

`18File 1

00:00

(This is Nancy Freeman, and I'm doing an interview with Sam Linhart [Note: Samuel B Linhart]. You spell that L-i-n-h-a-r-t. It is October 20th, 2005, and this is CD 1 of the interview.)

00:19

(Sam, tell me about your educational background.)

Well, I, uh, I got an undergraduate degree at the University of Pittsburg in zoology, of all things, and even in those days, one could hardly get a job with a bachelor's degree in zoology. So then when I—I was two years in the army, and then when I got out, it was really my first full-time job with the Conservation Department in New York. I was able to go part-time to Cornell and got my master's there in wildlife management in—I don't know when that was, probably about '61 or somethin' like that.

01:04

(OK. Where did you grow up?)

Well, I grew up mainly in, uh, Pennsylvania and a little bit New Jersey and then in Nebraska. My father had a wartime job in Nebraska, in the Second World War, and then we came back East after that. So it was just mainly in the Northeast, basically, with several years in Nebraska.

(Did you grow up trapping and hunting and fishing?)

No, I was a suburban [sic] boy.

(Really?)

So—I mean, I did fish. My grandfather taught me how to fish, but I didn't even know what alfalfa looked like until I was about 20 years old. [laughs] So I was a real—we always lived kind of on the outskirts of large cities. So I didn't have a really outdoor or anything to do with traps or trapping at that point.

01:52

(How'd you get into wildlife work, then?)

Uh...well, I guess mainly through interest. I mean, I did a lot of outdoor activities, hiking and so forth, when I was young, but I just decided I was interested in it. And then when I got that job with—probably what decided it was, when I got the job with the Conservation Department in New York, and bein' around other wildlife people, it's got me, and realizin' I—even back in those days, it helped to have a master's degree. And so I went—I lived near Ithaca when I was working for the Department, so I was able to take a class or two every semester there.

(You just mentioned that you worked for the Conservation Department of New York. Tell me a little bit more about your work history, like, how long were you with them?)

I was there seven years. What it was, it was—they had a rabies outbreak in foxes, primarily red, but I think also gray foxes, back in the late '40s. I guess public pressure and the health

implications, with people being bitten and so forth, is, they wanted to try to reduce the magnitude of the problem. And in New York state the use of population reduction methods by use of toxic methods or somethin', even in those days that just was—I think they would have had to change the state legislation. So really the only option they had, at that time at least, was to try and reduce fox populations by use of professional trappers, which were actually state employees which worked seasonally, because the winters there were so harsh they couldn't really be effective. So that's—I was—someone else had that program, and when he took another job and I was looking for a job, tryin' to get a job at the time, they hired me to run that trapping program, and that's really when I first start—had any association with trappers. Some of these fellows were very good. Some of 'em were older men, some had been—were veterans of the Second World War, and some had even trapped back in the late '30s, when long-haired furs were popular. I don't know if you remember, but back in the '30s a lot of women had those fox stoles, you know, silver foxes and so forth.

04:28

So they had a lot of experience, and of course I learned a lot from those people, 'cause I didn't know the first thing about traps or trapping. But it was seven years supervising those fellows, and I would go out with them quite often, two, a couple, three times a week, and then I did all the paperwork and went to the meetings and so forth. That was an early educational experience for me, working with those fellows. They were real nice, considerin' they had a 24-, 25-year-old boss that knew nothin' about trapping or traps! [laughs]

05:10

(Did you learn to set traps?)

Well, I did a little, but really, I never considered myself a trapper. I've trapped a little bit. Well, let me put it this way. I trapped a little bit with steel foothold traps, but I never really considered myself a trapper, but I spent seven years back there supervising trappers and became familiar with their methods and everything. I could trap dumb canid, just put it that way. If they were smart, had been trapped, had pulled out of a trap or somethin', I'd a had trouble. And then later, when I was working later, why, I did a lot of trapping with cage traps, for raccoons and so forth. But I never really considered myself a trapper per se.

06:08

(Now, after you left that job, where did you go?)

Well, what happened is, I supervised those trappers for three or four years and got interested in research. I moved from central New York state to a state wildlife research lab just south of Albany. At that time, it was just the very beginnings of looking at the possibility of usin' anti-fertility agent to decrease wild canid populations, because by that time it also became evident that just trying to control rabies in New York state by trapping was not effective, and this outbreak, which at least at that point in time was coming out of northern Pennsylvania and southern New York state and despite the best efforts, it wasn't controlling the disease, I'm guessing it was probably likely that that program was never able to take a high enough percent of the fox population, remove it from an area, to stop the spread. It might have reduced the incidence, but nobody really knows. But it certainly didn't stop the spread. So the anti-fertility stuff was an optional approach.

07:29

At that time, the only one who was doing that work was Don Balser at the Denver Wildlife Research Center. So I was—we were both kind of taking the same approach, myself with red foxes and Don with coyotes in Denver. So we corresponded and he came back to visit me at one point and we went down to see some expert on canid reproduction and so forth, I remember that trip. At any rate, Don Balser got promoted I think to assistant section chief and he asked me if I was interested in his job, and that would have been in 1964, yeah. So that got me all excited, so I ended up—which was one of the best moves in my life, really, to end up out West. So I came out, I think, in, like, either January or February of '64, and a month later I was down in New Mexico with Don Balser throwin'—flingin' baits out of a little single-engine plane [chuckles] and runnin' around the country in the Southwest. [laughs]

08:37

And then I picked up on the anti-fertility work that Don had been doin', and we tried to—'cause Don had done a field trial in southern New Mexico, and the results looked quite promising, but it later turned out that there were some complicating facts that kind of brought into question those data, I mean, as far as what was actually done or what wasn't done with respect to baiting. And the anti-fertility we had at the time, there was only one, it was really only effective during a very limited portion of the reproductive season of coyotes. You had to get it to 'em just at the right time or it wouldn't work.

So anyhow, we did several more tests. Well, in order to determine the results of that field work with these bait-delivered anti-fertility agents, you had to go out and trap coyotes and remove the reproductive tracts before you—and this compound, stilbestrol, only affected the females, and so you had to trap coyotes and remove the reproductive tracts to see what, whether they had young or would have young or what went on with their reproduction. And when we were doing these trials, they were with Wildlife Services people. In New Mexico we did a lot of them. I think it was mainly New Mexico. But later on we did a lot of work with traps in Texas and so forth. So I ended up working cooperatively with the Wildlife Services folks and their control people, some of which didn't—worked mostly with traps and others, at that time you could still use toxicants.

10:45

But anyhow, we relied on them, Don earlier and then I later, you had to rely on them to suggest test areas, because we didn't have any firsthand knowledge of who owned the land or if it was private or public and the status of the coyote populations. One of the problems with trapping to determine the results is that if you had to—if you were able—if those Wildlife Services trappers were able to take 50 coyotes off an area, which is quite a few coyotes, half of those would be males, so they wouldn't enter into your sampling. You were only interested in the females, so you'd end up with 25 females, and half of those were young of the year and they wouldn't be reproducing. So then you ended up with, say, like, 12 females in the sample. And that's a lot of coyotes, to take 50 coyotes to only 12. So the sampling was difficult.

11:55

Plus, where there's a lot of coyotes, we were concerned about the effects on non-target canids, such as kit fox and red foxes, depending on where you were. Where there's a lot of coyotes, they compete with the smaller canids, and there tends not to be—so if you went to an area where there were a lot of coyotes and did a test, you generally would get very few of the smaller carnivores. And certainly seldom enough to determine if there had been an adverse effect on their

reproduction. It's a pretty complicated—probably the most difficult work that I think I've done in my career, very, very complicated. We got very frustrated in doing that work and eventually we just kind of dropped the anti-fertility approach, for several reasons. At that time we didn't really have a good compound that would be efficacious over a period of time. Plus sample size difficulties. And then increasingly over the years more and more difficulty trying to acquire data such that you could even register such an approach, with non-target hazards and the fate of the compounds, so, it just was one of those things that conceptually, as far as coyote goes, it was a good idea, but in practical terms, the research was really, really difficult.

13:30

Anyhow, I worked with a lot of trappers then, but that was simply as a way to get animals. And then later on we got into actual doing research with the traps.

13:42

(When you started with DWRC, what was your title?)

I think it was wildlife biologist researcher, I think. Then we got some money in around 1972 or 1973, when there was—I think it was Nixon that put out an executive order that prohibited the use of toxicants, and that generated new funding to look at alternate methods. I can't remember, I'd have to look in these reprints [in front of him on the table] exactly when we started, when we started that was 1977, it turns out here, I see, was when we actually started looking at ways to modify traps, because [pause] well, even when I started work in the '60s, there was developing concern about the so-called "humaneness" of steel traps, but as the population in the U.S. got more and more urbanized, that concern became—there was more and more political pressure. That's I think primarily what motivated the Center to start research on ways to modify traps and make them more selective, in this case for coyotes, and ways to modify 'em so there was less foot damage, which there definitely was.

(Sure.)

15:18

So '77, I see here, is when we—first that I know of that we started doing research on modifying traps. In those cases, we first started out where we'd have a—DWRC technicians would go in the field, you know, modify a trap, we'd go into a field and I'd have maybe one or two guys do the trapping and I'd stick around until things got pretty routine, and I'd come back to Denver and they'd stay and, you know, we'd predetermine the number of animals that had to be trapped and so forth. And then at some point, when we felt that we had something that was fairly promising, then we would go to the Wildlife Services people and try to get them—get several of their field people, the real trappers, so to speak, [chuckles] to test 'em. It was fairly [pause] it wasn't really difficult research. There was a lot of repetitive stuff. But if you were looking at foot damage, you had to, you know, get coyotes and you had to look at the damage and so forth and so on.

16:42

We [pause] made a major error, I think, in those early days, where we were just looking at gross injuries to the paw, the feet, and we weren't looking—we weren't having the animal, the feet x-rayed or anything like that. Subsequently, and I think rightly so, we realized that you can't always see, just visually see the damage, that you could have damage that could only be determined by x-raying the legs of those animals that were trapped. So I think that was our

greatly improved method, and I think that was one of the problems with the early efforts, is that [pause] later on people would criticize that particular way of assessing injury, and I think that was correct, you know, to be critical. So I think it was done better. But there were—at least in this reprint here [taps table] that I have, I see that this is a paper given in '81, and we were—I was—we were reporting, three of us were authors reporting on the use of tranquilizer tabs that were put in the jaws, I don't know if you're familiar with those.

(Mm-hmm.)

18:05

Don Balser started that work, and actually that was—Don's initial work was actually a spin-off where they'd used those trap tabs in Australia, but with a toxicant in it, I think, I'm not sure if it was strychnine or something, so that when they were trapping dingoes that were causing problems with sheep over there, the animals wouldn't pull out of the traps. In other words, the first—John knows a lot more about this now than I ever did, but—and the work they did in Logan with captive coyotes is that the first reaction of a coyote that gets trapped is to bite at the trap jaws and try and get loose. So the idea was, if you put this trap tab with a tranquilizer on the trap, the animal would chew that and go to sleep and the injury would be minimized.

19:01

So we reported on this furbearer conference on our efforts to evaluate those trap tabs, and then we also looked at, by shortening the trap chains, where the coyotes could not lunge, which we thought might have an effect on the extent of the injuries, or where the trap chain was attached to the trap, or also trap chains that had a spring in the middle of the chain so that when they lunged, it would soften the injury. And then those things were all just kind of [pause] so-so results.

19:46

But then the third thing that we reported on was trying to use these pan tension devices, which is a device that you put under the pan of the trap, 'cause there is a—it varies, but there's still a fair amount of non-target animals, smaller carnivores, that are caught in traps that are intended for coyotes. These pan tension devices, we tested several kinds, allowed for requiring a certain amount of pressure on the trap pan when the animal stepped on the trap before it would spring. So in case, let's say, a skunk or a raccoon or—well, maybe not raccoons, but, say, foxes, they would step in the pan and it wouldn't depress sufficiently to set off the trap, whereas a coyote would. So those tests were quite successful. They weren't—and a couple—there was what they called trap-pan tension devices that were always being used prior to our efforts, but there had never been any systematic evaluation in terms of sample sizes or statistical differences between 'em. So that came out—that word came out very good, and that was the first stuff that we did before we even looked at, say, padded traps and stuff.

21:16

(So the modifications that you just talked about in the tension and the springs and the longer chain, was that just for the tranquilizer tab traps?)

No, it was independent. That was a completely separate project. That didn't have anything to do with the tranquilizer tabs.

(And the whole purpose was to cause less harm to the animal?)

Yeah, the purpose was to cause less damage to the animal that was caught and also to make the traps more specific for coyotes. Because not only did you not want to catch non-target species, but if you catch non-target species in your traps, then they're not still set for coyotes.

(Sure.)

So efficacy would enter into that as well.

22:03

(So when did the padded traps come up?)

Uh, let's see here, I'll have to look, [laughs] hit my reprints here, 'cause at least I [pause]

(Because I assume that was the next step in modifications?)

Yeah, well, I don't know as there was any logic, that we ever sat down and said, "This is a sequential approach to this problem." I'm not sure it was quite that well-organized.

([chuckles])

But I see here is another paper on those pan tension—just doin' it only with pan tension devices, and that came out in '84, and the work was done here, let's see, [pause] I don't know when the work was done here. I'd have to go through here. But anyhow, that was in that first period here, probably in the early '80s, I believe that we did that work. So that stuff got published.

23:07

And as far as the padded trap stuff goes, again, I have to look here, [pasue] sorry to have nothing going on here, but anyhow, the first paper that we published here on padded traps was in 1986, and, uh, [long pause] and the first work that was—some other people, a couple of which I worked with, was published in '84 that I show here as one of the earliest works. That presented some technical difficulties in so far as coming up with something that would stay on the trap and cushion—when the jaws closed, cushion the strike on the foot. And yet, it was something that the animal wouldn't readily chew off. One of my more memorable attempts to come up with something is, I did a trip—from Denver, I flew to LA and you had to get a GSA car from the motor pool at that time. I drove through the Watts area of LA right after the riots, went and saw a company that makes auto trim on the edge of doors, you know, there's that material? It's made so when you push it on the edge of a door, there's little metal grippers there. And then talked to those fellows about, this company about, did they have anything they could suggest, and then drove back to the motor pool, turned the car in, went to the airport, and flew back to Denver, all in one day. And I remember thinkin', "I'm never, ever, ever [chuckles] gonna take another trip like that in my life!" [laughs]

25:23

But anyhow, that particular approach didn't—that particular approach didn't work. But about the same time we were looking for ways to pad jaws, Woodstream Corp. in Lititz, Pennsylvania, because they were the major manufacturer, I think I read somewhere they made all, 95% of all the steel traps at that time in this country—

(Wow!)

—so they acquired other companies over the years, and so they were really THE company, and they also realized the public relations problem associated with foot damage by steel traps. So they had—well, a fellow named Pete Askins was their primary trap research person. He did that full-time. So we made several—when I say “we,” there was a couple of us involved in it—made periodic trips back to the Woodstream Corporation. We talked to one of the vice presidents or somethin’, but basically we worked with Pete Askins, who had had many, many, many years of trapping experience. And then there was another man for a while, I don’t recall his name. At one time they had two people doing trap research. So we worked closely with them, and we did field trials with traps that we either purchased from them or they provided to us.

26:55

The earlier trials that we did showed that the padded traps that they made did reduce foot damage, but they also weren’t as effective as the unpadded traps being used by Wildlife Services. I think they went through about—at least at that time—went through about four different modifications to those traps, in part because of our data. And then of course if we wanted to keep up in that, every time they made a modification, we had to go out and re-field test it. So there was fairly extensive testing. But unlike the anti-fertility stuff, every animal that you caught gave you data, so it didn’t matter whether male or female or if they were young of the year or sexually mature animals and so forth.

So we did make some pretty—we published, I see here, a couple papers that showed that they weren’t as effective, and then in the last one that we published [pause] it showed equal efficacy, but that work was done on a fairly—after reading this through—fairly good trapping conditions. And one of the problems that trappers have is if it’s freezing weather and the soil freezes around over the trap, or if it’s mud, the mud tends to cake, sometimes the trap won’t go off, or if it goes off, the mud slurs it. So there was a lot of questions by trappers, I think both government and private, as to under what conditions would these things work, and especially under difficult trapping conditions.

28:52

When we got to the point where something looked fairly promising, and of course we could only do limited trials, so we might have maybe a couple what I call trapper technicians, then we would go to Wildlife Services and try to set up trials with the Wildlife Services people in a couple, three states or whatever. Kind of like what Mike Fall’s doin’, but of course on a much smaller scale, where you’re tryin’ to do clinical tests.

Then also, somewhere in that time period, the Wildlife Society, which has got at least now somewhere about 8,000 members of professional wildlife people, they started putting committees together to address what they felt were major issues for the wildlife profession. And one of those things was, which I could not find my copy, I don’t know where it went to, but anyhow, they’re still available, they call ‘em books, but they’re really kind of monographs, and I was asked to chair this one dealing with “Traps, Trapping, and Furbearer Management.” I don’t see there’s a date here, but that had to have been in probably the early ‘80s.

30:22

We put together a committee and we started working on that, and then I just got so busy with research and stuff that I felt I couldn't do it, so another committee member by the name of Ed Boggess, who I think was in Minnesota, maybe still is, he took over as chair and he finished it. So that was a fairly comprehensive review, especially dealing with the literature on traps, trapping, and controversies and issues in regard to furbearer management. And then I got involved, and I don't even have any publications here on our best management practices thing that Mike Fall's working with. So I worked on that, and then when I retired, Bob Phillips did some, and now of course Mike's—now it's advanced a great way, 'cause I see one of these other publications here that was published in '88. There was a period of time where we did—I mean, the Center was interested in coming up with standard methods for doing certain things, and that had to do with this American Society for Testing and Materials. I guess they must have sponsored some meetings or something.

31:50

But anyhow, at that time, there really wasn't anything written on how do you go about testing steel—what I like to call “foothold” traps, not “leghold,” because the animal's caught by the foot and not by the leg, and it's a little bit less—you know, at least it sounds a little better! [laughs] So anyhow, with Greg Linscomb, who's in Louisiana, and who I work with some, and Mike I think works with him now, he spent many years working with the steel trap issue, he and I wrote a test method procedure. And then someone else came out with another one shortly after that, and at the time it seemed like it was pretty good, but in view of what happened in subsequent years and up to the present, it was really very superficial. Because now they've got very standardized and really rigorous tests, and this was—but that was a start, anyhow. So anyhow, that's kind of—

32:52

(I want to come back a little bit. You became section chief when?)

Yeah, I was just section chief for a year. When Don Balsler was section chief, he had some health issues, and I just—I was acting, just for a year, that's all.

(Oh.)

Oh, I wasn't department—and then when Don Balsler retired, they opened the position and I think Mike Fall and I applied and they hired Mike, which at the time I was kind of pissed off, but in retrospect I was really lucky, 'cause I got to keep doin' research. [laughs] If I'd have gotten the administrative thing, you know, that'd be the end of it. And I always—my first love was always research, so it really worked out well.

33:40

(So one of the primary things you researched were these traps, trap modifications?)

Yeah, there was a period of several years there, yeah, where we were pretty intense into that. And there was a lot of controversy, because there was a lot of resistance on the part of not only private trappers, but trappers—Wildlife Services trappers, because I think some of it had just to do with, you know, opposition just because there was opposition to change. But every trapper, like fishermen, they all, or hunters, they all have their own opinions. Nobody like to be said, “This is what you need to—this is how you need to do it.” These people have many years of

experience. So there always has been a fair amount of opposition to padded traps, unless you could conclusive show that they were as effective as non-padded traps, and even there, you're gonna have a certain segment of the trapping population that's not gonna buy it anyhow. So it's hard to tell. It sounds like Mike's doin' a pretty good job [chuckles] tryin' to, you know, push this thing along.

34:54

Because there's always the threat of—that one paper that I was telling you about that I wanted to give to John because it was published in such an obscure place, but it dealt with—these other things are pretty much—all these other papers are pretty much mechanical [papers rustling] [pause] papers dealing just with testing mechanical things. This one, I have a lot of references in here, and here I was addressing the problem of urbanization and I went to the—the title of it was “Furbearer Management and the Steel Foothold Trap.” And I went to the Bureau of the Census and I got data on urbanization over the last few decades and the effects of Walt Disney-like programs and Bambi-type stuff and the fact that people were becoming more and more further—and I don't mean—it was other people, in fact, I cite other people here that talk about that problem, that people are out of touch with the so-called real world and they get their information and their knowledge from the television set, and that's entertainment. Little babies playing with little babies of these. So that created a problem.

36:18

But anyhow, also in this paper, which I did in '86, Fish and Wildlife Service, we worked with Fish and Wildlife Service at the time, they commissioned a series of extensive surveys of public attitudes towards wildlife. Part of that included trapping. I thought they were excellent. There was several reports, they were done, I think, by some guy at Yale, I think, or one of these universities. So I was trying to put a lot of the sociological stuff in here, in this—and it was in something called “The Seventh Great Plans Wildlife Damage Control Shop, pardon, workshop.” So anyhow, I was recommending how they could fund trap research in here, and a whole bunch of stuff over and above just this mechanical stuff. I doubt if John Shivak's ever seen this, 'cause I've never even ever seen it cited by anyone. [laughs] Probably the most obscure thing I ever wrote.

37:35

I thought it was kind of neat, you know, 'cause I got into a lot of the sociological aspects of trapping and organizations that came about that were opposed and that stuff.

37:49

(I would like a copy.)

Yeah, 'cause there is a lot of really good references in here, and I don't think they'd be outdated, 'cause a lot of it's just kind of historical review of how trapping became more and more controversial and more and more pressure, you know, to stop it in certain states. But again, it's only about the mid-'80s, only going up to about the mid-'80s.

38:21

(You talked a lot about the mechanical aspects.)

Mm-hmm.

(And doing field tests with Wildlife Services operations.)

Mm-hmm.

(How did that go? Because you also mentioned, you know, some of the tension between research, trying to figure out better, different methods.)

Mm-hmm.

(And operations that perhaps didn't really necessarily want to change their methods. How did that work?)

Actually, I thought it worked extremely well, because there was a lot of those—I had a lot of respect for the people that did the field work and the control. There was people who had ideas and they were very proud of what they did and they had a lot of experience. I mean, we just had excellent cooperation. I mean, we would go, like, to the state—at that time they called it the state supervisor for whatever Wildlife Services was called at that time, and then it—or we might have a district supervisor that we wanted to work through and we got to his level. Or we might try and get two or three trappers from each district. It all depended on what type of a test, a field test we wanted done and how many people we felt we need and so forth. No, they were just, without exception, they were just really good to work with.

39:47

And one of the reasons is, these guys are out there every day trapping. So it becomes fairly routine to them. So anything that was, like, kind of a novel thing to do, we had 'em, you know, we would set up a test procedure where they had to alternate traps or it was—and they had to keep records for us, and we'd work with 'em, get 'em started. But no, it really worked very well, I mean, I—and it wasn't just with the steel trap work, but other things we did with those field folks. We might have maybe had a little resistance at the higher levels because they might have felt that it would take away from their operational efforts, but I mean, at the field level, it was just really—we had really, really excellent cooperation.

There were certain things that they could do and others they couldn't. I mean, if we needed to—because they obviously their primary responsibility was tryin' to reduce damage on ranches. So if we asked them to forego what they were getting' paid to do and switch to this stuff, it could create problems. So we tried to work with 'em so that it wouldn't interfere with their regular work, or we might do it when it wasn't a season of the year where there was a lot of damage, like before lambing. And we almost always did this work down in New Mexico, some in Arizona, and south Texas, because there was such—the coyote populations down there were so much higher than they would be up here. You could go down there and get as much data in a week as it'd take you two months up here

(Really?)

Just because the densities of the animals aren't that great, plus the weather up here. We'd go down there in the winter and there'd be no snow and generally it wouldn't be freezing weather, whereas up here there would be some day you wouldn't even be able to get to your trap line

because it would be—you know, the roads were snowed in. So almost all the work we did was in the Southwest, further south, New Mexico and Texas, primarily.

42:06

I did a lot of that—at the time there was a state supervisor called Milton Caroline, who was for many years directed the program in Texas. Texas I think was the biggest program in the West, and then California was next, so they had a lot of trappers. He was interested in research. He was actually originally out of New England. He died a long time ago, but he was very—you know, just really helpful, interested in research and really gave us a lot of support. There was other states where—you kind of learned which state to call the supervisor, which ones looked favorably upon research, and which ones felt it was really not—weren't all that enthused about that.

I did get to do a little trapping later on, after I'd left here. When I went back to work at the University of Georgia, we were getting funding from—well, at that time it was called Rhône Merieux, now it's Merial, the ones that produce the oral rabies vaccine.

(Oh, uh-huh.)

43:23

They're in Athens.

(Oh!)

Georgia. It's kind of weird. It's the only place in the country, and it's the only company in the country that has a license to produce an oral vaccine. So my boss at the time there at the university, he found out that they had to, had some—in order to facilitate cooperative ventures between private enterprise and the state or in this case a public university, the state would provide 50% of the research funds and the private industry, in this case Merial, the other percent. So we got a lot of money from them to look at this oral rabies

(Mm-hmm.)

Vaccination of carnivores.

One, I guess, so I went over and tested—the Israelis were really interested in this. They seemed to always want to be involved in the latest gadgetry or techniques. So I was over there three or four times, first to test baits with red foxes and a species of jackal they had there. They didn't know anything about trapping. We did a couple tests over there where we put out baits with markers, fluorescent markers that we originally developed—Fred Knowlton and I originally developed for coyotes, I think it was Fred. So you could incorporate this stuff in a bait, and if an animal just ate a single bait, this fluorescent biomarker was deposited in the teeth, so you decalcified the teeth and sectioned them and you could see this fluorescence with a UV microscope.

45:19

So those guys, they didn't know the first thing about trapping over there, so I got together a bunch of padded traps and got some lures from somebody, that a commercial trapper supply

house in Georgia and lugged all those traps and stinky baits over there on a plane. [laughs] I did the trapping, it was just for two different trips for a couple weeks, and they thought I was really somethin'. Well, those animals had never seen a trap in their life, and there was a lot of 'em.

([laughs])

We were catchin' jackals and red foxes, you know, just incredibly high numbers in the limited time we had. They thought I was somethin'.

([laughs])

I remember tellin' 'em, I said, "Well, you ought to let me send you a real trapper over here, then you'll—" I said, "'Cause I'm not really a trapper!" [laughs] So that was—I got to do work there. I was in Egypt two or three times. But the only time, talking about traps, the only time I did trapping was there in Israel.

46:34

(Now, that was after you left DWRC?)

Yeah, yeah.

(In 1990.)

Yeah, that was—yeah, in the—yeah, then I think the first thing I did in trapping was, this wildlife disease group that I work with at the university—

(Of Georgia?)

Yeah, University of Georgia, a fellow by the name of Victor Nettles, who's worked out here with Mike, come out and—they had an ongoing project in the Caribbean, a disease problem, and they were using an avian species, I forget which it was, and then mongooses as well, just kind of indicator species for this disease, I don't even remember what it was. And they were trapping mongooses. So since rabies in mongooses is perceived to be a problem in some of the islands in the Caribbean, we went down there and did some bait trials, got two publications out of that, and we trapped those with live traps, I mean, not with steel traps but with cage traps. It was kind of interesting to do that work.

47:49

And then the subsequent work that I did with that group involved a lot of work with raccoons because of raccoon rabies, and we did a lot of trapping with cage traps, but very little if any with steel traps. So I did—for people, technicians that we had, we did a lot of work with the, looking at this oral rabies vaccination that's being done now here at this center and others. So yeah, I got to work a little bit with mongooses and red foxes and silver-backed jackal, I believe was the one they had over there. But that's about it.

48:38

(I want to back up a minute, because we talked earlier this morning about your international program work.)

Mm-hmm.

(For Denver. If you could describe that briefly, when that happened, where that happened.)

Oh, you mean down in Mexico?

(Mm-hmm.)

Yeah, well, I, uh—the first two field stations, when we got AID money in '68, the first two field stations that were established was one in Mexico, I was down there the first two years, and then one in the Philippines that a fellow by the name of Nelson Swink, who was actually at Wildlife Services out of Virginia, and his wife I think developed cancer and he had to come back, and then Mike Fall took over that station. So I was there from '68 to '70 in Mexico and then I came back in '70 'cause my wife at the time was kind of freakin' out down there. Then I spent—I was readin' through this old stuff, I spent almost a year working on vampire bats when I came back here, and that method—Mike and I were talkin' about it—basically that method was developed after I'd come back and the preliminary work done with a vampire bat colony that they had there at Denver, and then when that looked promising, then I asked if I could go back down and do field trials.

50:09

Mike was reminding me that I had forgotten how there was a lot of—on the part of my boss at the time, 'cause I was supposed to be doin' coyote work, he didn't like the idea of me gettin' back into the bat stuff. I didn't remember that, Mike was tellin' me. But anyhow, we got permission for me to go down there and work with Clay, that was down there, and my counterpart, the Mexican biologist, and that's where we did the field trials that we talked about here this morning.

(Just because we're on tape, the control method—explain briefly the control method that you're talking about.)

50:50

OK, well, the genesis of that was that we noticed in caves, the vampire bat caves, that the vampire bats in their roofs or niches within the cave are always clustered very closely together, the animals are just in a complete cluster. So I think based on that we had some general idea of how we could take advantage of that behavior. And so—and we actually did a study in that lab with captive bats in an artificial roof situation on closed-circuit television with myself and my Mexican counterpart, where we observed what these bats did over a period of time and the activities within this very artificial—and, you know, in fact, that was published, that stuff, I believed.

We noticed that they groomed themselves extensively and they also groomed maybe an adjacent bat. So then when I came back, some of that work was replicated here, and then we started looking for ways to adhere a carrier with a toxicant onto those bats. We did—again, with a

captive colony here, we did some work where we used candidate carriers and a fluorescent marker that we would put on one bat and then re-introduce 'em into this one little colony of bats and then go back the next day with a fluorescent light and see the extent to which this stuff was transmitted to other bats. I think we worked with 20 bats and introduced one with the biomarker and the carrier. Based on that, we, some of the—probably Pete Savarie wrote it, I'm not sure who it was, but anyhow, some of the fellows here tested several toxicants on captive bats, including an anticoagulant, and based on the LD-50s that they obtained, we selected chlorophacinone, which then shortly they just died fast, because it was more efficient and less costly.

53:15

So anyhow, then we repeated essentially the same thing, where we took 20 bats and put this carrier or the anticoagulant in petroleum jelly or Vaseline on the back of one bat and introduced him, and we killed, I think 19 out of the 20 bats that way. That's what generated the idea that, "Hey, we need to go down and try this in Mexico," because this was under, of course, extremely artificial conditions. So that's when we went down and did the work, tested the procedure in caves and then subsequently on a couple of ranches. And that all looked good, and then that's kind of when Clay started doin' replicate tests, and then along with a technique and Dan developed and his guys developed, that's when we really started goin'. We just really did the very early stuff, and then, kind of verification of that thing. But the results were amazingly consistent, which is somethin'—a lot of times it's quite unusual, when you try and replicate somethin', it doesn't always come out, so that was pretty neat.

So anyhow, that's how that went. And then of course Clay Mitchell took off and demonstrated that, both techniques all over Latin America. In fact, I remember him complaining that he had so much to do he wasn't getting' to see his daughter grow up here, really. I wouldn't have liked that, all that—that much travel.

54:49

(You, while you worked for DWRC, you did a lot of different things. You did bat work, trap work, [chuckles] and probably a couple other things. What was your favorite kind of research?)

Well, I liked the—the years, three years, two in Mexico and then back here a year, that to me was the best job, the best work I did. And the reason—there are several reasons for that. One was that nobody ever had the funding, for one thing, to really look at comprehensive research. It was all kind of done—what there was, there was a fair amount of studies on aspects of biology. In fact, because we never—when we were trying to get that AID money, it was off again and on again. As I mentioned, I had sold my house twice and rented it once before they finally decided, yeah, it's OK. I did have the opportunity then to really do a good review of the vampire bat literature, with the help of the library.

56:01

And we ended up in '71 with a bibliography of the vampire bat literature that was between 600 and 700 citations, so I was really prepped for doin' this work, even though I had absolutely zero field experience. But, so anyway, we're gettin' off the subject. It was well funded, and as I mentioned this morning, we had this great backup of all these specialists here in Denver that we could ask to help us out. And then we had good facilities in Mexico and equipment and it was well funded. And I found out that I really enjoyed working in other cultures. I really, really liked

it down there. I liked the people. We got into all these remote areas and had some really neat experiences. To me, that was the [pause] there was no repetition. A lot of the stuff with the traps was just kind of variations on a them and a lot of that stuff I did developing baits back at the University of Georgia got pretty repetitive. It actually wasn't all that good of a job, as far as I was concerned.

57:19

But anyhow, so the vampire bat work, for me, just for those reasons, was really the very best and most interesting work. Like I say, nobody had had the funds or the continuity—that research went on for four years before they turned it into more of an extension thing that Clay did.

(Regarding your work with the trapping techniques and the modifications, funding was not so—not so well funded?)

I wouldn't say that it wasn't necessarily well funded, but I think we were doin' several different things at the time. As I recall, it was a periodic research. For one thing, it really worked better if we did that in the winter. If you'd try and—you know, coyote densities are substantially less in the northern part of the country. And...summertime is not a good time to trap, no matter where you're at. And down in Texas, the animals would die in the traps if you try to catch 'em in the summer.

(Oh, sure.)

It's just so hot. So you only had, really, basically kind of the winter in which to do that work down there where you could catch lots of animals. So we had different things goin' on. That might have been—one of the reasons—I wouldn't say it was underfunded, really, I just think that, uh—there were some aspects of that that were really difficult, just technically, in trying to get adequate data, because not only would weather really greatly affect your results, but also the skill of the trapper that was doing the work. And some of those trappers definitely had their own ideas. I mean, to some extent you could standardize the test method, how they tested 'em, but you also had some that were real enthusiastic and others that weren't, that would say, "I don't think this thing is gonna work very good." So you kind of had biases already, already built into some people.

59:54

But I mean, you know, we made some progress, I think. In the end we got some fairly good results. They weren't definitive results, but they were encouraging enough—unlike the anti-fertility stuff, which—it just got so complicated and so difficult that we finally just thought we were puttin' a lot of effort into something where the potential for success, as we went along, seemed lower and lower.

(Mm-hmm.)

Just for various—you had registration problems, non-target problems, a chemical that was efficacious. There was a lot of real problems. I mean, it was conceptually a good idea. In terms of inhibiting reproduction, it made sense. But in terms of being able to end up with something usable operationally, it was just—at least that was my opinion. My boss, Don Balsler at the time, he was very reluctant to give it up and he and I had a few battles about whether we should

[pause] I remember one time we were—we used to get in these big arguments and then to go lunch together, you know? It was one of those nice things where you could disagree and get pretty loud about it, but it just was part of doin' research.

01:01:17

I remember one time I was talkin' about that anti-fertility stuff and I was makin' an analogy about, if you can't—if you're trying to approach a problem in the sense that you might consider it a barrier or wall, I said I'd go around the wall, and Don Balsler says, "God dammit, I'd go right through that wall!" [laughs]

([laughs])

I remember that. Don was a great boss. I always admire him, and I still do. I still call him every once in a while. He's still a good friend.

01:01:48

(So while you were at WDRC, you did work on the fertility, vampire bats, trapping, anything else?)

Oh, yeah, we did a lot of other stuff. We looked at frightening devices, we did that for several years, tested those on pastured sheep, confined by fences, first, and then we did field trials on range sheep where they took 'em up into the Forest Service allotments in the summertime in the high mountains, where they had herders up there, and we did all that on horseback, 'cause there wasn't any other way to get in and out of there. And that was interesting in itself. Those trials were interesting. It was this electronic guard or whatever they call it, what we were talkin' about. And of course the electronics people helped us a lot devising that thing.

01:02:44

But it was really difficult to—I ended up giving the results of that at a couple of the vertebrate pest conferences, because the data that we tried to use to show that there was efficacy there, not 100%, but it significantly reduced the rate of predation, was—technically the protocol was fairly weak, because we had to rely on the ranchers and/or their herders to estimate losses to their sheep, primarily lambs, pre-treatment, before the lights were used, and when the lights were used. [pause] And there was a paper published not too long ago that was critical of that work for that reason, and that was correct, you know. It was not real—at least at that time I didn't feel that there was any way we could really control all those conditions.

(Mm-hmm.)

We didn't feel we could pay to set up artificial situations.

So we did that, and we did—Ray Sterner and I did some of the very first guard dog research, and that was, again, very preliminary stuff. But there was a period of time in there that I really felt good, because we were doing—we would do kind of a new area of work, like the guard dogs. There was another group also involved somewhat in that. And then we would get some preliminary results and it would stimulate interest on the part of other investigators, other people, and they'd pick up on it and we'd go do somethin' else. It was kind of neat, because you were kind of, kind of in the forefront of doin' somethin', but you'd never really slogged away until

you had really definitive—yeah, we got to the point where things looked promising, so that was kind of neat.

01:04:45

We, I'm trying to think what else we did. Let's see, we did guard dogs, frightening devices, the trap stuff, electric fences, we did several years, two or three years of electric fences. We [pause] [laughs] Well, this is kind of funny. I don't want to embarrass you, but—we tried to come up with a repellent that we could put on lambs, 'cause lambs are the primary target of coyotes. So we come up with the idea that we would put a collar, an expanding hollow collar filled with a candidate repellent which we had tested with captive coyotes on the lambs, and when the coyotes would come up to a bunch of lambs, they would bite one and get this awful stuff in their mouth and they would say, "Ew, these things taste terrible!" That was the idea, OK?

01:05:40

It was actually one of these research projects that you kinda, you're so embarrassed that it went so poorly that you wish you'd never even thought of it. Anyway, the problem we had was putting this repellent in these hollow collars. OK, we noticed that if you punctured those things, the stuff would just run out, and we felt we needed somethin' in there to retain—and these collars were about that big around [gestures with hands] to retain this fluid.

Well, we decided maybe one of the things we could use was Tampax, see? 'Cause it's somethin' that if you throw it in water it swells and everything and all that. So we went to our administrative people and we said, "How do we order about four gross of Tampax?" [laughs]

([laughs])

01:06:27

Well, what happened is, we didn't, we were too dumb to test it. Well, this particular compound was impervious to water. So when we [laughs] put these Tampax in the collar, nothin' happened. It didn't swell.

([laughs])

They just laid there like bullets, you know? And so then we had all these surplus things on hand and we couldn't figure out, what are we gonna do.

([laughs])

Declare 'em surplus or somethin'? [laughs] It was really—it was—that was awful.

([laughs])

I mean, I had several things I tried to do that ended up bein' so stupid and so dumb—

([laughs])

—you wish you'd never even thought of 'em, and that was one of 'em. It never—and then other work that we did, especially down at Logan, they realized that that business of preying upon, the

prey, the fleeing of the animal is what precipitates a chase, and the idea of—repellants never—there was quite a bit of effort—one time we had some contract money and we contracted with CSU and nobody ever could come up with anything that would even—that even showed promise with repellants. But that was a weird one, that particular— [laughs]

([laughs] Yeah, that was! And I have to ask, whatever happened to the surplus?)

I don't know, I can't even remember. [laughs]

([laughs])

We probably dumped them in a garbage can, I guess. I can't remember.

(At night! [laughs])

Yeah, at night when nobody was lookin'. [laughs] Yeah, I had several like that, where you're really embarrassed to even talk about 'em.

01:08:00

(So you did the majority of your work with predators?)

Yeah, really it was—my time here in Denver was almost exclusively with coyotes.

(Coyotes?)

Coyotes. Sometimes there was stuff done with non-target species. [pause] I'm tryin' to think—oh, yeah, we did test a little bit where there were some traps back in the—probably in the early 90s, '80s, where a couple of vendors came up with a—the problem with non-targets can be severe. Depending on the skill of the trapper and where the trapping's being done, you catch a lot of non-targets. [pause] What the heck did we do? Anyhow, we tested a couple of traps that inventors come up with that were selective, they wouldn't catch anything but raccoons, because raccoons have very—you know, they use their front feet. So they had a couple different devices. One was called an egg trap, I can't remember, that doesn't make any sense as far as selectivity goes, but for some reason, we did a lot of testing with those, and actually they are for sale now, where there was actually somethin' that you buried in the ground and there was a hole where the raccoon had to put his front paw down there. There's no other—I think possums might have been the only other animal that has that capability of reaching in and grasping something. So we tested those. That would have been a case where we worked some with raccoons. But that was a very preliminary effort.

01:09:49

We did a lot of work with attractants over the years, and early in the '70s we did a lot of work with trying to develop baits. Mainly those baits I think were—had to do with anti-fertility work, because you can come up with the best anti-fertility compound that you ever would wish for, but if you can't get it to the animal—it's the same with—like, Lowell was doin' this work with deer. Fine, if you can come up with a good chemo-sterilant or whatever they call 'em these days, but how do you get it into the animals, so we were very concerned. Our field trials with that stilbestrol, that candidate that turned out not to be a very good one, that fertility agent, we had—

as I recall, we had a marker in there, a bio-marker. But we never could get enough baits into a high enough percent of the population that we felt would, you know, be affected. Because some work that Guy Connolly did, some modeling work, suggested that you could—75% of the coyote population could die or be killed or whatever, and the remaining 25% would be adequate enough to maintain the population because there would be larger litter sizes, the juvenile coyotes would breed, where a lot of times they wouldn't. So you had to reach a fairly high percent of the population. And we never could do that.

01:11:25

But it looked like what it turned out as is, we simply weren't using enough baits per square mile, because in south Texas, when they, they were trying to control rabies and coyotes using baits dropped from planes with an oral vaccine, they got a very high success rate, and rabies disappeared. I mean, apparently it was very effective, although there's some—rabies outbreaks come and go, so it's kind of difficult to know what the effect of the vaccine was versus natural fluctuations.

(Mm-hmm.)

But the Wildlife Services would go in and aerial gun or coyote trap the areas that were baited, and they did find a very high percent of the coyotes had antibodies and they also had the biomarker, so it, I think it's pretty clear that it did work. Whereas we were unsuccessful in the '70s in getting a high percent of baits into coyotes, they were, and the only difference that we could see, really, was that they used many more baits per square mile than we ever used. And so we did a lot of work with baits, because we had no idea how far will a coyote come to a bait, what percent of the population could you mark with a biomarker if you put out X number of baits per square mile versus double that or quadruple that.

01:13:06

We did a lot of work with that, and we did a lot of work with reproductive rates of coyotes, simply because we needed to know what the normal reproductive rates were in populations as a basis for comparison with tests where we used a candidate, an anti-fertility agent. So we did a lot of different things. Some of 'em were good and some of 'em were mediocre, and some of 'em were embarrassments. [laughs]

([laughs])

I had several of the latter.

(We're going to end CD #1. So this is the end.)

01:13:43 End file 1

File 2

00:00

(This is CD 2 of the interview with Sam Linhart. What did you like best about your work?)

As I said this morning, working at the Denver Wildlife Research Center, one of the very positive aspects was the latitude that we had insofar as looking at a problem and taking different

approaches. Usually the problem was—especially under Don Balsler, we had periodic meetings where we talked about priorities, what we should prioritize as far as research goes and maybe talk about different approaches, got input from the different project leaders and so forth. Beyond that, we had a lot of leeway, so to me it was a very positive research atmosphere. And I didn't really appreciate that until some time after I had left. I did my share of bitchin', like everybody.

01:06

And I've talked to other people, in fact, just since this morning, and they said the same thing. And you know, you basically had pretty—I don't know what it's like now, but our funding was pretty consistent. We could count on it. It might be a little bit up or a little bit down, our annual funding for our work, but you knew it was gonna be there. We had quite a stable staff, so you didn't have people comin' and goin' all the time, you had people with quite a bit of experience. I liked the travel a lot then, I was in my twenties and thirties and so forth. Now I think I don't want to do that much traveling. But we got to go to a lot of interesting places. I worked in just about every state in the West, except I don't think—yeah, I even did a little bit of work in Montana. Actually, Guy Connolly was doin' some work up there. I was up there a little bit. So I got to travel a lot and I got to interact with a lot of the Wildlife Services folk, and I enjoyed that.

02:24

We had nice facilities. We were able to keep at that time coyotes in live pens there at Denver. It was a really—you were able to do—unlike a lot of universities, where you might have a master's student or a Ph.D. candidate, they had to scramble for funds, it was a short-term project, sometimes the faculty advisors were really more interested in getting the funds than they were in doing the research, I was always havin' to fight to get money, so I mean as compared to here at the Center, where you could—I mean, Fred Knowlton, he was collecting data on predator-prey relations for 10 years or somethin'. You never, hardly ever do that at a university.

03:18

Plus, you bring on—there was a period where we had contract money for a few years. It was right after when the toxicants were banned, in '72, by Nixon. So there was an influx of money to look at non-lethal methods. So we contracted with several universities to do short-term research, several, Fred Knowlton and I primarily were doin' that. And several were—we got some decent data, but some of 'em was—well, for one thing, you'd get a graduate student. He doesn't know the first thing about a coyote, where the tail and where the head is, almost. And then you get the professor, the faculty guy, and he's teaching, he's got his own research, he's looking for money, he doesn't really—he doesn't say, "Yeah, I'd like to really do somethin' with coyotes." And they were short-term and fairly, in our view, superficial researchers 'cause of the time allotted.

04:18

So here at the Research Center, we didn't have those constraints. We had people with experience. We had, we could plan on continuing studies for several years. We had equipment. We were able to get quite a bit of help from Wildlife Services people. We used to go to—at that time they called them "hunters' conferences," where they'd bring all their guys together. And I was kind of green at that time. I remember goin' to the one on Montana, and some of those trappers were pretty wild and woolly, and at that time there was some drinkin' goin' on at those things. I remember being camped in some place up there in tents and wakin' up in a sleepin' back at 8 o'clock in the morning and this trapper who was next to me pulled out a bottle and

says, “Here, have a drink!” [laughs] I’m like, “Well, I’m this green kid, you know.” I don’t, that was pretty awful. [laughs]

05:52

They were fun to go to, those things.

(Mm-hmm.)

You just gave your little spiel about—they wanted someone from research to say what are we doin’, and you’d give your little spiel and then you went around with those guys. And they used to have rifle shoots, because they did a lot of calling and shooting of coyotes, so they had competitions. So that was neat.

05:48

(What did you like least about your work?)

Uh, I think, as time went on, that’s pretty easy. As time went on, I think what I liked the least is, there was more and more restrictions on the part of the federal government. A really good example of this was—I mean, I’m not advocating this is the way things should be done, but realistically, this—the first winter I worked out here, in 1964, we were putting out baits from single fixed-wing aircraft. We had what they called these field vouchers. We’d go to some podunk airport in some little town and ask whoever was in charge, “Does anybody around here want to, have a plane that we could rent from ‘em and they’d of course pilot their plane?” So yeah. So Joe Blow would come in, “Yeah, if you pay me—” whatever, 15 bucks or whatever it is, and get in there and start flingin’ baits out.

06:46

Well, time I left, you know, you had regional pilots, you had to have fireproof gear, you had to have communications, you had the pilots had to be certified, they had to be under contract. So I’m not saying that there shouldn’t be some regulations, but that’s an example of how—and even today, I’ve had people say, “You know, it gets so hard to do research because of all the restrictions.” I’ve always thought that the federal government was the worst when it comes out to new ways of doing things, that they always went overboard, you know, like the security stuff at the airports nowadays. They took a pair of embroidery scissors away from my 95-year-old mother ‘cause they were afraid she was gonna attack the pilot, you know? So that was one of the things that I found, as time went on, working for the feds, I found very frustrating. It just got more and more difficult to do [pause] certain types of research, research especially involving animals to the point.

08:04

And a lot of people became really frustrated. And that was one of the things—I didn’t care that much for working at a university there in Georgia, but I will say that they had—I had a [pause] [sighs] committee that reviews proposals to do research with animals, the animal care committee, I guess you call ‘em. I mean, they had one of those, and we had to run our things through there, and they did have certain protocols, but it was so much easier to do research at that university compared to with the feds. And that was always my feeling, because I interacted with quite a few biologists with the state DNRs, they were much more pragmatic about these regulations. Yeah, you can’t really contest them, we’ll go along with them, but they’re much more practical,

where's the feds just seem to go crazy as far as adhering to—to me, and I know other biologists, I think that might have been the most frustrating aspect of work in research, those—and it always seems—they never would review things and say, “Let's try and make things easier.” It just was always, it got more and more complicated and harder and harder. There was never any—at least in my experience, any attempt to say, “Hey, wait a minute, we're really causin' some problems here. What can we do to modify our procedures to facilitate the research and yet still remain within the context of all these restrictions?” So that is—when you asked me that, it wasn't any problem at all [snaps fingers] thinkin' about the thing I liked the least. And there's a lot of other people I know that felt that way.

10:05

(What did you find the most challenging?)

Uh, I think it was the bat, the vampire bat stuff, because nobody had done anything, and we had all these—we had the funding, the resources, the equipment, and everything was brand-new. Nobody had ever done this stuff. It was really exciting. And Dan Thompson told me the same thing, he said as much. It was also in a sense challenging, because I went down there, and I didn't know one bat from another. I never did, I never was—I never even—we were so focused on vampires, I didn't even—we caught other bats, we just took 'em out of the net. We didn't even identify 'em or anything. So it was a real challenge, you know, and a real learning experience. Clay Mitchell was the only one who knew anything about bats. My counterpart in Mexico was working on looking at wild strains of potatoes.

([laughs])

Because they were tryin' to breed 'em with potato blights. They had this potato blight and they were tryin' to find some.

([laughs])

He didn't have any better clue than I did. [laughs]

11:12

So just learning about all that stuff was challenging, but it was a lot of fun. I don't know about later years, but we got along real well, our crew there, you know, the Mexicans. And Dick Burns was especially good, he was well liked down there. So I would say that was to me the most interesting and challenging, that work.

11:42

(What was the most difficult political or social situation you found yourself in?)

Oh, boy.

(In any of your work.)

Yeah. [pause] Well [sighs] you know, when you're a researcher, you're kind of insulated from a lot of this stuff, as opposed to, say, someone in operations in Wildlife Services. So I think that

was a big advantage of bein' a researcher, you kind of—we didn't have to deal with issues at policy levels, the research people administrators.

([laughs])

Surely, but the researchers, unless somebody came down and said, "Look, you're causin' a real problem," you know, and I never had that happen to me. But I think probably the trap research was politically very frustrating, because you like to think—you know, you're doing research, and you like to think that you're generating data and you're making decisions based on information that either is available in the literature or something that you might have generated, so it's a logical—you think you can make logical decisions based on your research.

(Mm-hmm.)

Or others' research or whatever.

13:14

Whereas the trapping issue is emotional. It's an emotional issue, and it isn't—it's like, some people out there, they don't care if you come up with a trap that when the coyote's in there he's got a big smile on his face. They just think it's wrong to trap animals, and certainly it's wrong to trap animals and kill them and take the fur and sell it. So it's—and that's that one paper I mentioned here, [taps on table] I talk about that a little bit in there. So it's like, I'm involved in the water—as an example, back where I live now, I'm involved in a local watershed group. It's almost all lay people, and they have, they don't understand about the need for data to show to what extent pollutants are occurring. It's all an emotional-type—and so that's—I think I would have found politically was that trap issue, because the people who were opposed to trapping, some might say that they opposed it, it was cruel, because of the injury done to the animal, but a lot of it was just 'cause they were opposed to trapping, period, and didn't care if there was injury or not. They just thought it was wrong to trap animals, and it didn't matter that you could give 'em all the data in the world that showed that, hey, in many instances, in that trapping a certain percent of the population is not adversely affecting that population because there's compensatory mechanisms there that compensate for the removal and that a certain percent of the population is gonna die anyhow, whether it's trapped or disease or whatever. At a certain threshold maximum density, somethin' gonna get in there, whether it's rabies or distemper.

15:20

Well, that doesn't matter. It's like these rehabilitators, people that rehabilitate injured animals. It's a feel-good thing, and I'm not against it, but biologically it's meaningless. If you've got a density of 10 raccoons per square mile, in 100 square miles, you've got all these raccoons that you nurse back to health and release, biologically it's meaningless, you know? So it's kind of that, see, I'm not against rehabilitation, I'm just saying, as a biologist, in terms of population, it's meaningless. So that's kind of the way that some of the people that are opposed to trapping—they don't think in biological terms.

This Kellert [Stephen], there's a guy in here that did a series of surveys for the public—on public perceptions of wildlife. He categorized the different types of people, which I thought was really neat. I don't remember 'em any more, but he described people that look at it from a biological viewpoint, people look at, he broke 'em down. It was some really neat studies. I know they're in

the library. They used to be here. We had a whole set of ‘em. And I don’t know if John’s aware of those, they’re so old, but there’s some good information in there.

16:51

(What is one of the funniest things that happened to you while you were capturing or handling animals?)

Oh, gosh. I can’t think of a funny—I’m sure there was.

(laughs)

I know there was, because I remember with Gary Dasch we had some funny experience, but I can’t remember ‘em any more. [laughs] Maybe I’ll think of it later on. I can’t remember it, really. We had some pretty funny things happen, but again, I just can’t think of anything specific. We had a good time doin’ field work a lot of times.

(And you might, as the interview goes on. What’s one of the scariest things that happened, that you can remember?)

Well, really the scariest thing was that thing that Dan alluded to, but he didn’t have it right. What happened is, the second field trip that I took with that Raúl—

(In Mexico?)

In Mexico. We were coming back in the state of Guerrero, which is always noted for a really violent state, especially the rural areas. There would be fights between villages and between the army and the locals, and when we were coming back, we decided since we were just learning how to use mist nets, we decided to park the truck up on the highway, our jeep, and set some nets down along this river and see if we could catch not necessarily vampire, but we were just really very early stages of our learning experience on how to work with bats.

18:34

Well, an elderly man came along, this was kind of in a ravine, this place on the river where we were trying to catch bats with the mist nets, and an old man came by, walkin’ down on the bank. We just said, “Buenas días,” and he kept goin’. Well, after a while, unbeknownst to me, Raúl looked up and he could just barely see the vehicle, our vehicle, which had I think—we were attached to the embassy, and they gave us plates and it had official Wildlife service sticker on the door, etc. etc. So I remember him sayin’, “Sam, come on up here, get up here.” There was a bunch of guys there with machetes and guns. He told me—and my Spanish was really poor at that time, because I hadn’t been there but a short time in the country. He said, “They want to keys to your vehicle. They’re gonna take us to their village.”

19:35

I said, “I can’t give ‘em the keys. It’s a government vehicle.” And this guy stuck a .45 in my belly, and I said, “Here’s the keys!” [laughs]

([laughs])

So we got in some—I don't know where it was. I mean, we went back to this village, and one of the guys was in there, one of the Mexicans was really drunk, and that really made me nervous. This guy sat there with this gun stickin' at me while somebody else drove, and we went back to this place. We were in some room in some dwelling or somethin', and there was all this talk goin' back and forth, and Raúl, he was tryin' to explain what we were doin'. And it was so illogical, in this book he wrote—we had a couple of friends, Argentinean, last time I saw that book, they had been reading it, and he related, if it is factual, that the people in that village, there was a rumor goin' around that the U.S. government was trying to control the Mexican people and that they were putting birth control materials in the water, and that's what we were doin'.

20:47

(Oh!)

That's what they thought we were doin'. And again, 'cause I didn't understand the language, they were talkin' about killin' us. [laughs] Not to say later, Raúl getting upset and frightened. And I was so dumb, I didn't know what was goin' on, and I think—'cause I remember showin' 'em an ID card that I had from the embassy, I think maybe that's what—I don't know. But they finally decided to let us go, and I got back in to drive and all these guys, some of 'em which were drunk, started beatin' on the roof as we started takin' off, and that really freaked me out. So, I mean, we did leave, but that was by far the scariest thing that ever happened to me, and that's when we decided we needed to get a local guide. And we never had problems after that.

21:37

We would go to a village and talk to, I forget, it's like the equivalent of a mayor. That isn't what they call it, but someone who was in charge. We'd explain what we were doin' and ask, did he know someone in the village who could guide us who knew where the caves were. And there usually was, 'cause those rural areas, those people were all—they knew their terrain real well. We'd pay 'em, like, 75 cents or a dollar [laughs] for a day's work, and everybody was happy. So we never had any problems after that that I know of, but that was the scariest thing by far.

22:18

(That would do it!)

[laughs]

How did you see trapping techniques change over the years?)

Well, I don't think—of course, you know, I haven't been involved in it now for 15 years or so, so I'm really not current, but I think basically trapping has stayed the same. There's been modifications to the traps that have made them more selective to some extent, but [pause] I still get some literature on trapping, and I don't think it's changed a whole lot, other than, it's under more scrutiny by the public than it used to be. That's certain. So the state DNRs, I know, are more sensitized to that.

One of the things that's guided trapping, and I'm not talking about Wildlife Services trapping but trapping by fur trappers, there's no money in it. Probably 95% of those people do it because it's just like hunters, they like to hunt, and these guys like to trap. In terms of, you know, peltin' the animals and sellin' 'em, prices have been suppressed for a long time. I don't know what it is

exactly now, but there's some fluctuations, but people generally do that. So I think with the increased scrutiny, the DNRs are more sensitized. But it also has something to do with—I guess the point I was trying to make and got off the mark there is that at times when fur prices are high, there's more people trapping, there's.

(Mm-hmm.)

More, more licenses, trapping licenses sold. And at times like that there tend to be more state biologists that are assigned as furbearer biologists. So they're looking into length of seasons and numbers of animals, if it's a case where the animals aren't very—say, otters or somethin', which in a lot of areas is probably low in numbers. So they tend to be more concerned about regulations and trapping techniques.

25:03

But when the prices are low, even a lot of people who do recreational trapping, there's a lot less trappers and a lot less interest and those people that might have been furbearer biologists when there was a lot of interest tend to get reassigned, so the numbers of furbearer biologists in the states dwindle.

But the techniques are basically, I think, the same as they've been for years. There's restrictions on jaw spread and certain restrictions that are required, but in this county, I think it hasn't changed dramatically. Now, this business of best management practices that Mike's workin' on is I think gonna be a really good—when they get that done, it's gonna be really helpful, because there's guidelines there that hopefully can be followed. I think the Canadians, up there is where it really—there's dramatic changes in the way trapping evolved up in Canada, because they got way more into restrictive trapping to the extent where they made it illegal to use foothold traps in certain—I don't know if it was provinces or whatever. And they actually [pause] I think, didn't confiscate, but they told the trappers, “You can no longer use foothold traps. We're gonna take those and we're gonna give you snares,” or somethin'. Which snares are, kill-type snares. Snares wasn't a good example, I guess it's more like [pause] anyhow, kill-type traps that kills the animal instantly. They did a lot of research on these kill-type traps up there.

26:59

So they've had dramatic changes in Canada in the last 25 years, way more than we have in this country. And there was quite a bit of resistance on any market mandatory changes and equipment and stuff, although it has been improved. But again, you have to ask yourself, which—does it make—I mean, it wouldn't be even an issue with people who are opposed to trapping, but from the standpoint of how populations are bein' affected by trapping or length of season, that the state DNR people are supposed to be concerned with. And I'm sure, I suppose some do better than others. But I don't think it's changed drastically in this country, I really don't. In Canada it has, and of course Europe, it's about impossible to trap.

I would qualify that in this country, because we are having—we have had a period where, like, Colorado prohibited fur trapping, and Mike was saying, these best management practices have resulted in a couple of states reinstating, allowing people to trap under certain conditions. We, see, I didn't even know that, 'cause I've been out of the stuff for so long.

28:26

(What do you think trapping and wildlife management will be like, say, 25 or 50 years in the future?)

I don't view it as very promising. I'm not sayin' it's gonna disappear, but this business of urbanization, I forget the data that I got from the Bureau of Census, but when I was breezin' through this, I saw it, and it was amazing.

(Hm-mmm.)

Here it is. It says—I talk about just increase in populations worldwide and in the U.S. and then it said, “In the '84 census, it showed that only 2.4% of the population lived on farms, as compared to 30% in 1920.” So you're talkin' there, what? 64 years? And so, that trend I'm sure is gonna increase. You're gonna get more and more urbanized people, people that don't hunt or fish or their kids don't hunt or fish, and what they see comes from a television set. So I think there's gonna be more and more pressure on trapping. I just don't see it any other way. I always compared, and I don't really have any data, but I always compared attitudes towards trapping, say, in, say, England, which to me is the one extreme example of restriction, and the U.S., which I consider intermediate, and Australia as the other end of the spectrum in terms of their concerns about trapping or their views towards the taking of animals or whatever. And I see us as gravitating towards the England, just because of the urbanization, you know, more and more people and more and more conflicts.

30:40

It's like they used to—a lot of the—in the Southeast it was real popular to run dogs, you know, after raccoons or foxes or whatever, and because land ownership has gotten smaller and smaller chunks of land, and there was more and more complaints about it, and it's still goin' on, someone with these dogs that let 'em go at night, put 'em on a scent, and they'd sit around the fire at night the drink and everything, and that these dogs were continually trespassing on property, that people didn't want that goin' on. So the result is, in the Southeast they put up these—I think they call 'em pens or somethin', there's several hundred in Georgia, where somebody will fence a fairly good acreage and they'll release foxes or coyotes on there and then they'll put their dogs in there. The dogs hardly ever catch the critters, as I understand, but I mean, they have to do that.

(Mm-hmm.)

Because of the problem of letting these things run. And that goes back to more and more people, more urban attitudes and smaller average land ownership. That wouldn't be true, say, in Texas, and a lot of parts of Texas, and it'd be true to a lesser extent in the West. But still—I just don't really see it, see trapping as a—

32:09

And there's a very small percent of the population that traps, so politically they have very, very little clout, unless they form some type of coalition with hunters' groups or the NRA or whatever you want to—politically, and generally trappers are very low-income, blue-collar, rural, and politically they have almost no clout. So they're not in a position, I don't think, to influence.

(Mm-hmm.)

Like, restrictive legislation or whatever in the future. It's just not gonna happen.

32:49

(Well, along the same lines, what do you see some of the biggest challenges facing Wildlife Services operations trappers?)

Well, I see that, you know, as quite a different situation, because they're [pause] maybe not entirely, but to a large extent, they're tryin' to solve animal damage problems, and they're rebulated. There's control over what they can and can't do. So—and plus, I think the trend is—again, I'm really kind of out of current times, [laughs] but I think the trend is for Wildlife Services to get involved in more diverse activities. In the West it used to be catching strictly killin' coyotes, and I think—and especially in the East, which is mainly extension-type stuff, a lot of it. But even in the West, I think with bird problems and sunflowers and stuff, I mean, there's a lot more diversity as to what they can do, and I think that's—then, like, this rabies stuff. So they're getting' into more white-hat activities. So I think that's a big plus for those people. And if they continue to do that, or even expand what they're capable of doing or what they can learn to do, it's gonna be—I mean, it could be, really.

(Mm-hmm.)

And the fact that they do have more people, there are more problems with that, and more damage. I think it's—I wouldn't view their future really analogous to the fur trappers. Because as I say, economically, the fur industry is not.

(Mm-hmm.)

And the other thing is, in the West, the sheep industry has never been a good, strong industry.

35:08

I saw some statistics about how many pounds of beef are eaten compared to lamb, you know? It's ridiculous. It's like, 100 pounds of beef to a pound of lamb, so that's never been a strong—and the prices of lambs, I just bought a couple from a farmer back East, 'cause we like lamb, and in fact, those little lambies are probably cut up and frozen about now. I just did that last Monday with another guy. So [pause] I mean, you know, Wildlife Services, they are smart, and they are looking at other activities that they can engage in, needs. 'Cause they can't, I don't think, continue to—and I don't know as they have. Well, they did in past years, you know, they relied pretty heavily on predation control for their livestock industry, and a lot of that was sheep, sheep production. So they've diversified, I believe, and I think that's real positive.

36:16

So, you know, their future I think could—depending on how they guide their future program can still be, I think, pretty promising, I really do.

(What other hobbies or interests do you have?)

Well, I fish. I hike. Except I don't hike in hot weather back East. Summers are awful. Falls and springs are really nice, and winters can be fairly mild and short. And I sit in on a class, I have since I retired almost five years ago, every semester. I was tellin' somebody earlier in the day

that I really enjoy that because I've been sitting in on, like, ecology classes or environmental issues classes, some more technical, which sometimes I get exposed to a lot, especially graduate classes, more than I really want to know. But I like it because a lot of people in research and myself are really focused on very narrow.

(Mm-hmm.)

Areas of research, it's like tunnel vision. And I guess to make progress, you know, you have to specialize, you're kind of pushed into that. So I always enjoy, here, like, in these ecology classes, talkin' about ecosystems and environmental broad issues and that type of thing. So I enjoy the classes. I like bein' around the young people. I come an hour or two for class, but, so I like that.

38:01

And I got involved in this watershed group. My wife, she's involved in five volunteer groups, and so she's—Habitat for Humanity, and she's editor for the Botanical Society of Georgia, their newsletter, on their board. She's quite a bit younger than I am, and she's got quite a bit more energy than I do. [laughs] And she's an avid gardener. So I mean, we don't have any problem keepin' busy. We do some traveling. We're gonna start doin', I think, some campin' again, too. Now's gettin' to be a nice time of year back East there. Summers are pretty gruesome, can be. Although Denver had higher temperatures this year than we did.

(I believe it.)

It was a record, yeah. It was awful. I talked to my daughter, and it was cool where we were compared to Denver, isn't that weird?

([chuckles])

Yeah.

(Well, we've come to the end of my questions. Is there anything else you'd like to add?)

No, I've pretty well run out of— [laughs] I'm pretty dry, actually. I enjoyed talkin' about that stuff, reminiscing about things. So thanks.

(OK, great, thank you, Sam.)

It's fun bein' out here with everybody and you.

(Good.)

What time is it anyway? It's three.

(Thank you.)

39:21 End file 2. End.