humans don't exactly have a good track record when it comes to ecosystem intervention. But there's also a recall button should things get out of hand. “It's called hunting.”

For now, the progress toward a passenger pigeon is slow and uncertain. The effort is largely unfunded and mired in the technical challenge of engineering and implanting germ cells into a viable, surrogate parent. But the goal is to hatch the first generation of passenger pigeon chicks in the next seven to twelve years. In the meantime, efforts are underway to learn more about the natural history of the passenger pigeon – where it lived, how it interacted with its environment – to inform best practices for breeding and eventual release.

“Today's science fiction is tomorrow's boring science. I would be shocked if it didn't come to fruition. It's far too late to start worrying about whether we're playing God or not – we've already done this. And one thing we definitely need to do differently is acknowledge what we're doing and start taking responsibility.”

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