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## Hamm, David ~ Oral History Interview

Edward Glazier

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Voices from the Fisheries  
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Woods Hole, MA 02543

## **Interview with David Hamm by Edward Glazier**

*Summary Sheet and Transcript*

### **Interviewee**

Hamm, David

### **Interviewer**

Glazier, Edward

### **Date**

July 30, 2016

### **Place**

The home of David Hamm

Kailua, Oahu

### **ID Number**

VFF\_HU\_DH\_001

### **Biographical Note**

Marine Biologist and Computer Sciences expert Dave Hamm was born in Minnesota in 1949. His father was in the Air Force and he traveled all throughout his childhood. He started college in Orlando, Florida and then went on to earn his Bachelors of Science at the University of West Florida, specializing in biology with a minor in statistics and mathematics. He went to graduate school at the University of South Florida and studied Computer Sciences. This allowed him work with both fishery management and database management within and for fisheries. He began his career with NOAA's Environmental Data Service then began working for National Marine Fisheries Service first in Miami then in Hawaii. He created fishery data processing systems from the ground up during his time working within the Pacific Islands, a challenging geographic area for fishery management.

### **Scope and Content Note**

Interview contains discussion of: American Samoa, alia Fleet, small vessel fisheries, data collection, fishery management, monitoring systems, fishery development, spearfishing, size frequency, GIS applications, longline fishing, data systems, social science, marine biology.

Dave Hamm's interview is a detailed timeline of his experience working on fisheries management programs on both the East Coast and the Western Pacific Islands.

## **Indexed Names**

Austin, Thomas  
Holliday, Dr. Mark  
Humm, Dr. Harold  
Lowe, Kimberly  
Quach, Michael  
Riolo, Francesca  
Shomura, Dr. Richard

## **Transcript**

**Edward Glazier:** This interview is being conducted as part of the Voices from the Science Centers Project funded by the Northeast Fisheries Science Center. It is also part of the Voices from the Fisheries Project supported by the National Marine Fisheries Service Office of Science and Technology. I am Edward Glazier and today I am speaking with Dave Hamm, recently retired but long time Western Pacific Fishery Information Network Project Lead. We are up at Dave's home in Kailua on July 30<sup>th</sup>, 2016. Dave, I thought maybe you could tell us a little about your background, what inspired you to get involved in fisheries and then we will proceed through a variety of issues. Dave....

**David Hamm:** Okay, sure, thank you Ed. Well, I was born in Northern Minnesota, Grand Rapids Minnesota, in 1949. So, I am a "forty-niner," as were a number of the other people in the Pacific, good friends of mine in Samoa and here in Hawaii in fisheries. So maybe that being born in '49 turned us into fisheries people somehow, I don't know [laughs]. My dad was in the Air Force, so we traveled all over the place, so I went to school in many places. In eighth grade, I was in three different schools, many different teachers. So, I got accustomed to moving around and meeting lots of people and making friends in lots of different places.

I started my college in Orlando, Florida and went up to Alaska for a couple years, and went to University Alaska and Alaska Methodist University in Anchorage. And then my senior year back to Pensacola, Florida where I got my Bachelors of Science at the University of West Florida, specializing in biology and minoring in statistics and mathematics. I went to graduate school at the University of South Florida, Marine Science Institute as it was called then. It was in St. Petersburg, Florida which has become a major marine science school. While in college and undergraduate school, the buzz word were they were going to need a lot of marine biologists. I loved the ocean, I loved being outdoors, and that's how I started getting involved with marine biology and marine science.

When I was in graduate school, I was originally going to do my master's thesis on colonization of artificial reefs but that funding never came through, so I ended up working on benthic algae at

Anclote River Estuary in Tarpon Springs with renowned phycologist Dr. Harold Humm. I finished up my bachelors there in '74', '75 and immediately I had a job with Environmental Data Service, NOAA's Environmental Data Service, traveling the Southeast visiting schools and anybody who was doing environmental research and I was involved in a project called Environmental Database Directory where I traveled to all major institutes in the Southeast from Texas to the Carolinas describing environmental data sets that had been collected, and computing and putting that into the computer database. With the idea that would become a real usable tool for people looking for environmental data and doing research in the environment.

My second year doing that they, I got an invitation to go to National Marine Fisheries Service in Miami, an invitation that said on this date you can show up in Miami or you can resign, so it was a good move. [laughter] I went to... head of Fisheries at that time was Tommy Austin and he wrote a very good letter of recommendation for me, and I went into the statistics group in Miami at the Southeast Fisheries Science Center where I worked for the next about four years, in their statistics, their fisheries monitoring, working a lot with all their data collection programs and analyzing and bringing in data from around the Southeast area for fisheries monitoring. The big thing back then was creating the market news in some of those reports.

Things were turning kind of south in Miami when the Mariel Boat Lift came and brought lots of crime and whatever. So, I took the opportunity to look at other jobs in National Marine Fisheries Service and was lucky enough to get this position out in Hawaii where we were starting the, they wanted to start a node of the information network and doing basic fisheries monitoring in the Pacific. I had good background there, I worked with Puerto Rico a little bit on one of the projects that we had in the Southeast. So, I was offered the job here. Also had the opportunity to go to Pascagoula, Mississippi, and to South Carolina, and I picked Hawaii. I'm glad I did.

**EG:** What year was that Dave?

**DH:** That was, I came here, I was hired first in, cause there was a hiring freeze about to start so Dr. Shomura hired me in January 1981 and allowed me to phase out of my many projects in Miami until the summer time. So, I actually arrived in Hawaii in July, early July, 1981. Then we started working to create, from ground up, a fisheries monitoring programs, data collection programs from commercial and recreational fisheries focusing in the state of Hawaii and the territories of American Samoa and Guam, and also the Commonwealth of the Northern Marianas. Those were the main areas that the Council and the U.S. fisheries agencies were involved in managing the fisheries for so that was our focus. Over the years, we also worked with fisheries in the Federated States of Micronesia and Palau. We helped, I helped establish some of their programs there, although we had no resources to support developing them, but we got them off the ground.

So, that's where I started and the vast majority in the Pacific then for over 35 years was supporting and leading the development of fisheries monitoring programs in all of these areas. Now, one of the very significant differences between our information network and the others on the mainland is that we started from scratch and there were limited resources and virtually all of our working people in the field were local fisheries staff. Many of them with high school education or less, although there were some professional scientists. It was a challenging thing to get the programs going there, but through working with these great island people, they were very cooperative and interested in knowing and expanding their knowledge of their fisheries and we established pretty, given the circumstances, very robust, by our standards, fisheries monitoring programs.

During those years, I took quite a lot of computer analysis programs. I was on a fifty-fifty program in Miami, so I took a lot of computer systems analyst and programming and that sort of stuff. As a fisheries scientist, and also with essentially a master's in computer science, I was able to meld the two sciences together and understand the database management side of things and the fisheries side of things to be able to develop tools that would be usable by island people. Island agency staff and also the information would hopefully be usable to the fishery management council, our NMFS stock assessment staff, and other researchers. The data we collected, as is all basic monitoring data, is kind of foundation of a lot of fishery management stock assessments and that sort of thing.

**EG:** Dave, this really was sort of the beginning of management in the region, wasn't it? In years prior, there was actually a development, a fisheries development focus. So around '76 or so, the Council was established and, I suppose, there was a period of movement toward management. Some people were thinking about how to monitor things, so you came in early on all of them.

**DH:** Yes, there was, I actually put the first microcomputer, the first computer actually installed in American Samoa, a little Apple 2 Plus in December 1981. They had no, their idea of fisheries monitoring was to go to a few stores that actually kept receipts, and add up all of the purchases they could and do that three times and then average their three different numbers they would get and say that was their landings for the year. So, it was completely . . . other than the State of Hawaii, it was really starting from the ground up. In American Samoa and the Commonwealth of the Northern Marianas, they really had virtually nothing. In Guam, they had some basic creel survey programs started in the late 70's which we capitalized on. In the state of Hawaii, they had a mandatory commercial fishing reporting system. They had licenses and mandatory reporting. When we started they were approximately two and a half to three years behind on just the basic data entry. So, it wasn't timely in any regard.

So, we worked on improving all of those systems, creating from the ground up data collection and processing systems, quality controls, and then of course feedback and reporting systems and

being able to provide data to scientists and fishery council and plan team people. So, the data that came out of our monitoring systems from the islands are the basics that go into all of the fishery management plans for performance of the fisheries.

**EG:** Did you find it challenging to introduce all of this? I mean, how were you received, for instance, by the State of Hawaii? I would think the territories would welcome you with open arms. Were there any challenges with the state since they were doing something already?

**DH:** There were challenges with all areas but they generally speaking they were open to making improvements. I can remember...well, some of the early managers in the State of Hawaii...was one comment that I recall to this day, was from the boss that said "it's always a one-way street, you guys take from us and you never give back." So, I took that as kind of marching orders to make sure the focus of our organization was to provide to each of the fisheries agencies something that they can use and what's going to improve their ability to do their jobs in the way that they need to especially in their inshore waters.

And that was one of the challenges as well even within their own agency because funding was limited and we were EEZ [Exclusive Economic Zone] outside of the local waters oriented. And back in those days, pelagics and deep bottom fish only, and the nearshore resources were of no concern to anyone [scientists and managers] back in those days. Of course, they have become critically important in coral reef environments and all of the stuff that's been a big focus. So, we were the first ones who recognized back in the '80s that we needed to be looking at an "ecosystem approach" to fisheries monitoring. Spending limited resources trying to work on coral reef data collection and everything back then, ya know was, it was a huge job. We started with me and one other part time programmer. Luckily, we built up over time and had more, but resources were always very limited to cover this geographic area, and the challenges of all the cultural differences that you run into in those areas.

**EG:** Right, truly a vast region and culturally diverse. I would think you did a fair amount of travel in those early years.

**DH:** Well, in the earliest years there was enough money for like one trip a year to each of the places, and I usually tried to go for two weeks if I could. It was not adequate to say the least. As time went on, we did have improved resources and we generally made about two to three on-site visits for a week or so to each of those island areas, and they also sent some of their scientists and their people who were involved with their plan team operations, from Council plan teams. We would meet someone when they came into Honolulu for some of their plan teams as well. All of the reporting that they did for fishery management plans came from the statistics that they were collecting through the Western Pacific Fishery Information Network.

So, it was challenging indeed, but especially the territories were open, they saw the need and they wanted to improve and, generally speaking, there was never push back from any of them as far as implementing anything as long as we could come up with the tools for them to do it, and the training for them to do it, they would be willing to even pass new regulations sometimes to make it easier for them to implement fisheries data collection programs. But technology was an issue, of course, in the islands. They had very little and the general level of education of the people, their professional staff was low, far lower than you would see in these kind of agencies on the mainland.

**EG:** It seems a natural outcome of geographic isolation.

**DH:** Yes, and you mentioned the travel, by the time I finished my career, I actually tallied them up and I had been to each of those areas about eighty times.

**EG:** Wow!

**DH:** They aren't necessarily pleasant places to go when mostly what you do is you get off the airplane and you work for eight, ten days straight, weekends included, and you don't want to be away from home any longer than you want to and the staff are glad that you're there. Sometimes they are not so glad because you make them work a lot harder than they are accustomed to doing so when you are not there. But they certainly had a good appreciation for our work ethic and how committed we were to helping them to be able to meet their management needs for the National Marine Fisheries Service, and Council-related, and also their local fishery management requirements for their coral reef fisheries.

**EG:** Now that I'm thinking about it, it's one thing to have computers locally in Samoa, but you would still have to send that data to your shop to work on. How was that done in the early days?

**DH:** In the early days, it was what we call, what I called "slipper net." You would, ya know, to transfer data from one computer to another, you would put your slippers back on and carry your floppy disk from one computer over to the other. When we made our trips down there, we would, of course, do back-ups and do quality control and make sure the data was in the best shape possible and we would bring back copies of all of the data. They could also, they would also, they had our agreement with them, was quarterly transmission of the data. The early years, it was putting it in the mail on a floppy disk and then on CDs, then on Bernoulli Boxes, ya know? And then it evolved into real time. They can get on, we set up, a number years ago now, we set up a data website where they could actually transfer directly to us.

**EG:** That would have been maybe early '90s, I would think?

**DH:** Where we got the direct link?

**EG:** Maybe even a little later?

**DH:** Yeah, I think it was probably.... Mid or late I don't...

**EG:** It's, we have had so many changes it's hard to recall. . .

**DH:** The evolution is, um. My brain has evolved, Ed, so I'm not sure about what we did when, but it was a process. Certainly we went through a lot of hardware, a lot of different upgrades from old Apple computers through IBM microcomputers. They are still microcomputer based in all of the island areas, but modern stuff. And database systems, fairly sophisticated data management systems that we set up and then, of course, when you switch platforms and operating systems and database management systems, there is a lot of rewriting to do. We created a lot of good software that then would be converted to others. That's primarily what the programming staff did. So we had some good programmers working with us. The islanders, not one of the island agencies had even one computer professional so we were providing all computer support basically to them. They had to, in the later years, they all had computer shops there that we could get some assistance from as well. But primarily Western Pacific Fishery Information Network staff, we did hardware, software upgrades and troubleshooting and all that sort of stuff. On top of your fisheries monitoring and everything, doing the computer side of it was quite an undertaking as well.

**EG:** To what extent were you involved in making sure the data were good data coming in? Were you part of the operational management of things as well?

**DH:** Yes, we, from the ground up, we trained them on data collection techniques and how to do interviewing when you are doing that it didn't always work. We had to train and retrain many times in different areas. We had quite a bit of staff turnover in the islands, so that was always a challenge to be breaking in new staff and making sure old habits from old people didn't get transferred on. All of our data collection programs we had as robust data entry and quality control procedures put into the software was able to do at that point. We had error checking routines to look for outliers and that sort of stuff. One of the things the island staffers would do, once the data was in they would run their report generators to see if there were any outliers and show them how to track it down. Yes, me and my staff on some of those visits when they hadn't run their reports and we went back through and found errors, we would sit there for hours and hours into the night sometimes, making sure the data were as accurate and good as we could get them.



So our goal was to always provide them with the tools and the training themselves, but when we saw it wasn't up to the standard we liked, then we had to get hands on and do some of the work ourselves with them, training them how to do it right next time. There were many, many, many hours spent in those sorts of things. But, in doing that the local staff number one learned and they also learned how important the data was because we had the commitment ourselves in that program to make them sit there and go through the importance of getting it right and getting it right the first time. Because one of the things I always told them, that bad data is worse than no data. If you can't come to work because you are hung over or sick, then don't make it up and put it in there later to cover up what you didn't do. Honestly, it's better to not have the data than to have poor data put into the computer. Many times that message got through, not always, and then it was a big mess to try to fix some of those times when somebody fabricated data. It's not only in the Pacific. I've seen it in every fishery program I have ever had any intimate knowledge with, it happens.

**EG:** Yes, and not just fisheries. I have seen it in social sciences and other...

**DH:** And I imagine in the medical field even, which is the scariest of all.

**EG:** For sake of context in the territories, we're mainly talking about small vessel fisheries, but I know there were some larger vessel longline fisheries, for instance, in Samoa. What were the principal fisheries in Samoa, CNMI [Commonwealth of the Northern Mariana Islands] and Guam?

**DH:** Other than the semi- short-lived longline fisheries in Samoa and a little bit in Guam and CNMI, the majority of the fisheries are small boat, one-day, two-day fisheries of pelagic fish and bottomfish. And we saw evolution go through, like American Samoa when we first started down there, it was like 50% bottomfish and 50% pelagics. Then bottomfish got really important and they found some new grounds. Then there was mostly, and this is deep bottomfish primarily from 70, 50 fathoms and down to 150 fathoms. These are not electric reels, they are hand cranked Samoan reels. It's like hand lining down to, ya know, 1,000 feet deep. It's a few hooks on a line and you're catching fish from deep there. Also, inshore, they have a lot of spear fishing and some net fishing, and so was primarily small fishing, one-boat operations. Sometimes an owner would have several boats and have crews that would fish. But it was all for local consumption. When the longline fishery started in American Samoa, a small boat, alia, a little 29' catamaran type boat, laying out five miles of hand-pulled monofilament gear, and they fished one day at a time and brought their fish back, and it was primarily albacore going to the canneries. That fishery is almost defunct now, there are a few boats.

**EG:** I think there are a couple.

**DH:** There's a couple of alias left from what I understand and then it evolved, that fishery evolved up to about thirty or forty of the alias. Then some bigger boats started and that transitioned out.

**EG:** What happened there? What happened to the alia fleet?

**DH:** It slowly became less, catch rates went down. It became harder for people to get crews, then boats would break down. They did have a few typhoons that wiped out some of their fleet.

**EG:** The tsunami too.

**DH:** The tsunami wiped out a lot of the fishing. They were on the, they were significantly on the downslide, even the big boat fishery was on the down slide when the tsunami hit. In some ways that might have been a blessing for some of them. They might have gotten their boat totaled through insurance because of that, I don't know, that's just speculation. But a number of them that lost their boats there were essentially done with the fishery at that point. And in Guam and CNMI, Guam was always pretty much a small boat fishery. There have been a few boats that could go several days out, a few thirty, forty-foot boats. A few in CNMI as well, but primarily just bottom fishing and both shallow bottom fishing. Mostly for lethrinids, the emperor fish, and small grouper species and then pelagic fishing primarily for skipjack tuna, yellow tuna and wahoo and mahi-mahi. The Marianas, Guam and CNMI have good mahi-mahi runs every winter, December through March-April. Although it's not the big money fish it is in Hawaii, it helps their local economies. And it's pretty much all local sales of fish there.

**EG:** Given the downslide of the alia fleet, and it just seems like there is not as much fishing going on in American Samoa. Do you know what people are eating now?

**DH:** Well, as that fizzled out, somewhat reduced, nearshore spearfishing and bottom fishing went on the increase again and so there were still fish available for local people. There were some markets that developed. A lot of night time spearfishing on the local reefs for the reef fish that they find edible. The one they like the best in Samoa is alogo, they call it there. It's a blue lined surgeonfish. It's, uh, you can usually find that in several fish markets. And the same thing in CNMI, they have had a lot of, in the last decade, I suppose, the spearfishing fishery really increased and also in Guam, going deeper and deeper there it was a lot of scuba spear and in CNMI it was some scuba spear and more just snorkel spearing. Guys going out at night for long swims along the lagoon and bringing in their catches.

One interesting kind of economic, a social thing that I remember in CNMI that happened. They passed a law, maybe back in the nineties, that said the food stamp program you had to use something like 25% or whatever for local products. Might have been even the early nineties

when that happened. And there is a lot of subsidy there, of low income people. An interesting impact that had local fisheries, spearfishing fisheries, low tech kind of, one man fisheries sorts of things, increasing substantially as did local farming. Those were two local products they could get was local grown products, watermelons and beans and local produce, and also catching local fish. That little law kind of had an impact on both economies, agriculture production and fishing production.

**EG:** Interesting, very good. I have been asking folks about projects they felt were particularly important or had an outcome they desired or were enjoyable. What can you pick out a couple that over the years that were particularly of interest to you?

**DH:** Well, one of the things as a fishery scientist, of course, I knew that one of the basic monitoring things you want to do is to be able to see what your fish stock is doing. So, collecting bio-sampling information, collecting length frequencies, gonads, and doing basic fish biology stuff, and just getting size frequency data was something that was lacking in all of these areas. Our creel survey programs which we established creel survey programs for all fishing gears except for big, the commercial fishing gears like the longline stuff we didn't. We had creel survey programs that did some measurement of fish in American Samoa and in Guam and the CNMI, so we had small samples of that. One of the things that was lacking was a large enough sample size so you could really see what was happening to the resource. Our fish of a particular species going, getting smaller if the fishing pressure is too large. What is their reproductive biology? That is a step further, of course, than taking length frequencies.

So, through the early years, knowing that that was an important thing to do, we established a few little programs like that. But there was no resources to keep them going. And in, oh I forget when it was, after 2000 I'm sure, there was some additional funding through initiatives from headquarters and we were able to establish bio-sampling programs in the three territorial areas that were quite substantive. Collected thousands and thousands and thousands of samples of size frequency, we had in each area there were major species that were targeted for collecting otoliths and gonads and, ya know, doing for the samples for doing that.

As far as I understand they are still ongoing but one of the things there wasn't resources for and I am not sure what progress has been made on these thousands of samples that have been collected by these island agencies, is actually analyzing all of the data. There is probably thirty master's theses waiting for somebody to do if somebody could come along with the resources and the students to work on them there. I think that was one of the funner things that was more along biology which I still say I'm a biologist at heart and not a computer nerd or manager. And that was, there is a lot of really good stuff there. And just by doing size frequency analysis we have seen some of the basic summary reports we have put out. It's very impressive size frequency charts and we can see seasonality of fisheries and things like that without a really robust program

could we, we could never do that before to really see that. I am hoping that somebody, as far as me retiring and my legacy or whatever, I'm hoping that somebody is going to have the wherewithal to follow some of those things and utilize all of that information.

**EG:** I was getting ready to ask that, do you feel like there is somebody coming, backfilling you, that can do all of that?

**DH:** Well, I'm sure there is people that can do it. Whether there is resources to have the people do it, that's one of the things. I guess, in looking back over my career, I have done that some and in fact there have been meetings about some of this stuff while I was still working. I think Dr. Mark Holliday had a graphic at one point when he was still on the statistics side some years ago. When I first started working for National Marine Fisheries Service in data management I think something like seven, six, seven percent of the National Marine Fisheries Service budget was dedicated to fisheries monitoring, or actually collecting and analyzing basic fisheries, foundational fisheries information. And as years went on and I guess lawsuits took over or protected species or other research initiatives, I think what Mark determined at the time, and this is probably close to ten years ago now, was that it had dwindled to like one percent or less than one percent of the National Marine Fisheries Service budget was being spent on the basic fishery data collection programs. So, that being a critical aspect of being able to understand your resources it seemed unfortunate that that's the way things went. It made the jobs harder to do. As fisheries management became more complex, and it demanded more information and more detailed information and more quality information, more complete data in order to turn it into better information, it just wasn't being supported properly to do it. That's been an unfortunate aspect, I think, of where the agency has fallen short. There is lots of opportunity for improvement.

**EG:** And you did, you were often interfacing closely with Council and Council needs. As I remember you often attended meetings so I would think the Council was quite glad to have you around. Did you maintain good....

**DH:** Well, yes I was intimately involved, probably as involved or more involved with fisheries, with fishery management council than almost any other staffer since I was the one to talk to for years to get any information from about any fisheries in any of the four major territories where management was being proposed. So I sat on every fishery management plan development teams and the ecosystem plan teams and everything, I was a member of how many? five, six, different plans. I was an active member on most of them. The precious corals not so much because we didn't collect precious corals information and they had a good, other group there. But as far as bottomfish from the beginning. Pelagic, the coral reef was the most challenging and it's still the most challenging from many aspects because of the diversity of those resources. The diversity of

the interesting people who are at different odds over the coral reef resources and the jurisdiction thereof. So, all of those we were involved in all of those meetings.

The Council and the Council staff were, always my "number one client". I used to be at times, I was accused, hopefully in a joking manner, for working for Kitty or working for the Council instead of National Marine Fisheries Service. They were the ones that were most interested in and needed the information we had and provided for their management plan. As I mentioned earlier, every fishery statistics that goes into their SAFE reports and all of those things.

Virtually every one of those monitoring fisheries performance, number of fisherman, how many pounds have landed, catch rates, all of that stuff came out of the data that the islanders collected using the data systems we created and the data processing systems we created and supported. And the report generators that we wrote for them. We actually wrote turnkey because they didn't have the staff on those islands. We wrote development software or reporting software where all they had to do to get their basic reports out was to push a button and all of the reports, every graph, hundreds of graphs and plots and everything would be updated with the latest statistics and everything. They would just have to do the proper analysis. Those whole plan team reports have gone through huge evolution as well and now I understand that the Council is taking the lead on producing a lot of those using the information more directly. The islanders can push information, push the summarized data to them. And I think a Council staff is helping to put those things together now. I think that is the evolution since I left which is great if they have the resources cause it's the islanders.

**EG:** Lots of busy people in fisheries here.

**DH:** Yes.

**EG:** How about the state, did the state make data requests to you at times?

**DH:** The State of Hawaii did. Mostly they had the data collection programs and we certainly set up their processing and improved all of that that so they are up to real time processing and reporting now based on the software we have provided and training provided to them. Generally we have written many report generators that they get out. They do have some of their own capabilities of summarizing their data using spreadsheets. They can dump data out into spreadsheets. They have some of their staff has been able to do some of those data queries and we have written a lot of more generic data query systems for them so they can make queries against their data and get it out without doing any additional programming.

But on occasion, if there is something special that is not done already, if the state wanted to get something, they would ask now Kimberly Lowe or Mike Quach to send a data request. That would be handled as resources permitted that Council probably had, would set records for the

number of data requests they made, special data requests. We had with the addition of Kimberly Lowe to our staff some years ago now, she had some GIS capability and also worked with a scientist in American Samoa who was there for a couple of years. We developed some pretty robust GIS applications.

**EG:** Kimberly had formerly worked for the state too.

**DH:** Correct, so she had a relationship with them. Yeah, there is a lot of GIS outputs that show fisheries distribution and that sort of stuff. That was one of the, actually now that I think about it, that was one of the other major things that was kind of fun to do and kind of on the side. In American Samoa, they had on their staff Francesca Riolo who was an ARC GIS guru and a tremendous biologist and an awesome programmer. She was there a couple years and came up with some ideas of plotting things. So, she and I worked together to design a fisheries analysis program where you could plot out densities. This was focused on a longline fishery because that had the proper geospatial data into it for the long line sets. That software is excellent software and very capable of doing fisheries analysis. Showing you pictures of densities of CPUE, and you could select individual species. You could select sizes of vessels to analyze. You could do all sorts of things as long as you had access to capture the confidential level data. But it also had buttons in there to put out non-confidential data. That's what we would use to show distribution of fisheries and catch rates and that sort of thing for the longline fishery.

She unfortunately left there years ago now and she is an analyst in Italy where she lives. Fisheries Analyst is actually a product that she sells, although we have full access to it because we helped developed it. I think it's probably that's another thing that is probably not getting utilized the way that I had hoped it would after I retired. Maybe somebody will resurrect that and utilize it. It is a fun tool to use. You don't have to be a programmer, you just select stuff and great graphics come out. It's something as simple as selecting a monthly plot of say around Hawaiian Islands or around the Pacific of the Hawaiian longline fishery. Just watch the boats chase the fish around and how the fleet matches. You can do quarterly or compare years or merge across years. It's really an excellent, kind of a fun, graphic way of looking at the pictorial distribution of fishing effort and catch rates and that sort of thing. But anyway, that was another project, I guess.

**EG:** Things came a long way since 1981.

**DH:** Oh, oh, yes. But there have been many, many complaints that it's not perfect. And that's the reality of things, ya know, when people collect, when people do anything, there is going to be errors in it and we are limited in all of these areas. Even as late as just a few years ago, just a year or two before I retired I had the pleasure of bringing...

**EG:** You retired in...

**DH:** Two and a half years ago at the end of '13. The head of Fisheries was out for a Council meeting and was out in Guam and Saipan, so I got to tour him around there. I had been on a number of meetings with and had some folks from S and T [Science and Technology] come out here on data collection activities especially the creel surveys that we implemented in Hawaii. Basically, even after thirty years of improvement, their impression is "wow, you guys really live in the wild, wild west, don't ya?" And "I don't see how you get anything done out here." It's tough. Yeah, so, we made huge advancements especially given the social, cultural, and spatial challenges, and the financial ones. On the mainland, somebody wants to go out to one of their regions. They want to go to a meeting someplace or to go on a site visit. They get on an airplane. They've got the choice of ten airlines and bunches of schedules and two hours later they are there.

**EG:** They might even be able to drive.

**DH:** They might even be able to drive. Here the shortest trip, we take is five and a half hours. And eight hours or ten hours to get to Saipan through layover in Guam. It's a huge place. We are in charge of fifty percent of the EEZ of the United States and very diverse fishing and very diverse number of gears in each place. We have come a long way, which we should have in thirty some years. Unfortunately, a lot of people are not happy with it not being perfect yet.

**EG:** Expectations.

**DH:** And I just say if we would have put more money and effort and people and training into it for those thirty years, it would be better off. It's still in, from what I know of all other island fisheries data collection programs in the Pacific and in the Caribbean, we have the best data systems of all of those areas. That's my humble opinion.

**EG:** No doubt, no doubt, I can't think of...

**DH:** It's other people have said that as well. I had some contacts over the years, a friend that ran fisheries programs in the Virgin Islands and people in Puerto Rico. They don't have a lot of this stuff that our island areas have. As imperfect as it is, it is still better than a lot and still very usable. You just have to take, as with all fisheries data, take it with a grain of salt and know what to believe and what to question when you are doing your modeling.

**EG:** Any thoughts on the future, Dave?

**DH:** For fishery management in the Pacific? It's not going to get easier. As the regulations get more robust, one of the big challenges we have and have had for a long time is the kind of the

dichotomy or whatever you'd call in National Marine Fisheries Service, we are supposedly a research agency. We are supposedly a management agency with the Council as our main partner. We are a protected species agency. Those mandates of those three branches, let's say, are at odds with each other most of the time. The management side of things we deal...as a social scientist you know how important people are in this paradigm and doing this. People depend on their resources, they depend on their resources being manageable, harvestable, sustainable, and being able to get food from the ocean. One of the things we are suffering from, I say suffering from is the idea that even, say, for this huge expansion, creation of MPAs [Marine Protected Areas] that are for political reasons, not science reasons and shutting down fishing opportunities for people. That is one of the real challenges. I think our agency needs to be very active in making sure that people can still utilize their resources from a recreational perspective and a commercial perspective. People need to know their resources are sustainable if managed properly and they need to be able to be utilized and not just preserved for people just because you don't think you want to hurt a mahi-mahi's feelings or something. It's a tough, tough environment and, of course, in the Pacific the biggest thing is this internationally what's going on with the pelagics and overfishing by international fishing fleets and that whole Western Pacific Commission business. Purse seine versus long line and bycatch issues. They are all quite challenging and that's a very international political world . . . is tough. Unfortunately, I think Americans and American fisherman take it in the shorts most of the time. We want to be leaders and we lead but then at the same time that cripples our ability to manage a fishery somehow. If we shut down our fisheries, our very well managed fisheries, and other international agencies don't, then we are not doing the resource any good. And we are just hurting our own populations.

**EG:** A lot of the broad scale closures have come from executive orders which seem to lack the input from science. That's clearly an issue here.

**DH:** I would say it's an embarrassment to the U.S. government that equities...what is it called...the law that they use to pass these things.

**EG:** Antiquities?

**DH:** Antiquities law is being so overstepped. The bounds of that and what it was created for back in what? Nineteen 0- whatever? I mean, it's ridiculous and I don't know why Congress or anybody would allow that sort of stuff to continue. We have a management capability well established through the Magnuson Act and everything that is transparent and takes science into account when doing these things. And to just take these sweeping closures for political and, I don't know how you say it, to soothe NGO [non-governmental organization] or environmental concerns.

**EG:** Almost popular decisions.



**DH:** Yeah, it's sad, it's embarrassing that we would allow that to happen when we have better tools to do that. I have seen that a number of times in recent things and heard it in the past when things got passed, you know, it's going to be his legacy. Oh well, that's not a very good legacy if you ask me. That's a legacy of something negative.

**EG:** A legacy of an individual.

**DH:** At the expense of so many other people. It shouldn't be allowed. But I have never been a political person when it comes to that. But it is rather irritating that they can ignore a very good foundational way of making decisions in this sort of environment, with fishery management and all of their inputs that we have from public hearings and all the rest and then just wink at it and say, no we are going to do this just because we feel like it. I hope it doesn't happen to this next expansion we're dealing with because I hope we are done with that. I hope we are done with that every place. We already have, you know when they came out, when was it, years ago? When they wanted to have such percentage of coral reefs protected by year whatever it was? We are already beyond that. We reached it way before the deadline. I forget the dates for all those things but....

**EG:** There's been a number of them.

**DH:** Yeah, we're beyond that already and we have to realize that people need to fish. People need to feed other people. We need to be able to use resources not just protect them from being utilized. It's sad.

**EG:** Well, tell me Dave, from my perspective, it's just been an awesome and productive career. Was it enjoyable? Would you do it again?

**DH:** Oh, I'd like to be young enough to do it again. I would do it different. I would certainly do some things different. I think I communicated very poorly many times to management and up the chain. Although I had talked directly to the head of Fisheries before, a number of times when I was back in D.C., you know, got pseudo promises of things were going to improve. But yeah, I think more documentation, more finding a way, maybe finding a way to get the voice out there better from the importance of what we were doing and the foundational need for better information for what was going to be happening in the future, which has happened. And now we don't have what we needed to have.

So, I would do it over, yeah. I enjoyed my career mostly. I enjoyed a lot of the people I worked with. There were a few I could have done without. I know in the Pacific we made a lot of, me and my staff, made a lot of good friends and built excellent relationships in fisheries agencies

throughout the Pacific. That was rewarding. It's unfortunate that I don't believe it's as appreciated now as it should be. I guess part of that's my fault for not doing a better job earlier on, getting resources and communicating the importance of it at a high enough level that something could be done.

**EG:** Well, we all know there are a lot of challenges there.

**DH:** Yeah, it is and you know it's always been if you look at maybe fair or not fair, from our perspective, my perspective in the Pacific. You look at home much resources go into the East Coast. Headquarters are on the East Coast and what's happening there. And their fisheries aren't, by the way, in the best of situation in the Northeast and other places and how that funnels down, once you hit the West Coast, other than the state of Alaska which is very well taken care of, even internally there the, Alaska Department of Fish and Wildlife or whatever, Fish and Game, has as many employees as National Marine Fisheries Service. So, they don't have the same problems as we do in the Pacific Islands but once you get past surfing zone in California, things fizzle out. Even in our region there hasn't been the vision, I think, to see the importance of what's happening in our poor little island areas. Their fisheries are small, by comparison to, per capita they're critical, important high value resources per capita. They are very important, more important than probably most other fisheries on the mainland. But when you say total landings in the hundreds of thousands or less than a million pounds, um, in some of these areas are just a few million pounds compared to, you know they say "well, we catch more menhaden than that in one set". It's been difficult to get people to recognize the importance of doing our job right even in these small areas because they are important politically and culturally--

**EG:** Yeah, culturally and socially.

**DH:** --in the Western Pacific and the fisheries are critical to those local island people.

**EG:** Yeah, in absolute terms maybe we need to look in absolute terms at the cultural significance of these things.

**DH:** I tried that once and I actually made some statistics at one point to try to make the point. I remember sitting in one meeting where I was fighting for resources on the West Coast from information networking thing that we had to battle with those people for money for a number of years. And after I gave my spiel, actually it came from another NMFS person from actually a different region, and his comment was "David, if you were as important as you say you are, your agency would support you better." So, it was like okay, well, this will be the last one of these meetings that I go to, and it was. People don't recognize the importance in how different, you know people hear that it's different in Hawaii. We are not the same as the mainland. It's true.

**EG:** Perhaps it calls for a tour of duty out here from...

**DH:** Well, like I said, I was very happy to take the head of National Marine Fisheries Service on tours around the islandds and to show them what we are up against. Take them into the offices and show them the resources, the staff that we have and what we're doing. They were very impressed with what we were able to do, and very surprised, you know, being able to do things in the wild, wild west. It's still in many regards it's still the wild, wild west. Even with the internet, you know, you don't have to send things on Pony Express anymore, but it's not, still not. I've been gone for two and a half years but it still doesn't appear to be supported. A lot of the programs that I had hoped would flourish when I left seem to have gone in the other direction. That's the way it is. We work hard and do what we can.

**EG:** Well, your example will always be there and perhaps somebody can take the . . .

**DH:** Yeah, I had told my bosses before one of my goals before I retired was to make sure that Dave Hamm was not two four letter words when I left but I'm not sure that's not the way it went [laughter].

**EG:** They miss you.

**DH:** Oh, I know my staff and the islanders do.

**EG:** Well, Dave, it's been wonderful. What a great career. I appreciate your time, and . . .

**DH:** I was glad to do it. I can, you know, there is so much that happened through those years. I still have boxes and boxes of stuff that I meant to get through before I retired, you know, a lot of the history stuff there.

**EG:** Well, maybe something can be done with it. That's the intent of this work here.

**DH:** I'd like to see if, you know, all of the hard work we did, not go belly up. The relationship that, one of the things that evolved over the years it seems like the relationship between the Council and the region and the science center at least out here has evolved in a direction that doesn't make it easier to do our jobs. There seems to be battles for funding for one thing or another. Maybe that's at the base of some of it. Not being able to get products to the Council as quickly as you can makes them want to do things on their own. It's unfortunate. The earliest years we had, I think, far better working relationships between the agencies. But as things got more complex and more challenging and more difficult and more demands on all three sides of that, what I call the bureaucratic side, the regional side from their perspective, and the science

side, monitoring side and then the Council management side. It's taken its' toll. Unfortunately, they don't work as well together anymore. Maybe they fixed it since I left.

**EG:** I think there's an underlying theme of need for resources out here.

**DH:** Yeah. It's only been talked about for since, I remember, '81. Well, we made a lot of good improvements especially in the State of Hawaii.

**EG:** Absolutely.

**DH:** One of the interesting things talking about with the State of Hawaii. One of the first things, I had the meeting in the fall or summer, late in the summer of 1981, with Head of Statistics or Data Programs down at the State, and I recall telling them that one of the first things we need to do is get one of their commercial landings system computerized and put up so we can make timely aspects and get automated input and do that. That was late in '81 and I think it was in the late '90s when it was actually accomplished.

**EG:** I recall those years.

**DH:** It was progress but sometimes it comes far slower. But now they're doing an infinitely better job with even less resources because of the tools they have been provided. So, they have real time data processing now. They keep monitoring the quotas for bottomfish and everything on a daily basis with the tools that WPacFIN provided and helped them with. One of the real stars, I guess, I being able to do that, provide those tools to an agency and they see the improvements. A lot more needs to be done that hasn't been done that I have told them about many years ago but it's, there's a chance with additional resources. They have the desire to do it, but they need people and money as well in order to do that.

**EG:** The capacity.

**DH:** The capacity, that's the social word, yeah. That's, yup they're lacking that.

**EG:** Well, I don't know where we'd be without you.

**DH:** [laughter]

**EG:** Very good Dave. I really appreciate your time and we'll keep in touch.

**DH:** I'm glad to do it and if anybody actually listens to these things, especially any upcoming scientists, any people in college, I think, getting into NOAA, NOAA Fisheries at this point in

their career. I think when we came in or I came in early on, it was you know at the boom on "oh yeah, they need marine biologists" and we were a dime a dozen back then, and making progress career wise and the agency was slow and arduous. There's a lot of opportunity right now. A lot of us old timers are retiring. There is going to be a lot of opportunity for bright young scientists and at all levels. Technician to stock assessment, whatever, to make an impact and have an excellent career and be able to do something. I think it's a great time to get into the career and get into fisheries. But, if you do, beware there's challenges.

**EG:** It's a real world.

**DH:** It's a real world, not everybody loves the government. "Trust me, I'm from the government" doesn't work very much. Well, thanks for including me, Ed.

**EG:** Absolutely.

**DH:** I hope it turns out to be useful.

**EG:** Oh, it's wonderful. It shall. Thanks, Dave.

**DH:** Aloha.

**EG:** Aloha.