



FORESTCAST [Ep.27]

Flying the Nuthatch Home

Hosted by [Jonathan Yales](#), edited by Jonathan Yales, and produced by Jonathan Yales, [Sharon Hobria](#), Andrea Crain, and [Suzanne Flory](#)

Once spanning nearly 6 million acres in Missouri's Ozarks, the shortleaf pine and oak woodland ecosystem has dwindled to 100,000 acres today. Along with the loss of this habitat, a bird—the brown-headed nuthatch—disappeared as well. However, after decades of pine woodland restoration, the brown-headed nuthatch has returned to Missouri—by plane.

Over two summers in 2020 and 2021, a team of scientists successfully captured and flew 102 birds from Arkansas to Missouri marking the bird's return to the state after being locally extinct since 1907. Weighing in at a mere one-third of an ounce, approximately the combined weight of a nickel and a quarter, the return of the brown-headed nuthatch is nevertheless a weighty event.

[Frank Thompson](#), Research Wildlife Biologist, Northern Research Station, Columbia, Missouri
Jody Eberly, Wildlife Biologist/Fire Mgmt. Officer (Retired), Mark Twain National Forest, Rolla, Missouri
Angelina Trombley, Wildlife Biologist, Mark Twain National Forest, Doniphan, Missouri

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JODY EBERLY: "I remember, as the first person came in with the first box of birds, it was just, it was, kind of, like seeing my kid for the first time. It was, kinda like, an unbelievable movie that you're watching—here they are, the birds are actually in those boxes."

IN THE MISSOURI OZARKS, THERE WAS ONCE A BIRD.

[FRANK THOMPSON](#): "They're a very small stocky bird that runs up and down the trunks of trees and branches and forages a lot on the pine cones in pine trees. And, when I say small, we're talking, 10 grams—easily fits within the palm of your hand."

ANGIE TROMBLEY: "It sounds like a rubber ducky when it makes its calls and stuff. It's very squeaky, like, literally, squeaky."

IT'S A BIRD THAT HADN'T BEEN SEEN IN OVER A CENTURY.

JODY: "The one and only Missouri record was actually in 1907—two of them."

AND IT'S A BIRD THAT LOST ITS HABITAT.

FRANK: "Savannah and woodlands once covered tens of millions of hectares, in the Midwest. By the late 1800s to early 1900s, this was reduced down to just a few thousand hectares. And, with that, we lost two species that were essentially obligates of that habitat, and that was brown-headed nuthatch and red-cockaded woodpecker."

"So, the last record of brown-headed nuthatches in the Ozarks was in 1907, and nothing since then, till 2020, when we brought 'em back."

TO HELP THIS SMALL SONGBIRD MAKE A RETURN TO MISSOURI FOR THE FIRST TIME IN A CENTURY, IN 2020 AND 2021, FOREST SERVICE SCIENTISTS COLLABORATED WITH A NUMBER OF PARTNERS, INCLUDING SARAH KENDRICK AND THE MISSOURI DEPARTMENT OF CONSERVATION, AND TOM BONNOT AND KRISTEN HEATH-ACRE OF THE UNIVERSITY OF MISSOURI.

BUT, IT'S NOT A STORY THAT STARTED IN 2020, AND, OF COURSE, IT WASN'T A SHORT STORY EITHER.

JODY: "When we started this, we knew that progress was not going to be measured in years. It would be measured in decades or more, and that we ourselves were unlikely to see the end result."

THIS IS JODY EBERLY. SHE'S BEEN CAPTIVATED BY ANIMALS SINCE BEING A KID.

JODY: "I used to pretend I was a wolf and go lay under the neighbor's bushes and wait for something to come by—I guess I was gonna jump out and do something. But, I know my mom tells me that my favorite toys were stuffed animal toys, and I always loved the kind of critters that nobody else did. I love rodents. I think they're adorable. Nobody else in my world ever thought that was right, but I always felt like I wanted to do something that would be beneficial to animals, and, particularly, wild animals."

JODY WAS A DISTRICT BIOLOGIST AND FIRE MANAGEMENT OFFICER ON MISSOURI'S MARK TWAIN NATIONAL FOREST FROM THE 1980s UP UNTIL HER RETIREMENT IN 2016.

JODY: "I don't have a research brain, I have a management brain. So, research is the place where you get to go and actually hold onto the fuzzy wild animals. And, that's what I envisioned when I went to school, but turns out, that wasn't my strong suit. So, going into management, you have to accept a little different premise. You're going to be working on the things that those animals need, not the animals themselves. And, you have to be ready to accept, also, that the timeframe of a human career, and a human life, doesn't necessarily translate into the timeframe in making changes to the natural world and an ecological change of such significance that animals can be affected."

FRANK THOMPSON IS A RESEARCH BIOLOGIST WITH THE NORTHERN RESEARCH STATION.

FRANK: "When I was a young kid, my mother maintained a bird feeder and I would sit at the window and watch those birds and then she, eventually, bought me a field guide, so I'd start looking stuff up."

HE IS BASED IN COLUMBIA, MISSOURI, AND SPENDS A LOT OF TIME ON THE MARK TWAIN NATIONAL FOREST. HE'S ONE OF THREE BIOLOGISTS AT THE STATION THAT FOCUSES ON BIRD CONSERVATION.

FRANK: "I remember field trips in ornithology, and in one—to the Pine Barrens in New Jersey—that afternoon saw, probably, almost a dozen different species of brightly colored warblers. And, I just knew that was something I wanted to know more about."

ANGIE TROMBLEY IS A BIOLOGIST WITH THE MARK TWAIN ON THE ELEVEN POINT RANGER DISTRICT.

ANGIE: "When I started, I was so young that I didn't realize how enormous this project was and, 'it's what we do,' right? I mean, I happened to step in at the right time. But, now that I'm getting some perspective, it's like, 'Wow, I can't even imagine, like, how much things have changed on this Forest, and for the better.'"

FRANK & JODY HAVE EACH HAD 30-PLUS-YEAR CAREERS IN MISSOURI. FRANK'S PLANNING RETIRE IN A FEW MONTHS AND TO JOIN JODY. BUT, FOR BOTH, THIS HAS BEEN A PROJECT THAT HAS HELPED DEFINE THEIR CAREERS.

FRANK: "I've gotten to do a lot of really neat things that I think have helped bird conservation, but is gonna be the far right of that spectrum as one of the highlights."

JODY: "When I finally did hear that it was, actually, not just a pipe dream, but it was in the planning stages, I said, 'Oh, please, please, I don't care what it is, but I really want to be there to see that happen.'"

TO UNDERSTAND WHERE THIS STORY ENDS—BIRDS BEING RELEASED—YOU FIRST HAVE TO UNDERSTAND WHERE IT BEGINS—THE TREES.

JODY: "In the 1800s, there were somewhere between four and six million acres of shortleaf pine in southern Missouri. And, many of the areas were a lot more open. You could see a long ways. Yes, there were trees there, but you could see through the trees, you could see quite a ways through the trees, and under the trees were not so much a new growth of trees, but a lot of plants on the ground, that you could walk pretty easily through, maybe even ride a horse through."

THIS WAS THE HOME OF THE BROWN-HEADED NUTHATCH. A HABITAT THAT HAS CHANGED AS HUMANS BEGAN TO CHANGE IT.

JODY: "There was a lot of lumbering back in the late 1800s, early 1900s. A lot of the shortleaf pine got cut. There's was very little big pine left. And, the scarlet and black oak species were a lot faster growing and would jump into those open areas that had been logged where the sunlight was coming down and they would shoot up and the pine didn't really have a chance to get going."

THESE PINES ARE WHAT THE BROWN-HEADED NUTHATCH RELIED ON. AND WHEN JODY ARRIVED IN MISSOURI HERSELF A 100 YEARS LATER, ONE OF HER FIRST JOBS WAS TO FIGURE OUT HOW TO HELP THIS HABITAT.

JODY: "In 1983, I moved to the district at Winona to become their wildlife biologist. And, about that time, the [Mark Twain National] Forest was going through a die off of the scarlet and black oaks, and nobody could really figure out why they were getting to be 60- and 70-years-old and just dying in mass. Because of that, we were starting to look at how we could diversify the forest stands in order to have stands that weren't completely scarlet and black oak, and so shortleaf pine happened to be one of the species that was native to southern Missouri and was a long-lived tree species. So, we were looking at how to increase the proportion of pine in some of those stands."

BUT, IN THE 80S, WILDLIFE BIOLOGY AND HABITAT RESTORATION WAS A DIFFERENT ANIMAL IN THE FOREST SERVICE.

JODY: "At the time that I arrived, wildlife biology was a matter of taking what was left over from the timber program and timber production and doing whatever you could with it. So, we had food plots, we had wildlife ponds, and if you were really, really lucky, you might get to prescribe burn something once in a while to help make the undergrowth a little more lush. But, those were very small areas, and they were only in the areas that timber didn't want to use for timber production. So, I was lucky that I went into a situation where the foresters working with me were very creative, and very open to new ideas, and we were all pretty young and enthusiastic and we wanted to do big things.

And so, one spring after fire season had ended, we were taking a trip around the district, and the district forester and I were looking at some of the areas that had had wildfires go through where we had done timber sales, and they looked fabulous. There was a wonderful lush undergrowth on the ground, and the trees were well spaced, and it was what we felt looked like something we wanted to do more of. And, we kind of looked at each other and he said, 'Eberly, we could do this.' And I said, 'We can?' And, he said, 'Yeah, we just need to put some fire in here!'

BUT, NOT EVERYONE AGREED.

JODY: "When I got to Missouri, burning in the trees was not a thing. The foresters were very concerned that prescribed burning through the woods would scar the trees, particularly, if you're talking about repeated burns in the same area. Trees would get scarred, and that would affect the quality of the lumber. so that was a big no-no, when I first started working in Missouri."

ANGIE STARTED ON THE MARK TWAIN IN 2001 AND SHE NOTICED SOME OF THE SAME RESISTANCE—EVEN THEN.

ANGIE: "I started, actually, as a firefighter. Didn't know anything about Missouri. I'd come here from work on some forests in Arizona. Before that I grew up in New York State. We never burned where I'm from. I mean, the idea of burning was just crazy, I mean, you don't do that. There's prohibitions on that. So, when I came, [there was] still kind of a, 'Oh, we don't wanna go there. That's scary and dangerous.' So, there's a lot of that, kind of, pushback. But, Jody's

one of the people that helped move this forward, and she was very well respected, so they—they weren't gonna just blow her off and just ignore her. And, she's not one to be ignored anyway."

AND, NEITHER WAS THE SCIENCE.

JODY: "As we started thinking more in terms of ecological need and how things functioned, rather than just what they could provide, that was when we started looking at when and how and where to burn. And, we were able to show that the prescribed burning under the conditions that we were gonna be doing it, had a pretty substantial increase in the number of native species on the ground. And, that translated into more food and more cover for all sorts of wildlife. So, it gradually became more acceptable."

AS THE PRESCRIBED BURNING PROVED OUT ON SMALL SCALES—10 ACRES AND LESS, JODY THEN BEGAN LOOKING FOR LARGER AREAS TO BURN.

JODY: "We started looking for areas that we had done timber sales in and we were trying for a 100 acres, which was huge at that time. So, we settled on about 125-acre area. And, we started burning that in about 1985. And, we tried to do annual burns, although the fuel wasn't really good for that, so we usually ended up doing a burn every two or three years. And, the results were pretty spectacular. And so, we added a few more areas, and a few more, and a few more. And then, at the same time, the Forest was, sort of, changing direction and we were getting ready to start working on a new forest plan, that was going to be more ecologically based rather than commodity based, and we had a whole raft of people on the Forest who were interested in biodiversity, and increasing biodiversity, and historical natural communities. And, the Nature Conservancy was big, at that point, in that sort of thing. Even, the National Wild Turkey Federation was interested in doing more prescribed burning to help turkey habitat. So, we had a lot of people who were interested in taking what we were doing a little further. And, in 1998 we entered into a partnership with the Nature Conservancy, to start looking for a large area to do some pine woodland restoration. And, they came up with some coefficients that said these areas are looking like they could be restored easily, and these maybe not. So, we finally picked one that was about 10,800 acres. We did some herp[etological] surveys. We did bat surveys. We did some hydrological surveys. We did archeological surveys. We set up a breeding bird route. All to try to come to some sort of baseline data that we could use to help us figure out whether or not we were moving in the right direction once we got started. And so, we wanted to be careful about having some way to measure progress, and some way to say, 'Yes, here's what we thought we were going to do, and here's what's actually happening.' And, that way, if things didn't work out the way we figured, we could change direction and hopefully get to the point where we want it to be. And, in 2003, we finally completed an environmental impact statement and got that decision signed for the first large area, which was [the] Pine Knot [project]. And, a few years after that, in about 2010, the Forest got a big pot of money, uh, uh, CFLRP, and now I'm not gonna be able to remember what the acronym stands for. Uh, Comprehensive Forest Landscape Restoration Project, I think is what that is, uh, where the money was to go for the Pine Knot area and increase that area. And, it helped to make those projects move a little faster."

THIS IS RIGHT AROUND WHEN FRANK, AND HIS BIRD RESEARCH, BEGAN TO INTERTWINE.

FRANK: "I began a number of studies between 2005 and 2010 about how woodland restoration was affecting birds. And, around that time, as we started thinking about and seeing the successful restoration ongoing and thinking about how it's affecting birds, I can't remember exactly with who and when, but we started to think about, 'Well, what species are missing from these woodlands as they're being restored?' And, there were two in particular, and that's the brown-headed nuthatch and red-cockaded woodpecker. So, that's what started to get us thinking about, 'Well, what do we need to do, in addition to just restoring this ecosystem to get those species back?'"

THIS IS ALSO AROUND WHEN JODY WOULD RETIRE.

JODY: "There came a point, when fire management in the country was changing a bit, fire leadership was changing. And, just so happens, one of my really good friends picked her retirement date and she says, 'I'm retiring October 1st,' and I said, 'I'm there, I'm going with you.' So, we did that. We had a big retirement party together, and it was wonderful. And gee, nobody's irreplaceable, you know, things went on. And, during that time period, there were a lot of folks that were taking the work that we had done and expanding it and doing wonderful things, and I don't want to gloss over their contribution. Because once I left down there, and some of the other folks retired down there, those folks picked it up and went. And, they kept it going, and improved it. And, there was a lot of good work done."

AS JODY LEFT, AND OTHERS CARRIED ON THE MANAGEMENT SIDE OF THINGS, FRANK CARRIED ON ON THE RESEARCH SIDE OF THINGS. BUT, HE WAS ONLY ABLE TO DO SO BECAUSE OF JODY AND HER TEAM'S WORK.

FRANK: "We've done research and looked at the direct effects of prescribed fire, and the birds that inhabit these woodlands, we can show direct benefits of frequent prescribed fire to both their numbers—their abundance—as well as their reproductive success. It's absolutely necessary for sustaining them and their wildlife communities. So, we would not be restoring nuthatches if there wasn't an active prescribed fire program."

AND, AT THIS TIME, FRANK ALSO KNEW FROM STUDIES HE HAD GOING ON THAT BIRDS WERE RESPONDING WELL TO JODY'S RESTORATION EFFORTS, BUT BECAUSE THE BROWN-HEADED NUTHATCH WASN'T THERE, AND HADN'T BEEN THERE IN 100 YEARS, THEY DIDN'T KNOW EXACTLY HOW IT COULD DO IN THIS "NEW" HABITAT. SO, IN 2010, FRANK AND A GRADUATE STUDENT HEADED FOR ARKANSAS.

FRANK: "We started a graduate student project with a master student, Rich Stanton, on the Ouachita and Ozark National Forests, looking at habitat use and range limitations of brown-headed nuthatches in Arkansas. And, my idea in starting this work with them was that, well, by chance we were ever gonna try to address the fact that the nuthatch is missing from Missouri, we probably need to know more about its ecology in northwest Arkansas, because that's the current northern limit of its range, and just south of the Ozark highlands in Missouri. So, that study was a success, and we learned a lot about the birds there. And, based on that study, we thought that there was the potential to bring this bird back to Missouri. But, we also learned

from that study that they have very restrictive movements and dispersal, and that they might not make it back to these restored woodlands in Missouri on their own."

BUT, HOW DO YOU MOVE A BIRD? CAN YOU... JUST... MOVE BIRDS AROUND IF YOU WANT? IN SEASON ONE, WE LEARNED WHAT THE RISKS ARE OF MOVING PLANTS AND INSECTS. WHAT ABOUT BIRDS?

FRANK: "Wildlife translocations, or reintroductions, is not a rare thing. It's done in a lot of different instances. We've reintroduced deer, and now elk, to much of their historic range where they were extricated—wild turkeys. There's a big focus on game species because of interest in those, and, typically, funding to do that. It's been less common with non-game birds, but in some endangered species programs it is common. So, this is a little unique from that perspective. Um, nobody on our immediate team had direct experience with this, so one of the first things we did, is we got help. And, we were very lucky in that some people had done some smaller scale translocations of brown-headed nuthatches within the state of Florida. And, in particular, we recruited Jim Cox from Tall Timbers Research Station in Florida, and his crew, who had done some of this to help us. So, while we were all experienced with bird research and catching and handling birds, we had not done this kind of translocation before. But, we were able to bring somebody in, who did have some experience."

JON: "What was your goal when you were making that first movement, when you were doing that translocation? Are we talking five birds? Are we talking thousands of birds? Did you have a long time to do this, or was it like, we only had a day?"

FRANK: "So, our idea was to try to complete the initial effort of releasing birds in Missouri over three years. And, our goal was a 100 birds, and then to monitor that, and we would evaluate if future releases were required after that. And so, we were gonna try to do that in two years, though we said it might take three. So, our goal for the first two years was to try to catch and move 50 birds in each of those years. Now, that number, there's a lot behind it. We did a little bit of population modeling about what we knew about their demographics. We looked at what other people have done, and other kinds of translocation efforts. And, there's also a little bit of arbitrariness to it in terms of, well, what did we think we could do, and what was logistically possible? And, that all came in at around 50 birds each of the first two years. And then, we would monitor carefully to see if we needed to modify that as we went forward."

JON: "Mm-hmm. And what was that day one like? Like, are you waking up, are you doing this in the middle of the day, the afternoon?"

FRANK: "Yeah. So, our days began well before daylight. We had some rented lodging down in Arkansas, for those of us that were down there from Missouri. Get up around 4:30 AM, and then sometime around 5:30 AM we would meet at the rendezvous point with anywhere from two to 12 capture teams that were gonna help us that morning catch birds. So, after some brief coordination at rendezvous point, those teams all head out to pre-scouted capture locations, and set up mist nets."

JON: "What is, what is a mist net?"

FRANK: "That's a great question. So, a mist net is a very fine, nylon mesh net—typically, black nylon thread—the size of sewing thread, and the mesh is sized for the birds you're targeting, so that if they fly into the net, they're gonna get partially entangled. Their head might go through, and then it's hard to back out because of their feathers—their head and a couple wings, or their legs might get tangled. But, basically, they're gonna fly into the net, get tangled, and then we're gonna be immediately there, up to the net, untangled them, and put them in our carrying tubes. Um, but, it's a little more of a challenge to get them to fly into that net, because as I said, these are a canopy bird, typically 40, 50, even 60 feet up in pine canopies. And so, we put these nets stretched between two poles. We use telescopic poles, so we can get them up, maybe, 20-feet tall. And then, the whole idea of the tape recording is it will lure them down to a perch near the net, and then they really focus on that call. We also had some painted decoys to resemble the nuthatch, and then they would dive at that decoy, if everything went right, they went into the net."

JON: "And is it light at that point, or are you guys still doing that in the dark?"

FRANK: "Yeah, no, we try to get everything set up so that we are ready to try to start catching birds just after it's light."

JON: "Ok."

FRANK: "Birds are, you know, they're roosting at night. As it gets light, they're gonna get up, start to move around, and we want to catch 'em at that point, partially because we have a long day ahead of us, we gotta get started early, but birds are generally very active first thing in the morning, and so we're taking advantage of that. And, the way we do this is we use pre-recorded calls of the birds, and play those calls, and that lures the birds into the mist nets because they're territorial and they're inquisitive. And so, we're trying to get that started by 6:30 in the morning, and our goal is to try to catch birds and then get back to the rendezvous point by about 8:30 AM—so we don't have a whole lot of time at any given morning because we've got this time schedule we gotta keep on to get the birds to Missouri at a reasonable time. So, at 8:30 AM we meet back to rendezvous point. We consolidate the birds. They're in these—each individual bird is in a tube, and those tubes are in crates. Pass 'em off to a driver in Arkansas, which was often me, and drive them to the Fort Smith, Arkansas airport where we meet the pilot, load them onto the small plane, and then the plane takes off, lands at a small airport in southern Missouri. A driver meets the plane there, unloads the birds there, and drives 'em to the release site. You know, by that point we're at 11:00 AM, and then the crew there, they process the birds. They're banded with a federal Fish & Wildlife Service band, and then color band, so we can individually ID them with binoculars. Later, half the birds get radio transmitters, so we can track 'em for their first 30 days. And then, those birds are released."

ANGIE: "It was my job to be at this airport in Missouri every single day by 10 o'clock, regardless. So, every day, by myself, drive all the way over to Mountain View—community of about, like, 2,500 people—unmanned airport. Drive there in the Forest Service van, and just sit there for hours sometimes. Soon as they finished taxiing I'd drive over, walk over to the plane, they'd hand me the black milk crates of birds, and I think they could fit about five or six of these cardboard tubes, and each tube had a bird, and each tube had a perch in there, and they'd put some mealworms to keep the birds happy. And, the tubes were covered with netting,

secured with a rubber band. So, just had 'em in the milk crates, had 'em covered, and get 'em in the car, make sure they weren't gonna tip over, and I'd be on my way to the release site, which was about a 40 minute drive."

"I'm just driving down the road and, corner of my eye, I see something in the rear view mirror just kind of pop up. And then it was gone. So, every time I just kept looking, you know, I'd look up in the rear view mirror and it was gone. I'd look, it was gone. It just kept happening. I'm like, 'what is that?' And, I really wanted to turn around, but they asked me to do one job, and that's to get these birds to the release site safely. And, I figured, well, I don't need to be driving down a major highway, high rates of speed, turning around and looking. But, it was just driving me nuts. And, it finally occurred to me that I'm, like, 'that must be one of the nuthatches,' and no idea how it got loose—it got out through the netting, it got out through the fabric that was covering the milk crate, but it was just, you know, apparently, just bopping around in the back of the van. And, I was like, 'oh, geez.' I'm like, I didn't wanna be a failure in the one job I had. So, I just kept driving and trying to think about what I need to do. I eventually got, you know, to some of those forest roads where I could just pull over, and I looked back and, yep, the nuthatch flew all the way from the back of the van, and landed on the dashboard. So, I was like—"

JON: "Just, and just sat there?"

ANGIE: "Yeah, it just sat there and looked at me. I looked at it."

JON: "What's up?"

ANGIE: "Yeah. I was like, 'not sure what to do now.' So, you know, I call Sarah Kendrick, she was the—at time—the MDC [Missouri Department of Conservation] ornithologist, and I explained what happened, and she's like, 'Well just keep the doors closed, the windows shut. As long as we can, at least, get the bird to the release site, it would, at least, be near, you know, some of the other birds, because you know, they are social creatures, and [we] especially didn't wanna leave it out there in Mountain View or something in the city where it wouldn't [of] survived. But, so as long as we can get it to the release site.' So, I drive on, and I pull up to that parking area, so Sarah hadn't come up there quite yet, so I was like, 'Well, bird's still sitting there on the dashboard. I'll see what I can do.' And so, I slowly reach over, both hands kind of—I'm like, I don't know what this bird must have been thinking, but here's this creepy person leaning over—and I cup my hands around it and I managed to just put my hands around it— it never moved. I was shocked. I thought it would start flapping around. I thought, well, at least I'll try it. But no, I got my hands around it and held it. By then Sarah had come up to the vehicle, she's like, 'Well, if you can turn around and get it put back in that tube,' because the crate was just behind my seat, and it was actually quite simple. I got the bird back in the cardboard tube, covered it up, and everything went surprisingly well. But, I could tell you I was, I was pretty nerve wracked from just, I've never handled birds. I didn't know if it was gonna peck me. You know, seems kind of silly when you see how small these birds are, but I don't know, it just, just kept watching me. It was making me a little, making me a little anxious. But, it all turned out for the best. I got to handle my first nuthatch, and he or she got safely back in its tube, and they managed to process it just like the others. So, no lost birds, no lost data. It all worked out really well."

AFTER DELIVERING THE BIRDS EACH DAY, ANGIE HUNG OUT TO CONTINUE TO HELP HOWEVER ELSE SHE COULD.

ANGIE: "Stuck around every day just to learn whatever I could. And, they did let me release some of the birds, so that was, kind of, neat because, while most of us could stand around and watch, they had to be really careful about releasing the birds to make sure that they were held properly. So, it was just neat being there. There would always be, like, a small group of people there to watch, they had been kinda on the fringes like me, where maybe we didn't have huge roles to play, but in our own capacity we still helped make this happen."

JODY WAS A PART OF THIS GROUP, TOO.

JODY: "I don't know if I saw it on Facebook, or some email or something, I was like, 'Holy cow, they're actually gonna do it!' It's like, 'We're, we're not just talking about it anymore, there's actual plans being made!' And so, that was the point at which I got on the phone and, I'm not sure if I called Frank, I think I called Frank, and he said, 'You need to call Sarah.' So, I called Sarah and she said she would be happy to let me know when things were happening and sign me up as a volunteer."

LIKE ANGIE, JODY WAS HAPPY JUST TO BE THERE, AND TO DO ANYTHING THAT WAS NEEDED.

JODY: "We were set up under a couple of tarps to be able to work the birds up when they got there. And, as the first person came into sight around the corner with the first box of birds, it was just, it was, kind of, like seeing my kid for the first time. It was, kind of, like an unbelievable movie that you're watching. Here, here they are. The birds are actually in those boxes. And, most of my volunteer time was, basically, spent in oohing and ahing, and taking pictures, and watching Sarah and the others work the birds up and let them go. And it was- I, I don't even know how to describe the feeling of that. That something that I had been partly responsible for was going to come to the conclusion that we had thought it could, and it, it was just, it was just, 'wow.' It was just a 'wow' moment."

"I always wanted to do something that was worthwhile for the critters. And, this was a shining example of the fact that what I had done all my career did have the worth that I thought it did."

IT OBVIOUSLY ALSO MEANT A LOT TO FRANK AS WELL.

FRANK: "It's a whole lot more intimate experience than just watching a bird 30 feet away in a tree. You're interacting with it, directly, and as a senior researcher for the agency, I'm usually not the one in the field anymore. I'm supervising a lab, and writing papers, and crunching numbers, but being out there and, literally, handling these birds from capture to transport to release, was pretty thrilling. And, it's an interesting feeling. It's both just the sense of wonder—you got this little, tiny bird in your hand—huge amount of responsibility. So, it's this mix of thrill and excitement and immense responsibility. And it reminded me a lot of why I got interested in birds in the very beginning."

JODY: "I saw them leave the hands, and fly up into the big old pine trees, and did their little squeaky thing. And, it was, it was just glorious. It was, it was just one of those, things that you never expect is going to happen to you, and it does."

SO, WITH THE BIRDS BACK IN MISSOURI FOR THE FIRST TIME IN OVER A CENTURY, NOW WHAT?

FRANK: "The really big question is, will this population survive? Because, that's the objective, establish a population. And for the first month we spent as much time in the field radio tracking and resighting birds and just keeping track of that. And, we established a program of monthly monitoring, where once a month we go down for two or three days and we survey 60 to 70 points, I think it is, we use the playbacks of their calls, and we try to detect the birds, resite them, and if we can, get their color bands. And so, every month we have a record of who we saw."

NOW, I ORIGINALLY TALKED TO FRANK ABOUT THIS PROJECT BACK IN 2021. SO, TO GET A MORE EXACT UPDATE ABOUT THE BIRDS, I CALLED HIM LAST WEEK.

FRANK: "Sorry, things got messed up, but I got stuck here in Atlanta during canceled flights."

HE WAS DELAYED FLYING FROM GEORGIA TO MISSOURI.

FRANK: "I'm on my way back right now from The Jones Center in southern Georgia. And, there I'm on an advisory board for The Center, which studies these open pine ecosystems. And so, it's very related to our work in Missouri."

I WAS MOST CURIOUS TO HEAR HOW THE BIRDS HAD DONE OVER THE PAST FEW YEARS.

FRANK: "As you know, we're now—this coming August—approaching three years since the release of the first birds. And, since that time, we've learned a lot—and some of it's very positive, but some of it also raises some uncertainties about their future, and what we should do about it."

"To start with the positives, one really important thing is we learned that we can effectively catch these birds. Move them hundreds of miles and release them all in the morning and do it very safely with no visible stress and no mortality. So that was a very positive thing. And then, we monitored those birds after release, or at least half of the birds by radio telemetry in each year. And, what we learned from that was, 60% to 70% of those birds released stayed on the site, and were alive, a month-to-45 days later. Now, the other 30 or 40%, we have some evidence that some made long distance movements, to the point where we couldn't relocate them. Some possibly died, but we have no direct evidence of mortality. So, so that's a bit of an unknown, but it's probably, I'd say, a positive sign that that many were alive and on site more than a month after release. Another really good sign is that every one of the last three springs we've had birds nesting on site, and on average, across all three years, more than half of those nests are successful. And that, that's pretty typical for a bird like this."

SOME OF ANGIE'S WORK, TODAY, INVOLVES KEEPING AN EYE ON THOSE SNAGS.

ANGIE: "We've always tried to maintain snags within our burn units because of our federally listed bat species need those snags. But, some of these snags are gonna be used by these nuthatches. They like those really punky, really dead trees to excavate their cavities. So, it's just been habit where when we do a prescribed fire, we go around the line ahead of time and push any possible snag that could possibly be a problem, just even remotely. So, now we're being more careful in those areas where, 'Well, you know, we'll keep an eye on this one, and maybe if it does fall, it'll fall into the burn, rather than across the road,' because if it looks like it's gonna be a safety issue, we definitely have to cut it. But, we'd be a little bit more conservative about which trees were removed."

BUT, EVEN WITH SOME BIRDS NESTING, THERE ARE STILL UNCERTAINTIES.

FRANK: "Now, where some uncertainty is, over the last three years, we've seen a slow decline of the number of birds we can relocate on site, that could be for a couple of reasons. As I said, we do have evidence that some birds have made distant movements and have gone far enough off site we just don't find them anymore. And, we know that some birds die. So, I mean, a resident small bird like this, you can expect half, or a little less than that, to die every year. And that's, that's normal population dynamics. But, we are a little concerned that numbers have dwindled over the last three years, and also, that we've seen a decline in the number of birds nesting on site. Again, we don't know exactly how to interpret that because we have some evidence that some birds have gone far off site and then come back, so, there's like half a dozen birds that disappeared the first year, then more than 500 days later, we find them back on site. But, overall, I think my assessment right now is, we might wanna bring partners together and talk about the current status of these birds, and I, I think it's reasonable to discuss if supplemental releases might be called for in the next couple years, and we wanna make sure there's a high probability of getting them established."

JON: "Mm-hmm. And, personally, what's gonna be your kind of involvement? I know you're retiring, um, like, what's—where do you, kind of, sit for where you're gonna be through all this?"

FRANK: "Yeah, so we talked about that earlier. I know I'm, I'm actually retiring at the end of this summer, September 30th. However, I'm gonna remain as a volunteer with emeritus status (with Forest Service research). And, I'm gonna remain involved in this particular research as this all plays out."

JON: "And, is there a place to ever set this down? Like, do you know, like, if you get five more years and there's more of a population, is there a place where you think you could feel a little easier walking away?"

FRANK: "Well, they can all carry on without me, that's for sure. They're all great professionals, and they represent the state of Missouri, the national Forest Service, University of Missouri. And, and so, they're gonna be continuing with this research, with or without me. I'm staying involved just because I'm so invested in it, and as we talked about, it's been an exciting project, and I'm not ready to walk away from all these things I've been doing in my professional life. So,

I'm gonna stay active in this project, for years to come, as well as one or two other projects, even after retirement."

PROBABLY WHY HE'LL KEEP WORKING, IS BECAUSE OF WHAT HE SAID BACK IN 2021. THE NUTHATCH IS JUST ONE OF THE MANY BIRDS THAT MIGHT NEED THIS SORT OF HELP.

FRANK: "With land use changes, we see landscapes becoming increasingly fragmented. With climate change, we get a whole host of additional challenges of species shifting and ecosystems changing. I think there's gonna be increasing demand to do small scale translocations like this, because species can only adapt so fast on their own."

"So, there's easily, right here in the Midwest, a dozen other songbirds that fall in this category with brown-headed nuthatches: prairie warblers, yellow-breasted chats, bluing warblers, summer tanagers and eastern wood pewees and pine warblers. All of these species are dependent on this ecosystem—or do really well in this ecosystem—with fire. And so, there's this whole community of birds that are considered of conservation concern, not yet threatened, but a conservation concern because of long-term declines."

BUT, AS A CURRENT RETIREE—AND AS A BIOLOGIST—JODY KNOWS THERE'S ONLY SO MUCH ONE PERSON CAN DO, OR PEOPLE CAN DO. A LOT OF IT IS UP TO NATURE.

JODY: "Nature does its own thing, and it's quite variable, and if there's one thing that I've learned is that you just never know what you're gonna get when you deal with Mother Nature. So, I'm gonna let the little birdies do their thing and keep my fingers crossed that all will go well with them. And, I trust the people who have been working with the nuthatches, are wonderful biologists and wonderful people, and it's good to know that the little critters are in good hands, literally and figuratively."

THOUGH THIS STORY TODAY WAS TOLD THROUGH THREE PEOPLE, THIS PROJECT SPANNED 30-PLUS YEARS, INVOLVED HUNDREDS OF PEOPLES EFFORTS AND IDEAS—INSIDE AND OUTSIDE THE FOREST SERVICE.

THE MARK TWAIN AND OUACHITA NATIONAL FOREST STAFFS. THE NORTHERN RESEARCH STATION. THE MISSOURI DEPARTMENT OF CONSERVATION. THE UNIVERSITY OF MISSOURI. THE CENTRAL HARDWOODS JOINT VENTURE. THE NORTHEAST CLIMATE SCIENCE CENTER. AND, THE TALL TIMBERS RESEARCH STATION.

A SPECIAL THANKS GOES TO JODY EBERLY AND ANGELINA TROMBLEY OF THE MARK TWAIN NATIONAL FOREST, AND FRANK THOMPSON OF THE NORTHERN RESEARCH STATION.

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AND, MY EDITORS AT THE NORTHERN RESEARCH STATION WERE SHARON HOBRLA, ANDREA CRAIN AND SUZANNE FLORY.

THIS EPISODE WAS PRODUCED AND EDITED BY ME, JON YALES.

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THANKS FOR LISTENING. AND, BE BACK SOON.