JOHN NEILL

Hooper, UT

An Interview by

Becky B. Lloyd

11 December 2014

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Great Salt Lake Oral History Project

U-3284

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THIS IS AN INTERVIEW WITH JOHN NEILL ON DECEMBER 11, 2014. THE INTERVIEWER IS BECKY B. LLOYD. THIS IS THE GREAT SALT LAKE ORAL HISTORY PROJECT. TAPE No. u-3284.

BBL: This is an interview with John Neill. We are in Hooper, Utah. Today's date is December 11, 2014. This is part of the Great Salt Lake Oral History Project. My name is Becky Lloyd. John, let's start with when and where you were born.

JN: I was born in Pittsburgh, Pennsylvania in 1972, May 10th.

BBL: What was your family doing in Pittsburgh?

JN: My dad was doing his residency. He was an orthopedic surgeon.

BBL: You didn't stay in Pittsburgh your growing up years.

JN: No, just my first two years of life.

BBL: So you don't have much memory of then?

JN: I don't. Just what's been passed down from my parents.

BBL: So where did you grow up?

JN: I grew up in South Ogden.

BBL: Oh, so your family came to Utah?

JN: Uh-huh.

BBL: Is that where they were originally from, your parents?

JN: No. My parents were from Ohio. They both grew up there. Met at the Ohio State University at medical school.

BBL: So what brought them to Utah?

JN: My dad got a job at the Ogden Clinic.

BBL: Oh, okay, so he went where the work was.

JN: Yes. They had been out before. They liked the West and skiing.

BBL: So from about two years old you've been living here in Utah?

JN: I have, for the most part, aside from college and the Peace Corps.

BBL: Okay. You graduated from a local high school?

JN: I did. Bonneville High School in Ogden.

BBL: Where did you go to college?

JN: Actually I have two degrees. I went to Whitman College in Walla Walla, Washington. I have a degree in geology and environmental studies, combined major. Then I went back to school at the University of Utah and got a bachelor's of science in biology.

BBL: Okay. What directed those decisions? What interested you?

JN: For Whitman College, I wanted to leave the state for education and Whitman College was one of my options, along with Oberlin, applied at Reed College and decided on Whitman. My dad had gone to Oberlin, so that was one of the interests out there. Same with Hiram College, where one of my uncles went to.

BBL: Why biology?

JN: Initially I was interested in…I was always interested in science, I wanted to do something there. But first was interested in astrophysics (laughs) at first when I was a freshman and sophomore, then once I had to decide, I went to geology. I just enjoyed studying the rocks, being outside and fieldwork. It's not a hard science like physics. It takes a lot more description and interpretation. Then I always had an interest in environmental studies as well, so that's why I combined the two majors, geology and environmental studies.

BBL: What were you hoping to do?

JN: After college, I didn't have anything really in mind. There was a Peace Corps recruiter that came to our college and that's always something I've been interested in doing. My parents have always volunteered in the community to help out and I thought the Peace Corps would be a good way to experience the world and volunteer at the same time. So I applied during my senior year of college at Whitman and I was accepted almost within a year, I believe, to Thailand. So I spent over two years in Thailand with the Peace Corps doing community forestry work.

BBL: Really? Had you requested that type of work? Could you tell them that's what you wanted to do, work in the forest?

JN: Kind of. It was at a government installation. I was helping develop an area that had been, these families and villages that had been relocated out of an area where they made a reservoir, it would fill up and flood their houses so they had to relocate these people onto the land settlement, it's called. So this government office that I was working out of would help extend trees and various ornamental shrubs and trees to the villagers to help improve their economy and their work.

BBL: That's really interesting. Did you like that?

JN: It's definitely a difficult experience, but it was enjoyable as well. Satisfying.

BBL: Did you like Thailand?

JN: Yeah, it's an amazing country. It was incredible. The people are very nice and welcoming. It's easy to travel around on the bus system and trains. Enjoyed it a lot.

BBL: That's great. Have you been back there?

JN: I have. I went back with my wife in 2003, I think it was. Went back to my old site and visited all the kids that had grown up.

BBL: What about the trees?

JN: Yeah, checked some trees and some of the projects that I was involved with. Not all of them survived, but it's interesting to go back and see how much things have changed since I had left.

BBL: That's cool. 2005 [2003]; it's almost time to go again.

JN: Uh-huh.

BBL: That's really interesting. So you came back from Thailand, and then what happened?

JN: After Thailand, I was trying to find something to do with myself, I guess. I did a lot of painting in the meantime, but one of the friends of my family knew Don Paul, who was the avian biologist, two people before me, was looking for seasonal help to do bird surveys around the Great Salt Lake as part of the Great Salt Lake Waterworks Survey. I was interested in doing that and I contacted him and went through the interview process and eventually got hired with him starting in February of 2001.

BBL: That was just a temporary job?

JN: Correct. A seasonal job, nine months, time limited. Went through the summer, and also working with the project, I started getting into the aquatic side of things. Initially I was focused on the birds and then started doing the brine shrimp sampling and surveying.

BBL: So you'd go out on the boats?

JN: Uh-huh, in the fall. I think I had to take a break from service for a little bit, and then I got rehired again for the winter. I was so interested in doing the bird work and the brine shrimp work, so I wanted to get a degree in biology to help supplement my

knowledge of that, so that's why I went back to the University of Utah to get a degree in biology. That was 2003-2004.

BBL: Then after that you got hired back?

JN: I was kind of working summers, a little off and on, during my degree, then, yeah, I got hired on again as a seasonal following my degree. Then became full-time in 2007. There was a little cascade there. The program manager, I took another job in the Salt Lake office, then John Luft, my boss, who was the avian biologist at the time, took the Program manager job and then that left a vacancy for avian biologist, which I applied for and received.

BBL: Is that something that you had had your eye on, you hoped for?

JN: You always hope to get promoted, I guess.

BBL: So when you completed your biology degree to get more experience, you didn't necessarily have a particular track you wanted to go on? You were interested in the brine shrimp or the birds or whatever?

JN: Yeah, I'm not a very goal oriented person (laughs), so I was just sitting biding my time, I guess.

BBL: Okay. That's great. And you were really well poised by the time that position came open then to move into that.

JN: I was. I was well versed with all the different surveys that they do concerning birds. I had that history there.

BBL: So what year did you take that job?

JN: 2007.

BBL: Oh, *that* was the full-time job. All right. So you've been here quite a while now.

JN: Yeah, it will be eight years in February.

BBL: That's good. Tell me about your responsibilities here then.

JN: All right. I focus on the bird aspect of the Great Salt Lake Ecosystem Program and we monitor the birds in part because there could be an impact from the brine shrimp industry that is harvesting the brine shrimp cysts and they do catch some adults and other food that might be available to the birds. There's a little competition factor there involved. So we need to monitor the birds to see if they're being affected significantly by the brine shrimp harvest. One of the ways we do that, or one of the species we're concerned with is the eared grebe. During the fall, it migrates to two staging areas in the United States. One of them is the Great Salt Lake and one is in Mono Lake. They come to these areas en masse. Most of the world population, or North American population of these eared grebes are at either of these two lakes during the fall. They come here to feed on the brine shrimp; they will double their weight while they're here. Also it's a time for them to molt. So they have an area out on the Lake where there aren't many predators and it's a pretty safe environment and they have lots of food. So they choose this time to undergo their body molt and become flightless during the time that they're here. So we need to make sure they're getting enough food while they're here and they're able to continue on farther south once the food dies off and gets eaten so they have enough fat reserves to fly farther south, often to Salton Sea or the Gulf of California, during a non-stop flight.

BBL: Really. Let me ask, why, of the many birds that come here, why are you particularly interested in those?

JN: The grebes are probably the biggest competition with the brine shrimp industries, because they almost solely eat brine shrimp while they're here. This year is an unusual year, but we usually get, all the freshwater marshes will freeze up, even Farmington Bay will freeze up because it's fresh enough. So that will move all the birds to the Great Salt Lake where it's salty enough where the Lake doesn't freeze. The only food available there is brine shrimp for the most part. There are brine fly larvae as well, but the grebes really aren't adapted to picking brine fly larvae off the substrate of the Great Salt Lake. So they're almost all, ninety-nine percent, their diet is brine shrimp during the fall.

BBL: I see. So if there isn't enough food for them here, that could severely affect their longevity.

JN: Right. If you have half, or over half of the population of eared grebes and they're not getting enough sustenance while they're here, it can have a big impact on their population.

BBL: Right. Are there other birds that you're also very concerned about?

JN: Uh-huh. One other survey we do annually, I think Don Paul was one of the first people who started this survey, was to go out to Gunnison Island, fly over the island and take photos of the American white pelican colony that's out there. Back in the early '70s, some guy name Fritz Knopf did his dissertation on American white pelicans out on Gunnison Island and he studied the pelican colony out there for three years. He suggested one of the management goals should be for the state to acquire that colony; it wasn't in the state's hands at the time. From his research, he thought that was a very important breeding colony for American white pelicans, and it is, it's the largest in the West, and at times has been the largest in the country. It's such an isolated area. There aren't any

predators; not many people can get there because it's in the north arm of the Great Salt Lake and the railroad causeway kind of inhibits any boat traffic that goes up there and there aren't many access points in the north arm to launch a boat or actually drive out in that area. So it's a well-protected area for the birds to breed. But it is a harsh environment. They can't just hop off the island and start feeding on fish. They'll build up enough strength once they've fledged to fly at least thirty miles one way just to get to a food source. So in that respect it's a harsh environment. The fledgling success rate is not very high. Back when Knopf did his dissertation he estimated about for every nest you'll get about .69 juveniles that fledge.

BBL: Is that right?

JN: So sixty-nine percent of the nests are successful in producing one chick. Some of the research that we've done lately suggests that that percentage has decreased. The population overall has increased maybe double what Knopf saw, but the success rate is anywhere from twenty to forty percent lately. We base, our calculations are probably not as good as Knopf's, since he was on the island, but we compare how many juveniles we see in July and compare that to how many nests we see in May, then we can get a rough success rate.

BBL: Are the pelicans migratory?

JN: They are migratory. During the winter the marshes where they feed, mainly on carp, suckers, chub, gizzard shad, those marshes freeze up in the winter. We do see a few that stick around on the areas that don't freeze, but for the most part, most head south. We've been doing some recent banding and tagging, we put wing tags on juveniles when we go out there. We've seen some reports of these birds showing up in Southern

California, Salton Sea, in Texas, even down into Mexico. So they head south for the winter for the most part.

BBL: So you said years ago the recommendation was that the state should take control of…is that the word you used? Or ownership?

JN: Yeah, at the time it was privately held.

BBL: Oh, you're talking about the island?

JN: The island.

BBL: I thought you were talking about the flock.

JN: No (laughs).

BBL: I was going to ask, can you take ownership of a flock (laughs)? But you were talking about the island. I misunderstood.

JN: Yeah, the island itself was privately owned. There are some mineral right holdings, surface mineral rights for the guano they used to collect out there. Maybe even the railroad had ownership of part of the island, because of the railroad causeway that goes through that area, so I think the State Legislature passed the Pelican Management Act, I think in '77, I'm not sure. But around then, they basically condemned the island and then bought it, forced the owners to sell, and then protected the island from any public intrusion.

BBL: In fact, even if you could get out to the island, isn't that restricted? I mean, if I could get my boat out there, I can't go on the island, isn't that right?

JN: Correct. Unless you're accompanied by…

BBL: You.

JN: Yeah (laughs). The Division of Wildlife, the people in our program. There is a one-mile buffer around the island. You can't approach within one mile in any direction, even above the island in planes. It has that status. Year-round.

BBL: So the eared grebe and the pelican. Are there other sensitive bird populations that you particularly monitor?

JN: During 1997 through 2001 is when we started our really intensive Great Salt Lake Waterbird Survey. During that survey we were focused on monitoring the waterbirds that are around the Great Salt Lake, including pelicans, shorebirds, gulls, terns, herons and egrets, ibis, rails and cranes. Those types of birds that use aquatic habitats for a big part of their lifestyle. We didn't include passerines like red-winged black birds that might be associated with marshes, but they're considered song birds and wasn't really part of this project. This project was undertaken by Don Paul and I kind of got in on the final year of the big project. We had, I think, around fifty survey areas, over 150 volunteers during that five-year time span surveying in every means possible, like walking the shoreline, driving along the dikes here. Some of the Waterfowl Management Areas we had aerial survey areas doing transects on some of the bigger bays, like Ogden Bay, Farmington Bay and Bear River Bay, the Willard Spur. We have airboat surveys to get on some of the more isolated shorelines. So it was a pretty broad and encompassing survey just to see what was out here. Nobody had really done a survey like that before over a long time period. It was a really good effort to catalog those species and the numbers that are out here.

BBL: Do you know some of those numbers, the numbers of species?

JN: Not really off the top of my head.

BBL: I'm sorry. Put you on the spot.

JN: I think we had around seventy or so that we were monitoring. We do have some of the largest populations of American avocets and black-necked stilts. This number wasn't associated with the project, but it was kind a the driving force behind it, just to see what was out here, but during a prior survey, we estimated a quarter million avocets use the Great Salt Lake in the fall as a staging area, similar to eared grebes, but just not as numerous. Black-necked stilts number around 65,000 here in the fall and both those species are active breeders here at the Great Salt Lake, so we have large concentrations of breeding avocets and stilts. Another important species for the Great Salt Lake, or relies on the Great Salt Lake, are Wilson's phalaropes and red-necked phalaropes. I think half a million Wilson's phalaropes come here and just over a quarter million red-necked phalaropes come to the Great Salt Lake and they feed on the open waters mainly at the Great Salt Lake, mainly brine flies, chironomid larvae, midges and brine shrimp that come to the surface. So the Wilson's phalaropes come here at the end of July and peaks around the end of July and into August and the red-necked phalarope is a little later migrant. It will come in August and stick around even into September; we'll see large numbers of red-necked phalaropes. Some of them, if there's still enough food, they'll stay into December, similar to the eared grebes, will eat brine shrimp off the Great Salt Lake.

BBL: What is your day-to-day work like? There's probably no typical week for you, is that right?

JN: Yeah. Lately during this time of year, in the winter, I don't do much field work, so I'm in the office a lot trying to catch up on all the data entry that I've been neglecting.

BBL: That you've been collecting all year (laughs).

JN: Yeah, there we go. And writing reports, the pelican colony report. And we still do some waterbird surveys, just not in the large scope as we did in '97 to 2001.

BBL: So in the summertime, then, you go out on the Lake a lot.

JN: Quite a bit. We have contracts with some graduate students that help do some research for us on the Great Salt Lake, starting, when the first project first started in the late '90s and early 2000s, we had Joe Caudell who studied the eared grebes and that kind of transitioned to the other Ph.D. students who did research on the Great Salt Lake.

Next, Josh Vest studied winter waterfowl on the Great Salt Lake to see what species were out here and in what numbers. He found that over 40,000 common goldeneye will overwinter on the Great Salt Lake, which is a significant population wintering so far north. They feed mainly on the brine fly larvae on the bioherms. He also did some work with green-winged teal and northern shovelers, but the majority of that work went to his successor, Tony Roberts, who studied that. Part of Josh's work was studying the heavy metals in the breast muscle of the waterfowl that are here. His work kind of led to the first mercury consumption advisories for waterfowl in the United States.

BBL: How do you measure mercury in the breast of a bird? Does it have to be a dead bird?

JN: Yes. We collect these with shotguns and do tissue analysis for each bird and see how much mercury content is in the tissue. So Josh Vest found that common goldeneyes and northern shovelers in, I think 2005, had levels of mercury in them that aren't healthy to eat on an everyday basis. So the Utah Department of Health issued a health advisory,

consumption advisory for those two species in 2005, then they added cinnamon teal in 2006, I think.

BBL: What was the result of that health advisory?

JN: I'd have to look at the advisory, but I think it limited the consumption to eight ounces of breast muscle or less for children or pregnant women. A lot of it is that they eat the food in the Great Salt Lake and the Great Salt Lake has been shown to have fairly high levels of methyl and total mercury in the water. That eventually makes its way into the food chain.

BBL: Tell me about some of the research on the eared grebe and how you can determine if there is enough food for them.

JN: I think Joe Caudell worked on that. He studied the bioenergetics of the different prey items that they could eat here, like the brine fly larvae, the brine fly adult, brine shrimp adults, and brine shrimp cysts. He did some calculations on how much energy those food items can provide and how much the grebes can access. They can't get every single ounce of energy out of those food items, so some are more beneficial than the others. So I think he did some estimates using those energy levels in the different insects, crustaceans, and did estimates on how much brine shrimp was in the Lake, based on some of the surveys that we do, and estimated that eared grebes would eat around 20,000 brine shrimp a day just to maintain their body weight and increase their fat reserves for the migration. He calculated how dense the water needed to be with brine shrimp to see how much they, so they could efficiently eat the brine shrimp and they found that the densities seemed to be adequate for them to get enough energy.

BBL: So that must have lined up okay with, or maybe this was part and parcel of the Gary Belovsky model.

JN: Yeah, that number, twenty-two cysts per liter, is what's needed to restock the Lake in the next year, so that will provide a population that's not too big and not too small for the grebes.

BBL: Okay. So that model does take into account the grebes?

JN: It does, somewhat. It's not specifically for the grebes itself, but it does ask is there enough food for the grebes. But that number is set at twenty cysts per liter such that if you have too many cysts in the spring, then you'll have too much hatching and they'll eat all the food that's available, the phytoplankton, that's available in the Lake. Then the population will crash and not produce enough cysts for the next year. If it's too small, then you don't get enough recruitment the next year, not enough hatching, and not enough shrimp for the grebes to eat, potentially. So that's kind of our equilibrium.

BBL: Yeah. And the grebes are doing okay now?

JN: They're doing really well, it seems. The last few years we've counted over several million of them; last year we had over five million eared grebes on the Great Salt Lake that we estimated and this year seems to be just as numerous. We haven't counted all the different photos that we take to assess the population. That's one of the surveys that we do each fall. We do transects over the areas where the grebes are concentrating and take photos every ten seconds, and we space our transects along about a mile or a half mile apart and do five parallel transects throughout the whole concentrations of where the grebes are. So we have a sampling of each area and we derive a density for that area, then we can extrapolate to the whole area how many grebes are on that particular area. Last

year was over five million. The previous year, I think was three million, so the population seems to have jumped quite a bit here at the Great Salt Lake. But part of that might be due to, we have changed our protocol a little bit. We've changed from a film camera to a digital camera. It seems to me that the digital camera is a little higher resolution. Before we used print film; we'd print it out on the standard three-by-five print and that's a little tricky to look at and count, the little dots there, they're really small specks because we fly at an altitude such that we won't scare the birds into diving into the water, because we want to be able to see them on the surface. So I think that the digital camera allows us to zoom into the photos a little easier and we can identify the birds easier. So I think some of our increase in the population is due to that.

BBL: Better visibility so you can count more accurately, I guess it would be.

JN: Yes.

BBL: So that brings up a question, is there a point where there gets to be too many of them? Suppose there really was a big jump in the population for real. Do you have to worry about managing that? Or do you just kind of pick a set point and say well, if they overproduce beyond that, some are just not going to make it?

JN: That's not something we've really considered, but it could come to that. The population does seem to self-regulate quite a bit. Each year we do have a die-off of eared grebes, though it's usually a small amount, usually less than a percent. So if you have five million out there, then it's only about 50,000 birds. So it's not a large portion of the population that dies each year. Last year we had a pretty significant die-off due to West Nile Virus, which was unusual. It'd never been documented in eared grebes before. I think we estimated over 20,000 eared grebes died from this as a result of the West Nile

infection. There was also a die off of bald eagles from West Nile Virus last winter. We had over eighty-six bald eagles that died off. The theory was that the bald eagles were preying on the eared grebes that were dying and they'd contracted the virus through eating the meat and then also the bald eagles would pass it amongst themselves by their saliva or their feces at their roosting sites. So that was a pretty hard situation to deal with last year, a lot of dead birds. But mostly, or usually, they'll contract avian cholera, which is the most common disease for eared grebes.

BBL: Oh, that's just a normal disease you see regularly?

JN: Yes. See that almost every year, except last year.

BBL: And that was because all you saw last year was West Nile Virus?

JN: Yeah. I don't know how many birds ended up being tested, but around twenty, thirty eared grebes were tested and the ones that showed positive results for disease were just West Nile Virus; we didn't see any avian cholera deaths.

BBL: That's something. Is that a reason for concern?

JN: Certainly. If it's a trend that we're going to see into the future, that can have a serious impact on the grebes and the bald eagles.

BBL: So do you do any kind of intervention with that? Or is that not your job?

JN: That's not really my job. We're out on the Lake, we see the effects of disease quite often throughout the year in different bird species, but the Lake's such a massive area that we can't really contain an outbreak like that. It would take a lot of boats and people and man hours.

BBL: Right. Actually, I don't know if there's anything you could do. Is there no preventive measure?

JN: Not that I've heard of. There probably is some sort of vaccine, but again, to get it into…

BBL: Five million birds, sure (laughs).

JN: Right (laughs). We just mainly try to monitor it and see how things go.

BBL: So was that also a trend you saw at the other lake where the eared grebes stop?

JN: The Mono Lake population has been shown to kind of parallel the ups and downs that the Great Salt Lake population does, so I think a lot of that is based on how well the breeding population is successful. Also, probably the major, the pinch-point, where they die off, they're more vulnerable in their lifecycle is during the wintering grounds, in the Gulf of California where a lot of these birds go to winter eat and get El Niño events for—this is the theory, anyway—you get El Niño events where you're too warm and you can't get the cold water upwellings, which provides a lot of the nutrients for the phytoplankton and zooplankton that these birds feed on. So if you have a warming ocean down in the Gulf of California that will decrease the amount of food available. We've seen large die-offs down in the Gulf of California during slow food periods.

BBL: That's interesting. Do you get sad when you see these dead birds?

JN: Luckily I'm not out there too often during the winter, but my co-workers that you've talked to already they're out there every week or sometimes twice a week and they see more of this than I do. But I've seen other, I've been involved with other die-offs from avian botulism that's more commonly in August, September, when we're still out on the Lake doing a lot of surveys. Yeah, it's sad to see birds that can't fly and get stuck in the mud and most of them end up drowning because they can't hold their heads up.

BBL: Nothing you can do about it.

JN: Yeah, there's just so many it's hard to help any of them. You'd spend all your whole time trying to help them.

BBL: Let's talk about your pelicans for a while. So you go out and tag them. Is that something you'll continue doing?

JN: Yes. We started in 2011 to band and tag pelicans on Gunnison Island, the pelican colony, because there's growing concern that that pelican population is increasing and putting a stress on aquatic species that are on the, like sensitive species, for states and even endangered species in parts of the country. So there's greater awareness of trying to study the population to see if it's going up or down. Are there bigger impacts on these sensitive fish species, like Bonneville cutthroat trout or Yellowstone cutthroat trout? And on the West Coast, the endangered salmonids that go up the Columbia River or some of the tributaries on the Pacific Coast that pelicans might be eating or other piscivorous bird species might be eating, like Caspian terns or cormorants, could have a pretty large impact on some of the fish runs.

So in Utah, the main concern is with the Bonneville cutthroat trout up at Strawberry Reservoir. The managers up there have seen a large increase in the summer population of pelicans at the Strawberry Reservoir and the past couple of years we've done surveys up there. I think our highest count was around 900 pelicans, which is pretty significant for a reservoir. Part of it is they're keying in on the shallow areas where some of the fish spawn. A lot of suckers will spawn in the shallow areas, chub, but also will go up into the tributaries during the cutthroat spawn. So possibly blocking the cutthroat trout from coming up the tributaries as they tend to loaf on the mouth of the Strawberry River and Trout Creek where these fish are going upstream to spawn, and they'll sit on the

mouth of the tributary there and block the fish or even eat the fish that try to make it up the tributaries.

We do have some evidence of this, though not a lot. This past fall we went out to Gunnison Island to search for PIT tags, which are Passive Integrated Transponder tags, that when you pass a receiver over the tag it will beep and it sends out an electric signal and it reflects off that tag and the receiver picks up the number of that tag, so we know where that tag came from and what fish it was put in and where it was stocked. So we had two PIT tags that were found on Gunnison Island this past year and one came from a June sucker that was stocked in Utah Lake and the other was a Bonneville cutthroat trout from Strawberry Reservoir. So we do know they're eating some, we just don't know how much. There's a master's student up at Utah State University trying to get at that problem this past year and will continue his work next year, I believe.

BBL: What do you do about that?

JN: That's a good question.

BBL: Or, again, that's not your job. Your job is to research and to find the problems and monitor and then someone else has to decide what to do?

JN: Right. Our main focus is to see how big of a problem it is. Some of the other research that we've done hasn't really pointed to a lot of cutthroat trout predation by pelicans. We've collected gut pile samples out at Gunnison Island. When we go out and corral these pelicans, juvenile pelicans that can't fly yet, they'll often regurgitate what they have in their stomachs as part of their fight or flight response, so we've collected some of the samples out there that they've regurgitated. We have over 100 or so and we

haven't identified a single trout in any of those food samples. Most of it is carp and shad. We've also had little crustaceans, crawdads.

BBL: That's interesting. I think you mentioned, maybe I got this right, that the number of chicks hatching per nest has dropped, but…

JN: No.

BBL: Did I say that wrong?

JN: I think the number of chicks that hatch is consistent from year to year, I'm not sure that has changed, and we haven't really studied that. But the success rate of each nest has dropped.

BBL: So there's a difference between the number of chicks that hatch and the success rate? We're not talking about the same thing?

JN: Uh-huh.

BBL: What's the difference between those? Oh…hatching versus surviving.

JN: Right.

BBL: Okay, I get it.

JN: Pelicans typically lay two eggs and they'll get to a point where one of the young is bigger than the other and the big one will kick the younger one out. So pelicans will end up with just one young to feed. How successful those adults are of getting food from thirty miles away, and maybe even a hundred miles away, which Strawberry Reservoir is, or maybe up to American Falls Reservoir in Idaho, those are a hundred mile one way commutes. So if they're successful in bringing back enough food for their young, it will survive to fledging.

BBL: Okay, I see the difference.

JN: There is disease that may be a factor in their survival, but I think a lot of it, for Gunnison, anyway, is how much food they can get. It's a hot, dry, weather can be pretty harsh in the springtime, even, and get seventy mile an hour winds out there; it's not a protected spot. And just depending on weather factors, food, disease, predation—there is a big gull colony there as well—if the adults are there and protective of their nestlings and their eggs, then they shouldn't have a problem, but some of the new parents won't really know what to do yet, so they have trouble protecting from the gulls. There's some predation from gulls.

BBL: So you said that the survival rate is dropping, but there are more overall pelicans, so the rate of pelicans is not dropping. Did I get that right?

JN: Yeah. The colony is doing well as compared to the early '70s. Some of that's probably because there are more wetlands and impoundments around the Great Salt Lake where the pelicans can feed, but also the population has recovered since the impacts from DDT era, which caused the shell thinning and low nest survival back when DDT was widely used. So we've rebounded from that. But our population is averaging over the last ten years around 11,000 breeding adults, so about 5,500 nests on Gunnison Island.

BBL: That's a lot, isn't it?

JN: Yeah, it's double what Knopf saw, I think.

BBL: So you go out there, and I think I heard this, that you tag and band about 500 of them?

JN: Yeah. The last two years we've banded 500 in 2013, last year, 541, I believe, just at Gunnison Island. So since 2011, we've banded about 1,641 juveniles on Gunnison Island. We've become a little more efficient the last couple of years. But it's a big ordeal.

We have four or five boats going out there and twenty-plus people, and all our food and water with us, and corrals and we have large dip nets to capture the pelicans, and six or seven banders that process the birds, put tags on. It's quite the ordeal, but the last couple of years we've been getting better at it. We just went out twice this year to band 541 birds.

BBL: When do you go, roughly?

JN: We can go as early as the end of May if there are enough successful early nests that have produced, but we try to time it when certain days they are all off nests, all the pelicans are past the nestling stage where they're, prior to that they're vulnerable to the predation by the gulls. So when we're on the island, the adults will leave when they see us approaching. So we have to make sure they're not sitting on nests or have young babies that would be eaten by the gulls. So we have to wait till most of the area that we're going to band has to be old enough to walk around and fend for itself. So that's usually the end of June into July. But it does vary quite a bit from year to year. I think our latest banding date was in September a few years ago. Last year we did two banding trips in July, middle of July, in back-to-back weeks. That second week, there almost wasn't enough to band.

BBL: So how do you keep track of where they are? Do you fly over? Or do you just boat out?

JN: Yeah, we fly over three times a year. We do our annual census in May, around the 20th of the month, then again we fly in June just to see how the population is doing and do another survey. The mid-July survey is when we count the juveniles and make an estimate for productivity, see how many fledglings we'll have. On each of those flights

we can see the south part of the island tends to be early nesters, so they'll produce young quicker. So maybe we'll go into the south arm, south bay of Gunnison Island and get that group and go from there.

BBL: I was thinking, I can't remember who I mentioned this to, but I was thinking it must be almost like a lottery to be able to take that trip to Gunnison and participate in that activity.

JN: Yeah. It's an interesting place to be in and nobody can really go there, unless we invite them, it seems.

BBL: So you take people who are within the Division, I guess.

JN: Yeah, we usually ask people who have helped us with the pelican tagging before, some people that have worked with our project before. We've asked people from the Aviary, because they have bird banding experience and we kind of work cooperatively with some of the Strawberry pelican stuff we've done. The State Parks and Rec has provided boats for us to get out to the island, so some of their staff goes. Some of the volunteers we've had with the Great Salt Lake waterbird survey and other aspects of our work will come along. We try to get people we work with and have helped with our studies and stuff to come along.

BBL: And have had some experience.

JN: Well, you don't need a whole lot (laughs). As long as we have enough banders, it doesn't take much experience to handle a pelican. You can pick it up pretty quick, so long as you don't mind getting puked on or pooped on, picking up a smelly bird.

BBL: So, what else? What other responsibilities do you have in your job that we haven't talked about?

JN: Let's see, one of them is kind of a liaison for a local nonprofit called Linking Communities, Wetlands and Migratory Birds. It was established in part by Don Paul, who was the previous biologist here. I think he got a grant or there was some grant involved associated with several shorebird sites that have been established by the Western Hemisphere Shorebird Reserve Network. They've developed a category listing of sites around the Western Hemisphere that are important to shorebirds and they have a hierarchy of how important that site is. Is it a hemispheric site, is it an international site, or is it a regional site? Great Salt Lake has qualified as a site of hemispheric importance based on the number of shorebirds that are here. I can't really remember the specifics per se, but I know one species alone qualifies the Great Salt Lake as a hemispheric site and that's the Wilson's phalarope. But I think we have two other species that also qualify it as a site of hemispheric importance, including the American avocet, which I mentioned earlier. Over fifty-five percent of the world's North American population of avocets comes to the Great Salt Lake. I think over thirty-seven percent of the stilt population in North America comes to the Great Salt Lake. One other species that I haven't mentioned before, but the snowy plover is a threatened species on the West Coast, it's a subspecies of snowy plover, but the interior snowy plover is, it's not very abundant, but its population seems to be larger than the West Coast population and I think twenty-three percent of the interior population nests at the Great Salt Lake. So it's a very important location for snowy plovers as well. Anyway, these hemispheric sites, there's also one up in—well, there's many of them—but there's one up in Canada at Quill Lake and Chaplin Lake, which is also a hemispheric site, and Marismas Nacionales down in Mexico, is another hemispheric site. Don Paul thought we should link these communities based on

their hemispheric status and we've had some studies showing that birds here do migrate down to Mexico in the winter. You see avocets in the winter in the Marismas Nacionales, [unclear], that's up at the Quill Lakes and Chaplin up in Saskatchewan, Canada. So these sites are linked by birds, but this linking community also wants to extend that to people, as well, and teaching people about these different sites and how it's important to birds, and developing a conservation ethic between these sites through education and also developing an ecotourism kind of model for these three sites. They can develop birding routes at each site and show that they have similar birds and ecology. So that's one aspect of my job that I do quite a bit.

BBL: That's interesting.

JN: Yeah, it's interesting.

BBL: What's your favorite part of the job? What do you like best about what you do?

JN: I think my favorite part is just being out on the Lake. Driving the airboat out and doing a bird survey and seeing thousands or ten thousands of birds flying around is pretty incredible. Just seeing a peregrine falcon dive bomb a flock of 20,000 birds and seeing them scatter or ball up; it's pretty incredible. It's a neat place. It's surreal at times. You can get on the Lake and it will be a really calm day and the water almost turns to glass. If there's just a little bit of haze in the air, you can't really tell where the water ends and the air begins. Kind of lose track of where you are sometimes. It's a pretty neat place.

BBL: Do you go out by yourself usually? Or is there a team that goes out?

JN: No, it can be a dangerous place to be out there, so we try to stick together, in pairs at least. We have a boat that breaks down or gets stuck, you need some help to get out.

BBL: Do you ever take your dog with you? Is your dog allowed to go?

JN: I've never taken mine. During some of our waterfowl collection days, my boss, John Luft, has brought his dogs out.

BBL: Because I know that Dave Shearer at the marina, his dog goes with him everywhere on every mission.

JN: He does. His dog, Taz, has been to Gunnison Island with us. John's dogs, they're more working dogs so they help collect the birds for us. But it's also fun for them; they like to go out.

BBL: So being out on the Lake is your favorite part of this job?

JN: Yeah, I think so.

BBL: Do you have a particular place on the Lake that's your favorite, a place or two?

JN: Gunnison Island probably tops the list. It's a pretty incredible place when it's a breeding colony and just full of life. You go out there right now and there's not a thing out there. It changes quite a bit. I've been fortunate enough to be able to spend the night, two nights out there during my career. It's one of the few places where you feel really isolated, even so close to a big metropolitan area. There isn't much cell phone service out there (laughs), and you can't communicate, so once you're out there, you're kind of stuck. So it's fend for yourself and hope everything goes well (laughs). But it's a neat place. It's a rugged island, yet it has these shallow bays where the pelicans nest. It's just crawling with life when the pelicans are there. They're beautiful birds; they might not smell that great all the time (laughs). But their white feathers are really white and they're just graceful fliers. Just to sit out on the island and watch these chevrons of pelicans come into the island, just inches off the water, it's pretty incredible.

BBL: That's cool. That sounds great. So what haven't I asked you that you think would be important? Or something about your job that we haven't included?

JN: I don't know. Maybe the lake level. We haven't really talked about the lake level. It's a dynamic place. From year to year it will fluctuate as much as five feet, depending on how much rain and runoff you get and how much evaporation you get during the summer. So lately we've been fairly dry. We had a large water year in 2011 when the Lake went up five feet, but since then we've dropped two feet each year overall. So we're about two feet from the all-time low for the Great Salt Lake, which is, it's going to affect our job if it drops much lower because we won't be able to get out to sample brine shrimp from the marina. I think there's about a foot and a half, two feet of clearance under the boat right now as it is and if we lose that two feet, next year we won't be able to get out and do our job sampling brine shrimp. The air boats can get out, but not the big boats.

BBL: Do you still occasionally go out on those brine shrimp measurement trips?

JN: I haven't been on one for a while now, but every once in a while we have somebody will be on vacation or somebody gets sick, so somebody needs to fill in so I'll help out that way. But I was out two weeks ago helping when we were short-staffed.

One of our projects is to put out these floats that have a certain number of cysts in the sack that hangs under the float and we measure how viable the cysts are throughout the winter, see how many survive. That goes into Gary Belovsky's brine shrimp model. So we went out and deployed those floats on the Lake at the beginning of this month, December. That was the last time I've been on the big boat.

I forgot to mention our most recent graduate student at Utah State University, Maureen Frank. She's studying Wilson's and red-necked phalaropes on the Great Salt

Lake. Instead of winter work with the waterfowl, we've kind of shifted into the summer so it helps the fingers stay warm and keeps us busy during the summer, which is nice. Yeah, we go out once or twice a week during the summer from the end of June into September as part of her Ph.D. research.

We're doing similar things. We're studying diets. We're collecting a few. We're also seeing where they're spending their time, seeing if they're focusing on certain food items. Are they eating chironomids? Or are they preferring brine flies, that sort of stuff, and seeing where they are around the Lake, monitoring populations and stuff. That's been interesting the past couple of years. We'll do it again next year.

BBL: When you were growing up here, you were near the Lake. Did your family come out and recreate at the Lake while you were growing up?

JN: Certainly. I remember going to Antelope Island. I think that's another special place on the Great Salt Lake. You can get away from the city, it's relatively remote, but you're still close to the city. But the Antelope Island causeway is a big mecca for birders and shorebirds. You see lots of different birds that show up there. You can go down to the visitor's center, there's burrowing owls nearby and there's a couple of breeding colonies on islands just off the western shore of Antelope Island, so you can see lots of gulls and cormorants that are nesting on those islands. Great Blue Herons. It's a nice place to bike, you can mountain bike or road bike. It's a pretty neat place, too.

BBL: So you spent time out there when you were growing up?

JN: Yeah, even during the winter you can go out and when you get a nice snowfall, take your cross country skies and trek the island. You can see the old shorelines from Lake Bonneville. Pretty neat place, too.

BBL: I love it out there; it's nice.

What else? Anything else you can think of that you'd like to say that I've missed.

JN: Nothing's coming to mind right now.

BBL: Well, I thank you so much for your time. This has been interesting to hear about your work. I think it sounds really fun.

JN: Yeah, it's definitely interesting.

BBL: Thank you.

END OF INTERVIEW