JOHN LUFT

Hooper, UT

An Interview by

Becky B. Lloyd

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THIS IS AN INTERVIEW WITH JOHN LUFT ON DECEMBER 11, 2014. THE INTERVIEWER IS BECKY B. LLOYD. THIS IS THE GREAT SALT LAKE ORAL HISTORY PROJECT. TAPE No. u-3283.

BBL: This is an interview with John Luft at his office 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. So, John, let's start with when and where you were born.

JL: Well, I was born in the flat lands in Kansas back in 1968 in a little bitty town in Bucklin, Kansas. Nobody's going to know where that's at. It's a little town close to Dodge City in western Kansas. So that's where I'm from.

BBL: What was your family doing there?

JL: For the most part, everybody around there farms, but my folks, my dad did a little bit of everything: farming, worked and owned a lumber yard in the little town. My mom was a physical therapist, so she traveled to smaller towns around there doing that.

BBL: That's interesting. Do you come from a large family?

JL: No, just me and my sister. So we're not the typical Utah family (laughs). We're really, really small.

BBL: So did you grow up, your entire growing up years in Kansas?

JL: Yeah, I grew up. I got a degree at Kansas State University, so I grew up there. I never really even planned on moving to Utah, never had a desire to move to Utah; I didn't know a whole lot about it. What happened was I, as I was going to school for wildlife biology, I decided I needed to get some experience. Typically during the summers I would go and farm, just about like everybody else, but I thought when I graduate with a degree in wildlife biology, I'm going to need some kind of experience so that I'll be more marketable for anybody that's hiring. So what I did for a couple of

summers, and it wasn't for…it was basically for food and a room, was I went to Colorado and there was a PhD student working there on capturing and tracking antelope. So we would catch baby antelope, tag those and follow them around, put radio collars on those. The PhD student that was doing that project was from Kansas University. So they had announced kind of a field technician position for the summer at our university, Kansas State, and I decided, well, I'd try to see if I could do that. So eventually, for a couple of summers I did, that's exactly what I did. We went and caught antelope. It was a lot of fun.

Well, that professor—well, she became a professor after she got her PhD—she ended up moving to Weber State and becoming a zoology professor there at Weber State. We kept in touch over the years and she…I had had a little bit of trouble finding my way into getting a job even after graduating; it was a little more difficult than what I expected. There weren't a lot of positions available and it was really hard to break into. So I started, after I graduated, I actually also got a degree in accounting. Even though I got a degree in accounting I thought, you know, I don't want to sit behind a desk all the time. But I continued to farm after I graduated, or had the two degrees, and I thought, gosh, I've got to really break away and just make a move, because I'm not looking for a job as hard as I should and I'm not using either one of these degrees.

So I had kept in touch with her over the years and she talked me into moving out here—well, not moving out here, but visiting: "Well, you ought to take a look at it, see what's out here. It's really neat. It's completely different from Kansas and I think you'd at least like to see it." And I thought, you know, I've never been there. I should at least come out and take a look. So I came out for a couple of weeks and started kind of…and I

was only going to stay about two weeks. It was going to be kind of a vacation for me. But while I was here, I met some folks at the Ogden Nature Center. Then I also met some folks at the Division of Wildlife and got to talking with them about jobs. Eventually I was offered a job at both places, the Ogden Nature Center and the Division of Wildlife. Not only that, there was a professor from Northern Arizona University that was doing a project in this area and he wanted to hire me for…and all of them were not…well, the Division of Wildlife wanted me for forty hours a week and the other two wanted me for about 20 hours a week.

So I ended up moving out here and working about eighty hours a week (laughs) for all of them and doing that for all summer. That kind of broke me into it. Working eighty hours a week doesn't give you a whole lot of time to do anything else, but I was running around at night taking care of the professor's plots. I was typically able to work most weekends for the Division because that's when they needed somebody on call. I did probably the least glamorous thing you could think about as far as wildlife goes. I handled most of the nuisance calls, which would be at night or on the weekends when nobody else was in the office and they would contact me. So I was basically on call most of the times. So if there was a raccoon in somebody's chimney, or if there was a porcupine in somebody's backyard, or if there was a deer carcass on the road, then I would go and respond to that and either pick up the dead deer or handle somebody's woodpecker in the house, or something like that. So it was fun and it was different every day and I really got a good feel for just Utah in general, because I traveled a lot. There were calls coming from everywhere in the northern region, so I got to learn a whole lot about places here in Utah. And I helped everybody in the Division. I didn't really have a

guy…there was the big game manager that hired me, but then I helped every section. So I helped with habitat, with fisheries, with big game, with small game, with upland game, law enforcement, whatever it was, I was always going around and helping them. So I got a lot of experience doing a whole lot of things. So that was, even though it was obviously not paying very well and it wasn't a permanent position, it was a seasonal job, it was still a lot of fun and I learned a ton doing it.

BBL: That's great.

JL: That's a long drawn out thing about me (laughs).

BBL: No, it's interesting. How did your interest in wildlife biology develop in the first place?

JL: You know, as a kid, my dad took me fishing and hunting and he, my dad was a really respectful person. We didn't have any, we had our own little farm, but it was so small that at that point we wouldn't be able to afford to farm it. Things had kind of started to change in the farming industry at that time where it was becoming bigger equipment, bigger corporations moving in and instead of the small farmstead type of farming, if you didn't have thousands of acres you just couldn't make it as a farmer. So that's why we didn't do any farming at the time. But my dad had a respect for the land, which his dad had instilled in him, and my grandpa wasn't, he didn't care to make money; he cared about the land and how to take care of it. So he would go out and he would plant trees. It benefitted you not in the least to plant trees. You made more money where there were crops and trees took up space, so most people took them out. He was the exact opposite: he would go plant trees, he would build fences around them to take care of them and they're still, at our old farm, there's still old rickety fences that he and

my dad had constructed over many years. My dad had that, I mean they dug out a pond and released fish. You know, it was just something that was of interest to him and he wanted to always give back to the land and respect it. My grandpa ended up doing that all of his, basically all of his life. He just gave back.

When he actually retired, he was an engineer at aeronautics place in Wichita, Kansas, and worked there as a machinist throughout World War II and things like that, so he could build things and he was amazing. My dad still has things that he built from scratch that now there is actually a machine that does it. He built his own table saw. I don't even know if there was such a thing at the time, but he just made one. He made all kinds of just really unique things. A cable stretcher for grapevines. And he would grow grapes and make wine and stuff. He had a system that he used to stretch the vines up and everything. You don't even…his mind was so good at inventing things and then being able to build them. It was just incredible.

My dad always, he appreciated that kind of thing and, you know, they grew up at a time when there wasn't a lot of money. My dad talks about a lot of the things that they would eat were things they grew or the things that they shot or caught or something like that. So he had these stories about they would get a snapping turtle and somehow his granddad knew how to clean one and he said I wish I would have paid attention because I don't know anything about it. I've never heard of anybody eating a turtle now, but they would catch these snapping turtles and said it was the greatest meat that they could get.

And they had a lot of, at that time there was a lot of water flowing through western Kansas, but farming practice has kind of changed that. They broke through a lot of the clay soil to where the water would drain through it instead of having these big

ponds and sloughs all over the place. They formed them up eventually if they were dry at any point in time just so they could make money. My grandpa hated that. So he would fallow his fields and he wouldn't use—I can't even think of the type of plow that they used back then—and my dad said he refused to use it because it cut too much into the soil. He didn't like that kind of a plow and wouldn't use one. So he would rather use the discs that cut more of the surface. I guess what he said is that plow would turn the whole earth up and expose it to the air and then it would just blow and he wanted to leave, cut it up, but leave the vegetation still sitting on top of the soil so it wouldn't erode or blow away. So he refused to use that kind of a plow when he was with his farming practices.

Anyway, because of that, my dad started me off with hunting and fishing and whenever we would go places, my dad made sure that I appreciated that the landowner that we were, I guess, had permission to go on, that we respected the property. I can remember a number of times that we would either be going to go fishing or hunting and we would see cattle out or something and he'd say, "We need to get these cows back in. I know who they belong to. They go in here and we need to fix the fence that's down and then get these cattle back in." So we would do that. And there were times that we wouldn't even go fishing or hunting. We ended up spending our time doing that, or cutting trees up because they'd fallen on something that had blocked a creek or a crossing or a fence or something and we would spend the whole day doing that and then not actually go fishing or something. And I would be mad! I would be angry about it. You know, my dad would say, "Do you ever want to do this again? It's just one day; we missed one day fishing. But if you didn't do this, you may never get to go because you don't have a place. You need to respect it, you need to take care of it, and don't ever pass

some of this by. That's not what you do. That's not the way that you gain the respect of other people." And it wasn't about, it was never about money for my dad or his family; it was always about respecting the neighbor, helping the neighbor, respect them.

There was a time that there was a guy harvesting a field and he had a bunch of guys working for him and my dad and he were cutting together, cutting this wheat field. They got done and that was going to be it. They were going to be done harvesting for the summer. My dad and he were talking and his hired, the other guy's hired folks—it was just my dad—but he and this other guy, they were good friends. As his hired men came out of the field, they thought they were done, they were happy to be done, and it was about nighttime when they were coming out. The guy says, "We're going with Tom. We're going over to Frank's place. So take all of this stuff in the morning to Frank's place because we're cutting his fields starting tomorrow because his combine broke down." They knew that he couldn't get his crops out because he had a breakdown and he had no way of going to get it done, which is critical for people at that time. I know for a fact that they didn't take a dime for it. I'm sure they were offered something, but that's just not how you did things back there. I mean, you helped who needed to be helped and that's the way my dad always did things.

I'm kind of a little off track there, but because of that I developed a respect for wildlife. As I was getting older, sophomore, junior in high school, my dad started getting conversations "Well, what do you want to do for a living? For a career, what are you thinking about doing?" I said, "Well, I want to do stuff with wildlife. Does somebody do that?" My dad had a couple of friends that he knew.

My dad, the reason he was in touch with most of these guys is because my dad was ahead of the curve on almost all the things going on back in Kansas at that time. They hardly had a deer back there when he was growing up. Well, the deer population started to grow. Same with turkeys. Even pheasants, clear back when he was growing up, there weren't hardly any pheasants. But they put in a program called the Soil Bank, which is similar to the CRP program now, and pheasants, there started to be more of them. Anyway, he hunted everything or fished for everything, because he grew up when there weren't licenses or anything like that and his granddad, they would do it for food. But my dad started doing it because he enjoyed eating game and stuff. So he did a lot of things that most people hadn't even heard of. He would go dove hunting and people thought, what are doves and why are…so he started doing that when other people weren't even doing it. Same with pheasants and same with deer and turkeys. I don't think he ever killed either one of those because they were so new when he was growing up. Then when I got to be of age, he didn't care if he shot one, he would go with me and just sit in the truck. I would say, "Did you see anything?" "Yeah, I saw some from the truck here." But he wouldn't even get out. I mean, he just wanted to go just to be out there. He didn't care if he shot anything.

The other funny thing was we would probably catch a thousand fish every year, and we never took any home (laughs). Maybe once every two or three years we'd take one little mess of fish home. My dad wasn't a big fish eating fan and he occasionally took some to my grandma because she really liked it, but other than that, we just went for fun, just to catch fish (laughs). And we had a blast doing it. But my dad said if we're not going to use them, we don't need to keep them. We rarely, I mean rarely, I can maybe

remember three or four times of keeping any fish. But we utilized almost everything that we shot.

So I told him I wanted to do something to protect the animals, basically, the wildlife. And he had friends, because he was one of the only ones that would hunt and fish around there, and he had a lot of knowledge about that stuff, he knew all the conservation officers in that area. So they would come and talk to him and ask him what was going on. And they had the same kinds of interests so, "Yeah, I'd like to go duck hunting. You want to go?" They would ask him. They would take him and he had a ton of stories about he could identify the ducks better than the conservation officers. So they would be flying in and he said that they'd go out early Teal season and the conservation officers would go with him and they'd kind of wait for him to tell them what ducks were coming in because you could only shoot certain kind. And he'd yell out the wrong kind that you couldn't shoot, and then he'd shoot them. They'd be standing there because they didn't want to do anything wrong. So he got a kick out of messing with them sometimes. They knew that he respected the land and wildlife and he would be a good person to connect with. He had way more knowledge than…I probably got more knowledge from him than all my years of schooling, just from being out there.

So, anyway, he had said if you really like this kind of stuff then you should try to be a conservation officer. So that was my goal and to do that you had to get a degree in wildlife biology. So that was what I focused on and I mean, I never…most people get into college and they check out different majors and they bounce around a little bit. I never strayed one bit. I went in wanting to get a degree in wildlife biology and I never looked anywhere else. When I got out and it was more difficult than I expected to get a

job, I thought, gosh, maybe I should have looked at other things. That's why I went back and I got another degree in accounting, because I was always good with math and numbers and I thought, you know, maybe I should do that and I'll spend my fun time out in the field. But after a little while of that, I thought I'd rather just be out and I'll work as hard as I can to get to that point instead of sitting behind a desk all day.

BBL: That's interesting. It's interesting that your dad and his dad had such a strong notion of stewardship to the earth and also their neighbors. That's really unique.

JL: Really, and I say that, and maybe it's unique to some people, but back there, back home, that's how you did things. If you didn't, you didn't last very long because you needed everybody's help. It's the same, you hear of these barn raisings and things like that, it's the exact same thing. I remember so many different times of getting stuck, flat tires, something. But every single time, somebody would just bend over backwards to help me, get me out. Every single time that would happen.

In fact, there was one time when I was still in high school and we were going to go deer hunting, my dad and I. He had to go back to work and as always, he still would go with me and take me down there, but he was going to drive a separate vehicle. So we started to drive out of town and he pulled over and his truck was overheating. I had my grandpa's old truck and he said, "I need to drive back to town." So I was following him back to town, and it's dark. And I am angry. I'm like, well, we're going to be way too late, wasting all this time, and stuff. I'm looking at my watch, trying to see what time it is and how much time this is going to take and I'm just all frustrated with the whole thing. I wasn't paying enough attention and I drifted off the highway and by the time I looked up, I had gone across the road and down into the other ditch. I thought I was pushing on the

brake, but I was pushing on the gas and I couldn't think straight. Off of this highway there are roads that go into people's pastures or into their fields and stuff. Well, those roads that go in, you know, you come to those going down the ditch and it ramps you up. Well, I come up on one of those and I hit it and shoot clear back up onto the highway, bounce, and still pushing on the gas, and I went, bounced on the road, and then careened off in through a fence and I still was pushing on the gas. If I wouldn't have been high centered I would have just probably kept on going. I ripped out all this fence and my headlights are shooting out across the dark and my dad could see that then, in the rearview mirror. Fortunately there wasn't a lot of traffic on that highway. So he comes back and I was, I knew I was in *big* trouble. I mean, and I was like, *oh, my gosh, I wrecked the truck, I destroyed this fence,* and I was crying. I was like, *oh, my gosh, I'm in big trouble.* My dad comes and hops out and asks me, "Are you okay? Are you okay?" "Yeah." And he's like, "Are you sure you're all right?" I said, "Yeah." And he said, "Then why are you crying?" And I said, "Because I wrecked the truck and I destroyed this fence." He goes, "That's okay. That's all right. Just as long as you're okay." He says, "Can you get back in and drive that? Let's get it back out on the road." So we did and he goes, "Well, I don't see anything wrong with the truck, I think it's okay. You just scratched it up." Of course, it was an old beat up truck anyway. He said, "Why don't you go on hunting and I'll take care of this. There are cattle in this pasture and I know whose they are. The fence is down and I've got to put it back." And I said, "No, I'll help." He would not let me stay there at all. Never even raised his voice to me at all, and that was unlike my dad. But he stayed there, fixed the fence, called the guy that owned the property, told him that he needed to get some posts and things to put in because I'd

ripped them out and broken them or bent them or whatever it was, and my dad never said another thing about that. Ever. I don't remember him ever saying anything, but yet he did that and fixed it, where a lot of people would drive through something like that, if they were able to leave, they'd just leave, and leave everything the way it was and just say I wrecked my truck, or something, and I don't want to deal with this and just go. But that's not what he would do.

BBL: That's interesting. Are your parents still alive?

JL: Yeah, he's not doing all that great, so he's getting older and having a lot of trouble. And he served, the other thing he did, he served in the military, too. So he developed some respect and how to treat people there as well and he's really big into that these days as well. That means a lot to him. But, it's funny, country and just being respectful of other people is a big deal to him.

BBL: Do your parents still live in Kansas in their original place?

JL: Yeah, uh-huh. I go back there. In fact I just got back from a trip in November. And I go back there a couple of times a year at least. I take my daughter back there because she likes it, too, and likes to go out and ride horses and just fits in a little better with, people are just…and it's changing there, too, over time. I always find it a little disappointing. I've lived here for twenty years now and in the twenty years that I've been here it's really changed a lot from what it used to be. It's kind of disappointing when I go back and fewer and fewer people are there.

It's funny how when I was growing up, there'd be these old couples I can remember, just old farming couples, and they were the nicest people. They were so good to me; they were so interested in everything that I did. I had this one couple that, they

went to our church and they always sat behind me. Another summer I went out and did, when I was doing the antelope, I did that half the summer, then the other half of the summer I released peregrine falcons and hacked those out in Montana and Washington. When I was doing it, the guy that was with me, there were just two of us, we camped out, I think it was eight weeks or ten weeks or something, solid. So there's nothing that…you might jump into the creek to wash off a little bit but the rest of the time you were just camping all on your own and taking care of these falcons. He started growing a beard and I asked, and he said, "I've never grown a beard before, I might as well do it because I'm not going to be around people at all so I can do something that's, without any repercussions or without having anybody look at me funny." I was like, huh. Well, I certainly can't grow a beard (laughs)—to this day I can't. So I thought, well, what am I going to do? And I ended up shaving my head. It started out a little kind of funny, I just thought, well, it will all grow back and I'll not worry too much about it. Well, I ended up shaving it and it was pretty bad. When I got back home, my mom, she was like, "Oh, my gosh. Really?" I was wearing a hat and she goes, "Take the hat off." So when I did, she was like, "Oh, my gosh, John. I'm getting your dad" (laughs). I was like, *oh, great*. So he comes in, takes one look at it—and I still had it shaved on the sides so it was kind of a Mohawk thing—he looked at me and he said, "I'm going to finish that off. I'm going to shave the rest of that because that's ridiculous" (laughs). My mom, we had to go into church and she goes, "What are you going to say when you see Ross and Leona Bell, when you go in today? What are they going to think?" And I thought, *oh, no*. Because they had always thought so highly of me and everything and I'm like, *oh, geez, I'm going to go in there and they are going to lose respect for me and they probably won't even talk*

to me. But I couldn't wear a hat in there, so I walk in, I sit down, and I'm just like *please make me invisible, just make me invisible.* And I feel this tap on my shoulder and Leona says, "John, if you like your hair like that, I think it's great." I looked over at my mom and she just rolled her eyes like she thought this was going to be the thing that made me… (laughs)

BBL: Knocked some sense into you (laughs).

JL: Yeah, exactly (laughs). It was such a crazy thing. That was what was always so nice, that everybody was so supportive and nice.

BBL: That's a great story. I like that.

So you came out to Utah and you stayed here, then?

JL: Yeah, well, I came out to visit, like I said, for a couple of weeks and I ended up talking to the Nature Center and the Division. I didn't really expect them to give me a job. I just sort of interviewed—not really, it was kind of informal—and the job wasn't a permanent job, it was seasonal like I said, but they said, "Yeah, just from talking with you and your background we would like to…" so I ended up coming back and moving out here.

The seasonal job with the Division ended and it was kind of funny how that worked (laughs). I was actually up at the elk trap up in Hardware and the guy that had hired me, he hardly ever saw me because I was always running around and stuff, but he happened to be up there that day and he goes, "Oh, you're still here? We ran out of money like two weeks ago." I was like "What?" (laughs). He goes, "Yeah, you won't be getting paid. I'm sorry." He goes, "You can go home if you want." I was like, "Well, I'm here." The guy that I mostly worked with was like, "Are you kidding me? He didn't tell

you anything? I don't know what's going on with the money stuff; he should have told you something."

But they ended up letting me come back. I guess I was off for like three months or something and I actually moved back to Kansas at that time and went back to farming and then I called back and they were like, "Yeah, we're hiring again." So I came back and once I got hired there, they were so appreciative of me kind of donating my time and stuff, so they worked it out so when I got done with the depredation work I started on a guzzler building project out in the West Desert, water for mostly small game guzzlers. Did that for a while and when that was getting towards the end, I came and started working on the waterfowl marshes, and actually right here at Ogden Bay. I worked here seasonal. Then an assistant job came open and I put in for that and got it and started working as an assistant superintendent for the waterfowl marshes here at Ogden Bay. There's basically just two…there's a superintendent and an assistant that work here for 20,000 acres and occasionally you get a seasonal during the summer to help you. But it's a lot of work, a lot of hard work, so I started basically permanent with the Division working on the waterfowl marsh.

And the funny thing is, in all the time that I had, I guess, thought what I wanted to do was, you know, I was going to be a conservation officer and I ended up, I actually had a chance or an interview for a job in Colorado and I'd gone through the whole thing and, like I said, I can't grow a beard, so I had this baby face—this was twenty years ago, again—but I went in, went through the interview, everything went great, I thought I had a job. Then there was a friend when I was catching antelope in Colorado, I met one of their district wildlife managers and he said, "I think you should put in for a job here. You'd

really be good at doing it. It's really diverse, I think you'd really like it." So I ended up doing that. Well, he kind of coached me through all the testing and interview process and he goes, "I've gone through this four times and it took me four times before they finally hired me. You're not going to get hired the first time because it's just really difficult." When I applied, there were eight jobs available and there were about 600 applicants. And I'm like, okay, I understand what you're saying now. He goes, "You'll just have to see how far you get." So they tested and they kicked out, I don't know, 500 of the applicants after the first test. Then the next test they knocked it down to like there were thirty people. Then they interviewed the last thirty and then they did another interview for the last, I think it was sixteen people interviewed for the last interview, and I made it all the way down there and I thought I may have it. Well, I met one of the guys on the interview panel at this district wildlife manager's house. So I go through that and he told the district wildlife manager that I nailed it: This guy was one of the best guys we had. And there are eight spots available out of…and I'm like, I probably got it. Well, went through all the interviewing and I didn't get hired and I was pretty upset about it. When I called him, he said, "Yeah, I don't know what's going on, but I'm going to find out." A couple of months later he called me and goes, "I found out why they didn't hire you." I said, "Well, what was it?" He goes, "You look too young. They don't think you would be an authority when you're checking people and asking for their licenses and things like that. He said you just don't look like you would have enough authority. You just look way too young like a kid and nobody's going to respect that." He goes, "I don't think that's right. They shouldn't have done that. I'll tell you what, though, that guy that made that decision is gone now." I was like, huh.

That was when I had started working out here and I worked out here and I ran into him later and he talked me into putting in again. But by that time I had a daughter here. I went through the interview process. Well, he had worked his way up through the system and now he was the chief and he was like, "Well, the decision's up to me, so guess what that means if you go through this." And I thought, *can I move away from my daughter and go there*? I was divorced, had my daughter and got divorced, but I decided it was probably better to stay here. So I had to call him because he was like "this is the last interview and we're going to offer you the job" and I felt really bad if they offered it to me and I turned it down. So I just called him and told him that I wasn't going to be coming in. He said, "Well, door's always open, so let us know."

So I passed up on that and ended up kind of taking a different path while I was here. It seemed like everything that I did here, I really never planned on doing or didn't technically have an interest in it. I mean, I was interested in it in general, but I was like, we didn't have a lot of waterfowl in Kansas so I come to the waterfowl marsh and I'm like, *uh, I don't know. Maybe. That sounds okay, but I'm not sure this is for me*. Well, as I started doing it, it was fun to me and it was really neat and interesting and I learned a lot from the different managers and how to manipulate the habitat to do things to aid the wildlife and it was a lot more…I didn't expect to really like it and I ended up liking it a lot. So I stuck with that for a little while. Same thing happened when…basically I did that for five or six years.

Then the avian biologist job came open for Great Salt Lake Ecosystem Program. Don Paul had been the previous avian biologist here. So I was thinking, one of the other managers said, "You should put in for that. You'd be good to do that." I thought, *gosh, do*

I want to? I really like doing this stuff. I thought, *well, I'll give it a try*. So I put in and went through the interview process and ended up getting it and I was so, I was like, is this good? Is this bad? Well, I started doing that and it was *great* and I loved doing that and coordinating all of the surveys, following up on what Don Paul had been doing. Of course, those were really big shoes to fill so that made me a little nervous, too, because everybody knows Don Paul, and he's the Great Salt Lake guru, and I thought, *gosh, how am I ever going to measure up to that*? So it was also really hard. Just constantly going and going and going. And we had all kinds of different projects going on at that time. But it was so interesting and neat that I loved doing that.

Eventually, same thing happened. The guy that was the program manager, Clay Perschon, he ends up moving to a different job and so I thought, *gosh, I don't want to have the responsibility and deal with all the administration headaches that he had to deal with as the program manager*, but I thought, *well, I'll put in for it anyway. I probably won't get it.* So I did, and the closer I got I thought, *I'm going to really try to get this job*. He was actually on the interview panel and he said I could do it. I had talked to him and he said, "I think you can handle it. I think you can do this." I wasn't really sure about it myself because I'm more of a field person, I always liked doing things in the field, which I spent almost seventy-five percent of my time out in the field as the assistant at the waterfowl marshes, or the avian positions. I was like, *well, that's going to take me away and I'm not going to like that and I'm going to have to go to meetings and deal with all this other stuff* (laughs). I thought, *oh, please, that's probably not a good thing.* But after I got into that, too—and it took a little bit of getting used to—but I started to really like

that as well because I was able to have a pretty good hand in a lot of things that are going on around the Lake and also coordinating all the research with our program.

So it was really what I went to school for. I mean, it was actual biology. It wasn't…you know, to an extent, there's a putting out fires type of part to it, but it wasn't as extensive as most of the other portions of the Division of Wildlife, where they're always dealing with complaints and headaches and things like that. Mostly instead of researching or doing actual biology on wildlife, you're dealing with people. This was a little ahead of the curve as far as that kind of thing goes. So it was more proactive instead of reactive to a problem. Here, we were ahead of that and mostly because this program, there's none other like it in the world and certainly at that time, at the very beginning, when anybody did a literature search on managing saline lakes or a brine shrimp fishery, there was nothing. There was no information. So this was completely new, which also made it difficult at the time because if it's brand new and nobody knows anything about it, anybody can say anything, and it might be right. So there had to be a point where you started and started to get some information, get some data, find where you're actually at, and then see how to manage it, which, you know, something brand new like that, anything goes.

But with that, there was some good fortune in getting some really brilliant guys to come in and probably not least of which was Gary Belovsky, who actually is, he started out at USU and has since gone to Notre Dame, but fortunately he remained on the program. I think in the early 2000s he ended up going to Notre Dame, a fairly prestigious school as well. He has just been the foundation for this program because all of our research is based on his model that we now manage. So it has been so fortunate that we

happened to get him on our program and then not only that but have him stay. I fear that if he ever leaves we'll be in big trouble, but at least he's made it this far. I've been telling him that if he is thinking of leaving that he has to give me a warning and hopefully I'm within range of retirement (laughs).

BBL: What year was it that you assumed the director position?

JL: I think it was 2007. And I had just finished…part of how I remember that is we had a student here, his name was Josh Vest and he works for Intermountain West Joint Venture now and he was the one that was doing, as I was the avian biologist, I had to coordinate with him on his research. We found out so many interesting things with his research and he was such a dedicated hardworking person. I guess that's the other thing, working here, it reminds me a lot of growing up because the people that I run across are the most dedicated, loyal and just really good people that are genuinely interested in making sure that they preserve what is here, just like what my dad and what my grandpa did.

BBL: Yeah, that same sense of stewardship.

JL: Absolutely. And the people that I run into, like folks from Friends of Great Salt Lake or any of the Audubon folks that just really want to maintain and keep this resource available for future generations, I get to interact with a lot. Not to mention the folks that I actually have working for me, the biologists, and we've had a few come through and go, but they've all been really, really good. And they have that kind of mentality and you'll be able to talk with them here in a little bit, but they all have been just absolutely great. One thing that Don Paul said to me one time that I always remembered, he says, the way to do well is surround yourself with good people because that makes you look a lot better

than you are (laughs). And that's absolutely great advice and what I've done because the biologists that I have working here are probably all smarter than I am and all better at a lot of things than I am and that's what great about having them. And not only that, but they're diverse enough that they're not all talented in one area. They have expertise all the way around, which makes me look good a lot of times, which is awesome (laughs).

BBL: Nice.

Tell me about the Great Salt Lake Ecosystem Program.

JL: Yeah, like I said, the Ecosystem Program has about, has been in place about the same time that I've been here in Utah, although I've only been on it for, I guess, going on close to, well, a little over ten years now, so I missed the first half of it. But it was started because the demand for brine shrimp eggs got high enough that it was getting really competitive and they decided that they didn't want to have what happens to a lot of other fisheries where they're overharvested or exploited to a point where they're just destroyed. So the fear was that if they didn't get a handle on it soon enough, that's exactly what was going to happen. Not only that, brine shrimp would be one thing, but that's what a lot of these birds are going to be coming to Great Salt Lake for is the food source. Well, what if there isn't a food source out there. So that fear kind of made, or brought forth the need for a program that would help manage it and get an understanding of what's going on out here.

So, like I said, there were some folks from USGS, Doyle Stevens and a couple of guys that worked for the Division early on kind of started taking different measurements out on the Lake, sampling different sites. It wasn't a very big program to start off with; I think there were only two guys on it at the very beginning, Paul Birdsey and Clay

Perschon were the two guys I think basically started and then Don Paul came along shortly thereafter. But they capped the number of licenses, or CORs, which are essentially a license for harvesting brine shrimp, at seventy-nine. Everybody always wonders why is it seventy-nine? Why not eighty? Why not seventy-five? Why not a round number? But there was basically…what they decided to do is we need to cap it, but whoever's in it now can be in it, so they grandfathered whoever had permits at the time in, so that's why it sits at an odd number of CORs.

That's basically what pays for our program. It pays our salaries, it pays for all of our equipment, it pays for our sampling that we do out on the Lake that gives us an idea of what is going on with, for the most part, the brine shrimp fishery, and then all the other different aspects with the ecosystem that we're looking at, like birds or algae or benthic communities.

BBL: What was the last thing you said?

JL: The benthic communities, which is, it's like the stromatolites or bioherms that form on the lakebed that provide also some habitat for not only brine shrimp but brine flies, which is the other major zooplankton component that feeds all the birds that migrate through here, or a lot of the birds that migrate through here. So, really, it was, it would be interesting to talk to Gary Belovsky because he was around kind of at the beginning. Wayne Wurtsbaugh did some of the initial work that was started back when you didn't even know what we were doing. We kind of went off of what USGS, their sampling sites. We expanded the number of sampling sites that we do.

Basically, our program, how it is designed is we sample, and you'll get this from the other biologists, I'm sure, because they're the ones out on the Lake doing the

sampling, but we take a vertical profile net haul through the water column and from that we take different aliquots from that sample to determine what, how much of each brine shrimp life stage is in the water column per liter of lake water. That, essentially, drives how we manage the Lake. So Gary Belovsky basically did some back-of-the-envelope calculations early on when somebody called and said, "Hey, we need to know what is the cutoff." He had had very little data, but some data to kind of go on, and he originally set the limit that the brine shrimp harvest would be limited to twenty-one cysts per liter. So once we reached that threshold, we would want to shut the season down.

So according to his model, and it's hard to describe the model because there's the ability to under harvest or over harvest, which is a little counter-intuitive, but with the brine shrimp, all of the brine shrimp die every year, they freeze to death out in the Lake, so the only thing that's left is the brine shrimp cysts. So there's typically a fair amount of data that we can pull from that can tell us where the optimal point will be when you go into the spring for the hatch, what will maximize the productivity for the following fall, which is what the brine shrimpers are interested in, but it is actually mutually beneficial to the birds that utilize the brine shrimp because your production is higher if you hit close to that threshold. There's a curve at the model that Gary uses that shows that—and it's a fairly steep curve—if you hit on either side of that twenty-one cysts per liter, then it drops off considerably. So you want to try to get there as close as you possibly can to maximize productivity here at the Lake. So that's been probably the biggest thing that we learned with this program and it was just fortunate that we came up with a number that was pretty accurate. I think throughout the length of this program he's figured out now that it's about twenty-three-point-nine cysts per liter, so in kind of coming up with twenty-one, it

was pretty close to that. And the more data that we collect each year, it will refine the model. So that's been, I think that's one of the success stories with this program is it's worked.

Not only that, I kind of mentioned that when there was no data here early on—because there was no data, anybody could say anything they wanted and they might be right—well, there used to be a lot of opinions and a lot of arguments on how to manage this fishery. In fact, they said, well, we could harvest everything and then you could take brine shrimp cysts and fly over the Lake and reseed it. That was one of the suggestions, which is not a very good way, smart way of doing things (laughs). But nobody knew.

BBL: You couldn't refute it.

JL: Yeah, right. And there are probably a lot of opinions and theories that came and went over the years. That's just one that I can remember. You'd have to talk to some of the guys that began the program that have all of those stories. It was really contentious early on. Not only was it contentious in meetings and for management, but it was contentious out on the Lake. When you're talking about making money off of this stuff, there's going to be people that fight and will intend to do bodily harm to certain people just to get their share of it.

Originally, the brine shrimp were just like what you see in the back of magazines or comic books, the sea monkeys, and that's what they were to start with back in the '60s and '70s. As time went on, they started using them for feeding aquarium fish and that was their purpose, until they started to develop these aquaculture industries primarily over in Asia and South America where they consume a lot more fish or shrimp. That's what brine shrimp are for; they're a food source for small larval stages of table shrimp or finfish that

people will consume. So instead of going out into the ocean and harvesting wild shrimp they'll grow them in something similar to what the mineral evaporation ponds look like. There will be these big ponds, but instead they're growing shrimp and feeding. Or they'll be in raceways like our hatcheries or something, but they'll just grow shrimp there that we would eat once they mature and everything. I think now it seems like I saw something that said that about half of the shrimp that is consumed in the world comes from aquaculture and the other half is wild caught shrimp and I think it's starting to shift over to where it's even higher now, the shrimp that are raised. So the demand for brine shrimp has increased. Now there are other places; it used to be Great Salt Lake was the only game pretty much in the world. Now there are other lakes, primarily over in Russia or Kazakhstan that have lakes that they can raise brine shrimp out of and supply, kind of take part of the market away of Great Salt Lake. But it's still a huge player in the worldwide market and usually no less than thirty percent and maybe upwards to fifty or sixty percent. It used to be that they were eighty or ninety percent, covered that much of the worldwide demand. But, obviously, as that industry, the aquaculture industry has grown, so has people's ability to find ways to utilize different lakes around the world for that kind of stuff.

BBL: That's interesting. So that was the origin of starting this whole program, and you say that is still funded wholly by these fees or licenses.

JL: Yeah. Our entire program is funded by the brine shrimp industry and that COR fee that they pay. Not only that, they also pay a royalty tax on what they do harvest out here. That, it's not very much, it's based off of a raw weight that they harvest, so it's not all marketable product that that's based off of. A raw weight that's pulled off of the Lake,

so that could include water weight, sand, feathers, whatever they are pulling out of the Lake before they actually process it and break it down to just brine shrimp cysts. But they pay three, I believe, three-and-three-quarter cents per pound of raw weight. So that doesn't sound like a lot until like last year, they harvested 32 million pounds. Well, that's a significant amount. So they pay that and what that money goes to is what the Division, or a lot of it goes to the Endangered Species Mitigation Fund or for the most part the Division of Wildlife is funded by license dollars, so hunting and fishing. Some of those animals that we, or a lot of the wildlife that we manage or have responsibility for are not hunted or fished. So prairie dogs or a lot of the endangered fish or something. Well, because there isn't any money from license dollars for that, they need a source of income and this is what a lot of that royalty tax money goes to.

For me, I know it's a little, I'm always competitive on almost everything, so I want to see the most, which probably goes really well with the industry because they want to harvest the most they possibly can, too, but I want to see the highest amount harvested out on the Lake. To me that means that the resource is doing really well. Back when the program started, I actually wanted to try to take a look at the first ten years of the program versus the last ten years and see what the average harvest was during those timeframes just to see if we're getting better at what we're doing. To me I think we are because we had these record harvests, one right after the other. Early on, there were some years that they didn't, they harvested 5 million pounds or around 10 million pounds, and like I said, last year it's 32 million pounds and this year we're already over 20 million pounds and still got a month and a half of the season to go. So it's, to me, it seems like

whatever we're doing is right and it makes sense, which gives you a sense of satisfaction and kind of gets me excited that we are making a difference and it's positive.

BBL: Right. That's it's being managed well, for sure.

JL: Well, I would hope so.

BBL: Well, that's the message I would get.

So it looked like on your website, unless this had to do with the whole, outside of just your organization, but brine shrimp, brine flies, birds and bison. Do you manage bison?

JL: No, we don't manage the bison. I think that's probably put on there because that's such a high profile animal. That's done by the Parks and Recreation out at Antelope Island, because that's entirely a park so we don't have anything to do with the bison.

BBL: So what you said was birds, algae, brine flies, the brine shrimp, and the bioherms.

JL: Yeah, and it really is just the overall, I guess, the water resource of the Lake and everything within it, nutrients, algae, and there's different…I guess I wouldn't say manage some of those things, but at least try to understand what those components do as far as the Lake is concerned. Different nutrients are going to do different things to the algae population. Salinity is going to change based on lake elevation, which will also change the chemistry of the Lake and turn the phytoplankton or the algae is going to respond to that as well. So we monitor all those things. I know it sounds fairly simple and straightforward, *oh, we just manage the brine shrimp,* that's the basic answer for our program. But there's a lot of different other aspects that we have to track to understand what the brine shrimp are doing.

You've got two, essentially you have four distinct ecological units within the Great Salt Lake and all of those units are separated by a man-made causeway. So you have Farmington Bay, which is separated by an automobile causeway. Right adjacent to that you have Gilbert Bay. And then Gilbert Bay is separated from Bear River Bay and Gunnison Bay by a railroad causeway. So because of that, each one of those different bays, essentially the reason they're distinct is based off of the different salinities in those areas. So typically Bear River Bay would be the freshest bay of those four. Then you have Farmington Bay, which is usually three or five percent, more like an ocean salinity. Then Gilbert Bay which is where most of, or if not all of the brine shrimp harvest takes place. Gilbert Bay typically hangs around thirteen to seventeen percent, that's probably around the average, but it can fluctuate up and down as well, depending on lake elevation. Then Gunnison Bay, or the north arm of the Lake, is completely saturated and it's at twenty-seven percent salinity and the salt precipitates out of the area over there. Not only that, then you have what has occurred in the south arm of the Lake where there's a deep brine layer that has flowed through the causeway and there's a chemocline within the water column that was developed because of that deep brine layer. Currently we don't have a deep brine layer in most of Gilbert Bay just because the elevation of the Lake has gone down and it's essentially been stirred up and mixed into the upper epilimnion of the south arm, so it's more or less disappeared. But that also plays a huge part in what, that's an anoxic layer in the south arm and there's, in fact, you can see pictures of where that is. There's nothing that really survives. There's no dissolved oxygen in that layer. So the question has always been, well, if stuff goes down in there, does it come back out? And does it still contribute to the population? So if you lose cysts

or eggs down in that layer, do they ever come back and are they able to contribute to the population at all? That's just one of the questions that we're trying to figure out.

Then, of course, the bioherms also play a huge part for brine flies. Their larval stage they attach to those structures because they can't really attach to sand or mud or anything else. So their survival is a lot better on those bioherm structures. Well, in the north arm, there essentially are no bioherms anymore because they're covered in salt, so they're basically dead. They're a calcium carbonate structure, they're essentially a coral, and Rob Baskin has done a lot of research on those and got his PhD on that, actually, so he has a lot more knowledge of both the extent and the importance of those. We're barely getting into doing our own research on those structures to find out their importance for the Lake.

BBL: So am I understanding this right: you're monitoring and researching and looking at every factor in the Lake that affects the brine shrimp. Is that right? Does it come back finally to the brine shrimp?

JL: Basically, yeah. And as you would expect, all of our money comes from the brine shrimpers, so pretty much most if not all of our money is focused towards brine shrimp. But that really, and I think they understand it, like I said, early on, probably, there was a little bit of pushback when we wanted to look at birds or bioherms or brine flies or anything. Well, nobody wants to pay money for that stuff. You're not making any money off of it. But after the data that we've collected, all the research that we've done, and it shows that these other factors all contribute to the entire ecosystem and the health of the brine shrimp fishery, then it's become much more, I don't know, it's made it so they, the

brine shrimp industry, understands that all these things are working together and the health of all of them are…

BBL: They're interconnected.

JL: Exactly.

BBL: So in the end, what's good for the algae and for the brine flies and everything that you're looking at and monitoring and studying, is good for the brine shrimpers, too.

JL: Absolutely. And they get that. They understand that.

BBL: I see. So if you see if there's a problem with the algae, does your organization have power—I don't know if power is the word I'm looking for—but do you have authority then to make changes or to do something that affects the…

JL: Well, and I guess, you know, that's a difficult question because a lot of what we do is monitor and track so we can understand what's going on out there. Some of the changes that we've noticed over time is that the algal community has changed at certain timeframes. If you look at Gary Belovsky's research, it shows there's typically three main algaes out there: diatoms, Dunaliella is probably the algae that the shrimp do the best on as far as graduating them to the next life stage as well as healthy in each one of the life stages. Then there's Coccochloris, which is cyanobacteria that they also do really well on, but only certain life stages do well on. So at different times of their growth, they need, and the diatoms for the most part that are out in the Lake, none of the brine shrimp do very well on those. So if your algal community contains a lot of diatoms, you're going to see a pretty low production, which in the early years there was a period of time when that occurred. So what happened during that time that made that algal community change

primarily to diatoms? Well, that is something that we're trying to find out or what we're trying to understand.

So measuring inflows of nutrients coming into the Lake, measuring the nutrients within the Lake, within the deep brine layer, within the epilimnion of the Lake, is something that needs to occur perpetually as we go through each year and during different times of the year. So we don't just sample during the brine shrimp season. We don't just go out there and that's the only time that we're doing our lake sampling. We do it throughout the year so we can understand what's going on in the times that there isn't a harvest. What is causing the brine shrimp population to go up or down, so we measure the brine shrimp population throughout the year so we know how well it's responding. And it does change every year. You'll see spikes in nauplii, which are the smallest life stage after brine shrimp hatch, up to juveniles and up to adults. So we try to track over time if there's big spikes or if there's a drop over a twenty-year data set, you have an average that it will follow. So are you hitting, or have things shifted maybe with climate change, is there a shift in how late these brine shrimp live throughout the winter, or are they hatching sooner, or are they hatching later. Whatever it is. There's a lot of different parameters that we look at throughout the year. Although it sounds, I mean, twenty years is a pretty good dataset, but then again, it's just basically, on some things that you're looking at, it's twenty points. Well, forty points would be…but then you're looking at forty years. So it just takes a lot of time.

Obviously there's patterns that develop. But then there's some things that we see as we're doing our research that you just go, well, I don't know how to explain this. At that point, you might have a theory or you might have an idea of why something

happened, why there was a spike in this particular algae, or why the brine shrimp all died at this time, or something, but you have to have that information to try to tease that out and sometimes it's things that we don't even see, but we might see it ten years from now and then understand it and then be able to make changes.

Obviously, you know, as certain things happen around the Lake, if there's…and for the most part the thing that we don't have a lot of control over is the lake elevation. And not to say that there's an ideal elevation that we would want to keep it at because that's what makes the Lake so unique and so important is the dynamics of it shifting and it's highly transitory shoreline that makes it so it exposes different areas and provides more habitat for birds. The same thing occurs within the Lake with the brine shrimp. As the lake elevation changes it helps some of the bioherms to grow better in certain areas because it depends on the sunlight that reaches them and they've got to be covered by some water to live; if they're out of the water they obviously just crumble up and are gone. So there's a break over point probably that we would be really concerned about that if the Lake gets too low we're really going to be struggling. It may concentrate contaminants more or it may take away the deep brine layer. Is that good or is that bad? Is cutting a hole in the railroad causeway good or is it bad? Everybody thinks that once, if you just connected the north arm to the south arm it would all mix up perfectly and we'd reach an equilibrium, but there's been models that have said that if that breech wasn't there, the brine shrimp would have all disappeared during certain times, or years in the past. So maybe it's actually a good thing. Nobody really knows for sure.

But each year when we see certain things. In fact, one of the last things that we have been seeing is there's another algae that has only showed up in the last three years

and it's called *Euglena* and nobody knows where it's coming from and why it's there and what its effect will be. But it's slowly taking a little bit more of a percentage of what algae, or phytoplankton regime, it's taken a higher percentage of it in the last few years. One reason that it's concerning is it's new and can the brine shrimp eat it? We don't know. We will have to do experiments to find out if it is a source of food for them and how well would they do on it. So that comes as one. But it's also, *Euglena* consumes other algaes. So will it be a competitor? So we don't know if it will do that as well, or if the numbers are just so low it won't have an impact. Or is it limited to certain inflows around the Lake? So we take samples all around the Lake to find out where those things are occurring.

Gary's done all kinds of, and I can take you back to the lab to show you some of the experiments that we're working on. But over time we've looked at brine shrimp of different life stages feeding on monocultures of specific algaes to see how well they do on each one. Or if they're just surviving or are they really actually prospering by eating a certain algae. Or is there a certain life stage that they go to the next algae at that you would want. Are there ways to manipulate that? Do we need more nitrogen in the Lake? Or is there nothing that we can do and are we just observing it? Or can we at least predict what's going to happen so we are aware of it, I guess, then would possibly manage for that. Would we cut the brine shrimp season off before it even starts just because of some of those things?

As those things come up or any of the issues come about, it makes me more nervous that we're getting into the reactive portion of wildlife management rather than the proactive like we have been. So when they start talking about Bear River diversions

or something like that, then I'm really nervous about what that means to the Lake. Is that going to have an impact to where we're going to lose even more water? Or how is climate change going to make it, are we going to get more water, less water, not enough snowpack? How is that going to affect the Lake as a whole? And I don't want it to become something like the Aral Sea and I don't think anybody does. So to make sure that people are aware of that, but if you don't have any information or data that supports any of that, just saying it isn't going to, "well, we need more water," "why?" But if you have the information to back that up, and that's what our program does, not only for the brine shrimp and the algae and the nutrients and the water chemistry and the salinity and the birds, we have information that is accumulated over time that we can actually draw from and give to people that have these questions. Or, we can at least decide that we're missing this, we need to start looking at things here or there or this parameter or that and at least we have a pretty good, if not, overall dataset, for sure a baseline to go off of.

BBL: As you were talking I was thinking one question I had was do you think you ever really have this lake figured out, but it sounds like there are so many variables and things that are changing all the time and new inputs and outgoes and all, that you probably can't ever definitively say, well, we've got it. We know we have to always do this to do that, because it's always changing.

JL: Yeah. You know when I first started on this I thought how much can you get out of this lake? How much can you learn? And isn't it pretty simple? Isn't it just pretty basic? How much work would you have to do? And the more I have worked on this, the less it seems that we know and the more questions that come up. And how to get to some of those questions seems to be the difficult part.

You look at some of the things that we're trying to figure out, and especially, I'll just give you an example of one thing that has really plagued us over the last couple of years, and it's again a new observation that we hadn't ever noticed in previous years. When we had the deep brine layer, we started noticing that the cysts would start to settle and sit right on the deep brine layer. We were trying to figure out why is that happening and why have we never seen it? The only reason that we had, Jim had actually noticed on sonar that there was a big, it showed that there was something sitting there above the bottom of the Lake. Well, to test that, we started doing a sample of pulling a net throughout the water column, so we would drop it down based off of what we're seeing on the sonar and Kemmerer sampler, which we did, and take a water sample at a specific depth. We figured out where the deep brine layer was, then we would lower a net to above it, which is most of the water column, and pull it through up and take a sample from that, and then we would drop it to the bottom and pull a sample from the bottom. So we noticed that when we did it above that deep brine layer, we had samples that had a hundred cysts in it or something like that. Well, when we pulled it through the deep brine layer, we had samples of 20,000 cysts. So there's a huge difference there. Well, that's unavailable to be harvested; it's sitting down on the bottom so you can't harvest that. Well, does it ever come back up? Does it ever get to where it's on the surface where they can actually harvest it? Does it sit down there and do those cysts degrade and then not even contribute to the system? Do they just erode away and dissolve and disappear? Or are they stirred up and then are available the following year for hatching out and building the population? Well, it seemed like there were, as we started trying to test that according to Gary's model, when it would sit on that deep brine layer, it wasn't, if it got mixed into

the deep brine layer, then it wasn't contributing the following year. Well, if you're doing all of your net tows through that and you're using that as part of your management, that's a different number than you'd be getting if you were not pulling it through there. So basically we had to change our strategy a little bit, or at least how he calculates his model. Well, we're trying to figure out in the lab exactly what is happening there. It's kind of hard to do because the Lake, putting the mesocosm in the lab is obviously going to be a little different than actual lake conditions. So how to you mimic a wind event in the lab? How would you do that? Or how do you get the deep brine layer water in there? How do you take samples? So those are some of the thing that we're working on that I don't know if anybody's ever done.

So as you learn more it seems like we find out we know less. And it's hard sometimes to learn some of those things that are done throughout the water column because sometimes you think, well, are these cysts, are they from a hundred years ago or are they from this year? How do you know that? How do you track that kind of thing? There are, core samples have been taken where they will hatch brine shrimp eggs that were a couple hundred years old. So it's possible that they could be in there. Are they in the mud? Are they up on the beach flowing back in? I mean, there's a million different things, possibilities, that you'd have to…like you said, there are enough variables that you can't tell everything for sure.

It's a hard thing to get an accurate count, but that even has been refined over the years and now I manage based off of things that we've learned within just our sampling, which I think has made the industry happier because we used to go just based off of numbers that we pulled out of the Lake. Well, now we know a little bit more about it. If

you have a hundred cysts per liter one week and you have ten next week, something there isn't right. It's the number that we got, but somewhere in there something happened. And what was it? Well, we're kind of figuring out that when the Lake gets stirred up a little bit more, it becomes a little more homogenous rather than when you've had days of calm weather. We've shown that in the lab, where even cysts from one brine shrimp female will separate and some will stay in the water column, some will float and some will sink. So why is that? Are they hedging their bet as far as having, based off of what salinity they hatched in, to maybe what if it changes one or the other, they'll have some young that survive depending on…I don't know what that is either. But those are the shifts. Are we harvesting too many of the floating cysts because that's where they take them off of and now we're developing entire populations of sinking cyst females because those are the only ones that survive?

So all those questions are things that we're trying to figure out, just so we can make sure that we're doing the right things out on the Lake. Some of the simplest things can be so complicated to get the answers to and that's the really cool part, that's the exciting part, is we're not close to answering all the questions, but we are getting much better and refined all of our research to an extent that it makes it really cool because we have answers and things work out and they're following the model like Gary predicted. That's the really interesting and cool part. For the most part it's working, but there's still a lot to be learned.

BBL: Right. So I can see when you were talking about making the change from really interfacing a lot with people, the public, to doing this more administrative job, how intellectually stimulating this kind of work is for you, it sounds like.

JL: Yes, and that's, like I said, I was telling my daughter the other day, she said something, because she's in high school and getting to the age where people are asking her "what do you want to do for your career?" "What do you want to do when you grow up" as a job, and that's actually been driving her nuts. She even said, "Dad, I thought of a good idea for a haunted house. It's only for high school kids, juniors and seniors. What you do is have a bunch of adults in the house and then you have the juniors and seniors walk through and have the adults, they just shout, 'What do you want to do for a living!' 'What do you want to do as a job?' 'What do you want to do for a career?' because she's so stressed about it that she's afraid of picking the wrong thing or doesn't know what the answer is. I said, "Do you think when I was going to school at Kansas State that I said, 'You know what I want to do is I want to be the brine shrimp biologist on the Great Salt Lake'?" I'd never even heard of a brine shrimp, I didn't know that there was such a thing, and even when I moved out here. So I never went to school with that in mind; it just happened. The thing is, is do I regret it or am I disappointed? No! I'm excited about it. It is really cool, and I wouldn't trade it for anything. I'm happy that I ended up doing this. Whether or not it was because somebody else didn't want to do it (laughs), it is really cool.

Obviously, most kids that get in, you're thinking about a career and you're thinking about it in wildlife, your mind goes to bears or elk or moose or cougar or something like that. Nobody thinks brine shrimp when they're thinking that, and I certainly didn't, but the weird thing is, you can probably tell, I get really excited about it and passionate about it and want to talk about how our program is managed and how all the different components to doing it is done by really good people, it just really gets me

excited because it's something that to me is working. I've even had people say a lot of places around the world want to model what they're doing after what you do because it is working and because it has grown and done nothing but increase the production on the Lake. Even though the Lake is shrinking we're still having good harvests, but that's because of how it's managed, at least in my opinion again (laughs). But to me that's why I feel, and when I said I was competitive, it's more, I don't know if I'm competitive against anyone, it's more I want to do the right thing and see the results as positive or getting better or as understanding things to where, look, it is working and it makes me excited to see that actually come to fruition. And it's all based off of work that was done prior to me and work that we're doing now. We've learned a lot from all of that so it's, to me, just exciting and really cool. I don't know that you can do that in some of the jobs dealing with bears because you have interactions with people that you have to deal with. Here, it's harvesters and inputs into the Lake that you…to an extent, you have a way of controlling it. Like I said, I'm getting a little more nervous as time goes on that as the population grows, where's the water going to come from because we're going to have a higher demand for water along the Front. Hopefully it will still make it to the Lake and there will still be a fishery because, not only the brine shrimp, but the birds depend on it as well.

BBL: I have a just a couple more questions I want to ask you. You obviously work with the brine shrimpers. Tell me some of the other organizations or groups or stakeholders that you work with on a regular basis.

JL: Yeah, I, of course, work with Forestry, Fire and State Lands because they own the lakebed and they're also responsible for all of the leases that are granted out on the Lake,

whether it be for leases at the harbors or the brine shrimpers to be able to stage out of these different harbors, or they also lease to the mineral extraction companies. So if they have questions as far as what impacts a specific lease or how many acre-feet of water that they're going to be using for the Lake, or for that particular extraction, they would contact me. We have, like I said, I mentioned Gary Belovsky working at Notre Dame. We have three different contracted researchers that we deal specifically with. Gary is one of them and he has developed our model and then he does a lot of in-lab research because he has a much larger and good facility to do a lot of the research that we need to know about the brine shrimp, in particular.

Then we also contract with USGS and they measure and do most of the work with the nutrients, or the nutrient inputs or nutrient analysis that we sample out on the Lake. They also track the deep, or we've had them, we've contracted them to track the deep brine layer or the lack thereof, as well as other parameters throughout the water column as far as temperature, wind direction, there's a bunch of different things that they look at and we've paid for them to put these devices out on the Lake so we can track that on a continuous basis and try to understand what's going on prior to this breach in the railroad causeway and then after and see what happens. So we work with them.

And that, to a certain extent, we talk to folks at the railroad, Corps of Engineers, the mineral extraction companies themselves will also, we work with them. I think over time it's interesting to see how everybody really has started to try to work together a lot more than it has been in the past where I think it was more on opposite ends of the table. But we understand that there's obviously a need for these other industries, not particularly wildlife, but ultimately if there was no need, obviously, there wouldn't be a

company out there doing that stuff. So there's a lot more compromises these days than there used to be, from what I understand. So we work with those.

Then our last contract that we have is with USU and that's with the bird research, the avian research that we do. We've managed to put, I think we're working on our fourth PhD student right now. The first one looked at eared grebes out on the Lake. Then the next one worked on Goldeneye, the next one was Shoveler and teal and now we've got one that's working on phalaropes, primarily. And we've learned a lot from the avian research that has been developed by USU.

And those are just the contracted researchers. If there's ever anything that happens out on the Lake research-wise, we probably have some part in it. So Scripps Institute came out here to look at the bottom of the Lake to try to see why there were certain structures and kind of look a little bit about what was going on with the bioherms and what structures were out there, but they had to have us help them to go out there. The University of Utah, we're working with them on a fairly continuous basis looking at mercury in the deep brine layer or in the sediments of the Lake and they have us take them. In fact, I think they went out with us yesterday, or went out with Jim yesterday to get some samples for some research. Of course, Audubon and Friends of Great Salt Lake always contact us when there's an issue around the Lake to get our opinions as far as what concerns there would be with wildlife or what information we have in that particular area as far as surveys or something goes, we usually have quite a bit of data. So we work, or at least provide information to them. I think every one of the universities. We have one professor at Weber State that sits on our technical advisory group. We have another professor from Westminster that sits on our technical advisory group. Then, of course,

DEQ or water quality, constantly working with those folks, too, just because of the concerns with inputs into the Lake. So it's a fairly diverse group. Probably any interested group that you could think of that has some part in the Lake we have a relationship with.

BBL: I would imagine so.

You said that taking this job as the new director changed the amount of time you were out on the Lake and actually doing fieldwork. So do you get out much on the Lake anymore?

JL: Yeah, and I try to get out as…if I can get caught up with things that aren't really driving me crazy as far as paperwork and admin things are concerned. If I can get out and do a survey, the good part is, again, with the guys that I've got working here, we cover for each other when somebody's going to be gone or something. So if, when we start to get spread thin with the different research projects that we're involved in, we'll typically, and that includes myself, I'll go out and help with them out in the field, which is usually pretty nice. So occasionally I'll get out on the boat or the airboat. The one thing that I do that most of the guys here don't like doing is fly; I fly over the Lake a couple of times a week.

BBL: Really? A couple of times a week?

JL: Uh-huh, during the season I do. Then I fly, when John does his avian surveys, I'm usually the other person. So I do, I probably fly more than any of these other guys. Some of them don't like it; some of them get sick in a little plane, so that's probably good.

BBL: Do you have a particular place on the Lake that you like?

JL: You know, and I wouldn't say just one, but there are several places that are really neat to me. One is right here, because when I first started permanent, I worked at Ogden

Bay. Now this is, we're on the waterfowl management area, which is interesting when people come in here. This looks like the most official building, so everybody who has a question about waterfowl or this area comes here. Fortunately I worked here for five years, so I know most of the answers to their questions. So I really, I have a lot of memories around here, not a specific spot, but just areas around here because I spent a lot of time and I came across some really interesting things. I flashback to some of those memories.

Another place that is really unique and I guess I'm fortunate enough to be able to get there is Gunnison Island. So every year, or recently—and there was a time that we weren't even able to go out to Gunnison Island; we just didn't have access out there, or access to the road to get to the boat launch out there. So now we do have an agreement to do that, so we go out and band the pelicans and usually do that two or three times a year. It's pretty…you know, you get out there and it's incredible because you don't hear anything, you don't hear any sounds of…

BBL: Civilization.

JL: Exactly. But then you think there are a million people right over there, yet there's nobody here and it's quiet. Then just to sit on an area or a place up on Gunnison Island where you know the Stansbury expedition placed these rocks up there, well over a century ago. It's just interesting as you see pelicans come across the Lake in a formation and it's just a little thin white line and then it just gets bigger and bigger. Then they get to you and they just break up and go to their specific spots where their young are. That's pretty…it's really surreal to be a part of that. So that's another spot that really sticks out as far as memories for me. And not a lot of people can say they've been to Gunnison

Island or get to go to Gunnison Island. So you feel like you're one of a handful of people ever to set foot there.

BBL: Right. That's cool.

Well, this has been fascinating. I hate to end this. I think I could just keep going on, but I'll probably end for today anyway. Is there anything else you want to add at this point?

JL: No, I'm glad, and I probably rambled on about a lot of stuff that was not of particular interest.

BBL: Oh, no. Not at all.

JL: If there's anything that you can think of that you want to add or something, I don't know, if there's certain aspects that I didn't clarify or anything, I'd be happy to sit down again and cover that. That might be easier to focus on a couple things rather than me just rambling on for, gosh, a couple of hours it seems like (laughs).

BBL: This has been interesting. I've really enjoyed hearing you speak and what you have to say, so that's very good. Thank you. I'll go ahead and stop for today.

JL: All right.

END OF INTERVIEW