

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
VOICES ORAL HISTORY ARCHIVES

IN PARTNERSHIP WITH
NOAA HERITAGE AND THE NATIONAL WEATHER SERVICE

AN INTERVIEW WITH GARY SHIGENAKA
FOR THE
NOAA 50th ORAL HISTORY PROJECT

INTERVIEW CONDUCTED BY
MOLLY GRAHAM

SEATTLE, WASHINGTON
NOVEMBER 23, 2020

TRANSCRIPT BY
MOLLY GRAHAM

Molly Graham: This is an oral history interview with Gary Shigenaka for the NOAA 50th Oral History Project. The interview is taking place on November 23, 2020, with Gary in Seattle, Washington, and I'm in Scarborough, Maine. Well, let's start at the beginning if you could just say when and where you were born.

Gary Shigenaka: I was born in Lake Forest, Illinois, December 26, 1953.

MG: I'm really curious about your family history. Could you start by talking about your mother's side of the family?

GS: Well, both sides of my family came from Japan, maybe obviously, but [on] my mother's side, my grandfather came over in the early 1900s, like 1907. He was followed shortly thereafter by my grandmother. The interesting story for my mother's side was that they were originally scheduled to dock in San Francisco. But it happened to be while San Francisco was still in flames from the great earthquake in, I think, 1906. So they wound up coming to, of all places, Seattle, and that's where they got married. I don't know how they went from Seattle to where they eventually settled in New Mexico. I know for a time they also were in Colorado. My grandfather, on my mother's side, was a jack of many trades. He was a coal miner, and I think that's what he did in Colorado. He might have done the same thing in New Mexico as well. But eventually, they settled for good in Gallup, New Mexico, which is kind of the crossroads with the Navajo Nation and Route 66. So it's kind of an iconic New Mexico community.

MG: Did they have ties in San Francisco, other family members that had immigrated?

GS: I don't think so. If they did, I'm not aware of them.

MG: When would they have left Seattle to head inland?

GS: I think that was very shortly thereafter. Again, I don't know how they got there. There's certainly no train from Seattle to the Arizona region. I don't think there was then, and Arizona would have probably been the place where they would have caught some sort of transit means, whether it's a train or something else to get to the Southwest. Then, who knows how they got to Gallup?

MG: Did your grandfather continue working in the mines?

GS: No, once he got to Gallup, he switched to being a merchant person. I think they owned a store, and then they started a restaurant. That's how they made their living there in Gallup, through a variety store, which was eventually taken over by my uncle, and then they had a restaurant there.

MG: What kind of restaurant?

GS: Well, I asked my parents when they were still alive what kind of food, and it was just basically what they called American food. It wasn't anything ethnic. I don't know that there was a big call for ethnic cuisine back in the early 1900s. But they also did cater to the Navajo

community. So my mother did say – and I just reviewed some video interviews I did with her – that they had some favorites with the natives there, the Navajo Nation, and it was things like lamb stew and beef stew, that sort of thing.

MG: Were there other Japanese American or immigrant families in the community?

GS: I think there were. I don't think it was a big community, and I always have wondered how it is that people are attracted to a place, like all places, Gallup, New Mexico. It's like [how] a lot of the Muslim community settles in Michigan. Wow. How does that happen? So I don't know. There was a small Japanese American community in Gallup, New Mexico.

MG: Was the restaurant a place where your mother and her mother worked or other family members?

GS: Yes, it was pretty much family-owned and operated.

MG: Can you talk a little bit about your father's family history? It leads up to Gallup as well.

GS: It does. I had to do a little digging to figure out how that happened. But yes, my father's parents came from Japan and wound up in California. I don't know what their port of call was. I suspect it was San Francisco. But my father's father's family pretty much settled in on farming as an avocation. So they farmed all sorts of things, I think, mainly strawberries in the Southern California region. That continued pretty much up until the war. Then, like all the other Japanese Americans on the West Coast, they were interned in camps. [Editor's Note: In 1942, President Franklin Roosevelt signed Executive Order 9066, ordering the forced relocation of Japanese-Americans into internment camps.] So that put kind of put an end, I think, for the most part to the farming portion of our family history.

MG: How old would your father have been at the time they were interned?

GS: Well, let me do the math. He would have been roughly twenty-four, twenty-five.

MG: Did he tell you the story of how it happened and what it was like?

GS: Oh, my god. No, it took forever to get him to talk to us about it. It was just something that he didn't like talking about, and he didn't really tell us anything about it until my brother and I were adults. He was approached by one of the American history teachers in my high school to come in and give a talk to our class. But he was just too shy about it. He didn't like talking about it. But one on one with the family, he opened up about it, to the extent that he remembered what was going on. So, over the years, it's been a quest of mine to try to put together more information and to try to figure out the timeline of when people went into the camp. My grandfather was separated from the rest of the family by the FBI [Federal Bureau of Investigation] and put in a different camp for a while. So it was a very complicated portion of our family history. I'm still trying to find out more about it. Actually, maybe inspired by you, I've done a little more digging and trying to tie up some of those loose ends. I just put in an inquiry to the National Archives in Maryland to try to get my grandfather's Department of

Justice file. Of course, they're quarantined. [Editor's Note: Due to the coronavirus pandemic at the time of this interview, individuals, where possible, are social distancing and quarantining to minimize contact with others and spread of the disease.] They aren't working where the files are. So that'll have to wait. But maybe someday we'll be able to see what's in that file.

MG: Your father was twenty-four when this happened. Do you know what he was doing up to that point? Was he working?

GS: He was pretty much doing what everybody in my father's father's family was doing, which was working on the family acreage. They were farmers. So, at that point, everybody worked in the fields, or I guess they had a roadside stand. So that was pretty much the focus. It was the war that disrupted that whole routine.

MG: When you finally asked your father about this experience, what stories did he share with you?

GS: Well, it was kind of a mixed bag. Being a child of the '60s, '70s, '80s, I was outraged by the whole experience, or at least at a general level. So when I interviewed my father, I tried to get him to address some of those apparent transgressions against the family. He was pretty much – "Oh, it wasn't so bad." It was maddening to me, but maybe more telling is the fact that he held on to two pieces of documentation from those days. One was his last paycheck from the internment camp, and I have that framed. It's on my wall, and it's for eighty-seven cents. The other piece that he hung on to was his ID [identification] card from that time. I saw that in his wallet when I was definitely an adult. So I said, "Why are you still carrying this around?" He said, "Well, you never know when you're going to need it again." So there were certain things that were put into his mind, and maybe part of processing what happened is to diminish the importance or the bad aspects of it. A lot of people process tragedies or bad things just by selectively dis-remembering things. So maybe that's what happened here.

MG: When would it have been that you started asking your dad these questions?

GS: Fairly early on because it was part of our family lore, our family history, that people got put into these camps, taken out of their house. So fairly early on, but he didn't really open up very much about it until he was pretty old. I think it took a structured series of interviews, kind of like this, for me to gather my thoughts about, "Well, what do I want to know about that time?" Then secondly, for him to remember in a structured way, what it was like. Otherwise, there would be the sporadic, "Well, what happened in 1942? What was it like?" So it took a little bit of organized thought. I interviewed both my parents and so did my nephew. He did sort of the same thing, just to try to get it straight from the horse's mouths, not only that part of the family history but the rest of it, too.

MG: Was he in that camp with his mother? Did he have siblings that were with him?

GS: Yes, I tried to figure that out. He had a number of siblings, either five or six siblings. He actually couldn't account for all of them. His father initially was put in a different camp, although, later on, he was allowed to come to the same camp in Gila, Arizona, where he joined

his wife and my father and my father's youngest brother. That left a whole bunch of other siblings, and I'm not sure where all of them were. He had one sister. I don't think she was in the same camp. He had another brother, who actually was put into another camp with a different family because, as best as I can tell, he had worked with them, and they were elderly. They had no other children, and so he wanted to go with them to assist them through this. So the family was kind of split up, I think, across different camps. I can't entirely account for where everybody went.

MG: Were they able to reunite after World War II and stay in touch as a family?

GS: Pretty much. Pretty much, everybody went back to Southern California except for my father. That was maybe the whole reason that I'm here in Seattle is that I wound up growing up in the Midwest and not in Southern California. My father received some sort of a work permit or a pass to leave the camp and go inland and work in – initially, it was in Michigan. He went with his youngest brother and another pair of brothers that he knew in the camp. So the four of them went to the Midwest. Apparently, that first job assignment was so horrible; they stayed one night and left the next day. Then went to Illinois, where all four of them got a job in what's called a sanatorium, a tuberculosis facility. So my father was a pastry chef, and his brother worked as a handyman, and so did the other two brothers that they were with. But my father's youngest brother and the two other brothers decided to leave. They decided to go back to California, and my father stayed, got a job offer in suburban Chicago. That's where he wound up staying for basically the rest of his life.

MG: Just a quick follow up from what we were talking about earlier. When you finally asked her dad about his experience, did it coincide with when, in the 1980s, Jimmy Carter began the investigation of the camps and their history and impacts? Then, finally, there was the Civil Liberties act of 1988 that formally recognized and apologized for this experience.

GS: Right. Maybe that brought it to the fore again. It always has amazed me that – I don't think it was Carter; I think it was Reagan, who actually signed the legislation, which, in some ways, is even more surprising. Then the Japanese Americans who were in the camps were given, I think, twenty-thousand dollars or something [as] compensation for that experience. But it was a brief flash. It came to the fore and then faded again. So yeah, it certainly was a reminder.

MG: Had your father met your mother before he went to Illinois?

GS: No. So if we rewind the tape a little bit, my father's family wound up going to Gallup, New Mexico, for reasons that I wasn't entirely sure of. But I went back over my own interviews, and the reason they wound up going from the coast to Gallup was to start a restaurant as well. So it turns out, my father's only sister had gotten married, and they had moved to Gallup, New Mexico, opened a restaurant. So, much of the family, or at least my grandparents, went there to assist in their restaurant. My father's father's restaurant was just about next door to my mother's father's restaurant. My father went to visit his parents in Gallup and went to some party. Back in those days, there were very strict rules about how young Japanese Americans interacted. So they apparently had some sort of a party for the Nisei. Nisei are second-generation Japanese Americans. So they had a party, and there happened to be – I can't remember the Japanese name

for it, but it's like a matchmaker at the party. He asked my father, "Well, is there anybody here that you have an interest in?" My father said, "Well, I kind of like her," and that was my mother. So they arranged for them to meet. So it didn't take very long. My father went back to California and corresponded with my mother. Then he went back, and he would visit, and they would apparently have dates. Then the matchmaker asked her to marry him. So the rest is history, I guess.

MG: Then, they both went back to Illinois?

GS: Actually, maybe I misspoke. My father was already working in Illinois. He started working in Lake Forest, Illinois, in 1946. They met that same year. So he must have taken the train from Chicago to probably Santa Fe and then met the rest of the family in Gallup. My mother certainly had never really been outside of New Mexico for most of her life. So, once they got married, they just packed up and went to Chicago, and that's where they stayed.

MG: How long had they been settled there before you were born in 1953?

GS: Well, let's see. Seven years. My brother was born in 1948.

MG: Can you describe the community where you lived? This was in Lake Forest.

GS: Well, if you look it up now, you'll see that it's an affluent little – now it's a suburb of Chicago. Back in the day, it was kind of a resort community. It's right on Lake Michigan. It's a community where many of the very, very wealthy families in Chicago would summer, or they would build their mansions, and they literally were mansions right on Lake Michigan. The Armour Family, Marshall Field, many of the big names in Chicago commerce built big, big homes there. So it's always been a very affluent, very reserved community. Frankly, very white. I joked for most of my life that when my brother and I were growing up there, we were the token minorities and in the community – very few Black people. There was one other Chinese American family in my school, but pretty much, we were it. Having said that, I have to say that it was a rather idyllic childhood for me. I don't feel like I suffered any slings and arrows from overt prejudice or anything like that. Being a wealthy community, the school systems were great. I think one thing that gave me personally some standing in school sociodynamics is the fact that I was one of the kids who had been there his entire life. I mean, there were kids who came and went, but I had an established group of friends, and people in the community knew us. My father was a fixture at Lake Forest Hospital as head chef. It was a very sheltered environment, very unexpected, I guess, given the dynamics and the demographics of the area.

MG: Well, I read that it was a sundown town until maybe 1990. So I was curious if you were aware of those kinds of restrictions?

GS: Well, there were very few places – once you get to high school, you begin thinking about beer and that sort of thing. There were very few – there was maybe one place where you could get a cocktail and one place where you could get a beer, and they remained institutions for decades. Fortunately, the next town to the south, a place called Highwood, had no such restrictions at all. Then once people got to high school, the Wisconsin border was only thirty

miles away, and the drinking age in Wisconsin was lower than in Illinois. So a lot of kids went to Wisconsin for those kinds of distractions.

MG: Can you describe where you lived? It was on the campus of the hospital where your father worked.

GS: That's right. It seems like a strange idea nowadays to have – it wasn't just the staff who worked in the kitchen or maybe worked on the grounds; it was also the nurses. There was a series of apartments that were built specifically for the nurses on the grounds of the hospital. In some ways, it seems like a brilliant idea. It means you have your staff right there. Housing costs have always been above average in Lake Forest. So I think it's a way for people who were not making Lake Forest kind of salaries to be able to be right there and be available to the hospital. So the place that we lived in – well, initially, my parents and my brother lived in a fairly small, I think, a one-room apartment in the residential part of the hospital. But when I came along, then my folks got a larger two-bedroom apartment above some garages on the hospital campus. That's where I grew up. So that was home for me.

MG: Did your mother work outside the home?

GS: For most of our childhoods? No. Once we got older, then she did. She worked as a – they called it nursery school. It would be like a daycare. She worked as a teacher at a daycare once we got a little bit older. Then, once I left the nest, then she did some other things, like worked at a pharmaceutical firm nearby and that sort of thing.

MG: Where you lived allowed for some neat interactions with nature – butterflies and ponds. Can you talk a little bit about that?

GS: The grounds of the hospital were given to the hospital by one of the wealthy families. I can't remember whether it was the Swifts. It's one of those big names in Chicago. But they donated the campus, and when I grew up there, it was pretty open. It was thirty-plus acres, and only a small portion of that was built up with the hospital buildings and parking lots, and the rest of it was just a field. We were surrounded by woods. On the other side of the margins of the hospital were cornfields and remnant prairie and that sort of thing. For a kid growing up, it was really a great setting. I wouldn't call it wild, but it was not developed. It certainly wasn't a typical suburban playground area. So big open fields that were still used by rabbits and ground squirrels and even groundhogs on the margins and lots of birds, and as you mentioned, butterflies and magnificent moths and frogs, and the whole nine yards. So kid with any kind of interest in biology or nature, it was really kind of a wonderful place to grow up. Of course, back in those days, parents didn't have to worry about anything. You just turned the kids loose in the morning and maybe expected them back for meals. Otherwise, they're on their own. So I'd poke around in the fields. I'd dig around in drainage ditches. It was pretty much: keep yourself busy, keep yourself occupied, do whatever you want to do.

MG: I know you're a big baseball fan now. So I was curious who your team was back then, the White Sox or the Cubs?

GS: [laughter] Oh, good for you. It was a big deal. The Chicago White Sox have always been the blue-collar South Side of Chicago team, and the Chicago Cubs have always been the more prestigious elite, North Side of Chicago. My dad, for whatever reason, was a White Sox fan. So, of course, that's what I was. That affinity for the American League lasts to the very day. Of course, now we have the Seattle Mariners out here, but I still look down my nose at the National League. Even though the Cubs were certainly a fun team to go watch in Wrigley Field, it was the White Sox that we watched on TV and listened to on the radio.

MG: Would you go to White Sox games in person?

GS: Oh, yes. We did that quite a bit. More often than not, we would go to White Sox games. Then, as I got older and my friends decided to go to a ballgame, they would invariably choose the Cubs. So I would go to Wrigley Field.

MG: You put in your notes that when you were five, you were visiting Southern California, and that was your first taste of the sea.

GS: Yes. For me, as a child, not having had that kind of exposure, either to the ocean or to uses of the ocean, was eye-opening, and it was a little off-putting. The whole notion that you would go down there and harvest and eat these things like abalones or octopuses was a strange idea to somebody who grew up in the cornfields of the Midwest. But it was a memory that has stuck with me to this very day, and my first exposure to the ocean and the idea that the ocean was a source of sustenance to people who knew where to look and how to do it. When I was going through the interviews with my father, he said that they would always go down to the intertidal beaches below Palos Verdes. They would harvest abalone. At that time, they were plentiful. I don't think too many people ate them, frankly. Other things like sea urchins – apparently, my grandfather would go snorkeling or diving for lobsters, rock lobsters. So it was part of at least my California family's routine to just work that into the regimen of harvesting food.

MG: It sounds like it was this interest and exposure to nature combined with your introduction to Jacques Cousteau that really solidified your interest in oceanography. I was curious if you could describe what that was like for you.

GS: Yes, kind of stereotypical, but it's true. I would watch on PBS, *The Undersea World of Jacques Cousteau*. I certainly had the foundation of an interest in biology and certainly zoology. But seeing on TV the incredible diversity that the oceans offered was another eye-opening experience for me. There was so much more color and such a bizarre diversity of form in terms of what you see in marine creatures, and it really engaged me and charmed me.

MG: What was school like for you growing up? Tell me about the subjects you enjoyed and the teachers you had.

GS: Well, I was a pretty good student. I don't know that I had any favorite subjects. I did enjoy writing. I'm kind of a frustrated English major, and that probably shows in the papers and manuscripts that I write, but I had an interest certainly in science. I had less of an interest in a

structured approach to science. What I tell kids and older students now is that all those subjects that I really hated in school coming up, things like statistics or chemistry, are the things that I use most now. So pay attention, and don't completely blow them off. But school was kind of a blur for me. It was more the social construct that goes with school that was the focus for me during those days. For me, it gave me an opportunity, and it was good for an insecure person like me that I've always been that even in a place like Lake Forest, I could participate in things like Student Council, and I was class officer and that sort of thing. So I think that all ties into the whole notion that my time in that suburb, despite its skewed politics now, and certainly the wealth distribution, my time there was very nurturing. I thought it was a very nice experience.

MG: You only wanted to attend colleges that were on the coast.

GS: That's true. When I got to high school, I kind of began targeting schools that had programs that were really relevant to marine biology or oceanography. So that led me to focus on three schools: the University of Washington, [University of] Miami in Coral Gables, and Stanford [University]. All of those schools have marine programs. The University of Washington was the only one that had and still has an undergraduate program in oceanography. I have to say: my heart got broken when I didn't make it into Stanford. But again, my life would have been very, very different had I gone that route, been accepted at Stanford. My parents would have been a lot poorer, too, had I gone to Stanford. Washington had that undergraduate program. I don't know that I seriously considered Miami, even though they've got a pretty strong marine program as well. I wasn't so interested in the exotic warm-water coral reef communities that might be a focus for a place like Miami. I've never been a big warm weather fan either. So maybe that entered into the equation as well.

MG: Can you talk a little bit about your transition to college? What was that first semester like? Talk about adjusting to college life.

GS: Yes. I have to say, my approach to college choices was a little cavalier in that I didn't do any campus visits. I didn't go to any of my three favorite universities. I also got accepted at the University of Illinois and College of Lake County, just as [a backup]. College of Lake County, CLC, people referred to as "College of Last Choice." So I wanted to have those backup schools that I knew I could get into. So Illinois and College of Lake County were my real backups.

But I never did campus visits. My first visit to Seattle was when I arrived with my suitcase to stay in a hotel in the University District overnight before I could move into my dorm. So it was a steep learning curve for me. I frankly didn't understand what Puget Sound was, this notion of wait, there is saltwater right on Seattle's waterfront, but it's not part of the ocean, really; it's part of this inland sea. So it took me a long time to get oriented. I have to say, being in the dorm system, too, was a social adjustment and, frankly, a big distraction. For me, the undergraduate years were two sides of a coin deal. One side of the coin was I was getting into my program that I had targeted for years and years. It was really much harder than I thought it would be. I, frankly, was not the best undergraduate student in the world. But it was also a time to really make new social bonds and make new friends. Some of my best friends to this day are people I met in the first year of college in the dorm system at the University of Washington. So there was that. I did wind up – I really wanted to graduate with a double major, with a degree in biological

oceanography and also in zoology. I came really close. I came maybe one or two classes short, but I didn't really feel like sticking around any longer than I had, which was the standard four years. So I graduated with a bachelor of science in biological oceanography, and I think, as I indicated in the write-up, I immediately transitioned into my new job as a bartender in Pioneer Square in downtown Seattle because I had no standing job offers. Like a lot of kids nowadays, like my own son, graduate into jobs that are waiting for them. That was not the case for me. Although I did have this job waiting for me, it just wasn't what I anticipated doing for the rest of my life. But that lasted only a few months, a couple of months, actually, until August, and then I got my first temporary job in my field, which was with what was at the time, Washington Department of Fisheries.

MG: You mentioned on your form how the curriculum was really difficult. Can you say what was toughest for you?

GS: Yes. I don't know what I expected going into biological oceanography. One of the things that they told us very early on in the curriculum was that if you want to study whales or seals, then you really might consider switching to zoology as a major because oceanography is more a study of systems and less a study of the critters or the plants themselves. And it's very true. The oceanography curriculum at Washington is structured so that you choose an area of interest – in my case, biological oceanography – but you're also required to take coursework in geological oceanography, physical oceanography, chemical oceanography. The physics and the chemistry part of those classes were hard for me. It was not something that came very easily. Even the biology part, the biology of populations, rather than individual animals, is a much different thing. It's much more mathematics-like because you're looking at models of how different populations interact. So it was hard. It was very difficult. Of course, there are other required courses in that degree program, including calculus, and the whole chemistry series up to organic or organic chemistry, was also required. So I did struggle a bit. I was pretty much an average, maybe B student. But once I got past the gatekeeper courses, the introductory bio, chem, geology, that sort of thing, and got into the upper-class portions of the curriculum, I found those more interesting, and that would carry over into my graduate program as well.

MG: Your last semester in undergrad, you had an internship at the Friday Harbor Marine Lab. What was that like?

GS: Well, it was coursework. It was a combination of marine zoology, marine botany class that is taught – I think it still is taught at the Friday Harbor Marine Lab every spring. It was really a return to what had attracted me to the whole notion of studying the ocean – a really wonderful location. You live at the lab. You bond with a small group of students. Then you study the habitats and the environment right around the labs themselves. So, really a chance to see things hands-on and to see where these animals live. It was just another idyllic time for me because to get groceries, we'd take a rowboat into the town and get our groceries and then row back over to the lab. There are plenty of different kinds of marine habitats to study right on San Juan Island, which is where Friday Harbor is. The final field trip for the entire class was to go to Vancouver Island with the instructors, and then we would get exposure to really a completely different kind of coastline, an exposed marine coast, which was not what we were seeing at Friday Harbor. It's

protected rocky shorelines, but not a true ocean coast. So very different. It was a great trip to really finish off a wonderful quarter.

MG: I want to ask you a little bit about the historical context for the years that you were in college. This was the end of the Vietnam War. So were there returning veterans coming to campus?

GS: I don't recall veterans coming to campus. I do recall that there was an ongoing tension on campus with, for example, the ROTC [Reserve Officers' Training Corps] program that was housed at the University of Washington. Of course, Seattle has always been this hotbed of liberal, progressive, radical thought. I do remember going to a demonstration in downtown Seattle, protesting – what was it? It was some sort of a meeting by ITT International Telephone and Telegraph [Corporation]. It was one of the big, faceless, nameless corporations that were reviled for whatever, some things that they were doing probably overseas.

But it was also the tail end. When I arrived in Seattle, it was 1972. So that was really the tail end of the really contentious demonstrations that began with the Democratic National Convention in '68 and a lot of the anti-war protests. [Editor's Note: The 1968 Democratic National Convention was held from August 26 to August 29 in Chicago, Illinois. In the streets of Chicago, thousands of anti-war protestors clashed with police.] There were still anti-war protests going on. But by that time, in 1972, George McGovern was running for president, about to be completely demolished by Richard Nixon. But nonetheless, there was a little bit more of an institutionalized anti-war attitude in some portions of the country. So the campus scene was not as disrupted as maybe places like [University of California,] Berkeley a few years earlier or even UDub [University of Washington] a few years earlier. There were a number of pretty violent confrontations there. But still tension; certainly, the tensions still existed.

MG: I'm also curious about the bar where you worked after college. Do you have any stories from that time period?

GS: Well, it was a little bit of a coming of age. I don't discount those times at all. I'd started working there while I was still an undergraduate, while I was still in school. It was a place called Doc Maynard's, right on Pioneer Square itself, in downtown Seattle. It also happened to be owned by the same person who owned and operated the Seattle Underground Tours. So the tours would begin in Doc Maynard's back in those days, and I think they still begin there now. But I guess one thing that it did introduce me to is the notion of historical storytelling or storytelling, period, as a kind of art. I saw a number of the tour guides for the Underground Tours, giving their spiel, and they're all initially given a script of the so-called facts. The person who owned the place, Bill Speidel, took history with a grain of salt and his own spin on history. But all the tour guides had the basic story of how Seattle started, which forms the basis of the Underground Tours, but they all added their own flair. So that has always stuck with me. Even now, when I give talks and presentations, the whole idea that you're telling a story and you need to engage the audience is something that I think I began to learn very early on from those early days listening to these tour guides. So that was a great experience. The whole idea of interacting with the public and an unwashed, unvarnished public, as a bartender, was also very eye-opening. In my resume, I note that as fieldwork in human pathology and psychology. It's really true.

When you're on the other side of a bar from people who are drinking, then you see the best and worst of humanity. So all of that was valuable, and I think it continues to be something I put to use in everyday life.

MG: Yes, I strongly believe that everybody should have some experience in the service industry.

GS: Absolutely.

MG: I was going to ask you about your speaking style because I loved watching some of your YouTube videos and talks in preparation for this interview.

GS: You really got into it.

MG: I did. I was curious if that skill was inborn or developed over time because you're such a great speaker.

GS: It's really been something that didn't come naturally. Let's put it that way. I remember the first lectures that I gave for my job, where I would try to teach somebody about the biology of oil spills or something like that. It was very hard. I had a whole series of index cards. These days, PowerPoint is basically my deck of index cards, but I'm a big believer in the whole notion that you need to tell that story, that you need to have a beginning and an end, and you need to engage the audience, and you can't just talk at people or read your slides. So that's what I try to do. It's another one of those two-edged swords; the people who are going to be doing the lectures that I give now – we give a regular “Science of Oil Spills” class at least once a year here in Seattle, and then several times in other locations around the country. I have a set series of subjects that I speak to. And now that I'm close to retirement, other people are going to have to give those lectures. However, when they look at the slide decks that I've prepared, they kind of go, “Huh? Why is he talking about red wine spilling on rugs for five or six slides?” I need to annotate those to really give some context. But I think it is really important to try to take what can be complex subjects, when you're thinking about maybe the toxicology of oil or hazardous chemicals, and try to translate that to people. We often teach Coast Guard personnel and a lot of people who don't have a lot of science background. So how do you engage them? That's something that I think is very important for people like me who are teaching these classes to ask themselves all the time. How do you engage people? Are we getting through? What works? What doesn't?

MG: I want to trace your career steps in some detail, but I just wanted to check in to see how you were doing for time or if you needed a quick break or anything like that.

GS: I'm doing okay. You let me know if you need to take a break, too. I haven't even I haven't drunk much of my coffee, but I'll start doing that.

MG: Yes, I'll let you take a gulp. Tell me a little bit about this first position in your field. Was it with the Department of Fisheries?

GS: Correct. Like most of my early jobs, it related to what I studied. It was a temporary position. I knew it would last from August to December; I guess it was 1976. It was ostensibly for a salmon research project in southern Puget Sound, but it had many different field aspects to it, which was really kind of neat. One thing that we studied was whether a fixed salmon trap was a way to harvest salmon coming back into Puget Sound. It was floating out in a place called Budd Inlet, in southern Puget Sound. I think it was based on pretty much Native American methods of harvesting salmon in some of the embayments in Puget Sound. So we would go out in a boat and tend to this trap. We would harvest the fish that were in there, clear out the non-salmonid species, take the others, and examine them for tags. The salmon that are tagged have a fin clip, so those we would retain, and then we would recover the little tiny tag that's embedded in their heads, which gave information about when they were released and that sort of thing. The other part of that project was to do stream surveys in the Olympic mountain foothills, just counting salmon in streams and small rivers. Then we also operated a fish weir on the Deschutes River in Olympia, Washington, where all of the fish coming back into the river were directed into almost a cage facility. Again, we would look for the salmon with fin clips and just pass through the others that were wild salmon. One other thing – we worked on the Wynoochee Dam in Southwest Washington. Again, that's an Army Corps of Engineers dam, and the fish need to be trucked from one side of the dam to the other so that they could spawn. So we would, again, look for the salmon that were tagged, and then we would take those back to the lab and recover the tags from their heads.

MG: This was around the time the Magnuson-Stevens Fisheries Act was passed. I was curious if you could say what that was and if it impacted the fisheries and your work?

GS: Well, in the state of Washington, that was not the big factor. At that time, the big factor was something called the Boldt decision [*United States v. Washington*]. Boldt was a federal judge who presided over a trial brought by Native Americans over allocation of salmon species in the State of Washington. Actually, I think it extended to other species as well. That was a highly contentious issue related to the marine resources of Puget Sound and the State of Washington. It basically allocated half the catch to Native Americans and the other half to commercial fisher people and recreational fishers. So for a community of commercial fisherman and recreational people, who had been used to unimpeded access to the resources of the state to have this imposition by a federal judge – it was really quite a dicey time.

MG: What do you mean?

GS: Well, there, there were people who would take the protests out onto the water. There were clashes not only with state and federal authorities but also clashes between native and non-native fishermen. So it bordered on not anarchy, but certainly on major civil disorder on the waters of Washington State.

MG: Did this impact your job?

GS: I don't think so because we were strictly on the research side of things. I don't think anybody had an issue with salmon research or doing stream surveys to count how many salmon

were in the rivers and streams. If I had been working on the regulatory or enforcement side, that would be a different thing. So it didn't really enter into affecting what I did.

MG: How long were you in this position?

GS: That would have been – September, October – about three to four months. It was a very short period of time.

MG: Did you go directly to the factory ship after that?

GS: Just about. I had a brief period of time off at the very end of 1976 and the first month or two of 1977. But I was kind of drifting from a temporary job to temporary job. This was the next thing that was lined up, the foreign fisheries observer job, which was another really kind of unexpected, unanticipated adventure. It's something that is kind of an extinct animal. I mean, there are no longer foreign fisheries observers because there are no longer foreign fisheries in American waters, really. That was definitely tied into the implementation of the Magnuson Fisheries Act, the very early days. I think we were the initial crop of observers that were dispatched out to foreign fishery fleets.

MG: Were you hired by the National Marine Fisheries Service [NMFS] to do this?

GS: Yes, it was administered, and the hiring was done by NMFS, but I believe it was still contracted. There was somebody who was paying us that was maybe a state entity. I can't really recall, but certainly all the training, all the administration was done by NMFS as it is now for the domestic fisheries observers.

MG: What was the training like? Were you taught how to adapt to the different cultures and languages spoken onboard?

GS: Only in the most rudimentary and kind of blue-collar and politically-inappropriate way. We certainly got some guidance, a little bit as to what to expect, but in terms of the cultural differences – now, you'll have to forgive me for telling you, but you asked. They advise us, in training, to take a bunch of cigarettes and American *Playboy* magazines and that sort of thing over, as icebreakers or gifts to give to the people that we wound up working with. To a certain extent, it was true; they did like Marlboros and *Penthouse* magazines and that sort of thing. But I doubt if they do that kind of training now. I'd be surprised.

MG: It seems like the observer system has changed dramatically since your days. It's mostly young college women who are going on these boats.

GS: Is that true? There's the gender difference?

MG: Well, at least in what I've seen in the Northeast, but this is something I don't know a whole lot about.

GS: Well, it's certainly a different kind of ballgame on any number of levels. I don't know that they ever sent women certainly out on foreign boats back in those days. Eventually, they did, but I don't think it was a very easy transition on Russian ships or probably Japanese ships either. So it was mostly guys and mostly recent graduates from either fisheries or oceanography or zoology.

MG: Talk to me a little more about this experience. What kind of ship was it? What were they fishing for? How long were you out there? All those kinds of things.

GS: It was a four-hundred foot Tanner crab or snow crab factory ship. The ship that I was on both years that I did this was a ship called the *Keiko Maru*, which was owned by the Nippon Suisan Company, a big fisheries conglomerate in Japan. The other factory ship that was also out there was owned by another company: it was called the *Koyo Maru*. I can't remember who owned it. It was a different company that owned that. But the first year, 1977, there were two American observers assigned to each factory ship. So there were four of us who left for Japan at the same time. Both of the factory ships operated in the same way. As the name implies, they were complete factories. They would take the catches from a fleet of small catcher boats that would actually harvest the snow crab. Once delivered onto the ship, they were completely processed from live crab to packages of frozen crabs and crab legs. So there were the gritty interior spaces of the ship that were just hundreds of Japanese men processing all these crabs that would come aboard. The entire fleet sailed from the northern island of Hokkaido in Japan and a port called Hakodate. That would have been probably in early March. I think that was determined by two things, the weather, the amount of ice in the Bering Sea, and then whatever the Americans and the Japanese had negotiated in terms of a quota for the catch. So our jobs as observers onboard the ship ostensibly was to monitor the catches coming aboard. So every time a catcher boat would make a delivery, we would stand with somebody from the ship and verify the weight of the crabs that were being delivered. Each fleet had a quota that they were assigned. So we would just fish until the quota was reached. There were no port calls. So once you're out there in the Bering Sea, you're out there. For us, it was pretty much March through September.

MG: You wrote in your notes that you felt the Japanese crew treated you like a project. I was curious if you can say what you meant.

GS: Well, of course, you know now that I grew up in suburban Chicago. Part of that upbringing, I think intentionally by my parents, was to make us as white as we possibly could be, other than our appearance. So we had no real Japanese cultural overlay in the Chicago area. Although, as kids, we ate a lot of rice, there were certain things like soy sauce that were staples in our household. But in terms of speaking Japanese or learning about Japanese cultural traditions, that sort of thing – nothing. So I was about as non-culturally aware as a Japanese American could be. Even my relatives in California had much more exposure. There's, first of all, a much bigger community of Japanese Americans in California, and the entire family was based there. So some of those traditions carried over into the kids who were being brought up at the same time as me. I had none of that. I went to Japan. I didn't speak any Japanese. I looked the part, and I certainly couldn't speak the part or act the part. So one of the things that I learned very early on was how to say, "I'm not Japanese. I'm American. I don't speak Japanese. I'm so sorry." It wasn't until much later in my life that one of my good friends pointed out to me that

people probably thought that I was mentally impaired. Like, “That poor man, he can’t speak.” And that’s probably true. I would be waiting for trains and stuff in Tokyo, and people would come up to me with consumer surveys. I would just be, “Sorry, no can do.” So the Japanese, especially the officers with whom I lived for all those months, did want to imbue me with a certain sense of cultural awareness. So they did their best. Being immersed like that, you learn a lot about Japanese culture and the subtleties of – you don’t pour your own sake, you’re always excessively polite. Even when you’re on a ship of hundreds of guys, there are cultural mores that you really need to be aware of. So in that first year, we were very fortunate in that we had on board with us as another observer, a Japanese Fisheries Agency, JFA, observer, who spoke pretty good English. So when we had questions or when there was something going on that we didn’t understand, he could explain it to us. So that was really fortuitous because even though the officers, in particular, all have English in their backgrounds, very few of them speak English. They study it in school, mostly writing. So they could speak rudimentary English, certainly much better than the Japanese that we spoke. But in terms of the subtleties or the other nuances of Japanese language and culture, this gentleman from the Japan Fisheries Agency was really invaluable.

MG: Did you say you also were on a Russian ship?

GS: No, no. I was not. The two years that I worked as an observer, it was on the same ship, the same Japanese ship. So 1977 and ’78, I was on the Keiko Maru.

MG: Can you say more about what you did as an observer?

GS: Well, the main thing was to verify those catch totals as they came aboard, which was not rocket science. You go out, and when they make a delivery, you look at a big scale, and you confer with the representative from the ship, make sure that the totals matched up. Then every night, we would – the first year – the second year I was alone. But the first year, the Americans would prepare a daily summary of what the catch totals were. That would be radioed out to the NMFS lab in Kodiak. They kept track of the running total. The other thing, especially the first year – at that time, I had an interest in parasitology. So I thought it would be interesting to take a look at the crabs that were coming aboard to see if there was any indication of infection. So we did notice in the gills of these crabs, there were little tiny flukes, like flatworms, that occurred. So we started this project, my partner and me, to document how many were in the crabs. We would look at maybe, I don’t know, fifty from each catch and where they came from and document what we saw inside the crab. There was plenty of time to do that. So it was another distraction. I think, in some ways, it conveyed the idea that we weren’t out there to be narcs on the Japanese; we were out there to also do some fisheries biology. So I think it was useful in that way.

MG: Did that experience give you the opportunity to move on in your career? I know your next step was on the NOAA ship *Miller Freeman*.

GS: Probably not. I talked to my old professor from that marine zoology/marine botany class up at Friday Harbor about maybe trying to publish some of that work, but I didn’t really know what that meant or how to go about it. So I never did publish what we found out there. What it did

give me – it was a precursor for understanding, first of all, what it’s like to be out at sea for a really long time, and to be out at sea in all conditions, not necessarily fine summer weather, but also freezing spray and everything else. So that was, I think, a useful precursor or experience for me to have in my back pocket when I did go to work on the *Miller Freeman*, but the things that we did were kind of different.

MG: How did that opportunity come about for you?

GS: Well, that came about from yet another temporary job that I took, this time directly with NMFS, the Northwest and Alaska Fisheries [Science] Center. At that time, they were combined (i.e., the Northwest and Alaska regions, which are now separate). It was to work with a team of ichthyoplankton biologists. So we were doing not only plankton tows but plankton trawls and that sort of thing. So, looking at the occurrence of larval fish. This was at the time when the massive spawning populations of walleye pollock were just – they really hadn’t been, I don’t know how to put it, discovered yet in Alaskan waters. Now, walleye pollock are the basis for all of the fish sticks, and surimi, and fake crab. It’s a huge, huge, probably multi-million, maybe billion dollar fishery in the Bering Sea and in the Gulf of Alaska. But at that time, not a whole lot was known about it. So this team of plankton biologists was out there looking at larval fish, including walleye pollock and Pacific cod, that sort of thing. So that was onboard the NOAA ship *Miller Freeman*. Initially, actually, I think my first cruise was on an Oregon State University ship (R/V *Wecoma*) with that NMFS team. Then we went to the *Miller Freeman*. When my time was up on that particular field cruise, I was offered an opportunity to stay onboard the ship and work as a crew member. I figured, “Well, what the heck? Why not? I’m here. I’m in Alaska.” So the rest of the team left; I stayed on board, and I began as a crew member – what’s called, on other ships, ordinary seaman; on the *Miller Freeman* or the other fisheries research boats, it’s ordinary fishermen. What I did was mostly work on the bridge, doing navigation stuff, maintaining charts, and updating charts, that sort of thing. Also, working as a quartermaster, driving the ship. Then I did, I think, one more cruise with the ichthyoplankton biologists and then stayed on board the *Miller Freeman* for good. So I became completely transitioned over to being a crew member, and I did that for roughly six years.

MG: Can you talk a little bit about the team you worked with initially? The team included some heavy-hitters in the scientific community.

GS: Yes, some very well-known, well-published ichthyoplankton biologists, initially led by a guy by the name of Ken Waldron. But then he retired. He was very fairly old when I first came to work with this team, but I did go out with him. But it was taken over by other people, like Art Kendall and Ann Matarese. So there are a number of people who stuck around here in Seattle at the Northwest Fisheries Center for a number of years and became very well known in their own right as ichthyoplankton biologists.

MG: Over the course of those six years, did you stay on as a crew member, or did you switch departments?

GS: I pretty much came aboard as a survey tech, a biological survey tech, which is the technician interface with scientific parties onboard the ship. So we would assist the scientists

that came aboard in deploying their equipment and then processing their samples. Because it was a fisheries research trip, a stern trawler, it was mostly fisheries research, and so we would process the catches of fishes as they came aboard. We also supported the scientific work with CTDs [Conductivity, Temperature, and Depth]. If there were bottom grabs to be taken or bathythermographs to record water temperature, we would provide all that information.

MG: Six years seems like a long time to be living and working on a boat. What was this time like for you and being onboard a ship so much?

GS: It was another yin-yang situation. I don't know that I would trade those years for very much. Not only did I learn a lot of technical skills in terms of rigging equipment and collecting scientific information, what's involved with field processing the data, that sort of thing. But, again, it's the social fabric of the work that's being done both with the scientists and then with the crew. You find that civilian crew members on board these NOAA ships are a pretty mostly irreverent lot, basically cynical, very down to earth. There was a certain amount of, I don't know, a little bit of a friendly "us and them" relationship with the NOAA Corps officers, who actually ran the ship. In the middle part of my stay onboard the ship, it was more than just a good-natured back and forth with the officers because the *Miller Freeman* had a little bit of a black sheep reputation within the NOAA fleet. So they brought aboard a series of captains who, I think, were there to try to bring the ship in line with the rest of the fleet, in terms of the behaviors and the attitudes. It was, I think, a miserable failure. It didn't work out very well. But that was the only example of the tension between the officers and the crew being much more than simply good-natured stuff. In the end, I had a very supportive set of NOAA Corps officers that my captain and my operations officer, who were responsible for allowing me to go back to grad school. [inaudible] I think I was one of the first wage marine crew members to make that leap to go back for continuing education in grad school.

MG: What you just said about transitioning to graduate school was a bit garbled.

GS: So, after six years of doing this onboard the *Miller Freeman*, it became quite apparent to me that if I didn't go back for some sort of advanced degree, I would be doing technician's work for the rest of my life, just supporting other people's science, but not really initiating my own. So that was the big motivation for me to go back to grad school. When I discussed that with the officers onboard the ship, my captain was Mike Fleming, and my operations officer was Craig Berg, they suggested maybe I pursue a NOAA-supported program of going back to school. They indicated that they would support this, and they did. I think it was the first time that somebody from the ships was supported to go back to grad school like that.

MG: Someone wrote a recommendation letter for you that was very meaningful. Who was that?

GS: A scientist from Fisheries here by the name of Gary Stauffer. I think he was for a while director of the Northwest Fisheries Center. But at that time, he was just one of the many scientists that I had encountered on these many NMFS cruises that we supported. He did write a letter of recommendation for me to go back to grad school at the University of Washington, and that did mean a lot to me. I'm sure it really helped me get in.

MG: Yes. I want to ask you next about your graduate school experience, but I'm wondering if we can take a quick break.

GS: Sure.

MG: I will pause the recording.

[TAPE PAUSED]

MG: In going back to school, what did you hope to do? Tell me about your course of study.

GS: Well, I was going to take one of two paths. One was to go to med [medical] school. That was a very fleeting aspiration. I did take the MCAT [Medical College Admission Test]. I didn't study at all for the MCAT, and I did miserably on it. So that was just a flash in the pan. I did also take, of course, the GRE [Graduate Record Examination], and did okay there. So my idea was to go back to grad school, and I wasn't necessarily keen on trying to narrow in on a really niche field of study in zoology or marine biology. But, at that time, the University of Washington had a relatively new program that focused on interfacing science with policy, so marine policy and that had some appeal to me because not only did I have the desire to play a larger role in the science itself, but also in the interface of that science with how it really affects people with the policy part. So that's where I chose to go back to be. At that time, it was called the Institute for Marine Studies. But now, it's the School of Marine and Environmental Affairs. Anyway, that's what I wound up going back into. It's a small program, or it was at that time. I really enjoyed it. It gave me an opportunity to not only really gain a better understanding of how that science and policy and human interaction with the marine environment really worked, but it also began to focus me in on marine environmental issues as something that I really had an interest in. Again, it also gave me a certain amount of flexibility in augmenting the course requirements for the program itself with some of the other technical aspects in fisheries or zoology that I have an interest in.

MG: You wrote your thesis on nonpoint source pollution. I was curious if you could first say what that is.

GS: Nonpoint source pollution – So most of what we think of as pollution, whether it's an oil spill or whether it's DDT [dichlorodiphenyltrichloroethane] or something like that, a lot of that is what we call point source pollution, in that we know where it comes from. It comes out of a pipe. It comes out of a tanker. That's the classic 1960s *Silent Spring* perception of what pollution is, the industrial pipes coming out into a waterway, something like that. Nonpoint source pollution is – well, it's the opposite. It's not point source. So that means it's either stuff that's deposited by the atmosphere, or maybe it's an oil that washes off roads into our waterways. So you can't really stop it with a law or regulation that easily. It's hard to do.

MG: Can you remind me what year you entered graduate school?

GS: Let me see. I believe I left the *Miller Freeman* in 1984. I think I began coursework in the fall of 1984.

MG: You worked under Dr. Tom Leschine. He was a relatively new professor at the time.

GS: He was. He had come from Woods Hole. He was the environmental science and environmental policy guy in the Institute for Marine Studies. So it was his coursework that really kind of sparked my interest in environmental issues in a more structured way than I had in the past. I mean, I had had an interest in the effects of chemicals on the marine environment, but I didn't really know how that translated into a policy framework or more structured analytical framework. So he really provided that. So I owe a great debt of gratitude to him.

MG: Were there any women on the faculty at this time?

GS: Yes. I'm trying to remember who, though. All the big names from back at that time were men. Eventually, some of the scientists that I worked with, or one of the scientists that I worked with up in Alaska, became the director for the program, Terrie Klinger. But in terms of other instructors, when I was there, it was a male-dominated academic environment.

MG: I was curious about how the Sea Grant opportunity came up. You said that it accelerated your grad school experience, and I wasn't sure how.

GS: Well, there is what's now called the John Knauss Sea Grant [Marine Policy] Fellowship Program. I'm certain that it continues. But at that time, it was just the Sea Grant internship program in Washington, DC. The idea was that each Sea Grant office across the country could nominate grad students to come to Washington for a year and work in either a congressional office or an agency line office in the DC area on some aspect of marine policy. It was sponsored by the Sea Grant program. So the students would get a stipend for the year, but the individual Sea Grant programs would make the selection of the students.

MG: Can you describe your course of study there and what you were looking at? You also said it was different than the Legislative Affairs work that other students were doing.

GS: Right. So I mentioned, the placements were either in congressional offices or agency offices. And as I think I indicated in my write up, the plumb positions were on the Hill; they certainly carried the prestige. You're working with people who were in the news, that kind of thing. So I was mildly disappointed when my placement was with a NOAA office in Rockville, Maryland, with a program that focused on coastal marine monitoring around the country, on a fairly new program that was just coming into play. But it was another one of those fortuitous developments because it really gave me the experience and the technical knowledge about what goes into defining and measuring environmental impact. So it was a program that sampled animals from the coastal marine environment, as well as sediments, and looked at the chemicals in the fish and shellfish, as well as any histopathological abnormalities, like lesions that might occur from exposure to chemicals. Then it was a way to try to compare environmental quality around the country. There were a couple of main flagship programs in this effort, and one was called the National Status and Trends program, which looked at fish and sediments in many different parts of the country. The other was called National Mussel Watch, which looked at chemical burdens in shellfish, either oysters or mussels around the margins and coast.

MG: When you say you were looking at quality around the country, were you traveling to do the fieldwork?

GS: I wasn't traveling a lot. But I did travel, and I did have the opportunity to participate in the fieldwork in the field collections, which also was useful for me. So I'm trying to remember where I went. I wound up traveling on one NOAA ship to coastal New Jersey, the Northeast. I did one out in California. So it was a good opportunity to also understand the link between the fieldwork and the analytical work in the lab, in terms of doing the chemistry, and then the synthesis of the results into something that could be used as the basis for maybe policy decisions.

MG: You were still a grad student during this time.

GS: Yes. Yes, I was because I hadn't completed my thesis. That was maybe the downside of my time as a fellow or an intern, is that I had that thesis hanging over me the whole time I was in Washington. A lot of the other participants and students had completed their work already. So it stymied not only my social life – I always felt like I should be working on my thesis – but it also was another source of stress in terms of trying to get that hanging sword of the thesis out of the way.

MG: Did you complete your thesis after this one-year fellowship?

GS: I got most of it done while I was working on the fellowship. I think I put the final touches when I finally returned to Seattle. But I stayed on after the fellowship had ended. So it was still another year before I came back to Seattle. That's when I really wrapped things up.

MG: Tell me more about how you wrapped things up and then the opportunity to come back to Seattle.

GS: I think most of my analysis was done for the thesis while I was in DC. It was just a matter of trying to polish it up and make sure that my advisory committee was okay with what I had written so in terms of formally wrapping it up, dotting all the I's and crossing the T's. I had to get back to Seattle somehow. That came about by taking a job with a sister office for the place where I had been working in the DC area. After the fellowship ended, which was just a year, they offered me a position as a full-time employee, which was the big advantage that the agency people had over the Hill interns and fellows. I don't think any of the Hill people were able to stay on in their jobs. Whereas more than a few, I think most, of the agency people were ultimately offered positions in the offices where they were placed. So I stayed on for another year, but all of my roots and everything that I knew was back in Seattle. Plus, I had a girlfriend back there. So I really wanted to get back. It turns out that I was able to apply for a job with a sister office of the one that I was working in, in Rockville. They offered me a position as well as the EPA [Environmental Protection Agency]. The EPA also offered me a slot. So I had a couple of options for getting back home.

MG: Was your office within the National Ocean Service [NOS]?

GS: Yes, I think NOS was in existence at that time. They reorganized so many times; it's hard to keep track. But I think that was the parent line office.

MG: What went into your decision to stay with NOAA and not take the EPA position?

GS: Well, there's a certain amount of loyalty. I mean, NOAA had shown me a great deal of courtesy, confidence, whatever, by offering to support my graduate school program for a year, and I felt a certain loyalty to NOAA. I also preferred to stay in a research-oriented position, rather than something that was more on the regulatory side with EPA. Finally, I did touch base with one of my old oceanography professors and asked his advice about which position to take. It was a guy by the name of Alyn Duxbury. He said, "Well, would you rather work on that beautiful campus out on Lake Washington, or on Sixth Avenue in downtown Seattle?" So that also played into at least the background of my decision and choosing NOAA, but mainly, it was a certain loyalty to the agency.

MG: Can you describe the work you were doing when you got back to Seattle?

GS: It was similar to the work that I had been doing in the DC area because, again, it was basically the West Coast office for the program that I had been working in. I will say it was less broad-scale fieldwork and more synthesis of existing scientific information to try to assess the state of environmental quality in various regions. A lot of this was spearheaded by a guy that I worked with for decades, Alan Mearns, who was really a wizard at taking many disparate sources of information, and using that information as the basis for assessing the state of the environment in a certain embayment or certain region.

MG: Is this the work you would be doing up until the *Exxon Valdez* oil spill?

GS: Yes.

MG: That's something I really want to spend a lot of time talking about. So I just want to make sure you're okay to go keep going or if we should save this for another session.

GS: It's your call. You're the boss. I can keep going for a while, and then maybe we can break or whatever your day allows, as well.

MG: I am free for two more hours.

GS: Okay.

MG: Well, tell me what that was like. How do you learn about what happened with the *Exxon Valdez*? When did you realize the oil spill would impact you and your work?

GS: Well, at that time, we didn't do a lot of work on oil, per se. We did work maybe on the class of chemicals that we mostly worry about with oil, which is aromatic hydrocarbons. But the work that I was doing looked at chlorinated pesticides and different other kinds of persistent chemicals in the environment and metals. Aromatic hydrocarbons were just another category of

pollution that we often considered for assessing environmental quality. But our offices were adjacent to the hazardous materials response people, the oil spill people. So in March 1989, when the *Exxon Valdez* occurred, we certainly noticed a lot of commotion going on down the hall. Then, the people that we worked next to said, “This is going to be a big one for us.” A lot of people left immediately. So I, at that time, in the initial days, didn’t think that there was going to be much of a role for our group, at least certainly early on. But the guy who kind of oversaw both of our offices, both of our agency groups, was someone named Bud Ehler, and he had an idea to activate a laid up NOAA ship, called the NOAA Ship *Fairweather* and use it as a platform for operations to assess the impact from the Exxon Valdez spill, which seemed like a whimsical idea, initially, at least to me, because I was well aware of how much time it took to get the NOAA ships ready to go on any sort of a cruise, much less a cruise for which the ship was not designed. The NOAA Ship *Fairweather* was designed to do hydrographic surveys or chart work; it wasn’t designed to do anything besides that, to collect samples or anything like that. So it meant that they had to completely reconfigure that ship, which they did mostly here, I believe, at the Sand Point campus of NOAA in Seattle. But they took all of the little survey launches and equipped them with either fishing gear or winches to pull gear out of the water. Then the lab spaces were reconfigured on the ship. So it was a major, major effort. But by early May of 1989, the *Fairweather* was ready to make the trip up to Alaska. So it was an amazingly quick transformation, something that I don’t think will ever happen again with the NOAA fleet. But I guess it’s kind of akin to the whole mobilization to create a vaccine for COVID. Never before has it happened so quickly. So the bottom line was: to staff the ship scientifically, a whole range of scientific expertise was recruited, not only from NMFS, from the – at that time – Northwest and Alaska Fisheries Center, the Montlake Lab but also from other fisheries agencies and our group. So we were part of a multi-disciplinary group that did the science onboard the ship up in Alaska, collecting fish, sediment samples, processing those samples onboard the ship, and then preserving them for analysis back in Seattle.

MG: How were you chosen or invited to be involved?

GS: I think simply because we had the experience of doing coastal monitoring. We already had the experience of working with the scientists from the National Marine Fisheries Service who were doing the chemistry. So we were known quantities both on the fisheries side and the NOS side. So it was a no-brainer in terms of who to put on board the ship.

MG: Who else was there with you?

GS: Oh, gee. Well, there was a whole crew of NMFS chemists, who worked out of the Montlake lab here in Seattle, who had become very well known for their work in not only the biochemistry of contaminants, ranging from the pesticide to metals, but also looking at aromatic hydrocarbon metabolism. So people like Dr. Peggy Krahn, Gina Ylitalo, who just retired this year. Those were the backbone of the chemists onboard the ship. The person who led the scientific expedition initially was Dr. Robert Clark, who also worked for NMFS and had a long career in pollution assessment. On our side, our whole staff had been doing what I had been doing for a number of years, both in terms of the fieldwork and the synthesis of the results that we would get from, for example, the NMFS people. So it was pretty much all hands on deck on both sides, both for NMFS and for NOS. Everybody from the oil spill response side was already

up in Alaska. So we were chosen to crew the NOAA Ship *Fairweather* for this special expedition.

MG: Can you talk me through the recovery timeline and what those next steps were like once you arrived in Alaska?

GS: Well, the *Fairweather* cruise was fairly well-defined and relatively short term. It didn't go on for a very long time. So the *Fairweather* had a fixed mission of going up and sampling the affected and potentially affected areas in the spill region, sampling fish. So that went on in 1989. I think that was just about it, not beyond that. But in the wake of our *Exxon Valdez* work, there was a small group of biologists on the NOS side who were invited by the hazardous materials group, the oil spill response people, to become a part of that group, which was all under the same line office anyway. So it was a matter of transferring positions. But Alan Mearns and myself and Rebecca Hoff were the charter group of biologists that were invited to support oil spill response. That was in early 1990. Up to that point, there had been no biology support in the oil spill response team. It was chemists and modelers and that sort of thing. So one of the reasons that we were brought in was to take over a program of biological assessment up in Alaska for the *Exxon Valdez* spill, that had been started under the auspices of Exxon, the spiller, but had been taken over by NOAA once Exxon decided it didn't want to know any more. So we were tasked with managing that program and participating in that program. That defined my work for a number of years because it was a long-term monitoring program. There was surprisingly good support across several different agencies, including EPA, Department of Interior, the Coast Guard, to put money into this monitoring program. So we did that, and it continued in the field really through the year 1999 or 2000. So we would go up pretty much every year, sometimes more frequently than simply once a year, and sample a fixed group of sites to try to track recovery from both the oil spill and the cleanup.

MG: Can you talk about those changes over the years? What was taking longer to recover? What was recovering faster?

GS: Well, because this program was focused on potential impacts from cleanup, as well as from the oil, we focused on the shorelines because that's where the oil had the greatest impact. What we found in examining the comparative effects of oil versus the cleanup was that – the big headline early on was that the cleanup appeared to have more environmental impact than the oil itself. That was the soundbite headline for at least the first year or two. But, as we learned, if you continue to track recovery over time, we found that eventually, the more impacted sites that had been cleaned up aggressively with high-pressure hot water eventually recovered to the same point as the oil alone sites. Then we could discern no difference. That took probably three years, maybe a little more than three years. So the operational lesson or the practical lesson from that part of the monitoring was that, yes, you can confer more damage on to the habitats that you care about if you clean them up aggressively and quickly. But if it's important to you to get all that oil out of the environment, or as much of the oil as you can out of the environment, then maybe that's the price you pay because you know in the long-term that they're going to recover to the same point. Two years may seem like a long time, especially when you're looking at a freshly oiled shoreline. But in the big scheme of things, a two-year recovery time is actually pretty quick.

MG: You said somewhere that this region of Alaska was still recovering from the 1964 Great Alaskan earthquake. So I was curious what that meant. How was it still recovering?

GS: Well, the physical setting of Prince William Sound was drastically changed in 1964. There were certain areas that were uplifted extensively out of the water, or land areas that were uplifted, or other areas that subsided. There were entire villages that were destroyed. There were oil storage facilities in 1964 that spilled their contents into the shoreline area and into the water back then. We could find remnants of the 1964 oil releases when we were out there surveying in 1990 and beyond. So that kind of a major impact to the setting that really forms the basis for all the ecosystems in Prince William Sound, that kind of a major change, takes a long time to adjust to. So we would go to certain beaches, and you could see clam beds that were embedded in the beach that were out of the water. But you could see these deeper water clams that were obviously dead. You could see the clam shells all lined up where they were before the earthquake, and then they got uplifted out of the water. So that was our first hint that trying to assess the impact of a relatively transient environmental insult, like an oil spill, can be really complicated by a lot of other things, including other larger-scale cataclysmic events that might have happened to that same environment. So the relevance now is that not only Prince William Sound in Alaska, but all of Alaska and all of our coastal regions are being profoundly impacted by climate change. So the question becomes if you were to have an oil spill now, or any other insult, like a major hurricane, or – I don't know – your choice, how do you separate out the damages or the impacts from that transient insult from these other things that are going on in the environment? I don't know that there are any good answers. People are certainly aware that they're dealing with a very dynamic set of conditions now, with climate change. Things in a lot of areas of our country and around the world are changing dramatically. So the great fear is that it's going to be increasingly more difficult to assess environmental damage in the context of these changes that are going on.

MG: Is it hard then to tell which changes can be attributed to *Exxon Valdez* and the resulting disaster, and then what changes are due to climate change?

GS: No. For one thing, I think we were much less aware of climate change as a driver for immediate impact in the 1980s than then we are now. But also, there are certain changes that have occurred that are clearly linked to *Exxon Valdez*, both in terms of their impact and then their recovery. Probably the most profound example is with orcas, killer whales. The reason that that information is so good, even though it's relatively circumstantial, is that that populations of orcas in Prince William Sound were monitored before the oil spill. So it's one of those rare times when there is pre-spill information. That's one of the rarest commodities in this business that I know of, and that's pre-spill monitoring information. But it turns out there's one whale researcher up in Alaska, Craig Matkin, who had been monitoring orcas since the mid-'80s. So he was able to show that the trends in the populations of two groups of orcas, a transient population and a resident pod of killer whales [inaudible] lived in Prince William Sound. The reason that I call it circumstantial is that he doesn't have direct evidence that the *Exxon Valdez* caused impacts to the population. But something happened at the same time, right around 1989, in the population numbers for the two groups of orcas, where they plummeted. So it's a pretty good bet that you can make that circumstantial link. Craig has continued to monitor the

population trends over time, and he's documented a slow recovery of the resident killer whales in Prince William Sound and then a slow decline toward extinction for the transient population. So thirty years later, we're still seeing the traces of the impact of the *Exxon Valdez* spill.

MG: It is interesting how you illustrate it. There's a graphic I've seen you present, and the orcas are in the not recovered phase. Is that right?

GS: Yes.

MG: Are there other species in that phase as well?

GS: There are a few bird species, I think. I think harlequin ducks and maybe marbled murrelets may be in the not recovered phase. But I can give you an example from our own work that we did in Prince William Sound of confounding results. I don't know. Let's see if I can – I have a poster up in my office, and it's about clams and Prince William Sound. Clams were one of those important species that we monitored because they live right in the intertidal portion of the beach. Initially, when we were doing the monitoring, we did document a decline in numbers. Then, what we then documented was a slow trend towards recovery. So in 2007, we obtained funding from the *Exxon Valdez* Oil Spill Trustee Council to go back out and, what we thought, cap our monitoring of clam recovery. Because the last time we had been out, it looked like the clam populations from oiled sites and aggressively clean sites had basically converged into the same place. So we thought we'd go out, and we'd just put the cherry on that sundae and declare them recovered. So we went out in 2007—and then could barely find any clams at all. That was discouraging. We didn't have a good explanation for it. It didn't seem to be linked to any sort of treatment or oiling category. We just couldn't find any clams. This led to a broader realization, when I talked to other biologists along the West Coast, that it wasn't just Prince William Sound; it wasn't just Alaska, even. It was all along the West Coast. Littleneck clams, which is a native species here, had declined in many places along the West Coast, and nobody knew why. So whether that's due to some sort of, I don't know, warming condition or disease, we never could find out. But it was something much broader scale that was going on and something that was clearly unrelated to the oil spill. So it just is another example of the difficulty in trying to tease out the impact and recovery from oil spills against that broader background.

MG: I saw a talk you gave about the *Exxon Valdez*, and I'm wondering if you can provide a little more context for what happened to the ship and some of the ironies on board, which will lead me into asking about the memorabilia collection you've developed?

GS: Yes, the ironies; there are many. The more I dive into the history, the more I find. The first one was that there was this apocryphal calendar that was printed by Exxon shipping, which, in the '80s, was a wholly-owned shipping subsidiary of the Exxon Corporation. It included all of their tanker fleet and tugs and everything else. So the calendar that they printed in 1989 featured many ships in their fleet, including *the Exxon Valdez*. The ironic piece is that the *Exxon Valdez* is the pinup photo for March 1989, which is when the spill occurred. If you've seen my presentation, then you see that there's a little notation on the calendar that says, "Take time to be careful – now," or something like that. It's just ironic that the very month that the tanker is featured is the month that it became forever imbued in everybody's memory as a disaster for

shipping. The other, I guess, minor irony is that – I just got a copy of a video of the *Exxon Valdez* making its first trip to Valdez, Alaska, its namesake, which is where the terminus of the Alaska pipeline is and where they load all the oil. So the *Exxon Valdez* made its maiden trip to Valdez in 1987. It was actually March 23, 1987, which is two years to the day before they ran aground leaving Valdez. But featured in the video is the Mayor of Valdez, who's a guy by the name of John Devens, who later would go on to become the head of the Prince William Sound Regional Citizens Advisory Council, an outspoken industry watchdog community organization. But it's just a couple of small ironies there. So this collection of mine began when I was on the *Fairweather*, and we encountered the *Exxon Valdez* after it had been moved off the rocks. We were radioed. We were working the same area as the *Exxon Valdez* and received a radio call from the tanker, saying, "Hey, you guys might be interested in coming over and taking a look at this." Their cargo hold, which had been ripped open when they had grounded on the rocks, was now freely open to the ocean, and they were observing big schools of fish inside the hold of the tanker. They said, "You guys got to come over and look at this." So we did. I got the chance to go over there. A couple of people from NMFS, a couple of the NMFS scientists, took a net, and they went down inside the hold. There was a little rowboat inside the hold of the ship, and they tried to catch some of these fish. They wound up not being able to. We were shown a video of the ship and the hold, and we got a tour of the ship. So it was my brief fling in being able to actually see the object of our study there as it laid crippled in Prince William Sound. But as we were leaving the ship, we came down the ship's ladder. There was a salvage boat (*M/V Salvage Chief*) tied up alongside, and they were trying to prepare the *Exxon Valdez* for a trip down to San Diego to be repaired. So they were trying to patch it up as well as they could. They had cut off a bunch of the torn pieces of the hull, and these pieces were just sitting on the deck. When we were leaving the ship, we asked the people on the salvage boat, "Hey, do you want that? Can we have that?" They said, "Yeah, go ahead. Take it." So we took a big piece of the hull back to the *Fairweather*, and the engineers on board the ship then cut it up into little pieces that we all could take home with us. So that was my first piece of this nascent *Exxon Valdez* collection. Over the years, I began to add to that collection, just things that showed up, like oddball things that showed up on eBay. Like when the ship was built, they had commemorative cocktail glasses that they created and gave to people to celebrate the christening or the commissioning of the ship. *Exxon Valdez* ball caps from the crew – just various little odds and ends – safety awards that were given to the *Exxon Valdez*. Over the years, this collection has grown larger. Then, things began to not show up on eBay because there's a limited market for them, and there's just so much stuff out there. But the crown jewels that I never could really find, and I really wanted to find, was a life ring from the ship. It was pointed out to me by somebody that, "Hey, you better check out eBay. There's a life ring on there." So I looked at it, and there it was, an *Exxon Valdez* life ring. It had a starting price of four-thousand dollars. I thought, "Well, gee, that's a little rich for a government biologist to spring for, for this little avocation of mine." But I did contact the seller and told her, "If this thing doesn't sell, maybe we can work out some sort of a deal." It turns out it was a woman who lives in Portland, and she was mainly interested in raising money for the Natural Resources Defense Council [NRDC]. So she said, "Hey, maybe we can work out a deal where we'll use this as a fundraiser. We'll get people to contribute to this contribution with the understanding that at the end of the fundraiser, you get to have the life ring." So we did that. It wound up raising, I don't know, a few thousand dollars that she gave to NRDC. Then I drove down to Portland, and we picked up the life ring. So long story, I know. I do have the life ring, and it's hanging in my living room right now. But another person

happened to point out this final piece of personal irony, and that is, I have a picture of me standing next to the life ring on the *Exxon Valdez* in 1989, just the life ring that was on the deck where we boarded the ship. Then this person pointed out to me, “Hey, that life ring that you now have is the same one.” And it’s true. There are certain flaws in the lettering on the life ring that match up. So that life ring that I had posed with in 1989 when I was onboard the tanker is the same one that’s now in my living room thirty-plus years later.

MG: That is an incredible story. I saw that those side by side pictures.

GS: Okay. [laughter]

MG: Did you make a documentary related to the *Exxon Valdez* case?

GS: I did. It was for the 20th anniversary of the spill. By then, I had been encountering the rather troubling aspect that a lot of the people that I was talking to and lecturing to either hadn’t been born or were in grade school when the *Exxon Valdez* occurred, so they had no inherent or intuitive memories or knowledge of that oil spill. So we did a documentary to just revisit the spill itself and then NOAA’s role in the response, and NOAA’s role in the long-term monitoring, and what that resulted in. So what did we get out of all of that work over the years? So we use that now. We show it for our Science of Oil Spills [SOS] class. It gave me the opportunity to go to Paris to an environmental film festival, where I introduced it, and it was featured in that film festival. So it was a great little project. I look at it now, and I think, “Oh, man, this is really an amateur operation.” But we’re a government agency; we can engage all the high-end CNN documentary resources that we’re used to now.

MG: If you could point me to a copy of it, I would love to see it.

GS: It’s online. It’s on YouTube. Just look for *Hindsight and Foresight*. That’s the title of it. So you can find it online. If for some reason you can’t, it’s on, I think, both our website and on YouTube. If you can’t find it, let me know. I’ve got about twenty copies of it right here in my office.

MG: How did the rest of this recovery unfold for you?

GS: Well, by the late ’90s, right before the turn into the new millennium, it was apparent that we had pretty much documented what we were going to document in terms of spill recovery. But there were a couple of questions that arose out of the long-term monitoring program. So what we did was we took those questions, two of them, and used those as the basis for conducting two targeted experiments. One we did in a place called Kasitsna Bay, Alaska, which is close to Homer, Alaska, just across the bay from Homer, Alaska. The other we did in Prince William Sound at a beach site. So these were questions about the long-term effects of aggressive actions on the shoreline. So in Kasitsna Bay, we took a piece of rocky shoreline and cleared off everything basically from the substrate in certain plots. So we cleared off all the algae, all the critters, and then tracked the recovery into those plots over time, compared to the reference sites that we also maintained. And then, in Prince William Sound, we did a similar kind of experiment. We had hypothesized that the use of the hydraulic washing techniques on some of

those gravel beaches changed the grain size structure in those beaches and maybe inhibited the biological recovery of the infauna into those beaches. I guess the working hypothesis being that you had to have physical recovery of the substrate before you get the biological recovery of the critters. So we went into a beach site and basically dug up whole plots, two-meter by two-meter plots, of the beach, and then washed out – physically washed out with a pump – all of the fine-grained sediments, then put what was left back into the excavations, and then tracked both the physical recovery and the biological recovery with time. So both of those experiments we monitored for at least ten years. In one case, on the rocky shoreline, we found that there was a lot of variability, and a lot of the extenuating circumstances of things like ice cover and other influences on those plots probably had a much bigger influence on recovery into those rocky shoreline study sites. Then, on the gravel beach, we found that there was actually a disconnect between the physical recovery and the biological recovery. We didn't see a sequential thing. We didn't see first the physical recovery followed by the biological recovery. We found that the biological recovery actually occurred at the same time and probably occurred more quickly than the physical recovery of the habitat, which led us to believe that those critters live in such harsh conditions that are changing all the time that maybe they're used to it. Maybe they're used to the physical changes in their habitat and are able to adjust biologically much better than we thought they could. So those concluded. It could be that that the rocky shoreline study is still going on because that was really overseen by the woman who became Director of the Institute for Marine Studies, Terrie Klinger. She would go up every year and just track those plots on her own to see what the conditions were. But the last time we did the gravel beach study was in 2012, and then we wrote it up and called it good.

MG: Was this the – it's an unfortunate acronym – SCAT [Shoreline Cleanup and Assessment Technique] survey?

GS: No. [laughter]

MG: Okay.

GS: SCAT surveys are – that's a regular activity for all oil spills, and that is to provide guidance on where to do cleanup. So it's a systematic way to describe what oiling conditions are and where the oil is on the beach so that the cleanup crews know what to expect when they go out there. So that stands for Shoreline Cleanup Assessment Technique.

MG: As a result of this major oil spill, George H.W. Bush signed into law the Oil Pollution Act.

GS: Correct.

MG: Can you talk about that process and the law? What changes were implemented?

GS: Yeah, sure. The legislation with the title "Oil Pollution Act" goes back a long way. It goes back, as far as I know, the earliest version was 1924. But the Oil Pollution Act of 1924 dealt with vessel discharges, bilge water discharges. Because back in those days, people were just cleaning their bilges and pumping out oily water into coastal waters, and that resulted in oil coming ashore and birds getting killed. So the basis really, up until fairly recently, has been

more on vessel discharges than on oil spills. There had been attempts for a number of years to do more comprehensive legislation related to oil spills themselves. But, as the documentary that you'll soon see says, those pieces of legislation languished in Congress. There wasn't much interest in doing anything about them. But the spectacle of the *Exxon Valdez* in 1989 really galvanized the effort to get that through Congress, and it wound up passing unanimously in 1990 and then signed immediately into law by George H.W. So the *Exxon Valdez* spill, to get that foundational piece of legislation into the books – and it really did completely change the way that we do business, both in terms of responding to oil spills, but also in terms of how the US regulates and prevents oil spills. So there are major changes with respect to the requirements for ships and facilities to be able to respond to oil spills that they're involved with. There are requirements for every region of the country to do contingency planning for oil spills. There was the requirement for any tanker that was built in the US to be double-hulled by the year 2015. Probably a more of a footnote than anything else, but it sure pissed off Exxon; here was a specific exclusion of any tanker that spilled more than a million gallons in Alaska to ever work in Alaskan waters. So that excluded specifically the *Exxon Valdez* from ever going back to Alaska. It strengthened the role of the Coast Guard National Strike Teams to respond to oil spills. I think it solidified the role that NOAA has in supporting oil spill response. So there are any number of improvements that occurred because of *Exxon Valdez*. So when *Deepwater Horizon* happened in 2010, we fully expected the "Oil Pollution Act of 2011" to come into play, but there's been nowhere near – there's been nothing, actually, that's anywhere close to being comparable to the Oil Pollution Act of 1990.

MG: What do you think accounts for that?

GS: I can speculate. It's just the inability of Congress to operate on a bipartisan basis. It could very well be – I think there's a perception that "Well, BP paid billions of dollars in penalties, and we've got a five-hundred million dollar scientific research program funded by BP. What more do we really need?" It turns out that industry has taken some steps on its own to better prepare for a deep water blowout like the *Deepwater Horizon* was. So I think maybe there is a perception that "Well, it's already happening. We don't need to force people to do anything more." I suspect, in this current political environment, that the modest changes and regulations that did occur in the wake of the *Deepwater Horizon*, that strengthened the regulatory oversight of production platforms, like, in the Gulf of Mexico, were immediately loosened by the current administration. So probably anything short of a major change in the laws would have been rescinded by the administration that's currently in place.

MG: I'm wondering if you can say how you changed after *Exxon Valdez*. It sounds like you became a real expert on oil spills and their histories. Then, your role changed. You moved over to the Hazardous Materials Division, HAZMAT office?

GS: Yes, that's correct. It had been an aspiration of mine to work with this group, the Oil Spill Response Group. There had been a certain kind of perverse glamour in the idea of being like an environmental firefighter. You go on these emergency calls. So I had actually talked to the HAZMAT group while I was still in grad school about potential positions being available in the days after I graduated, and they didn't have anything open at that time. So it was a little bit of just good fortune that I was invited to come over in the wake of the *Exxon Valdez* spill. But

certainly, my focus became much narrower in terms of looking at oil spill impacts. It became both narrower and then much broader. Because as I got deeper into trying to interpret the results of monitoring oil spill impacts, it became obvious that they needed to be viewed in the context of everything else that was going on. So I think that it's both narrower and broader in terms of how I look at the effects of oil. What I think I have always wanted to strive toward is becoming more of a trusted source of information on oil spills. By that, I mean, there's always been a certain amount of distrust in the government for one thing; that's for sure. That's very apparent now. But during an environmental crisis –and we saw this much more during *Deepwater Horizon* than during *Exxon Valdez*, although, in both of those spills, it was pretty evident that people trusted the scientists and semi-scientists and non-scientists, who were predicting gloom and doom, as a result of what was going on in the environment. It's often really hard to argue against that when you see the immediate devastation of oiled birds, oiled sea turtles, dead animals, and just wide expanses of oiled shoreline. You think, "How is this ever going to recover?" But I think the lessons that we've learned from looking at a longer term of recovery is that they do recover and not necessarily because we're really good at cleaning oil up or helping that recovery. I think it's more that nature is just incredibly resilient. Nature, for the most part, is built to respond to disturbances and to insults that are anticipated and unanticipated. So there's a built-in ability to recover from these things that we initially think are completely devastating. So I think if I can temper some of the actually very loud and shrieking panic that often follows these kinds of events when they happen, then that would be a good thing. To me, it goes beyond simply doing the studies and maybe writing the papers and publishing. It really involves engaging the public. That's why I think it's very important for us as scientists working on behalf of the public to engage the public in a way that can be understood. One of the things that I've been very adamant about when we do, for example, workgroups that have open enrollment or open inclusion built into them, whether it's for scientific topics or whether it's for area contingency planning, we need to have skeptics, people who normally say, "Oh, you're full of bullshit. I don't believe you." We need to have those people involved. Because if they're purposefully excluded, then it looks like we are trying to cover something up. So, over the years, in the wake of *Deepwater Horizon* and the major controversies about dispersant use, we at NOAA convened a series of scientific workshops on dispersants. I co-managed that effort with a colleague of mine here in Seattle. I insisted that we include some of the people who were really naysayers and had very nasty things to say about dispersant use in those workgroups because otherwise, I don't think that we would be viewed as being a legitimate reflection of A, the science, and B, the concerns that the public articulates. Same thing with contingency planning workgroups that we do in our region. We had another one here on dispersant science. I made a point of including a couple of people who have been very outspoken against dispersant use in our region. I think it helps – I may not have convinced them that dispersants are the best thing in the world to use. I don't believe that myself. I've always been a dispersant skeptic myself, but I think it's important that people understand that we're not just out there advocating something that is being perceived as a way to cover up the oil in the environment or something that the industry wants to use. I think we need to convey a balanced and scientifically-sound view of what we know.

MG: Were any of those workgroups fairly contentious?

GS: There was one that I headed up last year for our – it's called a Regional Response Team, which is a multi-agency response and preparedness group. It includes state and federal agencies.

We deal with oil spill issues in Washington, Oregon, and Idaho. One of our task forces – one of our workgroups had to do with dispersant science. So I included a couple of people who were testy during the course of discussions that we had. Again, I don't think that they became dispersant advocates, but I think they understand better that we're trying to be level and unbiased in the way that we look at the issues associated with not just dispersants but anything that we might choose to do in responding to an oil spill. It's really important in talking to the public that people understand that something bad has already happened when you're responding to an oil spill. You're just trying to make it less bad. So people sometimes forget about that and think that "Oh, you're going to put another chemical out there. Why in the world would you do that?" But there are reasons, and sometimes they make sense, and sometimes they don't. I think I think it's helpful to engage people and not look at them as adversaries, but just look at them as people with different viewpoints. Maybe it was successful because I was just invited by one of these adversarial task force members to be a member of a panel for the Friday Harbor Film Festival, where they aired a PBS documentary on the *Deepwater Horizon* impacts. So maybe that helps. Maybe it doesn't. I don't know. It's just my own personal mantra.

MG: Good. I think it's reasonable to share all viewpoints. I have one more question about the *Exxon Valdez*, unless I'm missing anything, which was you wrote, and I'm going to quote this, "The *Exxon Valdez* spill stood as the benchmark against which all other US spills and spill responses would be measured in scale, scope, animus, hubris, costs, controversy, and generally bad karma." Some of those last things I was curious about – "animus, hubris, controversy, bad karma." What did you mean? What was so complicated?

GS: Where do I begin? Well, I kind of touched on some of the animus and the controversy. *Exxon Valdez* was not exempt from controversial response decisions. That begins with the use of high-pressure hot water. The whole reason that we were out there as NOAA, doing that long-term monitoring program, was because the guy who headed our group at the time, Dave Kennedy, was a little concerned about the widespread use of blasting the shoreline with near-boiling temperature water. He was told, at the time, "Well, you have concerns. Show me. Show us the science that says that we shouldn't be doing this." At that time, there wasn't anything that could back up those concerns. So that's why our long-term monitoring program that focused on those aggressive cleanup methods came into play. But there were other methods that were used in Prince William Sound, *Exxon Valdez* that were controversial. Probably the best example is the use of a bioremediation agent called Inipol. It's a French product. The idea with bioremediation is that you try to accelerate the microbial breakdown of oil in the environment. We found the most effective way to do that is by just trying to accelerate the natural microbes that are already out there. They are oil-degrading microbes everywhere. So if you can just somehow make things better for them, then you speed the breakdown of oil. So they tried using this compound in Prince William Sound, Inipol. The controversial part was that it contained a chemical, 2-butoxy-ethanol, that was known to – I think it's a carcinogen. It apparently caused issues in some of the people who were exposed to it in terms of their ability to breathe and that sort of thing, similar to the kinds of issues that people raised during dispersant use in *Deepwater Horizon*. So the animus – there were a number of public meetings. I didn't have a lot of film clips of them, but there's a short clip in the movie that you'll watch later that shows some of the fishermen meeting with Exxon people. The fishermen, of course, were really pissed off because Exxon had spilled all this oil right when they were going to begin fishing for herring. After that,

salmon and everything else – crab fishing was closed down. So a lot of people who had a lot of money and time invested in Alaskan fisheries took a big loss for 1989. So there was a tremendous amount of aggravation and acrimony and unhappiness with Exxon, and by extension with the rest of the people who were focusing on the cleanup of the oil. And hubris, a lot of that falls on, I think, the confidence or overconfidence that we on the response side sometimes display in terms of our ability to take care of incidents. You see that with almost every spill, where the initial reports that we receive are ten gallons of oil have spilled, and then it gets elevated fifty gallons, and then hundred, maybe a thousand gallons. So, I think, in some ways, we overestimate our ability to deal with oil releases or any other environmental incident. We spend all this time doing contingency planning. We do drills, and we do a lot of planning documents. So I think there are some people who think, “Well, we got it covered. We’re ready.” But to be honest, we never really are. The famous and now overused expression that one of our key collaborators, Jacqui Michel, has always said over the years is, “I’ve never been to the same oil spill twice.” It means that we learn from each of the oil spills that we respond to, but each one is different. Each one presents its own set of challenges. We are typically surprised by something in every single incident that we respond to.

MG: Yes, I’m curious to hear about some of the responses you dealt with in your career following Exxon Valdez. Just a year later was the *Tenyo Maru* oil spill.

GS: Right.

MG: I have a list in front of me of subsequent oil spills, but I didn’t know if it would be easier to talk about some that stand out to you or that were significant in some way.

GS: Oh, gosh, there have been so many. There are certainly a few that stand out. I mean that the *Tenyo Maru* was a local spill for us. It was off the Washington coast. It presented a series of challenges. Fortunately, it didn’t release a tremendous amount of oil, but it laid bare a whole host of issues that are important for spill response, but not necessarily on the science side of spill response. So things like transboundary spills – what do you do when it spills right at the US-Canada Border? Or what do you do when it spills right next to a major Indian reservation, the Makah Indian reservation, or a national park, the Olympic National Park, or in a marine sanctuary, the Olympic Coast National Marine Sanctuary? That’s where the *Tenyo Maru* took place. So, again, not a whole lot of oil that was coming ashore, but a whole host of jurisdictional and coordination issues that really do have a lot of relevance for how we wind up responding. Not so much in recent years for some reason, but occasionally, we get invited to either observe or assist with international incidents. There have been some big ones, like the *Prestige* spill in Spain was one that we sent a number of people over to help with, to advise the Spanish government. That was a very interesting spill because it, again, introduced a whole series of issues about the initial inclination of Spain was to bring the stricken tanker into a bay where it would be a little bit more protected, and they could respond to oil right there. But the people in that bay said, “No way. We’re not going to let this oil tanker come in.” So that’s a whole category of response issues that we call Places of Ports of Refuge. It’s like sacrificing a bay for the greater good. It’s defining an area where you might bring a stricken vessel into to work on with the understanding you may inflict a greater environmental impact on that particular area, but then maybe reduce the harm more broadly. But this oil that spilled in Spain was a very

heavy oil. As economics enter into what people are putting into the ships, then they're using cheaper oils, and those are often the heavier oils that don't have many other uses but to be burned in boilers for big ships. That presented both challenges and advantages in terms of how it got cleaned up. It was cold; it was right around this time of the year in Spain. So the oil was so heavy; it was kind of congealed. You could almost roll it up off the shoreline. But it also affected a lot of the beaches. There were a lot of aquaculture facilities and mussel-growing facilities that were affected. So I think it's useful for us to look at international incidents as a way to sometimes see ways to improve the response structure in our own country and also to provide advice on things that we've seen in the past. The last international incident that I responded to was in Bangladesh, and that was part of a United Nations response to assist the government of Bangladesh. It happened in a World Heritage Site, the Sundarbans region of Bangladesh, which is the largest contiguous stand of mangrove forests remaining on the planet. There was a big concern that the oil spill there from a small tanker was going to affect the mangroves and a lot of the artisanal fisheries there and Bengal tigers, which live in the Sundarbans. So we went over there as part of an international group. The UN [United Nations] sponsored people from France and Spain and Japan and the US to assist in a concerted effort. Fortunately, the conditions were such that the mangrove forest was not significantly impacted. But it was very nice to convey some of the lessons that we'd learned from mangrove impacts. It was heartening to me that I arrived on scene at the spill site, and there were forestry folks from the government of Bangladesh, who had printed out some NOAA guidance documents that they had found online on oil spills in mangroves. So the reach of some of those documents that we produce to support our own response efforts extends beyond the borders. So that was kind of nice to see. But a lot of the spills that we respond to – most of the spills we don't respond to; it's mainly the Coast Guard. There are thousands of spills every year. Our group responds to probably, at most, a couple hundred. Most of the time, people just want to know, "I either have a release or a potential release of oil. Where's it going to go?" So that burden falls on mostly our modelers, our physical oceanographers, who run the information through a model and then predict where the oil might go. So, for me, as a biologist, it's even rarer for me to get involved in a spill response because it's only when there's that risk to biological resources that is now evident that they would then call us in to help out.

MG: About after a hurricane? I have a number of hurricane responses on that list. Are you dealing with debris then? What does the response look like there?

GS: Well, the first big hurricane that we responded to was Katrina and Rita, and those hurricanes were very notable in that a lot of the oil infrastructure in the Louisiana coastal region was really hard hit. So a lot of the storage facilities and refineries wound up releasing a lot of oil. So it was dealing with basically broad-scale oil spills. There were probably about eight or nine million gallons of oil that were released as a result of Katrina and Rita. That was all over the state of Louisiana, mostly along the Mississippi River. But more recently, what we've been dealing with is vessels that been strewn all over hurricane-impacted areas. So we've got tons of photos of big cabin cruisers sitting in people's front yards or in the middle of fields, sailboats that are high and dry. So we operate under the Coast Guard, or at the behest of the Coast Guard, and the Coast Guard by law is permitted to respond to those incidents when there's a threat of oil release. So if the assessment is made that a vessel contains a certain amount of oil, then we can assist with that. We can even determine whether that vessel should be moved, as they all

eventually are, out of where they wind up after a hurricane. So we have to make an assessment of how sensitive is the habitat around the boat and what safeguards need to be put into place to protect, for example, a wetland where a vessel may be stranded? What about the offshore seagrass or oyster beds, that kind of thing? So the ironic thing, and the way that the laws are laid out, is that if there's no oil on board a boat, like a sailboat, then there's really nothing that the Coast Guard can do, and so there's nothing that we can do to remediate that particular vessel.

MG: Are other incidents of response that you want to talk about? I know there are a number of them.

GS: These days, the broad trend in oil spills is downward, which is good, right? I guess from a business perspective, for our group, it's not great. But I think that's another legacy of things like the Oil Pollution Act of 1990. We've gotten better at prevention. We've gotten better – double-hulled vessels make a difference. Facilities response plans make a difference. So all of those things add up. I think, with the occasional exception, like the *Deepwater* well blowout, the trend in oil spills is downward. But that's not to downplay the potential, because as oil fields become less productive, then there's an incentive to go deeper and deeper, for example, in the Gulf of Mexico. So the *Deepwater Horizon* was a wellhead at a mile below the surface. Now they're going to two miles below the surface and deeper than that. So we saw how difficult that was to respond to an uncontrolled well blowout below the surface of the water. What happens when it's even deeper? Twice as deep? How do we deal with that? So as long as we're using oil and it looks like that's going to be in our energy portfolio for the foreseeable future, that's going to be something that we need to be prepared for. I think that, unfortunately, for our group, because there are fewer large oil spills, then there's less attention paid in Congress for funding. That's the way the federal government works. It's the squeaky wheel or the squeaky issue that gets the grease. I certainly expected, along with the Oil Pollution Act of 2011 that never occurred, a bump in funding for our group in particular, oil spill response in general after *Deepwater Horizon*, and that didn't occur either. So I think the issue that came up before the *Exxon Valdez*, after the *Exxon Valdez*, and I think now after the *Deepwater Horizon* is complacency. I think that, again, maybe it's more of that hubris, but I think we feel like, "Well, we're pretty well-prepared. We've got the legislative umbrella to cover us. We've got better technology." I think one of the major lessons that I've learned across the whole breadth of my career in oil spills is that just about every mid-scale or large oil spill has either an element or a significant element of human error involved in it. So you can have the best technology in the world, the best contingency planning in the world, but if people screw up, then oil is going to spill, and we're going to have to be dealing with the consequences.

MG: Are you looking at other hazards in the ocean, like acidification?

GS: Our group, in particular, is not, but other portions of NOAA certainly are. Those are concerning. Ocean acidification is occurring much more rapidly than any of the predictions seemed to indicate. Every year, I go to a meeting in Anchorage called the Alaska Marine Science Symposium, which basically divides out the state into the Gulf of Alaska, the Bering Sea, and then the Arctic. It presents a lot of the current science for what's going on in those marine areas. The alarming thing for me that I've noticed over the years is that all of the conservative modeling efforts, whether it's related to warming or acidification, have been

underestimates. The reality tends to outpace what we expect to be happening by sometimes a significant amount. So the changes that are happening now are much more rapid than we really anticipated.

MG: I want to ask you about your life outside of NOAA and a little bit about your decision to retire this year.

GS: I have no life outside of NOAA. It's become my persona. I don't know. A lot of people retire from the federal government with grand plans. It seems like in the business that I'm in, a lot of people retire from a spill response or spill response support and immediately jump into some highly-paid consultant position or contractor position. I have no such plans or aspirations. I look forward to sleeping in a little bit more. I have a little cabin up in the San Juan Islands of Washington State, and I've got a backlog of little chores that I'd like to take into account up there. I have real interest in growing things, horticulture. So I not only garden, but I've been growing a whole bunch of oddball trees, rare trees, that I then transfer up to my cabin. I've got two demanding cats. So what more is there?

MG: Well, I want to ask you a little bit about this past year. I think 2020 is a year that historians will study very closely. How are you managing during the coronavirus pandemic?

GS: Well, as I've noted to others, for an introvert, this is no problem at all, being cooped up in your house and keeping a low profile, but it's hard. Again, what's keeping me sane, or at least saner, is the ability to go to that cabin of mine. I've been doing that pretty much every other week because I work a schedule where I have every other Friday off. So really, since February, I've been going up to the cabin every other week. It doesn't match up with the term, but it's a good cure for cabin fever, going to the cabin because it gets me out of not only my townhouse in Seattle, but it gets me out of Seattle. I drive across the Skagit Valley as I go to the ferryboat, and then I ride on the ferry out to the island. Then I can just chill at the cabin, build a fire, and then I go back to the city. So unlike a lot of people, I'm not really cooped up in like a condo or something. That's been a lifesaver. Also, I keep in touch with people via social media; that helps. We have endless Zoom meetings. So Zoom and other Adobe Connect-type meetings. So it's not been bad. It's given me an opportunity to try to catch up on these projects that I'm obligated to wrap up before I retire. I have some guidance documents that I have to finish up before I exit. I have one manuscript I want to finish up on one of the experiments that I mentioned earlier to you that followed up after our *Exxon Valdez* long-term monitoring, that gravel beach study. We're writing that up to submit to a journal. So it's been hard. The other diversion – and it didn't start off this way, but about a month ago, or a little more than a month ago, I was cooking a pot of soup and swilling my cheap Boxed Wine, and I realized that probably people everywhere were doing some form of the same thing, being housebound. So I thought it might be kind of fun to touch base with not only my current colleagues in the group that I work for, but all of the past colleagues that I've worked for in this response group from the very beginning, and get one or two recipes from them, and then I would compile them into a single document. I'm going to send it back out to everybody. So that's been fun, just to see what people come up with. Hopefully, it'll give people a little bit of a diversion in a year that sorely needs a lot of diversions.

MG: Well, feel free to CC me on that email. I'm eating a lot of frozen pizzas and could use some ideas.

GS: Yes, it's really great. People are giving me cocktail recipes. The food ranges from stuck-in-a-hotel-room-for-long-period-of-time ramen to very elaborate paella recipes to traditional and family things. So it's been very fun. What it has turned into for me – it's been a great way to touch base with people and say, "So long. It's been fun. What are you doing now?" That covers both the people that I work with now and the people that I've worked with in the past.

MG: How big a group is the Office of Response and Restoration [OR&R]?

GS: OR&R is pretty big because it includes not only the response group, the Emergency Response Division but also the Assessment and Restoration Division, which is the natural resource damage assessment group. It also includes the Marine Debris folks. So, I don't know. I would guess probably, maybe three hundred people.

MG: This project is to document and celebrate NOAA's 50th anniversary. So I was curious if you could just reflect on the agency's history and legacy.

GS: Yes. I've been proud of this agency in terms of its focus on the broad range of both the science and the issues related to oceans and atmosphere. Up until very recently, I've been very pleased with the fact that we've been isolated from all the political machinations that have plagued other agencies like the EPA or Department of Interior. That came to a grinding halt last year with "Sharpiegate." I don't know if you kept up with that. I had a small piece in that whole Sharpiegate nightmare. But even so, I was very heartened by the support that I received when I was inadvertently thrust into the fray for Sharpie gate. I discussed it with not only the person who heads OR&R now, Scott Lundgren, but also the head of the National Ocean Service, and even Admiral [Tim] Gallaudet. So I've been heartened that the support has been there. There's been a real commitment to maintaining the scientific integrity of this group of dedicated scientists and support people who are doing the work on behalf of the American people. I mean, it sounds grandiose, but that's really true. I try to keep that in the back of my mind with the things that I do and the things that we do in terms of conveying science, that our obligation is ultimately to the American people. So I'm hoping, in some small measure, that what we do in our very focused roles in spill response contributes to that.

MG: Let me pause for just a moment.

[TAPE PAUSED]

MG: We are back on.

GS: This comes under the heading of maybe more irony, and this is a little bit of bitter irony. It goes back to the ship that I worked on for all those years, the *Miller Freeman*. That time, again, is a cherished period in my work history, and I really value all of those experiences. Those of us who worked on that ship had a great affection for her; we called her "Mother Freeman" and viewed that ship as our home and our safety in sometimes very challenging conditions. The

ironic part – and this really enters into my own personal history. The ironic part of that is that the namesake, Miller Freeman, was a racist. He was more than a racist. He was a racist, specifically towards Japanese Americans. [Editor’s Note: Miller Freeman founded and was active in Washington’s Anti-Japanese League.] His legacy is not well known, but it is a part of the regional history of this area. I think it’s really unfortunate. So here’s what I’ve been thinking about – if I go down the hall here at Sandpoint, and go down to the offices of the Pacific Marine Environmental Lab [PMEL], they have a gigantic placard and name placard from the *Miller Freeman* that’s hanging there because a lot of the work – and back in the day when I was a survey tech onboard the ship, I supported the work of PMEL that they did on the *Miller Freeman*. Then, if you go to the building next door, the Fisheries building, they have a whole display on Miller Freeman. So I’ve got, what, six weeks left in my career? I’m thinking of penning a letter to the head of PMEL and to the Alaska Fisheries Science Center saying, “Maybe this is revisionist history, but Miller Freeman – I know you can’t change the name of the ship; that’s part of NOAA history – but maybe it’s time to not celebrate the person himself.” It the whole revisiting the legacy of past times, and that extends not only to the *Miller Freeman* but also to the [NOAA Ship] *David Starr Jordan*. That was a famous ship in the NOAA fleet. David Starr Jordan was a big proponent, I think, of eugenics. So a lot of the very distasteful concepts and ideas and attitudes that are an anathema now are also part of NOAA history. And they should be. The ships themselves worked distinguished careers on behalf of NOAA and the American people. But I think that it also is important to understand that the namesakes have a legacy that somehow should be at least recognized.

(An update from Gary: In the waning days of my time with NOAA, I did contact Dr. Michelle McClure, the Director of PMEL; and Dr. Bob Foy, Director of the Alaska Fisheries Science Center, and I told my story about the *Miller Freeman*, the ship, and Miller Freeman, the man. Both were supportive and sympathetic to my concerns, and in fact, NMFS had already changed the content of their displays. In addition the subject has already been scheduled as a Diversity and Inclusion discussion for February, 2021).

MG: It’s important to document and examine NOAA’s history, so we can determine the future.

GS: Right.

MG: That’s interesting. Is there anything I’ve left out or forgotten to ask you about at this point?

GS: Maybe. [laughter] You’ve certainly been a very studious audience through a long, droning monologue here. So props to you for that.

MG: You’re doing all the work. So the props go to you. There will be an opportunity to fill in any gaps in the transcript, or we can always arrange to have another session.

GS: Yes.

MG: Well, I really appreciate all the time you spent with me today and for all the work you’ve done in your career. It’s really impressive.

GS: Thank you. Thank you. It's been fun. It's a good time to sit here and look back on it. So this is good.

MG: Good. Well, I look forward to being in touch. I'll reach out when the transcript is close to ready.

GS: Okay. Let me know if there's anything I can do to fill in the gaps.

MG: All right. Thank you so much. Enjoy the rest of the day.

GS: Okay. See you, Molly.

MG: Bye-bye.

-----END OF INTERVIEW-----

Reviewed by Molly Graham 1/13/2021

Reviewed by Gary Shigenaka 2/2/2021

Reviewed by Molly Graham 2/8/2021