Name: David Klein
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Location of Interview: Home of David Klein in Fairbanks, Alaska
Interviewer: Karen Brewster

Brief Summary of Interview: In this interview, Dave talks about working in Petersburg, Alaska, and being the primary deer biologist there and in southeast Alaska. He also had responsibilities that dealt with hunting and fishing regulations and management of wildlife. He talks about what kind of food sources the deer ate and what they did during high snow years, building exclosures to keep deer out of certain areas to see what kind of effect they were having on vegetation; bear issues concerning the Forest Service; meeting his wife and starting a family while in Petersburg; and getting his PhD at the University of British Columbia. He also talks about the division of Predator and Rodent Control, and how they would poison wolves even though it wasn't always necessary in certain areas. He shares a story about an experiment where wolves were put on Coronation Island and what happened with the deer population because of that. And he also talks about his relationship with hunters and how he would explain to them about deer populations and habitat and why certain things should or shouldn't be done, all without threatening hunting, and therefore getting gaining their confidence in him and getting their help with studies.

KAREN BREWSTER: Okay, today is March 27, 2014 and this is Karen Brewster here with Dave Klein at his home in Fairbanks, Alaska, continuing with our life history conversations. So, Dave, I think last time we left off you were talking about your work in Petersburg in southeastern Alaska for Fish and Wildlife Service looking at the deer population. So maybe you can tell me more about that work.

DAVID KLEIN: Yeah, actually, the deer work had started -- biologists starting with the -- in territorial days, the first biologists were mostly in post-war years. And then by that time there was money available through the federal aid in wildlife restoration legislation, the national legislation, that was based on taxes on firearms and ammunition that supported the states and the territory in relationship to size and number of hunting licenses sold, so -- hunting and trapping licenses. So my job was -- technically, I was based in Petersburg but all of southeast Alaska was my major area of responsibility, primarily deer. But I had some other responsibilities related to hunting and fishing and game regulations and management of wildlife. For example, I had to do an annual survey -- of flights -- of moose on the Stikine River. And mountain goats, not much. I had a big

interest because I'd done a master's degree on mountain goats. So I could provide a lot of information, because I hunted them there with friends and sometimes we'd do – if were doing other aerial surveys on the mainland for deer, we might check out goat areas close to the sea. But it was mainly deer. And one of the big problems was, how do you estimate the number of deer so that you know what trends are and population numbers over time, as well as how many deer are available? Was hunting pressure -- is it reasonable in terms of the numbers of deer? And the deer were known to fluctuate widely based upon extreme winters, the frequency of extreme winters, which was like once in every five to ten years, you would have an extreme winter. And that could cause heavy losses of deer through starvation, because the deep snow made food unavailable to the deer. And the old growth forests, close to the beach, were like the last place the deer would be pushed down close to the beach, but there was food there usually, but it was not a lot because of this old growth forest. But old growth was uneven age and had holes in the canopies so the sun could get down there. So there were plants that were important as deer food like blueberry shrubs, and on the forest floor itself before the snow came in a lot of low bush cranberry and dwarf dogwood. And this was -- the leaves were good, they stayed green all winter long. On several other plants, stayed green all winter long. So as long as there was no snow covering the ground, which is where -- when there was snow, it was mostly up at higher elevations where it was cooler, and that that was down low often melted off because of the rains that usually came at lower elevations when there was a storm. But in a severe winter, a cold winter, with snows right down to the sea line was when there would be a big starvation loss.

KAREN BREWSTER: So what you're saying is that the deer's main food source was this dogwood, and blueberry, and cranberry down near the coast and that would --

DAVID KLEIN: At that time of the year.

KAREN BREWSTER: -- and then when it snowed a lot, then their primary food source --

DAVID KLEIN: There was still food available if they were pushed down there by the snow at high elevations, but if you got snow down there, it could be so bad that it was hard for the deer to get around. The energy costs of moving through the snow meant that the fawns couldn't handle the deep snow and would die first. And then the old ones that were not in good shape. It was only the more vigorous ones. And then if the snow lasted for more than a couple of weeks, the deep snows without rains washing it down and melting it, then would be massive die offs of deer just dying on the beach. Eating lower hemlock bows -- needles from the lower limbs of these trees, which was like starvation food. Eating some kelp that would wash up on the beach. They always ate a little bit of this stuff, but it was hard to digest. And they would starve with full rumens in their stomach, fore-stomach, and with this food that they couldn't digest well. They'd lose their microorganisms in starvation and just couldn't digest this food.

KAREN BREWSTER: So what was their regular main food source on a regular year when there wasn't a lot of snow?

DAVID KLEIN: It was -- if there were deer down at lower elevations and there was no snow, there was a lot of what we called winter green vegetation. Which were perennial plants trailing in the mossy layers of the forest, in the old growth forests and in open areas in these forests where trees fall down, and others have to take years to fill in. And so they had a wide variety. They ate the centers of ferns, over-wintering ones, the fiddle heads on ferns, they'd eat those. They were opportunistic, but they would select for food that was digestible and suitable.

KAREN BREWSTER: And what about the --

DAVID KLEIN: The willow grouse, when the snow would cover the lower evergreen, then the blueberry and huckleberry, they're closely related *vaccinium* species, those were the main browse species. And they'd eat the green shoots from the previous summer's growth, which was okay food, it wasn't as good as the winter greens that were covered by snow, but they'd eat these and could usually get through the winter. But you could see the browsing was heavy. And one of the first things I did was to build some exclosures to keep the deer out from -- about 10 by 10 foot squares in forested areas as well as in more open areas. And those paid off right away, because we didn't realize they were eating these winter green things because when they took these green leaves, it didn't kill the plant. And if they were gone by the end of winter, it was just some mossy forest floor vegetation left with a few shrubs growing up. And some of the shrubs they wouldn't eat, like devil's club and what was called buck's brush. That didn't have berries in it and it was resistant to being eaten, because it was apparently very poorly digestible. But at any rate the --

KAREN BREWSTER: But so, I want to interrupt a second, the deer that lived higher up, what were they eating?

DAVID KLEIN: They would – eating -- in the summer time and you could get up above tree line, that's the most lush deer habitat in summer because it's nice and green pasture-like situation, with a lot of variety of plants, but typical alpine plants that are fast growing, especially in the rain forest, heavy rainfall, lots of sunlight, and good growth conditions. But as many of those would be -- have annual growth above ground, so they were kind of perennial plants, but then they were also in the -- as you started coming down out of that alpine there would be, well, there'd be things like sedges, a few sedges and grasses that would not die back. And was like this in the wintertime. But that would -- if you were on the mainland, then that's what mountain goats would be feeding on until the snow came. Well, then the deer would -- when the snow came, the deer would start moving down. And the area, the timberline forest, was very productive for deer food, because there was sunlight there, the trees were small and scattered and a lot of shrubs. And this where there was a lot of the blueberry shrubs, and they were the main browse species that was used in the early winter by the deer that were up there. High quality, they were growing out where they were getting a lot of sunlight. But that would -- in southeast Alaska, it would quickly be covered by snow as the winter progressed. So they gradually moved down into the lower slopes. And the slopes were good slopes, especially

south slopes, where they could get more sunlight during the growth season. And they would just -- it was a product of where the snow accumulated and how much. And you would get different depths of snow, too, because in a storm, frequently, the precipitation was mostly on the side of the mountain where the wind was blowing from. Whether it was rain or snow, it tended to be deeper on those sides. So they moved around in relation -- the deer moved around in relationship to the availability of food and the snow was the main controlling factor, which, of course, was a product of the variability of the weather throughout the winter.

KAREN BREWSTER: Well, that makes sense that the pressures of your food is covered by snow so you keep moving, moving, moving down to the beach, and eventually if there's snow at the beach, you've got no more food left.

DAVID KLEIN: Right. So, and these exclosures -- I only built about four of them in different parts of southeast, but mostly not too far from Petersburg, because we had to haul the, by boat, the fencing and cut poles and what. And it was an all-day operation to build one of them. And then there were problems too, because if in the rainforest there was always a lot of limbs coming down, and those on a big old growth spruce or hemlock, those limbs are big and heavy, and they could break down the exclosure quickly. And we had one case where, fortunately, we were checking that daily, and a branch came down and broke down the fence so that it leaned into the exclosure. And deer walked in there and pushed the fence down, because it was at an angle, because there was more green vegetation inside that hadn't been eaten. And then couldn't get out. So it had had plenty to eat while it was in there, which was only a matter of hours, just overnight and the next morning. And so we had this deer in an enclosure, which we put an ear tag in and let escape. But it was a problem in maintaining these, because often times they'd be just crashed down on top of them and there wouldn't be any fence left at all. And it'd be a big operation to -- if it was a big tree, you'd have to -- you couldn't do it. You couldn't -- We didn't have big chainsaws to --

KAREN BREWSTER: What time period was this, the '50's?

DAVID KLEIN: This was in the '50's, right.

KAREN BREWSTER: Yeah, so you didn't have all the chainsaws.

DAVID KLEIN: Oh, there were -- we might have a small chainsaw, but these were big logs. And these were small for cutting lumber and stuff if we were building a dock around town or working on your house or something. Yeah.

KAREN BREWSTER: So for somebody who doesn't know about exclosures, maybe we can explain that? You built this fenced in area to keep the deer out so the plants would grow so you could see --

DAVID KLEIN: So we could see --

KAREN BREWSTER: -- what deer were eating --

DAVID KLEIN: What effect the deer were having on the vegetation. In other words, they weren't eating all plants, they were eating those that they selected for. And they were the good ones for deer browse. And there were not so many outside because the deer pressure was fairly high, when the deer population was high, and especially if they were forced down in early winter and feeding on the blueberries. In some places, some islands, out towards the outer coast, they didn't have so much snow, and so the deer, except at higher elevations, so the deer would spend the whole winter down at low elevations. And the exclosure, after a few years, you could see that we were getting real -- the forest, without the deer, would have been super brushy and hard to walk through, but it was open and park-like underneath the trees. In some cases, there wasn't good reproduction of some -- of hemlock, particularly. Hemlock can get started growing on top of dead logs for example, and they're called nursery logs. A tree that falls over and gets mossy, they get started there. Where the deer pressure was high, those are edible young trees. But once they get big, then, of course, they can't feed on them. Sitka spruce, they normally will not eat Sitka spruce, although in extreme cases there was some. We found on Coronation Island, where there were no wolves and no hunting and the deer were controlled by the food supply, and they therefore control the food supply, and eliminated a lot of -- virtually eliminated all of the good quality food. So you'd only find, say, blueberries growing up on a dead stump where it was decomposing, and enough soil there, but the deer couldn't climb up on that stump to feed on it. Or on cliffs and rocky places that the deer couldn't get to.

KAREN BREWSTER: So in your exclosures, if there was lots of one type of plant that was growing really tall, that was different – that that same plant was not seen outside of the exclosure, you knew the deer was eating that?

DAVID KLEIN: Yeah, that's right. So the terminology is confusing here. Generally, you use the term enclosures, to enclose the vegetation.

KAREN BREWSTER: But you were excluding the deer.

DAVID KLEIN: That's right. And that's why we tended to use the term exclosure for excluding deer.

KAREN BREWSTER: But a botanist might call it an enclosure, 'cause they were studying --

DAVID KLEIN: That's right.

KAREN BREWSTER: -- something inside?

DAVID KLEIN: Yeah. And we were doing that, too, but our purpose was to keep the deer out. In some areas, when you build exclosures or enclosures for moose, for example, on the Kenai Peninsula or other places, you have to consider the other

herbivores like snowshoe hares. So you might have to have fencing that will keep out both the moose, which have to be pretty tall, and then it would keep out the snowshoe hares. And there's always a few herbivores in there that you're not going to keep out, like voles, which may be eating the seeds of these trees or plants, which is how plants get started. But there's a limit to what you can do with an enclosure or exclosure.

KAREN BRESWTER: And I've heard it used as the term exclosure from -- when I've heard scientists talk about this kind of work, I've heard them use the word exclosure.

DAVID KLEIN: Yeah right. And one of the main reasons, at the time, as a young biologist I was sort of typical. I wanted quick solutions to problems. And an exclosure is, in many cases, other than this winter green vegetation that we found. It only took one year, one winter, and then we saw the difference. But mostly for the woody browse like the blueberries and related plants, it might take ten years before you could see the difference. And they're slower growing, and you had to have -- the control was outside, the rest of the area outside. And then you had this -- so you had to have an exclosure that would be sustained and managed to last for ten years without getting broken down by the windfalls. But deer didn't push fences over, like if you build exclosures and they have for bison or moose, yeah, they can push over a fence if there's food inside. And the fence is not built to withstand them doing that. You build an exclosure for bison, for example, I used railroad ties for posts 'cause they may rub against them, too.

KAREN BREWSTER: So what did you use for posts for the deer?

DAVID KLEIN: We just cut smaller poles and trees. And they were available close to where we were working.

KAREN BREWSTER: And we didn't say, but these are Sitka black tail deer, is that correct?

DAVID KLEIN: There's a Sitka black tail deer.

KAREN BREWSTER: Okay.

DAVID KLEIN: And, right. But then we had -- Southeast Alaska is just a terrific place to study deer ecology and the deer/ecosystem relationships of the deer. And the reason is, that you have all these peculiar distribution of the predators in relationship to the deer. Like the northern islands in southeast Alaska, Admiralty, Baranof, and Chichagof Island; they're called the ABC islands. They have a much more pronounced winter with deeper snows, because they're further north. But they also have no wolves present. They have deer, no wolves. There are brown bears there, but no black bears. On the mainland, there's black bears and brown bears, both present in southeast. Now you go further south, the next group of islands, the middle ones with Petersburg is Kupreanof, and Mitkof, and Etolin where Wrangell and Petersburg are. In the middle islands, there's wolves. They're close to the mainland and the wolves could swim and get to the islands from the mainland. There's black bears, but no brown bears on those islands in southern

southeast Alaska, just black bears of the bear species. And there's a really long and complex history of how they got there differentially and how long. Some have been there longer than others. And were there refugia? Well, when I was there the geologists claim that southeast Alaska was totally covered except for a few nunataks sticking through the icecaps with ice. And therefore there couldn't be any refugia for mammals, and birds, and humans.

KAREN BREWSTER: So what's refugia? It's a place they take refuge?

DAVID KLEIN: A refugia is a term used for an area with regard to glaciation. It wasn't glaciated. And you could have plants that would have been there through the glacial period. And if it's a big enough refugia, you could have animals that would be living there in a whole ecosystem.

KAREN BREWSTER: So it was during a glaciation period, it's a part that didn't get glaciated?

DAVID KLEIN: That was the hypothesis. And this was based mainly on geologists studying rocks mostly in the mountains that didn't have snow on them in the summer. And they'd see that there obviously were glaciers overriding much of the mountains, unless they were real tall mountains. Or in lower elevations everything was covered by vegetation usually, so you couldn't examine rocks unless at the beach there might be reefs that hadn't eroded down. And some of those would have -- many of those would have glacial scarring from glaciers. So it was an assumption that there were no refugias. Subsequently, it was shown – well, first with some pollen analysis in marshy areas, and ponds, and swamps. They showed that there were species of plants that must have been in refugia because they didn't occur outside of the area. And then the limestone caves, mainly on Prince of Wales Island, which is the largest island in the southern group of islands down west of Ketchikan. That had a lot of limestone and karst topography, which is limestone substrate where you have sinkholes and caverns and caves. And in these caves, which frequently had openings through a sinkhole from the top, animals over thousands of years had fallen in. And so, their bones were present. And they were able to date the bones and tell when deer arrived, when the brown bears and deer were both present there in southern southeast at one time. Why the brown bears died out, we don't know, there. And why they haven't come back into southeast from the mainland. Occasionally, one would be in there. And my hypothesis then was the bears that were there first had priority even though the black bears are usually subordinate to brown bears because they're smaller. The diets were different on -- They were able to do stable isotope analysis on the bones showing that the black bears were eating forest plants and berries, and some animal matter, some fish. But the brown bears that were down there at the same time were eating almost all animals including fish, and mammals, and birds coming from the sea. So they were all animals that lived in the sea, or lived on the production of the sea. So these are advances that have occurred since I left.

KAREN BREWSTER: Yeah. But like Admiralty Island, I think of as a place that has big brown bears.

DAVID KLEIN: Yes. And the Admiralty Island bears are particularly fascinating because it was hard to explain why there were brown bears there and not -- We knew that they didn't normally swim the long distances to the mainland even though there are brown bears on the mainland. But we figured at maybe lowered sea levels they didn't have as wide a distance to swim, but then you had to factor in the glaciers. What was -- we were able to find though, from genetic work, and some of that was done -- first was done through the university here where we had a faculty member who was the --

KAREN BREWSTER: Geneticist.

DAVID KLEIN: -- geneticist. And he had a student, Sandra Talbot, who did a PhD with him, and they started looking at tissue samples from the brown bears, and on the mainland as well as in southeast Alaska. And they found that the brown bears on the ABC Islands in southeast Alaska were the most different from other brown bears throughout the whole world. Like, if brown bears occur across Siberia all the way down into Hungary and Scandinavia, and they're all very closely related with the exception – Well, they're all closely related, but the ones in southeast Alaska are less closely related to the mainland animals then. Even though you have the Barren Ground Grizzly, which is a brown bear, and the big Kodiak brown bear, they're genetically close together than the southeast Alaska brown bears, which were big because -- as well as the other coastal brown bears on Kodiak and the Alaska Peninsula, largely because of the abundance of fish that they were able to have available to feed on. But genetically, they had been separated for a long time. And the southeast Alaska, this is a mystery that has not been adequately explained as yet, is that the southeast Alaska brown bears were more closely related -- the mostly closely of the brown bears related to polar bears. So the question is how many hundred thousand years ago were the polar bears separated from the brown bears. I think when they were first doing these studies and finding this difference, it was estimated that it was about 350,000 years ago that the polar bears and brown bears separated. I think more recent studies suggest it might have been longer than that.

KAREN BREWSTER: Interesting. It got us off the subject of your deer, but --

DAVID KLEIN: Well, yes and no.

KAREN BREWSTER: -- it's related, I'm sure.

DAVID KLEIN: I had some responsibilities for bears, but mainly it was on Admiralty, Baranof, and Chichagof where we got into an argument with the Forest Service, because they were wanting to log everywhere that they could. And their whole attitude, Forest Service at that time, even though it was supposedly a national -- the Forest Service was a multiple resource management agency and they talked about managing all the resources on the land rather than just focusing on one. The reality was that they didn't have any biologist at that time working for them, they were all loggers and foresters and they knew a lot about cruising timber and what was ready to be cut and how to go about estimating the board feet of timber so they could lease land for logging and they wanted to get old

growth forests into what they saw, the foresters saw, as better production. You're producing more fiber per year on second growth forest than you are in old growth forest, 'cause a lot of the trees are falling down and decomposing and not being harvested. But, of course --

KAREN BREWSTER: Still having those arguments.

DAVID KLEIN: Pardon?

KAREN BREWSTER: We still have those same arguments today.

DAVID KLEIN: Of course they are. And so we -- I was working for the Fish and Wildlife Service and the Forest Service, another federal agency, -- We had a hard time relating to them. We related more closely to the state government in Alaska Department of Fish and Game after statehood than we did with the Forest Service. And even before statehood, we had a lot disagreements with the Forest Service because technically we had responsibility -- Fish and Wildlife Service had responsibility for the well being of the wildlife, which should be -- and is properly in relationship to harvest of other resources from the forest.

KAREN BREWSTER: So even though it was National Forest land, Fish and Wildlife Service had responsibility for the wildlife?

DAVID KLEIN: Wildlife and the fish. And for salmon that meant it was Forest Service land and technically the Forest Service had responsibility for the streams and what. It was the Fish and Wildlife Service and the Bureau of Commercial Fisheries that wanted to be sure that spawning streams were protected when logging occurred. So they were arguing for protecting the spawning streams, don't cut close to them, and it was -- because if you cut and just left the big trees close to the streams, then the next storm would usually blow them down because they would not be protected by other trees. And that would be a worst case scenario, because then it would be a tangle and it might even obstruct salmon moving up through the streams and be costly for the forest to salvage that wood and clear them out.

KAREN BREWSTER: So you needed a certain width of a buffer?

DAVID KLEIN: That's right. And it varied because of the shape of the landscape. Some areas are so exposed and vulnerable to strong winds, that it was very hard to do logging successfully in those places. You might, in some of those cases, they could make an argument for clearing all the trees out, so that -- and live with warmer water temperatures until you got regrowth of the new forest that shade the waters in the whole watershed. And water temperature was crucial for the success of the salmon spawning eggs and the young salmon in the sea. So it was -- and of course this was big industry. The commercial fishing, as well as -- and a young forest logging industry was just getting started. So technically the Forest Service was managing in a way to be detrimental to the money making industry at the time to get another one started. And subsidizing road building and

what so that the loggers could buy the -- get a lease on the basis of the stumpage and how much wood there was available. And they had to lower the price. These resources were property of all American citizens and yet they were sort of catering to special interests. And northwestern loggers were clear cutting most of the rainforest down there and they saw southeast Alaska as a place to come. Which they did. They had made deals with the Japanese to build two pulp mills, one at Ketchikan, one at Sitka. And that's where most of the logging was. Went there. They also had very lax laws to allow rough timber to be shipped to Japan directly from southeast Alaska without any processing and without creating very many jobs except cutting the trees down. Gradually, there were some changes made in that regard. But back to the bears on Admiralty and Baranof and Chichagof, and there were problems that the Forest Service had and they tended to blame Fish and Wildlife Service on the fact that the brown bears were coming into logging camps where loggers were small scale loggers which were two or three families. And the women and children were there and mess hall and they frequently were -- the best place to locate was the mouth of a salmon stream, which attracted the bears. And they were damaging the salmon stream. Attracting bears because they weren't disposing their garbage properly. And then there're children and they were at risk of injury by the bears. And so the Forest Service attitude acknowledged at that time by the chief forester was, on closed doors, it wasn't for the press when we met with him was, "Well, you wildlifers have to face up to the fact that bears are going to have to go. They're just not compatible with logging and with our primary use of the forest." From their perspective, primary use. So we did some studies jointly with the Forest Service to try to identify how many bears there were on a given salmon stream during the spawning time when bears tended to concentrate there. Because the loggers claimed there weren't many bears. We claimed there were a lot of bears, and they were mostly staying on the stream. And they said that they were moving between the streams and so it looked like there were more bears than there actually were. And so we did some studies. We measured tracks and differentiated moderately well how many different bears were on salmon streams. Which was – That was -- We had Forest Service boats and Fish and Wildlife boats that we were based on and we moved around. And then we had a helicopter and a float plane. Helicopters would move a team of two people. Two of us would be flown up to where they could land at the head of a salmon stream on a muskeg or if a stream was wide enough on a gravel bar and drop us off. And one person would be carrying a bear gun, and the other person would have a clip board and tape measure and we'd be measuring and recording tracks as we came down in the stream sands, along the stream, or anyplace we could find tracks all the way down to the sea. And then we'd get picked up again and moved around either by boat back to our -- by a small boat back to our big boats and then shuttled back up to the head of other streams. So you do a couple of streams a day, with a team of two people. So we had quite a few teams. And some of them were Forest Service people, but I was responsible for coordinating all this. And we worked together with them and it was -- it was a good project. And we published a paper on the method we used and estimates of the deer. So we made a strong case that there were more deer on those islands, more --

KAREN BREWSTER: Bears.

DAVID KLEIN: -- brown bears on those islands. That they were a unique resource. And although it wasn't until some years later when the National Interest Land and --

KAREN BREWSTER: ANILCA.

DAVID KLEIN: -- Conservation Act, ANILCA, protected Admiralty Island as a National Monument, largely because of the richness for brown bears there.

KAREN BREWSTER: And that was partially then based on your research?

DAVID KLEIN: Some of that, yes, definitely. But there were continuing studies done with the bears and the deer on those islands.

KAREN BREWSTER: So your research showed that there were more brown bears there than what the loggers were saying?

DAVID KLEIN: Yeah. It wasn't just a matter of scaring a few bears away from camp. And, I mean, it was obvious. There were some things were quite obvious like the bears were tied to the salmon during the spawning period. And the bears were playing -- more studies, and some Forest Service studies were beginning to show that the bears were moving. Were spending a lot of time on the banks of the salmon streams where they would pull the fish up after they were spawned out or they'd eaten part of them and they would decompose and be spread around further by gulls, and ravens, and small mammals, and other animals eating them. And the nutrients from the sea were being brought in by the salmon that died after they spawned, and some of them were killed by bears certainly before they spawned. But at least the nutrients were entering the whole watershed because the bears were moving around. They were spreading, also berries, by eating berries along the stream and spreading those seeds, berry seeds, out. And studies done through the Forest Science Laboratory in Juneau, which was a product of the Pacific North Forest and Range Research Station, which was the research branch of the Forest Service. They were able to show this good connection between the salmon. And some of our students here, my own students, were also involved in these studies. With using stable isotopes we were able to show how important marine resources were to much of the plant and animal life on these islands in southeast Alaska. And that remains the initial cutting edge science that has been built on by that and realized that Pacific salmon is so unique for Alaska, enriching the whole ecosystems of the land as well as moving back to the sea and growing and coming back again, and after their cycle time.

KAREN BREWSTER: Well, I think our conversation is showing how interconnected this all is from an ecosystem perspective considering we just went from deer to bear to salmon.

DAVID KLEIN: Yeah. We can go back to deer again and then it'll get to where I went to --

KAREN BREWSTER: Well, that was my question. So this work you were doing with the exclosures, what did that show you and how was that useful?

DAVID KLEIN: Well, I think I mentioned earlier that as an undergraduate student I took quite a bit of botany and was always interested in botanic and gardening and plants and -- as well as the wildlife. And so my interest in the deer, the exclosures were part of that, were what kind of plants are most important and what plant communities are important to the deer. And I know they were used differently and different seasons of the year. And how do they affect the nutrition and growth of the deer. You can say that food that the animals eat, are going to affect two aspects of the animals, of herbivores. One is it's going to affect the population of them, because then that's a matter of how much quality forage is available in a given area to allow the population to grow successfully. To reproduce and go through tough winters and then grow to good size. And the other was body size of the animal themselves is going to be a function to some extent of the quality of the food. And that became apparent through hunting. And they would have -- in some of the towns they would have a trophy for the largest, the heaviest deer that was killed, that was brought out where -- in the usual way. The deer were relatively small and so you can -- the average size female you can make a pack just the whole animal by just eviscerating it and leave the head and feet on, and eviscerating it and sew it back up again. Put the heart and lungs -- liver back inside, sew it up with some twine and a pocket knife and then you can carry it like a pack on your back.

KAREN BREWSTER: And what, like a hundred pound pack, a fifty-pound pack?

DAVID KLEIN: A female would be a seventy pound, probably a seventy-five pound. A buck would be over a hundred, and the biggest bucks would be up in the hundreds -- this is with the viscera out, but the rest of the animal there, skin and all, head and antlers, and it would be -- a big one would be over a hundred and fifty pounds. Sometimes a little higher than that.

KAREN BREWSTER: And that's with the head and the antlers, or without those?

DAVID KLEIN: Head and antlers. The whole animal without the viscera, so that would be the guts and the guts. But then there were islands, smaller islands, that were fairly isolated, hard to get to, that didn't have any deer. And the southern groups of islands didn't have any wolves rather, pardon me, didn't have any wolves, where there were wolves on these other islands. So I was fascinated by the fact that this one island close to Wrangell, which was a good size island, but small compared to the big islands of Wrangell Island and Etolin that were close by or Mitkof, where Petersburg was on. And Woronkofski Island had a lot of alpine area, not much lowland, and it had big deer and the wolves were there sometimes, but they could swim across to Etolin, that was a narrow channel, and move back and forth sort of in relationship to the availability of deer. But in the summer time the deer were scattered out and around this area are hard for wolves to prey on, plus in the summertime, they're raising their young and they're staying down low and they're usually not hunting in packs until wintertime.

KAREN BREWSTER: The wolves, you mean.

DAVID KLEIN: The wolves. So here where there's an island with big deer and wolves and good quality food, but the population fluctuated markedly because it was close to the mainland and close to the Stikine River, where you had a colder influence coming in from the interior in wintertime, and you had heavier and deeper snows for longer periods of time. So it was a case, it's -- when you had severe winters, again, available food was covered virtually and they didn't have the lowland over-wintering areas like some of the other islands had. And so the population would fluctuate and in a period of mild winters you'd have lots of deer and good hunting and there were big, giant deer that were winning trophies for being large body size. Then if you go straight out to the west coast, there's Coronation Island, which had no wolves on it. And it was hard to explain why there were no wolves on it, because there was a narrow channel between Kuiu Island to the north, but it was a very dangerous channel for boating because the waves and currents were strong there, so it probably discouraged swimming by wolves. It didn't have any bears on it either, of either sex. They were closely black bears on other islands, and wolves. And the deer there were -- obviously they were not -- and it was kind of an isolated place so that most hunters didn't go that way. Occasional fishermen would go into one of the bays and anchor up and then might go hunting, but there was essentially no human harvest. So deer there -- the winters were milder because they're out by the maritime coast. So I started this study comparing the vegetation on these two islands. The deer were small there and there were lots of them. They were less wary and easy to hunt because there were no predators.

KAREN BREWSTER: That was on Coronation, they were smaller and less wary?

DAVID KLEIN: Yeah, right. But then the vegetative studies showed that the high quality forage plants had been eliminated by this long heavy pressure of deer without a lot of snow, and so there wasn't -- They sometimes would, in a rare winter, a rare winter would be once every twenty years or so, then there might be a fair reduction. But mostly they died because they were in poor condition going into the winter and they had slower growth rate and probably not as many females successfully raise their calves going into the first winter, their fawns. And the vegetation showed this effect, but you don't see it because it was uniform. Subsequently this was funded -- my studies were funded by the Department of Fish and Game, after statehood, before that it was the Fish and Wildlife Service, but I was just getting started. So then when -- 1959, Alaska became a state and I had started this work, I decided I wanted to go back to university and get a PhD because I thought ultimately I wanted to be at a university and needed a PhD degree. So I made a deal with -- I quit the Fish and Wildlife because there was no place for me to stay in Alaska. I would have had to transfer out of Alaska if I wanted to stay with the Fish and Wildlife because they were cutting back. The new state was building up the Department of Fish and Game and so the jobs that we had as biologists with Department of Fish and Game in the territorial days were eliminated and the state then took over this responsibility. I then transferred to Fish and Game. And most of the people that made up the Game Division, the large percentage of them were from students, graduates of our program here at the University of Alaska, like myself. So I knew quite a few of them and

they were -- I think they did a good job of organizing, and they had good role models from the federal work that we were doing. And there were several others that were with the federal that transferred to the state. And so it was a good transition. Good cooperation between state and federal during this transition period. And the federal government took a lot of responsibility for the habitat studies before, because virtually all of the habitat was under federal control, whether it was National Forest, or National Wildlife Refuges, or National Bureau of Land Management, public domain lands. And it was before statehood and the state hadn't had time to select lands nor the Natives. There hadn't been a native claim settlement, so there weren't areas selected by the Natives. And so the new Department of Fish and Game put an emphasis on counting animals, and studying population dynamics of the animals on the basis of working with the animals rather than studying both the habitat and the relation of the animals to habitat. So my experience and training had been -- through the Fish and Wildlife Service, had been looking at habitat, animal and plant relationships through habitat and then the well being of the population and the growth of the individual animals, etc. This kind of studies were only continued then in places like wildlife refuges, where it was all under federal control. And national parks, some studies there but mostly there weren't those studies being started at that time. So I took -- I was able to take leave without pay, educational leave they called it, to go to the University of British Columbia to do a PhD, because they were doing the kind of studies with deer that I was interested in and that I was starting. I had collaborated with them on getting animals down to them for their studies. And the major -- Dr. Ian McTaggart-Cowan, who was head of the biology department, also was my major advisor. And he was the one who was managing and started the studies on the deer, including Sitka black tail. Some of the fawns I had provided that were orphan fawns, and picked up by people thinking they were orphaned at least. And we had to take care of them for a while, then we shipped them down and he used those in his deer studies. But I felt it was the best place for me to go and he was the ideal professor to advise me. And I could move down with my new family, and two young children. And I spent two winters then in Vancouver during the academic years and came back in the summers, and my wife and children came down with me, and then in the summer they would go to Washington state and Walla Walla, where my wife's family lived. And they stayed with the grandparents during the summer, then come back to the campus when I came back.

KAREN BREWSTER: And so your summers you came back to Alaska and were doing fieldwork?

DAVID KLEIN: I came back and continued to do field work and trying to finish up these studies, but it was overlapping with a young biologist who had just got his degrees at the University of Alaska in Fairbanks. So we worked together. He was sort of my field assistant, but he was learning his responsibilities through working with me.

KAREN BREWSTER: And who was that?

DAVID KLEIN: That was Harry Merriam.

KAREN BREWSTER: So I'm going to side track us a little bit, because you mentioned a wife and family. When did -- where'd they come from?

DAVID KLEIN: In Petersburg, I had been single, and definitely didn't want to get settled down. I had the military service that I had to do and I didn't have a job or income or savings when I was a student, and in the military. But I moved to Petersburg and had a full-time job then, and then I met a school teacher, young school teacher in Petersburg who was originally from Washington state. And she and I got together and we got married. And we had our first two children there.

KAREN BREWSTER: And what was her name?

DAVID KLEIN: Arlayne, A-R-L-A-Y-N-E. Her last name was Knox. No it wasn't Knox, it was Brown.

KAREN BREWSTER: So how did you meet her?

DAVID KLEIN: Well, actually, it was through wives of pilots. I mean, I knew the pilots that flew -- I was doing a lot of flying between southeast towns with the deer management, checking with hunters, and determining what they killed, etc., etc. And collecting jaws for age studies. And so at that time you flew only with a Grumman Goose and landed in the harbor. There were no airports except at Juneau, and Ketchikan the closest airport was on an island.

KAREN BREWSTER: That was Annette Island.

DAVID KLEIN: Annette Island. And you'd have to fly there, a short flight from Ketchikan to get there. So at any rate, so I know these pilots and then there was a pilot who flew for a charter company with small planes. And I used him a lot for deer counts or moose counts. Bill Stedman. He's a terrific pilot, very good and safe pilot. Some of the winter counts you'd be dealing with turbulent weather and he was good about cutting off when it got turbulent before he and I might get sick. I never had any problems with air sickness, but -- And he knew how to do the kind of survey work.
And he had a wife who was a school teacher, so -- And then one of the pilot's wives was a school teacher that flew for the airlines. There were two companies, one based in Ketchikan and one in Juneau. And Alaska Coastal Airlines. And the one in Ketchikan was, I'll think of it.

KAREN BREWSTER: I know I will have heard of it, but I can't think of it.

DAVID KLEIN: And they worked together, really, and moved people and mail and other things back and forth. So no ferry system then.

KAREN BREWSTER: Oh really.

DAVID KLEIN: And no -- things came in by either -- the produce and stuff, came in by the -- once a month the Alaska Steamship Company came up from Seattle and stopped at the towns and dropped off food products and stuff. But, of course, we had the fish processing companies there. Shrimp fishing, salmon fishing, halibut fishing. A lot of diversity of food, and good food, but didn't have a lot of fresh produce. And the airlines were not capable of hauling that stuff because the cost would be prohibitive. The small planes just handling baggage and passengers was -- plus the cost of logistics of loading and unloading didn't make freighting that way realistic.

KAREN BREWSTER: So you met Arlayne through these other wives?

DAVID KLEIN: Yeah, socially.

KAREN BREWSTER: It's a small town.

DAVID KLEIN: It's a small town, very small town. And single young people were brought together by some of these school teachers and what that -- and friends that I met. And, yeah, so that worked out.

KAREN BREWSTER: And so the two children you had there were which of your children?

DAVID KLEIN: Martin, the son, the first one and the oldest. And then Peggy Ellen.

KAREN BREWSTER: Okay, so they were the two ones at that time period?

DAVID KLEIN: Born in Petersburg, yeah. In the hospital there.

KAREN BREWSTER: And then went to BC with you guys.

DAVID KLEIN: Yeah, that was the case. So this -- it was an exciting life for them, 'cause they got -- we went by ship into Seattle. A government ship was coming down through and we were able to get a ride down. And then we bought a -- first new car that I'd ever bought was a VW Bug, and picked it up in Seattle. And so that was very efficient for us. It was efficient for that small family and we were living in Washington state and Vancouver, British Columbia.

KAREN BREWSTER: So what year was it that you started at UBC?

DAVID KLEIN: '59.

KAREN BREWSTER: That's right, okay, statehood. And when were Martin and Peggy Ellen born? This is a test.

DAVID KLEIN: You're going to ask the difficult questions.

KAREN BREWSTER: That's fine. I can find that out. But before 1959. [chuckling]

DAVID KLEIN: Yeah. We got married in 195- -- around Christmas time, '55, I think. So I'd only been down there for a year, about a year. And then Martin was born the next year. And a year and a half later Peggy Ellen was born.

KAREN BREWSTER: We can do the math. So you mentioned going to these other communities and talking with the hunters. So part of your work was this research and these exclosures, but you also were dealing with --

DAVID KLEIN: Management.

KAREN BREWSTER: -- more management.

DAVID KLEIN: Yeah. There were game wardens and technically we had a game warden, a law enforcement authority, but our policy was we didn't want to exercise it except in an emergency, because we wanted the hunters to cooperate with us and we didn't want them think we were just other game wardens. But we worked closely with the game wardens and frequently they were helping me in the field, if they had the time, and I was doing the same. And they usually had priority for using the boat, a big boat, that we could sleep on. But most trips, organized trips, we would plan to do my own research in conjunction with theirs. But it was more the management kind. Where were the hunters hunting, and what was their hunter success in different areas? And what sex and age of deer were they killing? And the deer populations were in good shape and fairly high. And in fact they were high enough that I could see pronounced effects with these exclosures on the vegetation of the deer, and was making the case that we should be very liberal with hunting. And at the same time the Fish and Wildlife Service was carrying on predator control, and were killing wolves, because there was a separate branch, Predator and Rodent Control. In the early days in Alaska, the idea was that all wolves kill game, and so they said wolves should be killed because we want the game for humans, except on parks or protected areas. So they were given credit for the numbers of wolves they killed, and coyotes, as well, where they were killing coyotes. And rather than killing wolves where it might be needed because the deer population was pushed down say by the severe weather, and then you had good weather and they were slow to come back because there's still a lot of wolves there. So they didn't concentrate the control in the areas where it was needed, there were more wolves where there were more deer. And so they killed the wolves, and this was true throughout the whole territory. And then later the state it was somewhat similar until Predator and Rodent Control was pretty much dissolved with statehood.

KAREN BREWSTER: Okay, so Predator and Rodent Control was part of Fish and Wildlife?

DAVID KLEIN: Yes. So I was working -- sometimes Predator and Rodent Control agents -- there was one stationed in Petersburg, one in Wrangell, and they moved around southeast somewhat. But yeah, we worked together frequently. I didn't do their control

work, but I frequently was there when they were doing control work. And I was already a young biologist in the territory at that time, myself and others, and in the Department of Fish and Game were wanting to get away from poisoning wolves. Poisoning any animals. It was not as selective as it was desired and in theory they were trying to be as selective as possible. But like they were putting -- they would fly in a small plane, and if you had a freeze up early of the lakes in the southeast in the winter, the wolves would frequently move around on the islands and use the frozen lakes. Well, they would make up these baits in plastic bags and drop them from the plane and they would burst and the baits were chunks of seal blubber with --

KAREN BREWSTER: With poison?

DAVID KLEIN: -- strychnine --

KAREN BREWSTER: Oh.

DAVID KLEIN: -- tablets. And when they hit the ice they would burst open and scatter this brown spot of terrible smelling stuff for -- at least for humans, and then the wolves would be attracted to that and they would eat it. And bears by then should have been in hibernation. And most other small mammals would not be out in the middle of the lake. And so the wolves would normally hang around there long enough, they'd die right there, and they could go out and pick them up. But that would only work well if you had an early freeze up of the lake. Often the lakes didn't freeze up until there was a lot of snow and the wolves wouldn't be using the lakes for movement. And then other times, they just would set baits along the coast above high tide. And they would usually kill a seal, and seals were not protected then because they ate salmon. At least that's the argument. And they also made it hard when gill netters fishing at the mouth of the – off the mouth of the Stikine River or Taku River, other major rivers where the salmon would school up getting ready to go up with the tide. Seals would move in and feed there, but the fishermen didn't like them particularly because they'd fish out of their nets, or take big bites out of the fish in their nets.

KAREN BREWSTER: So the seals were a target for this predator control because of that or they were a -- ?

DAVID KLEIN: They were more of a target for the fishing industry and fishermen, but then Predator Control was given the responsibility to do that. And so they just -- they didn't think that the -- probably the territorial people as well as the Fish and Wildlife in general, didn't want random killing of seals by Predator and Rodent Control people. But they were not protected, so they were fair game to use for bait for killing wolves. And they would just pull up the whole seal and cut it open and then they'd have these baits made out of seal blubber with seals they'd killed for this purpose, and would mix it in with fermenting herring and other fish. And then they'd put these -- scattered these around, and inside the carcass of the seal. And this was a little more difficult because the wolves would travel along the beach line and if they picked something up they might just move along the beach. And they were getting -- some eagles were being killed. Eagles

weren't protected until 194- -- 19-- -- about 1951 or something like that in southeast Alaska, or they were protected nationally then. Before that, the eagles were also bountied by the territorial government and you could get -- I don't know how much it was, it was about a dollar or a dollar and fifty cents for a pair of eagle feet. And then the territorial legislatures did put a bounty on seals in southeast Alaska. And that was -- you could turn in the scalp of a seal skin with the eyes and nose on it and get paid probably five dollars each, something like that. And that was passed by the territorial legislature and then -- I think it was the territorial legislature. And then when – there were a lot of -- of course, some Natives involved in southeast, but at that time there were probably more non-Natives than Natives in southeast. But Native people on the north coast of Alaska then heard about paying five dollars for the scalp of a seal, and they said, "This is unfair to us. We have to hunt seals for subsistence living and we don't have any cash economy. We should get five dollars for each of the seals we kill, because we're not going to overkill them."

KAREN BREWSTER: Right.

DAVID KLEIN: So it was welfare.

KAREN BREWSTER: They were killing them for food and in southeast they were being killed because they were pests.

DAVID KLEIN: That's right, but from a perspective of those people on the north coast, they saw the bounty as welfare, which it was to some extent. The wolves that were being bountied at the same time, then trappers got a good price. I forget how much it was. It was significant like twenty-five dollars or something.

KAREN BREWSTER: I thought at some point it was up to fifty dollars.

DAVID KLEIN: Yeah. It was significant and the hides were valuable, so -- But it's like, you know, we should be treating the Natives fairly.

KAREN BREWSTER: So what happened, did the Natives in the north get that five dollar bounty?

DAVID KLEIN: I think. And then it was repealed shortly later. There were no very organized environmental groups.

KAREN BREWSTER: No.

DAVID KLEIN: At that time in Alaska. Which would have pointed out the illogical basis for doing what they did.

KAREN BREWSTER: Well, eventually that's what happened with the wolf bounty, how that got eliminated. Was the wolf bounty federal or was it the territorial legislature?

DAVID KLEIN: It was territorial legislature, but it was technically the -- in territorial days it was the Game Division, which was the mechanism through which the federal government operated. So the Chairman of the Game Commission was the head of Fish and Wildlife Service in Alaska. When I was there, it was Clarence Rhode then. So we had good input, us young biologists in our annual meetings of the Fish and Wildlife people with the Game Commissioners. And it wasn't that easy to get rid of the bounty because this was a legislative thing and the one key legislator from Nome said he would never vote for elimination of bounties on -- he hated one animal and that was wolverine. He'd been a trapper on the Seward Peninsula. And so the trappers didn't want them to be bountied, but he wanted the wolverine to be bountied. And he was so hard-nosed about this that they voted a bounty on the wolverine and they were able to get rid of the bounty then on the seals, I think it was that trade off, at the same time. He agreed that it didn't make sense. Of course this was a different time, and he was a white man in Nome and an old trapper. And yet the Native interests weren't represented in the territorial legislature at all at that time.

KAREN BREWSTER: Right.

DAVID KLEIN: I shouldn't say at all, there was probably one from southeast. Yeah, there was, from Hydaburg. I can't remember his name.

KAREN BREWSTER: Yeah, but not equal representation, that's for sure.

DAVID KLEIN: Right.

KAREN BREWSTER: Well, you mentioned something about the wolf predator control and where it was happening versus not where it should be happening.

DAVID KLEIN: Yeah.

KAREN BREWSTER: That they weren't getting rid of the wolves in the right places. And can you explain that a little bit more. How do you know where -- what's the right way to do it?

DAVID KLEIN: It's partly that -- and this is more – well, in southeast Alaska for example, I was telling the hunters and the Game Commission that we should liberalize the season because there's really too many deer. Especially in the central part where Petersburg, and center part of southeast, and the northern part, but there weren't any wolves on Admiralty, Baranof, and Chichagof in the northern part, so there wasn't an issue there. But in the Ketchikan area the deer populations were lower and they didn't -- they thought any wolves were bad because there weren't very many deer. And frankly, we didn't know the deer/wolf relationship very well at that time, but you could make the assumption that was somewhat valid that where there's a lot more deer, there were a lot more wolves. And yeah, there were wolves. We sometimes you could hear them howling across the channel from where we lived in Petersburg. You could hear them howling on a moonlit night, a pack of wolves over there. And they were living on the deer. And so the

idea was -- the old school idea was that wolves were killing deer and hunters should be killing deer, if they're going to do it. But the hunters had a very lib -- you could kill four deer a year and so for a family with more than one hunter, that's a lot of deer. Plus those people were fishermen and they had lots of fish too, and they lived off the land a lot. And so they didn't – they didn't -- And hunting was -- you had to go by boat generally to hunt deer and it was an expedition, so it was okay -- you had a lot of good hunting but you also had to make a living fishing and doing other things. And hunters were satisfied with the liberal season. And it was either sex so they could shoot does as well as bucks. But the idea of -- they still were not controlling the deer population through hunting. And the deer were having a pronounced effect on the vegetation and so lowering the future carrying capacity of the habitat by being at such a high density, and yet at the same time wolves were being bountied. And Predator and Rodent Control people were -- and we couldn't make the case then for there being a lot of deer because they would say, "Well, the only time you see so many deer is when there's snow and they're all pushed down to the beach." Which is true to some extent, but there's an awful lot of beach. And it wasn't always on -- every beach was not the same, of course. And we'd do follow-up studies of counting the number of deer remains, carcasses of those that starved, and we could differentiate between wolf kills versus starved deer and so we collected that information and made it available. And did -- published one paper with the fellow that I replaced when I first went down there. Who started it. But it was on winter mortality of deer. And it was based somewhat on our aerial surveys along beach lines and then walking these beaches back into the woods where these deer would die. And that was, you know we could do it locally with a skiff. An outboard with two people, and one person would go ashore and start walking about a mile and the other person would go up shore two miles and anchor the boat out and start walking back to the half mile and then -- no start walking the same direction as the first person. And then when the first person got up to where the boat was anchored out, he would pull it in and motor up and either pick up the other guy, or anchor the boat out and do another mile. But when you're out a way, we'd have to go on the big boat and that was a bigger operation and you did it somewhat differently, but we used a skiff and the big boat could move along with us and speed up things. And it was selective beaches on different islands to get an idea of relative numbers. We could never actually count -- We tried it to mark and release and then recapture, but in those days we weren't that efficient and couldn't do it with the conditions we had. And it never has been done. But the best estimates of deer populations have been pellet group counts in the wintertime, in winter range areas. So you do it after the snow melts and the areas where they're wintering, typical winter -- and that gives you trends at least because you could extrapolate to some extent to numbers of deer, but you could also extrapolate from year to year as to the number of deer that were using that area on the basis of pellet group counts. So that meant going with the team and walking transects through there. I used to go down with students from here and join up with Fish and Game people and we would help them do some of these counts so that they would -- the students, would see how it was done and, of course, it was in the springtime when it was really beautiful to be down there.

KAREN BREWSTER: And by pellet count, you're talking about you're counting the poop, that kind of pellet?

DAVID KLEIN: Yeah. Now you don't necessarily gather them all. Yeah, you count the drops. It's the pellet group.

KAREN BREWSTER: You know that's one deer.

DAVID KLEIN: Well, it's -- Yeah, that's one deer, but there may be more than one. We had to do some basis of captive animals in feeding to know how many times they poop per day.

KAREN BREWSTER: Okay. But so the thing about the killing wolves is, so in that area around Petersburg there were a lot of deer and the hunters were getting enough deer but Predator Control Unit still was wanting to go out and kill wolves, even though they had absolutely --

DAVID KLEIN: That was their job.

KAREN BREWSTER: -- no impact on the deer population.

DAVID KLEIN: That was their job. And they got -- in their annual report they would be able to say how many wolves they killed. So in relationship to their budget, the more wolves they killed the more justification for them to go on existing. And so it wasn't until -- and there were some cases where Fish and Wildlife Service in territorial times relative to say, caribou and maybe moose, were starting to get Predator and Rodent Control to agree to do wolf control only in those areas where we could say there's a real need for it. And stop controlling. And they were using -- also in those areas, they weren't using the same kind of poisoning technique, they were using cyanide guns, which were called coyote getters.

KAREN BREWSTER: Oh.

DAVID KLEIN: You have this metal pipe that you can drive into the ground. The top, you filed it so that you put like a cartridge without any bullet in it, but it can fire like a cartridge. And then you load that with cyanide powder, I think it is. And then you put this in – it's like a triggering device and you wrap this thing with – a bullet is there, you wrap it around with the string and wax and stuff and then you impregnate it with a lot of odors. And you put it down in there and turn it and then it's set so if something tries to pull this off, it fires this into the mouth of the coyote.

KAREN BREWSTER: It's like pulling a cork off or something.

DAVID KLEIN: Yeah. But it's designed so that once they get their teeth in there, the string -- they get a good grip and they try to pull it off and, bang, it would shoot the cyanide right into their mouth. And it would kill them within minutes usually. But again, you know it was designed in the Lower 48 for coyotes, it would have worked on wolves and bears or other animals. Well, again, you'd set these things out and then you had to

go out and pick them all up before the bears came out, in theory. And there were always some you couldn't find.

KAREN BREWSTER: Right.

DAVID KLEIN: And especially walk long distances and scattered them out in the Tanana Hills, for example. And the idea was that those wolves are killing caribou and mountain sheep and moose. And yet we didn't have studies that say that those populations needed wolf control.

KAREN BREWSTER: Well, it sounds like your deer habitat exclosure research and this idea of harsh winters, and depth of snow, and your island comparison would show in those places you had deer starving. But they weren't being killed because of wolves.

DAVID KLEIN: That's true.

KAREN BREWSTER: There's all these other reasons.

DAVID KLEIN: That was the intent of the studies, to try to show whether there was really a need for this. But you've got to realize the biologists were young college people and here you had these old timers, who were game wardens working for the same agency, and the Predator and Rodent Control people. And they were just like old hunters, they had a lot more experience in the field and therefore they thought they knew better about the need than we did. We'd say, "Well," and they'd say, "If there aren't many deer over in this area?" And, "Well, hunters never go there, but it's probably because there's not good habitat for the deer." And we didn't have hard data and that's a big problem especially with winter mortality. Well, how many -- if it's heavy winter mortality of starvation, well how many deer didn't starve? And how many did wolves kill? We didn't have that kind of data. There was started some wolf studies, but that was not through the Predator and Rodent Control. Well, they might have got -- the young fellow that started those was through the Fish and Wildlife Service and then later he – no, I guess it was through the Department of Fish and Game after statehood.

KAREN BREWSTER: So that was wolf studies in southeast?

DAVID KLEIN: Yeah.

KAREN BREWSTER: And do you remember his name?

DAVID KLEIN: Yeah, Paul Garceau. And he was an undergraduate student and did an undergraduate degree here in wildlife at UAF. So I knew him as an undergraduate student when I was doing my master's.

KAREN BREWSTER: So once you started getting this data, did the Predator Control people start listening and was that changed?

DAVID KLEIN: No, I think you have to remember that there was change going on in the system. It was just that a few biologists, new hires, aren't going to turn over this agency that is with long time old employees, who, especially game wardens, who interact more directly with the hunters than we did. We were interacting more, trying to interact more with the animal in the habitat. Whereas they were interacting with the hunters, and, of course, it's the hunters that were having a voice in the legislature, through their representatives in the legislature, whether it's the territorial legislature or the state legislature. So the hunters know best. And the same problem exists today in the state legislature, who think they know better how to manage wildlife than the Department of Fish and Game with trained professionals gathering this animal habitat relationship.

KAREN BREWSTER: Yeah.

DAVID KLEIN: I should mention one more of this wolf study that we did down there. And I say, we, sort of. At any rate, I had done -- I was working on the Coronation Island as well as Woronkofski. Coronation didn't have any wolves. And it had small deer and they were damaging – had damaged habitat over a long period of time. Of too many deer, no hunting pressure to speak of, and no bears, no major predators. You know, an occasionally eagle would kill a calf, a newborn calf, and that would be about it. And so when I -- I had pretty much finished the vegetative studies and was in the beginning of the write up stage, but I was then on educational leave down in University of British Columbia. And then Harry Merriam was taking over my deer studies, my deer management work, and he'd worked with me when I'd come back in the summer. But then the top people in the new Fish and Game Department, Jim Brooks, who was the head of the Game Division then, who had been a student at Fairbanks, a top-notch guy who I had convinced that I should -- he convinced me I should go with them, and I convinced him I would. But I needed this educational leave and come back and do the studies. Well, while I was down there, they had a meeting of the biologists and they came up with the idea. It wasn't – it didn't come out of the blue but what had happened before when Garceau --'59 let's see, yeah okay, so this was probably about '59 when this came up when I was down there at UBC. Paul Garceau had been hired by Fish and Game and he was starting some wolf studies. Well, he was on Kupreanof Island, he had a small cruiser boat and he wanted to -- someone told him -- a waterfowl biologist came back from an area where there was a big estuary and quite a ways from Petersburg but out to the west, and a channel between Kuiu and Kupreanof Island. John Bay, I think it was called. And so this waterfowl biologist was out there doing bird counts and breeding bird counts in the spring and he saw a lot of wolf tracks and he heard wolves howling because of his presence in the general area. They were howling because he was there. And so he figured that there was a den with young. And so he came back to town and he told the wolf biologist about it. He went out, Paul Garceau, and he wanted to make some observations on wolves around the den. And so he went to this general area, it's a big open, when the tides out you can walk around on the mud flats, and then up in some of the sloughs that -- at the head of the -- he went up there and he went through a little island of timber and then he was told that the den would probably just opposite the island, so he went up through there. Came through the woods, it was rainy, he had rain gear, dark rain gear on. And he crawled out where there was this tree down and so he'd have some

cover. And he looked around and tried to -- he didn't hear any -- he saw tracks but he didn't see any sign of wolves. And so he's looking with binoculars, and apparently the den was just up -- not where he was looking, but just upstream.

KAREN BREWSTER: He was looking straight and it was up --

DAVID KLEIN: Upstream a short distance. And suddenly -- and the tide's out so it's pretty dry in there. And he's looking through binoculars and suddenly he hears animals running on the dry bed of the deal. Just the sound of these running animals. He didn't have a clue what was causing it. And he looked up and here's a whole pack of wolves coming toward him, down the -- because they'd seen him and probably thought he was a black bear. And it was close to their den and so they were probably going to try to harass it away. So he was an excellent shot. He had a good light rifle with him. He jumps up and these things are just coming right straight for him. So he shot one of them. And the others, as soon as he shot, they all split and ran off into the woods and were growling and howling and making all kinds of strange noises. And he was careful, and he went down, and this was the pregnant female that he had shot. Not pregnant, a nursing female.

KAREN BREWSTER: Uh-oh.

DAVID KLEIN: So he went up and investigated. The wolves kept their distance back in the woods, and here were these little tiny --

KAREN BREWSTER: Pups.

DAVID KLIEN: -- pups, which, and with mom dead. So he gathered up the pups, and brought them back to Petersburg. And he took them out to the -- there was an experimental mink ranch that had some line of connection with the university, but he said, "You know, I got these and they'll be great -- we've got to feed them." And so the family out there said they would bottle feed them and then they could put them in one of these fox cages when they were pups, big enough pups and they could feed them fish meal, which they were feeding to their mink, and they had some foxes too with their experimental, for the skins, that they fed the foxes. And they usually had surplus when they feed them and so that's what they did. And so Paul did start collecting information on weights and what they were eating and what. And then I came back and we -- Harry and I -- Paul went someplace else on another project, and Harry and I would go out there, at first every week, and we made up a big white board and had them stand on this platform. We weighed them individually and then take their pictures of their size against this gridded background. And then we kept that up, we didn't go as frequently later, once a month or something. And they built a -- we built, no, finally they got too big for these fox deals, it was like a raised with a wire that they walk on and then they had little houses they could go in. They got too big for that, so they --we built a big sort of a paddock with big cattle wire fence and rugged and long and narrow so they could have running room. And then they had an old fox house where they could have -- we could go in there and put a scale in there and then they had a trap door and feed them. They'd feed them inside,

so then we could trap them periodically and weigh them again. And we did this -- they got up to be huge.

KAREN BREWSTER: Like a hundred pounds?

DAVID KLEIN: They got to a hundred and twenty-five pounds.

KAREN BREWSTER: Wow.

DAVID KLEIN: In less than a year of age. So they were growing well on the food that was available. When they were eating this stuff that they were feeding to the --

KAREN BREWSTER: Yeah, but that's not necessarily what they would do in the wild.

DAVID KLEIN: No, of course not, this showed the potential for growth. And it was fun to go out there and do this because you got to see different characters in the litter of six pups. There were two females and four males. And two of the males grew to the biggest size, substantially bigger than any of the others. And then two of the males that were smaller size, they were -- this was when they were less than a year old, they acted like females in terms of being submissive to the bigger ones, but they all hung out together and were happy to be in a group and running back and forth in the deal, and play behavior, too. And when we would go out, finally they wouldn't go into the hut, they knew they were going to get weighed. They didn't want to be handled too much. So we -- Harry and I had to catch them individually. Well, the big males, didn't have to catch, they'd come over and they were just like dogs, they'd put their front paws and look right in the face and their tails would be wagging and you rub them. They were beautiful animals, beautiful animals. And then the other -- then we had problems, so we had to trick them and get them into the house. We think they were thinking they'd get food, and they were getting a little. And get them in a crate because they wouldn't stand still on the scale. Whereas the others -- this was one of the big scales where you were weighing big things.

KAREN BREWSTER: Right. One of the hanging kind of scales?

DAVID KLEIN: No, this had wheels and you stepped on the platform.

KAREN BREWSTER: Okay.

DAVID KLEIN: And the females were real shy and they were hard to catch. You'd have to corner them in one place and then grab them. And once you grabbed them, they'd usually – we'd have coveralls on, and they'd usually go like that but not squeeze hard.

KAREN BREWSTER: They'd chomp their jaw down?

DAVID KLEIN: Yeah, just hold, and they were shivering, you know, and these subordinate males were the same way. And then we'd carry them in, set them on the scale, and they would stay still.

KAREN BREWSTER: 'Cause they were scared.

DAVID KLEIN: Yeah, as long as you had control over them and you just let go, and they would still -- 'cause we were in control of them. But the big ones wouldn't stand for this and they just wanted to be doing their own thing and moving around, and so we had to put them in crates. And they would fight the crate. They would just tough guys, but they never were aggressive towards us. And so then they -- this is worth it. I published a paper on this. And so then what to do with these? So I was back then at UBC, and they decided well, let's do an experiment and put wolves on Coronation Island and see what it would do to the deer out there. So they all had ear tags. And they had to build special containers out of -- get some welded, to contain these -- the wooden crates they'd just chew their way through, these aggressive males. They took the two aggressive males and two females out in separate crates. They were made out of old fuel barrels, welded to make them larger, and sealed so they couldn't get out. And they had water and were well fed. And they calmed down when they were in dark like that. And so it was like a four hour trip on the boat. Took them out there and released them on Coronation Island. And they shot a couple deer – you know, these deer were thick there on the island, and they shot a couple deer and left them there for the wolves to eat on. And then they came back and the wolves, you know, went wild right away, and proceeded to kill the deer. And so unfortunately, you know, they didn't -- they didn't have a lot of money to do this, they had like none, they're doing it with a budget. And so Harry Merriam had all these other jobs to do, so he'd only get out there once every month or two at the most. And he did have this one boat he could get out there, which was important and it was sea worthy and he could sleep on it if necessary. And so then he was following what was happening, and of course, again you had the problem of you don't know what -- you don't see them all. You get there and you'd see tracks and you'd find the deer became scarce, some of it was just they became wary because they were being preyed on. But they'd find lots of wolf killed remains scattered around the island when he did hikes. And occasionally he would see their tracks in sandy beaches and could estimate how many there were on that basis. And sometimes he'd see two or three at a time, or a single one. And they became very wary. But then he carried this on for -- in the meantime I had finished up and I was working in Juneau. And I did get down one time and went out with Harry, shortly after I – when I was there working in Juneau, and that was really fascinating. About this time -- and then Harry was able to show that they bred, and produced a big litter. And so that he estimated, on the basis of tracks and what -- that the population got up to fifteen, and there was a litter – the litter was getting pretty good size, about half grown. And then a strange thing happened, some fisherman had pulled into one of the bays because of bad weather, and he went for a walk on the beach. And he knew that there were deer there. And he saw these two wolves running on the beach and he shot them. And they were the two females. And they had ear tags. Well, he didn't tell anybody, of course. He couldn't understand why that -- nobody knew about this except Fish and Game. So the public, they figured nobody's going to -- if we bring this out to the public, now this is an

experiment, the public won't see it this way. The idea of transplanting wolves to a deer island, you know, even though the public didn't have all the background on the island. And this guy was based in Ketchikan, and finally word leaked out that this guy had these ear tags, which said you were supposed to return these to the Fish and Wildlife Service, or Fish and Game. Fish and Game, I guess it was. And so then it got into the press. Fish and Game, why are they putting ear -- at that stage nobody was putting ear tags in wolves. And why was this -- why was there wolves on -- Coronation, didn't used to have wolves. So they had to come out and explain everything. And they did. And the Director then, Jim Brooks, was good at that and went down and talked to people and said, "We wanted to know a lot of things about wolves and deer and here was this island." And they presented all this data that I'd collected. I'd hadn't finished writing the thesis yet, but I had the data on the deer density and effect on vegetation instead of deer size and lower growth rate. And I had a lot of skeletal measurements, because we shot some deer. And we had a permit to shoot deer to get skeletal size, and I did a publication on showing how the skeletal size was an indication of nutrition and compared it to the other island where I had the similar sampling of deer, that were the big deer. So that was one of my thesis papers, one of about four or five. And so then they calmed down the public concern. They did a good job of getting publicity out about the nature of the study, etc., etc., etc. And so the public accepted that, especially because it was now a classified -- no, later on it became classified as wilderness. At that time it wasn't.

KAREN BREWSTER: So after he shot the two females, did the population decline and that was the end?

DAVID KLEIN: No, that was it. Harry Merriam showed that the pups were growing and they saw them with -- so the population that leveled off at about a total of fifteen animals. But it was mostly pups, because they had to be mostly pups because there were only two males of the original left. So they did live trap an animal on an adjacent island, a female, and released it there. I think they did that, but there never was any known additional litter produced. By this time the deer population has been greatly reduced, so Harry continued this work and he would walk the island and he wouldn't see any deer droppings or deer tracks unless he got in to the real rocky coasts on one side of the island where there's real steep slopes and big boulders, and brush. And he figured this was escape terrain. And he found a few deer pellets, fresh deer pellets and an occasional track. So the deer weren't totally eliminated, but what was happening to the wolves, they were feeding on lots of other things. Things salvaged off the beach. One time he saw them digging clams at low tide.

KAREN BREWSTER: Wow.

DAVID KLEIN: And eating the clams. Well, you could see these squirts coming up and they probably were investigating and they probably would do that anyway. But it wouldn't be a major – but it was becoming a -- And there used to be a place where seals hauled out and they killed a few seals and then the seals stopped hauling out on that one coast, rocky place. So the seals stopped hauling out there. And I went back one time, while it was -- and went with Harry and we were confronted with some nasty weather.

There had been a -- Forest Service had built a cabin there, which was used -- we could use, which was a good deal. If you're out it the rain, and have a nice woodstove and come back and dry out. We did a long hike in nice weather, and that first night we camped out under a overhang and a storm blew in. And getting back through those woods was terrible, because you can't walk with – there were several bays and you can't see much in the rainforest, you can't see where it is, and it was foggy. We were going to go up high. We decided to go up high, 'cause we knew if we got high we could cover ground better, but it was too foggy, you couldn't see where you were going. And we came down and stayed up as high as we could to miss these bays and then we had a directional problem. You would think you were going in the right direction, and I thought I was familiar enough with the island, but and -- There were a lot of sink holes because of this, not bottomless, but you'd walk down and there'd be downed trees and you'd have to go up – coming up. And then, we somehow we weren't getting there. And we covered a lot of ground and the compass, we were using a compass, and so we thought we were reading the compass wrong or something. It was too close to the rifle. And then the worst case scenario is when you lose confidence in the compass. And the wind. And we couldn't get any break in the clouds to look out. Most places you wouldn't see out because of the trees, but sometimes there'd be an opening in a steep slope and you could look out. And if we could see and recognize one of the bays. Finally, we figured there was something wrong with the compass. And that using the wind, because of the storm, but we were on sort of the lee side, so you're getting a lot of turbulence. And we knew that you can't rely on wind in these cases, but that was the only thing that we could -- once we'd lost confidence in the compass, that's what we did. And then finally, there was a break and we looked down and ooh, there was a bay, and so we were heading in the right direction. And we had one more bay to go, and so we got over and back. And when we got back and we got the map out and looked down on the fine print on this map, it said there was a magnetic anomaly on this island. And I didn't even – I'd never thought about that before. And it was just in this one portion of the island. So that's what screwed us up. Any rate, it was a memorable trip.

KAREN BREWSTER: Yeah, sounds like it.

DAVID KLEIN: But you know when I'd hike through that country and never had that happen to me before, and relied on the compass and we didn't have GPS --

KAREN BREWSTER: No.

DAVID KLEIN: -- in those days. And you relied on everything you could read, but this --

KAREN BREWSTER: Well, and it's not like there were nice cut trails and all that.

DAVID KLEIN: Yeah, well the problem was you thought you knew the country. And if you're perfectly flat, that's different, here you're hilly country and we knew we were on the right side of the island, that's because we weren't being hit by the full force of the storm.

KAREN BREWSTER: And also heavily wooded down there.

DAVID KLEIN: Yeah, yeah.

KAREN BREWSTER: So what's ended up happening with those wolves?

DAVID KLEIN: Okay, then what happened is that – you know, we should have, they should have, because I wasn't there making the decision, but I followed up on this. And in the meantime, Harry went through a period when he broke up with his wife and became an alcoholic. And he quit. Well, he didn't want to quit at first, but Fish and Game came down hard on him and then finally he -- they gave him ultimatums and he quit. And he and his wife, who stuck with him, this was his second wife. They had built -- he had built this beautiful log cabin and bought some land right across, in west Petersburg so you have to go there by boat. So he moved over there. And so he just didn't want anything to do with the Fish and Game for a while after that. And he would give me information. And I'd said, "Well look, let's write this thing up as much as we can." Because the wolves finally, they finally had declined. They were no more litters born and it was in fact partly because there were no deer.

KAREN BREWSTER: Well, I figured they ate themselves out of house and home, sort of.

DAVID KLEIN: Yeah, that's right.

KAREN BREWSTER: They ate all the deer and then they're digging for clams and they're going to start starving.

DAVID KLEIN: And they couldn't –starving -- and there was indications even of carnivoury in the wolf droppings, eating other wolves. And then I was -- one of the last times I was out there with him, we saw two wolves and one was -- and they were probably the last two. One looked healthy and the other one looked real run down. And then there was -- he had seen one -- the last one he saw -- was able to verify when the tracks, only one, and it was female. And the last one he saw was a female, and then it disappeared.

KAREN BREWSTER: And what -- about what time period is this when they were disappearing?

DAVID KLEIN: From the introduction to the end?

KAREN BREWSTER: Yeah.

DAVID KLEIN: Must be nine or ten years.

KAREN BREWSTER: Okay.

DAVID KLEIN: But I don't know. That's in the paper. Finally, I ended up publishing this paper because Harry said he did not want -- oh, there was a wolf conference and I said we should do it together and he didn't. And I lost touch with him for quite a well. And then I went – I wasn't getting into Petersburg, I was at the Wildlife Unit then. And I occasionally when I'd get down there, I would get to see him again. But he spent most of his time across and he'd went over by a skiff. And then he quit alcohol completely, but he split up with his wife and she was kind of a strange person. She was a biologist and she was employed in office [ADFG] actually. I had employed her when I was working in Juneau as some kind of a secretarial assistant or something. She had a degree in biology. And she was a very terrific, fine person, but she was kind of screwed up with some strange religion when she got down to Petersburg.

KAREN BREWSTER: Well, so I think we should probably end pretty soon here.

DAVID KLEIN: Yeah.

KAREN BREWSTER: Because it's --you've had to talk for a long time tonight.

DAVID KLEIN: I know.

KAREN BREWSTER: But I have one question that to sort of end this topic, maybe. You'd mentioned that even as the biologist, with the management issues you went and talked to hunters. I'm wondering how that went and how you got along with the hunters and how they felt about the biologists?

DAVID KLEIN: Well, the fellow, Sig Olson, who preceded me, he did a lot of laying ground work, 'cause he was up against the same problems. You know, here he was a college graduate and he grew up in Lake of Woods Country.

KAREN BREWSTER: In Minnesota?

DAVID KLEIN: Yeah. His father was Sigurd F. Olson, wrote – you've probably --

KAREN BREWSTER: I've heard of him, yes.

DAVID KLEIN: Yeah. And he had the same personality as his father. He wasn't a writer, but he was a good artist and he had a wonderful sense of humor. Fun guy to work with and I just enjoyed it, him, a lot. At any rate, I had instructions from him how to proceed, and I'm a quick learner. And I got to know people. And I'd have scheduled meetings for the public, which would be mainly hunters, about proposals for regulations in which I would explain what I was doing. And had charts and tables. The average age of the deer that were killed by hunters, and the sex ratios and how this related to the growth population pyramids and showed that it was a vigorous growing population at that time and compared it to a slow growing population. And I guess I'm kind of outgoing and also modest enough so that I would listen. Good listeners when I talked to hunters.

And I tried to get as much information from them as much as possible. I knew that hunters are good sources of information, and well, "How many deer did you see and did you see any females with young?" And they would let me measure their animals. And I was taking measurements on their hind-foot length and I was using that as a iden -- based on the bones, too, but the hind-foot length and used that. And I had published this paper on it and showed the growth rate in relation to body size. I could explain the difference in size of the deer on Woronkofski and Coronation. Well, some of them may have never hunted on both of those islands, but they might have known about them and they were ardent hunters. And then – I would write articles. When they – then we finally did get a big snow and deer were down on the beach and the Wrangell hunters got the idea of, "Well, let's feed them. Let's cut down -- go up on the Stikine and cut down willows and aspen. There's none growing out on the islands. And bring them in and feed the deer." And so I wrote this long deal in the newspaper saying -- explaining how this had been done, tried down in the Lower 48, and it's not a good deal because the animals can't respond rapidly if they're starving, to good food. And they wanted to try and get hay and things like that in. And they can't respond rapidly to a different kind of food because they have these microorganisms. I had to go through all of this, you know, explaining the microorganisms and the rumen and how they worked, and how they need time to adapt. And that frequently it's too late when they're down on the beach and they're eating seaweed and needles of the western hemlock from the trees that they could have eaten when they're heathy but they didn't. And that you concentrate the animals from one area, so if there's any natural food available, and it's the same in Africa if you try to concentrate animals around a watering hole or with food. And in Europe the same way when trying to feed red deer and stuff in the wintertime. You've got to start feeding early, and you've got to feed them all the time, because they're now domestic animals. And so I went over to Wrangell and talked to people. And there was a good school teacher there, who was just -- he just cornered me on to get more information. And he said, "Well, that's terrific." He says, 'cause hunters keep contacting him. He was an ardent hunter but he had a good education. And so I built up confidence in the people on the kind of studies we were doing, and I wasn't -- there was no need to curtail hunting. And so it wasn't a –

KAREN BREWSTER: Yeah, I mean, I think you're right. That if you had been in a situation where hunting was threatened and those hunters were feeling constrained, there might have been some conflict between the biologist and the hunter.

DAVID KLEIN: And then they knew I was also having problems in trying to get the Forest Service to protect these wintering areas of old growth forest along the beach, which the small loggers loved that because it was so close they didn't have to build roads. They could just use an A-frame and a cable and take these big beautiful spruce, mainly, but also hemlock, and build the rafts right there. One person with a fishing boat and they built the A-frame and they can haul any materials they need from town and they camp out there. They might have a shore camp when they use cables. In fact, the old, real old logging was hand loggers.

KAREN BREWSTER: Right.

DAVID KLEIN: And that was just one aspect of their life. They were trappers, fishermen, hand loggers. Good money to take down one of – one spruce and if you can get it to fall in the water at high tide and drag it to the sawmill, you'd get several thousand dollars from one log.

KAREN BREWSTER: So those old guys were your allies in trying to protect the old growth forest?

DAVID KLEIN: Yeah. Although most of them were no longer alive, but there were a few left but there were so few of them that -- and they didn't want to – They were mostly recluses.

KAREN BREWSTER: Okay.

DAVID KLEIN: But they were good guys to talk to. And other hunters talked to them. And you could -- if you told them -- told other hunters, they knew them. Most of the hunters were coming from long time families that -- and also they were financially well off because they were salmon fishermen. And the Wrangell people were mostly gill netters on the Stikine, the mouth of the Stikine. Which is good. It was -- they made their money like Cordova in one big shot in the summer. Some of them didn't fish anymore all winter long. Petersburg was totally different. Those Norwegian fishermen, they were so dedicated fishermen and they had -- they worked so hard, they had bigger, better boats. And they could go halibut fishing in the Bering Sea from Petersburg when the halibut season opened. They could fish for black cod. You know, black cod? It's a terrific fish and it brings big money.

KAREN BREWSTER: Oh, I didn't know that.

DAVID KLEIN: And it has a lot of oil in it. It's quite unrelated to codfish.

KAREN BREWSTER: Right.

DAVID KLEIN: And then they fished for herring. And there was a shrimp fishery, but it was small, there was only one or two boats but caught quite a few shrimp. And they had a fish processing plant in Petersburg. Shrimp processing plant, as well as halibut and salmon, and a cannery. And Wrangell had a sawmill too, a big sawmill, so the economy there was in pretty good shape. The attitude of hunters about -- of course, in Wrangell they wanted to harvest wood for the mill and for their jobs. But the Forest Service said – convinced, of course, legislatures that pulp mills are the way to go, was this future Petersburg is. And it all depended upon the rayon industry in Japan. Mostly that. The pulp mills, they produced this fiberboard that went back and they could make rayon out of it.

KAREN BREWSTER: Oh, I didn't know that.

DAVID KLEIN: And it was not as good as nylon for clothing and things or as cotton or wool, but it was cheap and they could do that.

KAREN BREWSTER: But so because the economy was pretty good down there, the hunters had animals to kill, everybody was sort of getting along with each other.

DAVID KLEIN: Yeah.

KAREN BREWSTER: Is that what you were getting at?

DAVID KLEIN: Yeah, because it was mainly just deer hunting that fishermen did. Some of them might occasionally hunt bear or go up on the Stikine and hunt moose, but those were so limited in the animals that they had at that area, and animals that – there was competition. Too much. And most hunters down there for deer hunting, you never went ashore with your skiff to go hunting if there was another skiff on that shoreline. You just didn't want to be in the same area with other hunters. And one of them was safety but the other one is that it's always the idea that you're competing, someone's competing with you. Maybe there were -- the other people were going to get the buck.

KAREN BREWSTER: Well, and I was thinking that the hunters might be more willing to cooperate with the biologists and share information if they didn't feel like their hunting was being threatened.

DAVID KLEIN: Yeah.

KAREN BREWSTER: Is that how it felt?

DAVID KLEIN: That's true. That's true. But there were still a few hold outs who believed that you shouldn't kill the females. The Buck Law. You know, the Buck Law was there until -- after the Second World War was when the -- of course, in some places around communities, most of the young men were off in the war and so there wasn't much hunting, and so deer around communities increased. And then when Sig Olson was employed, the first deer biologist down there, it didn't make sense to have a Buck Law. There were too many deer and you can't really sell too many deer to a hunter. But you can sell them that there's no need to. And then you have to work hard to say there's too many deer, because they like a lot of deer when they're out hunting. And to be able to pick and choose and be sure that you're going to get your deer if they're going out that way. And it's hard to sell them, that's why things like exclosures were necessary. And you had to have some hard evidence and then work with them and make presentations frequently with slideshows, that kind of thing. And I did that.

KAREN BREWSTER: Alright.

DAVID KLEIN: And I did it in other towns, too. In Juneau and Ketchikan occasionally when I had opportunities to get there.

KAREN BREWSTER: Well, it sounds great. I think that's maybe a good place to stop.

DAVID KLEIN: Yeah.

KAREN BREWSTER: For tonight. And next time we'll move into post-graduate school and what you did after that. Does that sound okay?

DAVID KLEIN: Yeah.

KAREN BREWSTER: Okay, thank you very much.

[End of tape]