**Transcript: Tempest in a Teacup**

*Note: Episodes of Outside/In are made as pieces of audio, and some context/nuance may be lost on the page. Transcripts are generated using a combination of speech recognition software and human transcribers, and may contain errors.*

**Sam Evans-Brown: So… what do you know about the passenger pigeon?**

**Taylor Quimby: There… there were a lot of them.**

**Justine Paradise: They would darken the skies!**

**Taylor Quimby: And now there are none.**

**Sam Evans-Brown: Exactly.**

[Music]

*Voiceover: “The roar of their wings on arriving and departing from the roost is tremendous and the flocks, during the flight, darken the heavens. The ground is covered to the depth of several inches with their manure. Thousands [of pigeons] are killed by casualties from breaking limbs of trees.”*

**Sam Evans-Brown: The passenger pigeon was incredibly abundant. The best guess at their population, based on the descriptions Europeans gave of their flocks, is that they were in the billions.**

*Voiceover: The ground is covered from the depth of several inches with their manure. A flock would land then move like a tide, eating acorns. Then another bunch would land ahead of them, and the flocks would leapfrog until they ate every acorn and beechnut on the forest floor.*

**Sam Evans-Brown: And not only were there a lot of them, but the defining trait of the passenger pigeon was that they lived in these huge flocks. So some folks think that there were maybe only ever five flocks at a time… so we’re talking about maybe a billion birds per flock.**

**Taylor Quimby: That is a lot.**

*Voiceover: There’s so many to a flock, that you never see an end to it!*

**Sam Evans-Brown: There were so many that the Archbishop of Quebec ex-communicated the passenger pigeon as a pest, as a plague.**

**Justine Paradise: He ex-communicated...**

**Taylor Quimby: I don't think you could do that.**

**Sam Evans-Brown: [Laugh] It’s not clear how effective this was.**

**Justine Paradise: ...from the church?**

*Voiceover: Thousands of pigeons are killed by casualties from breaking limbs of trees.*

**Taylor Quimby: Did they look like normal pigeons? I mean, they look like a pigeon.**

**Sam Evans-Brown: Individually, I mean they were pretty.... they were like a skinny version of your standard rock pigeon, but they had this nice reddish blush on their chest and like a longer, more delicate tail. But you really can’t separate the passenger pigeon out from their numbers. There were so many that they were kinda like a force of nature… like descriptions of forests that they left behind said they would break limbs off the trees and open up the canopy and their poo would literally smother plant life on the forest floor.**

**Justine Paradise: Oh my god**

**Sam Evans-Brown: So they were like a fire coming through when they came to town.**

*Voiceover: When they jink and the sun strikes their feathers just right, they sparkle like a big river flowing in the sky.*

**Sam Evans-Brown: The fact that by 1914 we had wiped them all out, just two hundred years or less after these descriptions… I mean it’s a pretty powerful narrative. I think it is the thing that Americans think of when we talk about the destructive capacity of the human race...**

*Charles Mann: I think the first thing they think of is the passenger pigeon, because it's such a symbol of, you know, human greed. Cupidity and carelessness.*

**Sam Evans-Brown: That… is Charles Mann.**

**Justine Paradise: You got to talk to the *1491* guy??**

**Sam Evans-Brown: Did you read it?**

**Justine Paradise: No but I know about it. This is the the thing is it’s like a famous book. It’s like a *Guns, Germs, and Steel* or something.**

**Taylor Quimby: Well I don’t know jack about it so explain it to me**

**Sam Evans-Brown: It was a best selling book, it’s about what the Americas looked like before the arrival of Europeans, but tucked away in this archeological tome there was this one… small… section.**

*Charles Mann: ...the relatively brief discussion in the book about the passenger pigeon.*

*Sam Evans-Brown: Yeah, incredibly brief. One might say yeah.*

*Charles Mann: Yeah, a paragraph?*

**Sam Evans-Brown: And in that very short section, he suggested something… well… something downright heretical… he wrote about a paper… written in the 1980s by an archaeologist named Thomas Neumann. Remember that name? Neuman.**

**Justine Paradise: Neuman.**

**Taylor Quimby: Neuman. Yeah, that that helps. Thank you!**

*Charles Mann: And he hypothesized something. It really struck me, which is that the destruction of native societies, you know, with the arrival of Europeans had lifted the lid off of passenger pigeons. And what we were seeing was an outbreak population. It was a crazy thing that happened because of the sort of a weird ecological byproduct of the genocide against Native Americans.*

[Music]

**Sam Evans-Brown: And when I read that… I thought, as I often do when I read really short interesting things that aren’t really expanded upon in books… oh that would make a great Outside/In episode, but then as I got into the story… there were people who were refusing to be interviewed…**

*Charles Mann: How dare you say that?*

**Sam Evans-Brown: one even told me that to even look into the question was journalistically irresponsible…**

**Taylor Quimby: What?**

*Charles Mann: Give me a break. There was new evidence. I didn't know about it because I couldn't have because I'm not a time traveler.*

**Sam Evans-Brown: ...so that’s when I decided that there’s a whole different story here… which is: why is the population of an extinct bird… so controversial?**

**Justine Paradise: What are birds?**

**Taylor Quimby: Isn’t there a whole thing about how birds aren’t real?**

**Justine Paradise: I don’t even think they are real**

**Taylor Quimby: That’s why it’s so controversial!**

**Justine Paradise: They’re spies.**

[Outside/In theme music rises]

**This is Outside/In a show about the natural world and how we use it. I’m Sam Evans-Brown and I’m here with Justine Paradis and Taylor Quimby.The Passenger pigeon is arguably America’s most notorious extinction story. It’s a cautionary tale of how humanity, can, with incredible speed, destroy even the most astonishing wonders of the world. BUT is that cautionary tale fact or fiction? How many passenger pigeons were there before Europeans arrived in North America? And… why is this is such a sensitive question??!**

[Outside/In theme music fades]

**Sam Evans-Brown: So… the paragraph that led this whole kerfuffle had its origins in a place called Cahokia. Have you ever heard of Cahokia?**

**Justine Paradise: No.**

**Sam Evans-Brown: Cahokia was a city, before Europeans arrived in North America right across the mississippi river from where St. Louis is today…**

*Charles Mann: That it existed from, you know, very, very roughly speaking, you know, 400 A.D. to about fourteen hundred A.D.*

**Sam Evans-Brown: Most guesses say that there were like 20… 25,000 people living there.**

*Charles Mann: I mean Cahokia was until about eighteen hundred, the largest city north of Rio Grande*

**Sam Evans-Brown: Some archeologists think as many as 40,000… which would have been bigger than London at the time.**

**Taylor Quimby: Wow.**

**Sam Evans-Brown: Right! And so… a city that size, just like cities today, would have required a lot of food. And one of the things archeologists can look at and determine what’s being eaten is they can sort through bone piles which are called middens.**

*Charles Mann: So, you know, they look at the bones, what they have and what they didn't find was passenger pigeon bones. It gets more complicated than that. But that's the basic insight is that there's remarkably few passenger pigeon bones throughout these societies which there are very well organized, you know, food procurement systems.*

*Sam Evans-Brown: Well and also, isn't it the case that when we read colonial accounts of passenger pigeons, they were just sort of famously dumb?*

*Charles Mann: Yeah, they're easy.*

*Sam Evans-Brown: Right, exactly.*

*Charles Mann: There's this amazing account of the Seneca just simply knocking them off the branches of trees and catching them in baskets and then, you know, boiling boiling them up into pigeon stew.*

*Sam Evans-Brown: They’re basically meat fruit.*

*Charles Mann: Yeah, they're meat fruit... and... well, they're pigeons. Right? These are not the brightest birds.*

[Music]

**Sam Evans-Brown: So, an archeological mystery… where were the pigeon bones? And this is where Charles stumbles across Thomas Neumann…**

**Taylor Quimby: Neumann!**

**Sam Evans-Brown: ...the archeologist who again argued that these huge flocks were...**

*Charles Mann: a weird ecological byproduct of the genocide against Native Americans.*

**Sam Evans-Brown: And so that was the story that Charles told in… you know… a few paragraphs of his book.**

**Justine Paradise: Can we. Can we review the idea really quick? So big because of the genocide of the Native Americans that opened up like an ecological niche for the passenger pigeon to explode? And how did that happen?**

**Sam Evans-Brown: Right. So passenger pigeons. they ate nuts. — so the big thing they ate are beech nuts, acorns — and these are all crops that Native American people also eat. But also more to the point, you know, when you have millions of native people die, you have all these fields that are suddenly fallow, not being not being tended and not being protected. And so not only are there fewer people eating the the these nuts that the birds also rely on, but suddenly there's this huge swath of agricultural land that they can just forage in. And so the population booms.**

[Music]

**Sam Evans-Brown: And so like the very presence of these huge flocks is instead of being like, you know, a symbol of the abundance of the new world gets recast and and reinterpreted as like another symbol of the horrors that Europeans visited upon native people.**

**Justine Paradise: God.**

*Charles Mann: And what really happened was that a bunch of ornithologists found out sort of the through the odd mechanism of this journalistic book that a whole bunch of archaeologists didn't think that there were that many passenger pigeons. And they went, What? And so all of a sudden, I got, you know, a small number of irate letters…*

**Sam Evans-Brown: Which, according to Charles, didn't really poke holes in the hypothesis per say. They were just sort of mad that he had written about this.**

*Charles Mann: How dare you say that?*

**Sam Evans-Brown: And it may be that these letters didn’t have much substance to them, I don’t know I didn’t read them. But as I dug into the critique of *1491*, what I found was it was really… … really pointing out some fundamental problems archeology in general.**

Taylor Quimby: Like what?

*Sam Evans-Brown: Hello. Hello, hello, hello. Hello. I hear my own voice coming back to me like before.*

**Sam Evans-Brown: Well, to sort through it all first let me introduce you to an archeologist named Cregg Madrigal, who got his PhD researching passenger pigeon remains...**

**Taylor Quimby: Doctorates are so weird.**

**Sam Evans-Brown: … in New York State.**

*Sam Evans-Brown: I’m hoping to talk to Cregg Madrigal about passenger pigeons.*

*Cregg Madrigal: Hello.*

*Sam Evans-Brown: Hey. How you doing?*

*Cregg Madrigal: I'm good.*

**Sam Evans-Brown: And what he told me is that Neumann was writing in the 80s… and frankly… even though people had been doing excavations for centuries, we were kinda dumb about the ways we went about it.**

*Cregg Madrigal: When they dug then they use shovels and trowels, not looking really closely at soil.*

**Sam Evans-Brown: And nobody was doing things like, say, screening the soil through a very fine mesh, looking for things like the rib of a passenger pigeon. But eventually, through the 90s and into modern day, we've been getting smarter.**

*Cregg Madrigal: Well Neumann wrote the paper, I think in 1985. So? So he found about 20 sites with passenger pigeon bones.*

**Sam Evans-Brown: Another researcher who looked at this question in the mid-aughts found more like 65 sites.**

*Cregg Madrigal: I started in the 90s, actually. And now I have a list of something like 366 archaeological sites from the Holocene — so from the last like 10000 years — with passenger pigeon bones.*

**Taylor Quimby: So we're up to there's at least 400 passenger pigeons. [laughs]**

**Sam Evans-Brown: [Laughter] No! So in some of those sites, the passenger pigeon bones are actually like really numerous like he says that that, you know, you'd see the turkey bones and other types of birds that Native American people were eating. But the passenger pigeon would be the most numerous bird bone that you'd find at some of those sites.**

[Music]

**Taylor Quimby: Okay. So this this supports maybe the idea that they really were that numerous all the time, right?**

**Sam Evans-Brown: Well, maybe. At the very least it suggests that this idea that Neumann was starting from, that we don't find many passenger pigeon bones in the archaeological record, at least need some updating. Okay.**

*Cregg Madrigal: Yeah.*

*Sam Evans-Brown: So do you think do you think. I mean, Neu man was wrong.*

*Cregg Madrigal: Well, to some extent, they're all kind of right. Yeah, but some of them might be a bit wrong, too.*

**Sam Evans-Brown: What Cregg told me, that what you get from the archeological record is really just like a general story**

*Cregg Madrigal: and just the fact that you are talking about thousands of years, you know, things are going to change.*

**Sam Evans-Brown: And that story is that, you know, during the ice ages, passenger pigeons were around. People were eating them...**

*Cregg Madrigal: In the pleistocene passenger pigeon probably were relatively small population. There's no really big accumulations.*

**Sam Evans-Brown: But when the last ice age ended, the population probably began to expand...**

*Cregg Madrigal: And we actually do see a few signs that they moved north pretty quickly*

**Sam Evans-Brown: ...following the ice. And according to Cregg, it probably, you know, maybe around 4000 or 6000 years ago, you had forests that are kind of like the forests we have today that could have supported these big passenger pigeon flocks. The oak and beach forest that dominate the northeast in the Great Lakes right now, which again is around 4500 years ago.**

*Cregg Madrigal: That's when we kind of get a modern environment. I kind of suspect that the really large flocks started happening around them.*

**Sam Evans-Brown: But my big takeaway from this conversation was that if we’re hoping that the archeological record is going to definitively refute or support this hypothesis… well… here’s what Cregg said...**

*Sam Evans-Brown: In terms of… if I wanted to say… like tell me a number? Tell me how many passenger pigeons there were… can archeology do that for us?*

*Cregg Madrigal: I would again, kind of avoid the question by saying to me the most important question is not where the five billion over there for a billion or where there only five hundred million. We know there are a lot. We know it changed over time.*

[Music]

**Sam Evans-Brown: Archeology can tell us some things… but if we’re looking at it to give us population estimates, it’s probably the wrong tool.**

**Justine Paradise: This reminds me of like how fossils, you know, you only find them under certain ecological conditions so it’s like a snapshot of what existed in a wetland and there’s a desert nearby and you just have no idea...**

**Sam Evans-Brown: Yeah, true of archaeology, too, bones… animal remains… are only preserved in non-acidic soil, which like excludes most of the eastern seaboard.**

**Taylor Quimby: And yet we use these remains to try to like paint a picture about what the whole world was like at a certain time or era.**

**Sam Evans-Brown: BUT… what was interesting to me is that even… the ornithologists who are upset about the passenger pigeon section in 1491 still do cite archeology. So… Joel Greenberg is the author of a book called *A Feathered River Across the Sky* who also curated a large museum exhibit about the passenger pigeon, and he wrote a blog post saying that the Neumann hypothesis — the idea that the bird’s population boomed maybe 3 or 500 years ago, after european diseases wiped out native people — had been quote “definitively refuted” and he cites… another work of archeology. I read that paper… and it doesn’t really refute the Neumann hypothesis. It actually makes a kind of different argument… it argues that the boom came earlier… about 1000 years ago when native americans started cultivating maize. And I reached out to the author… he’s retired and didn’t want to be interviewed about this, but in his email he wrote to me quote “Neumann wasn’t wrong.”**

**Taylor Quimby: You really need like a person to translate the shade in the archaeology community. [laughter]**

**Justine Paradise: Throwdown!**

**Taylor Quimby: Neumann wasn’t wrong.**

**Sam Evans-Brown: The thing that’s funny to me about it is you have someone citing a scientist and the scientist is like, no, that’s not what I said.**

**Taylor Quimby: Yeah.**

**Sam Evans-Brown: So … I wanted to talk to Joel Greenberg about this… about his mischaracterization of the archeological evidence, but also more generally, why he is so worked up about it. But even after swapping a number of emails, and a long phone conversation, he declined to talk to me… and in an email he called even bringing up this excerpt *1491* and the Neumann hypothesis “Trumpian.”**

**Justine Paradise: He called you fake news??**

[Music]

**Taylor Quimby: When did politics… I don’t feel like that was a part of this at all?**

**Sam Evans-Brown: Yeah I have to say I found it all baffling… because what I wanted to do was essentially a fact-check a claim that had been made in a high profile book. And… so it was just like, why? But I think his refusal tells us something a lot more interesting than determining whether the passenger pigeon was really numerous or really really numerous.**

**Justine Paradise: We’re just debating the number of reallys.**

**Sam Evans-Brown: That’s in my opinion what we’re doing. That’s what we’ll talk about after a break.**

**<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<Break>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>**

**Sam Evans-Brown: Can we briefly talk about what we do know about the passenger pigeon? Like for sure**

**Justine Paradise: You’re talking to me? [Laughter]**

**Taylor Quimby: What? Are we on a show?**

**Sam Evans-Brown: For starters, for sure by the 1600 to the 1800s… they were incredibly numerous.**

*Jaime Jacobs: There were definitely a lot.*

**This is Jaime Jacobs, he works at the Rochester Museum of Science and is a member of the Townawanda Seneca people…**

*Jaime Jacobs: Just coming from the culture and then seeing just a little bit of evidence. You know, you can kind of put two and two together.*

**Sam Evans-Brown: ...who live in the middle of what we think was the passenger pigeon’s historical breeding territory.** **And he says the oral history is pretty clear that the arrival of the pigeon flock in the spring was a big deal.**

*Jaime Jacobs: The whole village would clear out and they would go and, you know, find where these passenger pigeons were roosting after their long trek back from the south.*

**Sam Evans-Brown: The birds would land and breed in late winter… march or april… which is sometimes called the Hungry Gap…**

*Jaime Jacobs: Yeah, so we do have a word in Seneca for the passenger pigeon pronounced jaghowa. So if I linguistically break this down, what it really means literally is a large piece of bread.*

**Sam Evans-Brown: ...the time period where the food you’ve saved up for the winter is running low, but nothing new is really growing yet because it’s too early in the spring... so the pigeon came at this incredibly important time, they were a very important food source.**

*Jaime Jacobs: This was kind of like a fresh meal. And after a few months off you know, living off, you know, stored and dried foods.*

**Sam Evans-Brown: And the baby pigeons, they were just like a little butter ball. They fattened up incredibly quickly… some accounts say that in one or two weeks they would weigh more than the adults.**

**Taylor Quimby: Wow**

*Jaime Jacobs: So today in our culture we actually say it’s tied in with the maple season. But we have a dance that we called the pigeon dance. And it’s the first dance that we dance. And this is a people’s celebration, what we call Jaghowa owano, which just literally means the pigeon song.*

**Sam Evans-Brown: So we know the societies throughout the Northeast, the Great Lakes, and up into Canada, relied on them for this skinny part of the year...**

*Jaime Jacobs: You know that was a call for a celebration that, yeah, we made it. And we have this bird to thank. And we’re going to, thank the great spirit that we saw the bird come again.*

**Sam Evans-Brown: …but there’s a limit to what we can learn from eyewitness accounts… and just as a for instance. Explorer Jacques Cartier, who was one of the first Europeans to write about coming to North America sailing, when he was sailing along the coast of Prince Edward Island in 1534 wrote that they saw quote “an infinite number of wood pigeons.”**

**Justine Paradise: Sounds scientific and accurate to me! [Laughter]**

**Sam Evans-Brown: But what does that tell us? Even the most authoritative population estimate we have of 3 to 5 billion birds at their peak… that estimate comes from reading eyewitness accounts of how long flocks would take to pass overhead and just like doing math… like you know: river of birds traveling at x rate, for x number of birds per meter… and you know, like other things, like stories of hunters killing 50,000 pigeons a day. Like, at its core this is still a really rough estimate.**

[Music]

**Sam Evans-Brown: Even today, animals are hard to count. And so a flock with a billion birds in it would seem infinite… but maybe so might a flock with 100 million? Ultimately, I think the fact that our collective memory is really, at best a few hundred years old… it makes it hard to say anything with much precision about population sizes of creatures that go back thousands and tens of thousands of years. But there’s one line of evidence that recently we’ve begun to turn to… that was really in its infancy when Charles Mann wrote *1491* back in 2005 and which might … genetics.**

[Music fades]

**So back in 2014… Gemma Murray, who is a researcher who studies ancient DNA… was trying to answer a question. And to do it, she was collecting passenger pigeon DNA.**

*Gemma Murray: But this is museum samples where the birds have been stuffed and preserved.*

*Sam Evans-Brown And I read that you — sort of, like — shaved a few skin cells off … like the bottoms of the feet of these museum birds?*

*Gemma Murray: Yeah, that wasn’t me personally. That was all done before I got involved in the project but yes.*

**Sam Evans-Brown: There’s this idea called a genetic bottleneck… have you ever heard of that?**

**Justine Paradise: Yeah -- so I think the biggest example I know about is the cheetah -- they are super inbred because they went through these big die-off events - one was at the end of the last Ice Age - where their population shrank really suddenly. So, they had a big population, sudden die off, and then a way smaller one - so today the cheetah’s gene pool is super homogenous, which can lead to all kinds of problems like weak immune systems or weird mutations**.

**Sam Evans-Brown: Right, yeah, so it’s like a moment in a species history where a ton of genetic diversity is lost. And it’s such a profound event that it shows up in your genetic code.**

[Music]

**Sam Evans-Brown: And a previous study looking at the passenger pigeon had found what looked like a genetic bottleneck**

*Gemma Murray: What they found was that the genetic diversity across the passenger pigeon genome was surprisingly low, given that population size.*

*Sam Evans-Brown: How much was it off by? You know, if we thought there was a population in the billions, what would you have expected that math to come out to versus what it did come out as?*

*Gemma Murray: I think it’s sort of on the order of like, you know three orders of magnitude out, so like a thousand times less*

**Sam Evans-Brown: But, Gemma Murray, and her team, found something that they thought was even more interesting … an incredibly rare genetic fingerprint.**

[music]

**Taylor Quimby: I look forward to not understanding this.**

**Sam Evans-Brown: Let’s just imagine a single passenger pigeon suddenly developed a random… really beneficial mutation.**

*Sam Evans-Brown: Right… like suddenly it’s shooting lightning at every predator that attacks it. [laughs]*

*Gemma Murray: Yeah, exactly like that. Yeah, and so obviously that’ll be a big advantage. They’d have a lot of children. And that mutation would spread through the population really really rapidly.*

**Sam Evans-Brown: Now… every time two animals make a baby, it’s kinda like taking two decks of cards and shuffling them into one deck so all the cards get mixed up. But it’s not like a completely random new order, like some of the cards that were next to each other are still next to each other. Like if you’ve ever played War, and you like see those patterns that come up every time.**

**And so, with our lightning pigeon obviously because it's not getting eaten by anything and it’s spawning new lightning birds, which are doing the same. And every time a new lightning pigeon is born it gets the lightning gene.**

*Gemma Murray: But it also gets a big chunk of DNA around it because, you know, it’s just your DNA gets passed down in chunks, not on an individual basis.*

**Sam Evans-Brown: And the longer it takes for a mutation to spread through a population… the more that chunkiness goes away. So when you see chunkiness it’s like a signature… chunkiness tells you that adaptations are spreading very rapidly.**

**Another geneticist who was not involved in either pigeon team — Jennifer Leonard who’s at the Estacion Biologica de Doñana in Spain — she explained this to me**

Jennifer Leonard: *Well, there’s not a lot of examples where you can see this, but the theory is, is very well developed.*

**Sam Evans-Brown: This chunky fingerprint is really quite rare. It is predicted by genetic theory, but outside of viruses and bacteria… we almost never see it in real life.**

*Sam Evans-Brown: Has it been observed anywhere else? You said we don’t have many examples but sounds like there are some?*

*Gemma Murray: Yeah, the herring, you know the fish.*

*Sam Evans-Brown: I do know the herring.*

**Sam Evans-Brown: And it was that signature that Gemma’s team detected. So… while there wasn’t much genetic diversity, ALSO it looks like the reason why is because there were actually a ton of pigeons that flocked together, and so natural selection was very efficient… meaning beneficial mutations could spread to the whole population, very fast. In other words, Gemma Murray and her team thinks they’ve proven, there was no genetic bottleneck.**

[Music fades]

*Gemma Murray: When we took estimates from the mitochondrial genome, we saw evidence that they had … the passenger pigeon had a population size of at least 13 million for the last 20000 years. And that was a pretty stable population.*

**Taylor Quimby: Wait… did she just say 13 million? We’ve been talking about five billion birds. 13 million is not an impressive number.**

**Sam Evans-Brown: Yeah… which… ok so get ready to be disappointed… because it seems like genetics can’t tell us how many birds there were. Genetics can come up with what’s called the effective breeding population, which is like the number of individuals that can like find each other and nuzzle with each other and make little bird babies together. And understanding the relationship to actual population size is kinda complicated, but I would actually focus on the second thing she said…**

*Gemma Murray: ...for the last 20000 years,* ***and*** *that was a pretty stable population over that period.*

**Sam Evans-Brown: If the bird’s population had increased dramatically, you would expect to see that in their genes after just a few hundred years… so… if there were a boom, it would have to have been very short-lived, because we see zero evidence of it in their genes.**

**Justine Paradise: I’m bewildered.**

**Taylor Quimby: Help me understand this. Are we thinking that Neumann is wrong here? That there wasn’t a dramatic boom in the number of birds?**

[Music]

**Sam Evans-Brown: Where I have landed, I would say it like this: the evidence supporting the Neumann hypothesis was thin at the time he wrote it. You know, archaeology is not an exact science in this regard. And the more we learn the thinner it’s getting. And to Charles Mann’s credit, I feel like… he’s open to reevaluating his understanding of this whole topic. For one, he says a lot of this evidence came out after his book, but by his own admission, he didn’t really work super hard to uncover every stone to try to vet Neumann’s claim.**

*Charles Mann: And here I think I should be faulted. I didn’t realize that people would be so arrested by it. I thought wow, this is really interesting. Had I realized that, I probably would have given a super hard look and tried to bolster it but as it was, it was really just a couple of paragraphs or even just a paragraph.*

[Music fades]

**Sam Evans-Brown: Here’s what I think is that this is really about narratives. The narrative of the passenger pigeon is really useful.**

*Charles Mann: Useful as a story. As a story, as a conservation story. And what they feared, I believe, is that, you know, by me saying this, that it somehow lets humankind off the hook. And conservation is somehow called into question. I really don’t believe this to be so but I think that’s sort of the rationale.*

**Sam Evans-Brown: So for the conservation movement, this story… that there were 5 billion birds, so numerous that they were like one in four of every bird in all of North America gets a rallying cry for the types of things that conservationists want to do that protect species, set land aside for nature and even, you know, use genetic engineering to bring back the passenger pigeon. But that narrative recently has come under assault from another narrative championed by people like Charles Mann.**

*Charles Mann: But there’s a second thing that goes along with it. And it’s this kind of vision of an Edenic nature. You know, that the Americas were like the Garden of Eden untouched nature, until Europeans came along and wrecked everything. And that’s a really important subnarrative, if that’s a word, in to the environmental movement. And you know... not intentionally... but it’s sort of weirdly racist. And by that I mean that it suggests that these native peoples whose indigenous peoples were here for thousands and thousands of years didn’t do anything. They didn’t change anything. They didn’t make anything. They existed in what historian Eric Wolfe called in the state of being people without history. There’s something off about that. And I, and in fact one of the reasons I wrote the book, because you know, it’s something that I was taught as a kid. And I believed it and it wasn’t till native people started saying, ‘hey, we have a history. We do stuff. We were people.’ that I realized the I think mostly unintentional implications of that.*

**So this alternate narrative, the one advanced by Neumann and seized on by Charles Mann, is seeking to correct this long- standing bias in archeology and in the environmental movement.**

**It’s this striking example of a way in which something that you just took as given… that the passenger pigeon was a wonder of the world and we annihilated it… that is actually just another way in which native people have been erased from history. And so like that’s what this is.**

**this tempest in a teacup, is a proxy war over these two narratives.**

**Taylor Quimby: But do we actually have an answer here? Do we know how many passenger pigeons there were in… you know… 1430??**

**Sam Evans-Brown: I mean. I keep coming back to something Cregg Madrigal said, which was that this is kinda the wrong question.**

*Charles Mann: I'm more interested in ecological relationships and how they were used by Native Americans, how they were used in historic times. But there is no doubt that they were superabundant in the eighteen hundreds. And there's no doubt in my mind their extinction was caused by the unregulated hunting for commercial purposes of them.*

**Taylor Quimby: Yeah, it’s like… it doesn’t seem like these two narratives are actually in conflict. It can be the case that native americans had a profound influence on the passenger pigeon population AND that it’s a tragedy that North America’s most numerous bird was hunted to extinction.**

**Sam Evans-Brown: yeah… and Jamie Jacobs, I think he agree’s with Charles Mann’s larger point about the erasure of native people from history…**

*Jaime Jacobs: Yes, I feel the same way, now that we discuss this and bring forth ideas! [laughter]*

**Sam Evans-Brown: … Neumann hypothesis, he doesn’t see the evidence for it.**

*Jaime Jacobs: ...but there is this other side to the story… you know, like I said, we’ve had a long tradition of passenger pigeon in our culture, and we still have it. We still present it, today.*

**Justine Paradise: It’s interesting to think of because you didn’t say that 200 years was sort of what we could imagine this outbreak being given the genetic record. That’s sort of the final landing place.**

**Sam Evans-Brown: Yeah, if it happened it would have been something on the order of like two or three centuries**

**Justine Paradise: Because that’s like the entire length of the United States of America. Right so imagining like this, if you use the word, it’s always been like this, what are the things that make an American person an American? And I think maybe one of those things that for me at least is this sort of shallowness of memory. It can only mean up to 200 years. And I remember once I was in France in like an old farmhouse and we were saying we’re from New England like our houses are old. They go back to the 1850s and the guy just laughed in our face. It was like this building was built in the year 1500 like… please.**

**Sam Evans-Brown: It's actually funny because like when you think about the effort to bring the passenger pigeon back in a way, that idea is something that comes from the first school of thought, like let's put nature back to the way it was as far as Europeans remembered it. But at the same time, it's kind of accepting like our role as gardeners. It's like we want to put we want to make the world into we want to we want to change the world. So it's the way that we want to be. And the world that we want to be is one that has giant flocks of passenger pigeons again.**

*Taylor Quimby; That’s not the world I want.*

*Justine Paradise: I don’t want to clean up a lot of guano*

*Taylor Quimby: Yeah yeah, you said the houses were breaking. That sounds terrible.*

[Outside/In Theme Music]