# HUMMINGBIRDS

Peter pretended he felt a tiny heart beat from under the breast feathers as he smoothed them in place over the mounting wires. “I bet you loved to fly little tit willow,” he said to the empty room. Peter imagined the five small passerine bird skins flittering in and out of the display’s madrone branches. He wired the last feathered sculpture to a branch, then daubed their tiny glass eyes with spirit glue and pushed them into the empty sockets. His workroom door opened.

“Tit family, Paridae, I believe,” Dr. Ellison said. “Nice job, Peter. Very lifelike.”

“Thanks, boss,” Peter said. “I’ve watched cousins of these little guys in my parent’s backyard.”

“We received a request for information that might be in your area of interest. I pinned it to the board.” Dr. Ellison said.

“Thanks, I’ll take a look,” Peter said.

Peter locked his collection rooms and set the motion alarm. It was museum policy. But really, he thought, do we need so much internal security for 9,000 bird skins? He stopped at the information board by the door.

“Request for Ornithologist with broad knowledge regarding hummingbirds. Contact: Rebecca@NebraskaFarmProject.com.”

Peter unpinned the note and tucked it in his pocket. I'm twenty-four years old, living in my parents' basement, and taking care of dead birds, he thought. But, I'm an Ornithologist with a job. It had been months since he'd camped out with his field glasses on the ready.

Every year he and his family travelled to Illinois to attend the annual meeting of the Wilson Ornithological Society. During his childhood he had participated in avian species population spotting programs all over the country. Winged birds of flight were Peter's passion. Perfect aerodynamic engines of incredible strength. He could watch them for hours, studying their motions, habits, and wondering at their intelligence.

He got off the bus a stop early when he saw the young crow swoop down and up over the roadway. The crow flew ahead of him, landed on a limb, and looked back at Peter.

"Waiting for me to catch up, are you? I bet you're the chick I watched learn to fly?" The crow tipped his head and made a sound, like clicking your tongue on your palate. It flew a little farther, to another tree, but not out of sight and repeated the sound. "Sorry buddy, Peter said. "That's a mating call and I'm just not your type." The crow kept Peter's company all the way to his house, but even the amorous crow couldn't erase Peter's gloom from his long days with the dead birds.

Peter's mom was in the kitchen as he headed to his basement. "Hi Honey, you look tired."

“I’m just tired of dead birds. I’ll get over it.”

“Maybe you shouldn’t,” she said.

Peter opened his e-mail and took the note from his pocket.

“Hi Rebecca,

I am an Ornithologist at the Connecticut Museum of Natural History and familiar with hummingbirds. Can I be of assistance? Peter Aronsen”

His computer played a tone and a box opened showing that Rebecca was on line.

Rebecca: “Hello Peter, I am Rebecca Trinnel, with the Nebraska Farm Project and need information on hummingbirds that can survive in our region.”

Peter: “Nice to meet you, Rebecca. The Rufous Hummingbird and the Ruby Throated Hummingbird are best for your area. These two are highly adaptable and increase their insect consumption when other food is scarce.”

Rebecca had avalanche of questions. After they finished emailing in real time, Peter wrote, “Wow, I have so much swimming in my head right now, I have more questions than answers. Let me do some research and think about a few things. I’ll email you with the rest.”

“Sounds good Peter,” she replied. “You’ve given me a lot to think about too. I look forward to hearing more from you. Rebecca.”

It was after midnight before Peter finished e-mailing information to Rebecca. He lay in his bed feeling charged. That was pretty cutting-edge stuff she asked me. He closed his eyes, trying to hang onto the experience a little bit longer.

Three days later, Dr. Ellison walked into Peter's workroom and said, "Rebecca Trinnel offered you a job. Something to do with hummingbirds. Oh, and there's one more thing, she said if you want the job, you must bring her five-hundred viable Rufous Hummingbird eggs and five-hundred viable Ruby Throated Hummingbird eggs and transport them to her facility in Nebraska."

Peter had heard Dr. Ellison's words, but they seemed slow to sink in. Move to Nebraska. Hummingbirds. Five hundred, no, a thousand eggs. Then he finally internalized the conditions of employment. "What! You can't buy live hummingbird eggs. And transport viable eggs, I don't know if that's possible. They incubate in 14 to 16 days, and when they hatch they need food."

"I told her," Dr. Ellison laughed. "She only asked you bring viable eggs. If you do that, you get the job. It sounded crazy to me too, but I know you'd be happier working with live birds. Rebecca Trinnel is famous for creating large-scale ecological systems. There's a lot of chatter about amazing things she's doing in Nebraska. It's something to think about."

"You didn't tell me. What's the job?" Peter asked.

"I don't know," Dr. Ellison said. "I asked, but she wouldn't tell me. She said you couldn't know unless you qualified."

“Qualified?” Peter said.

“I guess that’s the hummingbird eggs part,” Dr. Ellison said. “And I have no idea how you could make that that work.”

Between excitement over this crazy idea and the near certainty it was impossible, Peter considered it. Rigging an incubation nest for one-thousand pea-size eggs needed technology. And, finding the eggs. He felt the same excitement he’d experienced when he talked with her by email. She pushes me, challenges me, he thought. I’m going to figure this out.

Leroy was at his workbench when Peter arrived in the museum basement. His ruddy-jowled face focused on the wood-carving knife he held as he nudged a groove in the wood held between two clamps.

“Hi Leroy,” Peter said. “Got a minute?”

The deep lines of Leroy’s face crinkled into a smile as he looked up. “A minute?” he said. “You eggheads never mean a minute. Good think I like inventing stuff. What do you need?”

“Only the impossible,” Peter said. “I’m trying to figure out how to transport live pea-size eggs to Nebraska. But I don’t know where their journey will begin, and I don’t know how long it will take. I do know the eggs are fragile and they require a stable temperature between 55 and 60 degrees, fahrenheit.”

“Why don’t you know where the eggs are traveling?” Leroy asked.

“Because, I don’t have the eggs.”

“I bet you have an idea where you could get them,” Leroy said. He watched Peter’s mental wheels spin.

“Maybe,” Peter said. “They’re migrating to Illinois for breeding season right now. The males are preparing the nests now. I do know a group that might help collect the eggs.”

“Okay,” Leroy said. “How many eggs do you need to transport?” Leroy said. He picked up a pencil and a pad.

“I’m supposed to bring a thousand eggs,” Peter said.

Leroy whistled.

“That sounds crazy, doesn’t it?”

“Not to the guy who’s been making museum collection gadgets for thirty years,” Leroy said. “How long do I have?”

“Females are arriving so mating season has already started. The eggs will be laid in two weeks. Could you come up with a plan in a week?”

“I do my best,” Leroy said.

This was so crazy. But, Leroy hadn’t said no. And, Leroy’s questions prompted him to formulate what he needed to do next. The Uber driver texted he was downstairs. Peter raced out of the museum. On his way to airport, he called Dr. Simon, the Wilson Ornithology Society’s president, requesting an immediate meeting.

Peter smiled at a large Audubon photograph of a hummingbird as he hurried through the Society's great room to Dr. Simon's office.

"Well, this is exciting," Dr. Simon said. "I don't think five hundred of each species will adversely impact the hummingbird population. And, you're right Peter, most of our members are in the Chicago area. If they gather the eggs over a ten-day period, you might have four days to transport them before they begin to hatch. But, there is no way of knowing exactly when the eggs are laid. Weather, diet, even an extra predator can disrupt their cycle. But, I'm game for us to give this a try. If Rebecca Trinnel is involved, you are working on something remarkable."

Dr. Simon e-mailed invitations for the members to participate in Peter's project, asking anyone interested to gather in the Society's meeting room Saturday morning at ten o'clock.

"I'll help, but you're going to need to convince the members," Dr. Simon said.

Peter had three days to prepare. He knew some of the members would object to stealing eggs from hummingbird's nests. Peter googled a search for an inexpensive motel and was glad he had packed his computer and an overnight bag. Dr. Simon allowed him to use the Society's research room as well as the main printer to create material for the meeting. Moving between the specialized libraries and internet searches, Peter sifted through information on the impact of egg removal and the benefit of colonization of birds into new ecosystems. He

also did some research on Rebecca Trinnel. It's going to be hard to convince the group that Rebecca's project has legitimacy, when I don't really know anything about it, Peter thought.

By Saturday, Peter had created pamphlets, eleven pages long, describing his project and Rebecca Trinnel's background, and asking and answering five questions:

1. Are Rufous hummingbirds a stable population in Chicago, Ill.?

2. Are Ruby Throated hummingbirds a stable population in Chicago, Ill.?

3. What affects flow from the removal of 1,000 eggs?

4. How long will it take for the hummingbird population to recover?

5. Viability for the removed hummingbird eggs?

There were no absolute answers to any of the questions. Just ranges of possibilities that Peter supported by every fact he could find. It helped that Rebecca had such a sterling background. She had built new ecosystems in places he would never have thought possible. Countering extreme enviornments seemed to be her strength. In the ice, create a cold rain forest. In the desert, create an oasis. She considered the choices of flora and fauna as the long-term stabilization device for new ecosystems.

It was nine-thirty on Saturday morning. "What if no one comes," Peter said.

“I don’t know how many will come,” Dr. Simon said. “But some will, and, I’m here.”

“Does that mean you’ll help with gathering the eggs?” Peter asked.

“Yes,” Dr. Simon said. “And my wife and at least one of my kids will help. We’ve already scouted out two nests that look promising and the boys are still scouting. My wife said these little guys are always mad about something. Now we’ll give them a reason.”

By ten minutes after ten o’clock, forty-three people had arrived. Peter described his project and passed out his information pamphlets.

“I can’t believe that Dr. Simon, head of the Wilson Ornithological Society, is supporting this project,” a woman said. “He’s asking us to steal all the hummingbird eggs from our own ecosystem,”

Peter started to respond when Dr. Simon put his hand on his shoulder. “Let me,” he said.

“Hello, Rosemary,” Dr. Simon said. “I not only support Peter’s project, my family and I will help with the egg collection. Peter correctly explained that he will be gathering less than one-half of one percent of the estimated number of live chicks from this season. And, that estimate doesn’t take into consideration the natural loss of eggs through predators or other misfortunes. We estimate that thirty percent of the eggs we collect would not survive in nature and have a better chance with Peter’s project.”

“Not even one egg should be removed,” Rosemary declared. “It is our responsibility to protect them all.” She pelted Dr. Simon with questions for another twenty minutes, then marched out of the room.

After she left, a man stood up. “I’m Gene Elmhurst and my backyard is already full of nests,” he said. “I’d be glad to participate.”

Peter was relieved to see the rest of the group had been reading his information while Dr. Simon handled the stream of challenges from Rosemary. People begin discussing collection sites and milling around Peter. It looked like he would have nearly forty people gathering eggs.

“Hi Peter,” a man said. “I run the avian rescue facility in the Monrose Bird Preserve. I could rig up an incubator for the eggs until you need to transport them.”

“That would be great,” Peter said. “What’s your name?”

“John Abrams,” he replied. “Here’s my card.”

“I’m glad you spoke up,” Peter said. “I was so busy working on how to move the eggs and collect them, I forgot that we need a place to incubate them between gathering and moving.”

Another man discussed a plan to keep the eggs at temperature during pick up and transport to John’s incubator.

Peter stood at the door as they left. “I’ll be back in four days when the collection starts,” he said. “Thank you all so much.”

“Hi Mom,” Peter said, walking into the kitchen from the basement stairs.

“Good morning Peter,” she said. “You look so happy. Could it be because this new project involves live birds?”

“It’s all I think about, Mom,” Peter said. “I don’t know if the eggs will survive the trip, or even if we can gather the thousand, but it’s the most exciting thing I’ve ever done.”

She gave him a hug. “I’m cheering for you,” she said. “Are you hungry?”

“Starving,” he replied. “My flight got in late last night and I didn’t have dinner.”

Peter ate a stack of pancakes with syrup and nibbled on a slice of ham while his mother studied the information packet Peter had prepared for the Chicago collectors.

“Pretty exciting stuff,” she said. “Why did you come back before the collection starts?

“Leroy, at the museum, is working on something for me to transport the eggs to Nebraska,” Peter said. “I’m going there next.”

Taking the bus to the museum was the best transportation method. Parking was horrible by the museum and only the bigwigs, like Dr. Ellison, had parking spaces. Peter scanned the route for the crow without success. He’s probably figured out what the mating call is for, and moved on.

Peter saw Leroy at his workbench with a hard leather case. “Hi Leroy, How’s the project going?”

“That’s all I’ve been doing since you left,” Leroy said. “Your baby bird carriage is what I’m working on right now. You can help.” He handed Peter a rubber gasket and a temperature regulator. After watching Leroy fit his gasket and regulator into one of the two holes drilled into the sides of the tooled leather suitcase, Peter repeated the process on the other side.

“The inside looks complicated,” Peter said.

“You wanted a traveling incubator for a thousand tiny eggs. And, you didn’t plan on an omelet.” Leroy lifted the inner layers to show Peter his invention. “There’s ten pods, and each one has one-hundred pea size compartments. I used raw silk. It was a bear to get that stuff before the suppliers turn it into thread. I tried a few other things, but nothing worked as well with your temperature requirement. There’s thin powder-coated wires woven through each pod for heat conduction and a non-toxic viscous adhesive and punctured straws to keep things in place and provide air tubes for circulation. The extra layer of silk padding around the outer edges keep the pods from bumping the inside of the case. There’s an extra layer between the pods, too.”

“This is amazing, Leroy,” Peter said. “A week ago, I thought this was all impossible. You’re a genius.”

“I know,” Leroy said. “But, I still need to calibrate the temperature range and test this thing. Roll up your sleeves.”

Peter smiled and watched Leroy.

“No, I mean it. Roll up your sleeves,” Leroy said.

Leroy strapped two armbands to Peter’s upper arms. He inserted the plugs at the ends of the thin cords trailing from Peter’s armbands into the regulators on the sides of the case.

“Why the armbands?” Peter asked.

“Because, you’re the heater,” Leroy answered.

After a couple hours of testing, Leroy told Peter he wanted to run more tests before giving him the suitcase. “Can I keep this for forty-eight-hours to run a longer test on the temperature system?”

“Yes,” Peter said. “The egg collection will take at least that long. I’ll come back and pick up the case in about seven days. We have ten days to collect before transport.”

During the airplane ride back to Chicago, Peter worried. What if I can’t collect and transport the thousand eggs before they hatch? What if we can’t find enough eggs? What if no one shows up to help me? What if they all die during the trip to Nebraska? Peter closed his eyes. Stop obsessing. I have so many people helping me, he thought, drifting into sleep. I haven’t done any of this alone.

Refreshed from his nap, Peter picked up his rental car and drove to John Abrams bird rescue facility. Dr. Simon was there with six people from the meeting.

“While you were in Connecticut we set up a system for transporting the eggs to John’s incubator,” Dr. Simon said. “John asked the science club at the University to build six small incubators to keep the eggs warm during transport here.

Peter looked at the tiny inventions. “Twenty pods in each?” he asked.

“Yes,” Dr. Simon said. “These aren’t as stable as John’s incubator. We plan multiple shuttles for the eggs each day. This group, except for John and myself, are the drivers. They will transport the eggs to John until we reach our goal.”

“What a great solution!” Peter said. “What can I do?”

“We have enough drivers,” John said. “Why don’t you go with Dr. Simon’s kids and gather eggs. They’ve searched two parks for nests and mapped over twenty-three locations.”

“Great,” Peter said. “I can gather for seven days, then I need to return to Connecticut and collect the traveling incubator that’s still being tested. Is everyone set to begin the gathering tomorrow morning?”

“We are,” Dr. Simon said.

Dr. Simon’s boys, Louis and Andrew, respectively 13 and 15 years old, had located seven more nests the day before Peter met them at the first park.

“I climbed up and looked into the nest, there,” Andrew pointed to a spot on the hand drawn map of the park. “It looked like there might be three eggs in that nest. And, there’s four more nests we found that are really close by.”

“It looks like a great place to start, Andrew,” Peter said. “What do you think, Louis? Shall we go?”

“Okay,” Louis said. “Can I climb up and get the eggs?”

“You sound pretty confident about climbing,” Peter said. “I brought this shoulder bag to hold the little incubator. Do you think another pair of hands would help you get the eggs into the incubator to protect them before you climb down?”

“Yeah, maybe,” Louis said.

In about two hours they had their twenty eggs and called for their driver to pick them up and deliver them to John’s incubator. An hour later the driver returned with an empty incubator, so they could continue collecting.

On the morning of collection day seven, John had seven-hundred and thirty-six eggs in his incubator. They still needed ninety-four Rufous eggs and one-hundred and seventy Ruby Throated eggs.

“I’m flying to Connecticut for the transport case,” Peter said. “If everything is working, I’ll fly back with it tonight, so I can collect with you during the last two days.”

It was just after one o’clock when Peter reached the museum’s basement.

“Hi Leroy,” Peter said. “Did the case test out?”

“Yup. It’s ready to go,” Leroy said. “I hope you get the job, but I’ll miss you.” Leroy hugged Peter and handed him the suitcase. “Come back sometime and tell me how the project worked out.”

It took all ten days for Peter and the Chicago members of the Wilson Ornithological Society to collect the one-thousand eggs. But, it didn’t take longer.

One-thousand tiny lives rested on his lap. ‘Two weeks ago, I was suffocating from dead birds,’ Peter thought. The train’s vibrations seemed to be increasing. Peter pulled up his heels and pressed down the pads of his feet trying to cushion his tiny charges against the bumps. Lightning flashed across the flat, desolate plains and Peter lifted the suitcase slightly in preparation for the thunder. With every clack of the train’s metal wheels, Peter’s excitement evolved further toward trepidation.

“McCook, Nebraska,” the conductor called as the train stopped.

He stayed in his seat until the conductor opened the door. Clutching the suitcase, Peter stood on the train’s step and looked over his shoulder. Dark clouds charged with spears of lightning were churning over the plains. Peter shivered, but he wasn’t cold. Were they alive, any of them?

The conductor bellowed, “Get on or get off, we need to go!”

Peter stepped down. It was day twelve. If they hatched, they would starve within an hour. A weathered man in a brimmed hat standing by a SUV waved at Peter.

“Are you Peter Aronsen?” he asked.

“Yes,” Peter answered.

“I’m Randy Sanders,” They shook hands. “I’ll take you to the farm. You’ve got everybody excited. Our first birds, you know. They’re all waiting for you.”

A mountain of earth rose from the flat landscape in the distance. “Is that where we’re going?” Peter asked.

“Yup,” Randy said. “You’ve never seen anything like this. Well, for sure not in Nebraska.”

The mountain was perfectly straight across on the top and grew exponentially in Peter’s eyes over the twenty-minute drive. Randy drove toward the center of the mountain’s wall, and Peter wondered whether the project was somewhere right in front of him. Then he saw the tunnel. Emerging on the other side of the mountain, Peter felt as if he had left Kansas and arrived in Oz. It opened into an immense lush garden.

Randy parked the SUV. “Hold on there, bucko,” he said. “Let me get your door. Don’t want you shaking up the babies.” Peter waited until Randy opened the door, then stepped out holding the case with both arms.

An Amazonian woman in a long scarlet dress stepped out from a group of people in jumpsuits and strode toward him.

“Hi Peter,” she said. “I’m Rebecca. Let’s attend your hatchlings before we talk.”

“Okay,” Peter said. He clung to his case as if he was afraid to let them go.

The group of people carried a table over to Peter, set it down and gathered around him.

“We’re ready, Peter. Open it,” Rebecca said.

Peter laid the case on the table and opened it. Humming and cooing came from the people in jumpsuits as they examined the eggs. Only nine chicks had broken their shells to die of starvation. Rebecca stood with Peter as he watched his tiny eggs leave with the group to find their incubators.

Rebecca hugged Peter. “I’m so glad you’re here. Great innovation with finding and bringing the hummingbirds.”

“I had a lot of help,” Peter said. Her hug helped calm him down. He had never done anything so stressful, so important. This wasn’t posing tit willow bird skins on wire. This mattered.

“Of course,” Rebecca said. “No one could have done this alone. That was part of the test. Come with me, I’ll show you around.”

Peter's window looked out over the man-made square valley with a wall on the fourth side.

"Rebecca, how big is this place?" Peter asked.

"This section is one square mile, or 640 acres."

"And you did all this in three years," Peter said.

A curious low chuckle came from Rebecca. "Come on birdie papa, watch your fledglings hatch."

Twenty nests appeared on the monitors. They were hatching fast. Peter thought half of the hummingbirds would die during hand feeding. Only four died. Then he looked back out the window at the one acre and realized his hummingbirds needed more space as adults, at least two acres. Hummingbirds were famous for aggression toward their own kind if they didn't have sufficient territory. He texted Rebecca who texted back, "Don't worry."

After five weeks of hovering over the eggs, tending their nests and hand feeding the fledglings with eye droppers, Rebecca took Peter to the shuttle that ran on a light rail system. "Our project is four square miles divided into four sections by moveable walls. Today, all the section walls are open."

They rode to the "Mile 2" signpost and walked into a meadow.

"Now," Rebecca said into her cellphone.

Nine-hundred and eighty-seven clumsy baby hummingbirds filled four square miles of sky.

Peter sat down, looking up. Tears rolled out of his eyes. Rebecca sat with him.

“Good job. What other birds do you suggest?”