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Phelan Hill, Beth ~ Oral History Interview

McCay, Bonnie

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Voices from the Fisheries
166 Water Street
Woods Hole, MA 02543

Interview with Beth Phelan Hill by Bonnie McCay

Summary Sheet and Transcript

Interviewee

Phelan Hill, Beth

Interviewer

McCay, Bonnie

Date

June 9, 2016

Place

Northeast Fisheries Science Center
J.J. Howard Sandy Hook Laboratory

ID Number

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Biographical Note

Beth Phelan Hill, Ph.D. has been a research fishery biologist at the J.J. Howard Marine Sciences Lab at Sandy Hook since 1984. She earned her Ph.D. from Rutgers University. At the time of this interview, she was the Chief of Fisheries Ecology.

Scope and Content Note

Interview contains discussions of: Changes in focus for lab, ecology, ecosystem management, ocean acidification and climate change.

In this interview, Beth Phelan Hill discusses her work with the Northeast Fisheries Science Center including funding challenges and the evolution of data management.

Indexed Names

Able, Ken
Bejda, Allen
Boreman, John
Calabrese, Tony
Chambers, Chris

Cohen, Ann
Draxler, Andrew
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Freeman, Bruce
Grassle, Judy
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Wikfors, Gary

Transcript

Bonnie McCay (BM): This is Bonnie McCay and I am interviewing Beth Phelan Hill from the National Marine Fisheries Service Sandy Hook lab or the JJ Howard Lab at the Northeast Fisheries Science Center on June the 9th of two thousand and sixteen.

So, thank you for agreeing to be on this interview. So let's start off with how you even got involved in marine science? What brought you here to, doing fisheries work and marine oceanographic work?

Beth Phelan Hill (BPH): Ok, I first got involved actually in environmental science, not necessarily marine science back in my high school years in the early '70s. After I got to college was when I started getting interested in marine science but that wasn't offered commonly as a subject at the university and when I went to graduate school at the University of Maryland I still wasn't particularly interested in fish marine science. I was more interested in invertebrate science at that particular point in my career.

So after I got my master's, I decided that I needed to work for a living so I started trying to get a job and when I started entering my third year of unemployment [laughing], I started to look at federal jobs. At that particular time in history, there was no internet so I had to go to Newark to investigate what job postings were on the bulletin board and at that point in time there was a position available at the National Marine Fisheries Service at Sandy Hook. Now, living in New

Jersey, I had limited access to certain locations. I didn't even know that the facility was here and I came down and checked it out on a weekend and applied for the job and I didn't get it based on my application. Another scientist got the job and then about three weeks later, I got contacted by the Sandy Hook person again because they actually had two positions and they were using the same list to fill the job so I interviewed and was hired to work here even though I had never taken a fisheries course as part of my academics but I had obviously studied ecology. I had conducted research. I had studied everything but the subject of fish in particular.

So, I started working here and actually at the time the woman I interviewed with and who hired me, Anne Studholme had been working on the effects of oil on marine worms at that particular time so she thought my invertebrate background was a big help to her with that project. Well, that never went anywhere [laughing] and within the first year of working here .. I started in December of 1984, the following September was when we had the fire at Sandy Hook that basically destroyed the building I was working in; so the group I joined with, Anne Studholme and Allen Bejda were working on behavior of marine and recreationally important fish species, this followed from the history of the lab which originally had studied recreational fisheries and they expanded that to commercial fisheries and the person (Bori Olla) that ran the department had just left..Anne was the new Branch Chief and they were still studying basic life history requirements of blue fish at the time and I participated in that activity -

[Bonnie's phone rings]

BM: Excuse me [looking for phone]

BPH: Sure

BM: Sorry

BPH: It's ok.

BM: So you were doing bluefish, right? Was Bruce Freeman involved in that?

BPH: No, he had already left at that point. There were a number of people who had been here and had left either at the end of internships or graduate school students. It's funny because neither Anne nor Al could ever remember where I fit in in relation to those other people so every so often a person would show up like Bruce Freeman and visit and they were like "you remember Bruce" and I'd be like "no, no, I don't remember Bruce, I don't remember this person".

So the whole principal of the group was to look at basic life history requirements. The kinds of information that went into the essential fish habitat documents. The good old, classic field studies, throw a net out, count how many fish, where do they come from, how many in January December, that kind of early life history requirements. The hook behind behavioral ecology at the time was to bring those animals into the lab and actually observe them in a large research

aquarium or any variety of tanks or aquariums because we had our intake seawater system from the Sandy Hook Bay.

So, the devastating fire obviously burned our building to the ground and threw us all into a completely different world. So, for the next I would say 7 years, 8 years we were doing primarily field work because there was no lab to work in. So the field work involved going off shore to the dump site. It involved doing work within Sandy Hook Bay, within the Navesink River. Again, it was all commercially and recreationally species, you know bluefish, winter flounder, striped bass, all the local things.

In 1990, John Boreman, who was Center Director at the time, asked me if I would like to take advantage of a program called 20/20. 20/20 allowed you to go back to school 20 hours of your work week. So almost simultaneous with that, Anne Studholme, Tony Calabrese from the Milford Lab and Ken Able (Rutgers University) were trying to get funding from the Coastal Ocean Program to launch a comparative study between the three locations and the subject would be winter flounder and tautog, and we were looking at growth in different habitat types.

So again, our Congressional funding originally started out being bluefish but it, sort of, moved in to this project and the dump site project in the late 80s and since Ken Able was involved, the buy-in for me was to go back for my Ph.D., make this project foundational to my Ph.D. project and that's how I ended up at Rutgers.

BM: That's great. So how long did it take you to do that?

BPH: [laughing] I'm ashamed to say but it took me 10 years. It took me 10 years to finish it from start to finish. I took all my courses at first. I finished the research project in three years then it took us like another three years to get everything analyzed, published, you know out the door.

BM: It's not surprising, you've got a job!

BPH: Yeah, right there was marriage and everything else.

BM: Life goes on

BPH: Yes, the house buying and all that kind of thing went on over that period of time and so I finally completed the Ph.D. At the time I was pregnant, late pregnancy, and I literally defended the Ph.D. two and a half weeks before I gave birth [laughing].

BM: Did you really?

BPH: I did. So the joke was that I was playing the sympathy vote.

BM: Good for you.[laughing]Who else was on your committee?

BPH: I had Judy Grassle on the committee with Ken. I had someone that left from Rutgers that I'm going to have a hard time remembering, I am going to have to look. Um [looking through papers]. Let's see if it's actually in here. I actually have the signature page. Sybil Seitzinger.

BM: Oh yeah, yeah.

BPH: Sam Wainright was also from Rutgers and left and C. Lavett Smith yeah he was from the Museum of Natural History and he knew Ken for quite a long time but then he also retired.

BM: Oh

BPH: And so he didn't attend. He actually read the dissertation, commented on it, and sent them via mail. Because it had taken me so bloody long to finish, you know, that's the price you pay

BM: That's right.

BPH: As a matter of fact, the defense was also mistakenly scheduled for one of the Rutgers graduation days so Sam Wainright actually had a hard time getting in because of the traffic to get on campus so they were talking about "Well, maybe we should have Gary Taghon step in" and I said "at the last minute? I don't think so." So, I did it, yes! The trial and tribulation of the defense.

BM: That's great. So did that change your work, the fact that you had been doing that research? It sounds like it fit very neatly into what you had been doing.

BPH: Yes. It fit very well into what I had been doing. It overlapped with a lot of the essential fish habitat work that was taking place here at Sandy Hook at the time, as what I call it, the good old fashioned, scientific, investigation into you know essential fish habitat and early life history, life history requirements and so forth so it was, it was a very good study for where I was at the time and what we were doing here at Sandy Hook. Um, you know, it was seamless.

BM: That's nice. So let's go to a question about dominant paradigms that the governed approaches to research in the field – have you covered that by saying that early life history sorts of things?

BPH: I have covered it so much as in this physical location, even though it is part of the greater government and Woods Hole in particular, always functioned a little bit you know south of center. We were very much dictated, let's call it issues, issues that were ongoing and issues that Congress wanted to deal with so there were line items, there were special projects. Again, the blue fish, striped bass was a big deal. Dealing with the dump site was a big deal. Then the essential fish habitat really dominated the '90s and what we were asked what to do here.

Once we rounded 2000 however, you know things started to change. You mentioned Magnuson-Stevens. That had a big factor in where Woods Hole and the Center as a whole went with their research. Those special line items, you know, those earmarks essentially disappeared and what

we were doing as researchers here, what we had been doing was the kind of stuff that other people, university people, other branches within NOAA were supposed to be handling. It was shocking to me that that really wasn't part of what Northeast Fisheries Science Center was supposed to do anymore. And nothing takes place quickly in the federal government. When you actually read Magnuson-Stevens and you see what it's all about and what we are supposed to be doing, we really fall outside of that and so things begin to slow down.

Environmental science as a whole, in the mid to late '60s, those people that were a part of that environmental movement at the time that set the foundation for what I became part of later in my career were leaving for any number of reasons. Sometimes they were changing where they were working or interested in. A lot of people went into academia or smaller colleges or teaching, you know, they were all moving around and what was left here to manage and work with was changing and we were trying, trying to change to fit into that paradigm. The saving grace, if you would was the environmental change, climate change and the fallout from that.

The Northeast Fisheries Science Center used to have these symposium weeks where they would bring everybody into one place and allow us to talk about what we were researching. So it was supposed to help us know what was going on and, again, this was before computers and email and all that kind of stuff. So I went to one of these things. The Center Director at the time was a woman—Nancy Thompson she stops me literally while I'm on my way to get into a car, hand on the door, and she says "how would you feel about spearheading research into oceanacidification" and I was like "excuse me?"

BM: [laughing]

BPH: She says "we can talk further about this but oceanacidification is going to become very important to the Center and I would like you to consider you know managing a project relative to that". So I went home and looked it up because I had never heard of it

What I didn't realize at the time was that the Chemistry Branch Chief here, Andy Draxler who has since retired and passed away, had attended a meeting like in 2006 or something like that where people were talking about it. People from Alaska, people from the Northwest Center were talking about it because it was an issue out there and but --

BM: It hadn't really emerged as a big issue here.

BPH: Nobody had heard of it in this point in time. There was money to be had, in other words, and we were on the ground floor and were interested in launching an investigation into the potential effects of this environmental problem. So I started to get interested. I started to get involved and this was just around the time the IPCC [Intergovernmental Panel on Climate Change] had their second report come out and there was this huge scandal about how it was all a scam, climate change was all a scam so the people that I was talking to from the Northwest Center in Alaska were like, you know, "let's not align ourselves so closely with climate change per se. Let's deal with the issue as it exists here" so that was the approach.

So the funding came out, I polled the Northeast Center to see who was interested in this issue who wanted to become involved. And people responded to me, we talked about it and so we launched a program within the expertise we had.

BM: So you had enough in the different units?

BPH: Yea, we had a phytoplankton group. We had somebody in shellfish. We had somebody here interested in early life history. We were going to be able to hire somebody for chemistry that could deal with the carbonate systems and the laboratories we needed to establish. So this group got together. Now since then, of course, climate change has made a resurgence and OA [ocean acidification] is considered a part of that greater issue. The other CO₂ problem is how they promote it and that's where we've been involved in since then. You know, it may be another topic issue and not really part of Magnuson-Stevens per se.

BM: But, it's definitely, I think, recognized as essential to fisheries management

BPH: The new buzzword now is ecosystem science and those of us interested in ecosystems, climate change and let's call it the side issue of OA and such, look at that as the contribution. The whole thing with stock assessment is best available science. You can't talk about stock until you talk climate. You can't talk about climate without talking about OA. Talking about it from the bottom up and top down which is the ecosystem. That scientifically is where I am right now.

BM: So that was a big move from early life histories to ecosystems to oceanacidification.

BPH: Uh, hm. That's right. All part of the same web. We are a small part of it but we are still part of it.

BM: It was probably 10 years ago, not only do I lose track of names but I lose track of time but I heard somebody talk about oceanacidification at a meeting at Stamford. I was just appalled and terrified. Horrified, horrified. I didn't know anything about it until that talk. So it's been so interesting to read what people are doing and what has been done. The work done with the shellfishery and the oyster hatcheries on the West Coast and so forth. To see it percolate up as a genuine practical problem and not just this terrifying specter of loss of everything in the oceans basically.

BPH: That's right. There is a major researcher in OA and her name is Joanie Kelypas and she gave a talk in Monterey, California at the second Oceans in a High CO₂World international conference. She actually stood up there and said, "I was actually physically sick to my stomach when I realized the magnitude of what this was going to mean in the oceans today." So, it's a shocking realization, truly shocking.

This was the first time I had been involved in a research, I was really in on the ground floor where, you know, there were maybe a dozen papers that I could get my hands on when I first started learning about it and now there are hundreds of papers on the subject.

BM: How has your program developed? You started the program, the ocean acidification

program in what?

BPH: The first year, I think, was 2010 and unfortunately while there was quite a bit of funding from NOAA Headquarters at the time, the Northeast Fisheries Science Center let us go along for a few years with the full amount of funding and then they started taking salaries out of the funding so 50% of our funding now goes to pay salaries. Logically, it makes sense. We work for the Northeast Fisheries Science Centers so our salaries are paid from the Northeast Fisheries Science Center but all of our work is for a different program which is in a different line office, Oceans and Atmospheric Research.

BM: So your salaries come out of the Northeast Fisheries Science Center but your work, the research, comes out of the Ocean and Atmospheric Sciences Center?

BPH: Yes, which is where the National ocean acidification program lies in the hierarchy.

BM: So it is because of ocean acidification that is working that way?

BPH: Yes. So, our research dollars have actually gone down since the inception of the program which restricts what we are capable of producing.

BM: Are you expected to, you can't go out and seek funding elsewhere, can you?

BPH: There are certain limits to what we can do, certain limitations. But there is some options.

BM: Or you can partner.

BPH: That's right. Right now that is what we are trying to do. We are trying to bring in external partners who are receiving funding from this program and trying to use that as an avenue to conduct meaningful research. The Northeast Fisheries Science Center, which is largely guided by the Magnuson Act, doesn't have a directive to do OA research but there is an way limited through aquaculture research.

BM: But at this point in time, it is not it, obviously.

BPH: Right. It's still not part of the main mission . It kind of falls into the climate change research mandate. It's a slippery slope. We are constantly justifying what we were doing and why it's important and why it's important in the Northeast and why it's important to the Northeast Fisheries Science Center and not some other line office within NOAA. Nobody argues with the importancescientifically. It's a question of the structure.

BM: Who wants to take the responsibility of paying for it.

BPH: Exactly. It's the structure.

BM: Yeah, it's an interesting one. So, it's kind of... but climate change generally has moved

ahead of EFH [essential fisheries habitat] stuff of the past. It is still there but it's not, not so critical except in relationship to climate change.

BPH: Exactly, exactly.

BM: What about marine spatial planning, is that something that makes any sense of this?

BPH: That hasn't at any time really developed here.

BM: It hasn't materialized for anything you do here.

BPH: No, no. I mean, first and foremost, myself and the people that work here are research scientists. Spatial planning, again, is one of those management dictates that, you know, we don't do. The only way we feed into it again is how are fish doing, where are the fish and how do you describe that in a meaningful way?

BM: Vince was talking about the work for BOEM [Bureau of Ocean Management] and how you interface with it.

BPH: Now you were asking about funding before. Well, of course, we are always looking out there to see who's got funding, who has funding, how can we use that as a funding source and still be meaningful and relevant to the Northeast Fisheries Science Center.

BM: So have you been working at all through Ken Able or Paul Falkowski at Rutgers on ocean acidification stuff and fishes.

BPH: No. I talk to Ken. I've seen him at Mid Atlantic Fisheries Society meeting and he's aware of things that we are doing. I don't know Paul Falkowski at all, actually.

BM: I don't know that he's doing ocean acidification per se but he's written about it but I don't think he is doing research on it. I am just curious, I don't even know who is doing what on that at Rutgers. So here, you have been doing work with fishes and acidification with Chris Chambers?

BPH: Yes. That's correct.

BM: Is there anything else you do here? Labwork on ocean acidification?

BPH: Chris Chambers works within my branch so as far as ocean acidification research project, he is the primary researcher in charge of those projects. We did a small, side project, Dan Wieczorek and I on the effects of ocean acidification on American lobster that were cultured from an aquaculture facility in Connecticut. He's done some student projects with the Marine Academy of Science and Technology seniors that are interested in biology and, do senior research projects like one he did with one of the seniors from that school on clearing rates in oysters.

BM: Oh, interesting.

BPH: And our chemist Matt Poach, who is also in my branch, he's been working with Daphne Munroe who is at the Rutgers Aquaculture Innovation Center and he's been collecting samples. He is basically demonstrating that New Jersey also has upwelling, as does the West Coast and no, we don't have coastal aquaculture facilities as they do in the West but we do have within Delaware Bay we do have a number of aquaculture interests.

BM: So we should be concerned about it?

BPH: Right, so he was demonstrating that upwelling does exist on this coast often for very lengthy periods of time and it could have a potential effect. So today he is not here actually because he is actually down there talking to a shell fisherman about crabs and other shellfish.

BM: I've worked with Daphne, she is great So does anybody do any work with sea clams like surf clams and ocean quahogs?

BPH: Surf clams, this goes to the Milford Laboratory. The researcher, Lisa Milke, has been doing surf clam research with Woods Hole Oceanographic Institute. Anne Cohen and Dan McCorkle from WHOI.

BM: Oh, ok.

BPH: They haven't been able to demonstrate a major effect of oceanacidification on surf clams. And they were looking to see if their status of being fed or unfed might have an effect as well but they haven't seen much yet in the research. I believe they did a demonstration, last year they wanted to move onto sea scallops. Obviously the interest and the funding might be more robust for that species.

BM: Sea scallops don't live as long so it might be easier to do[laughing]

BPH: True.

BM: Yeah, interesting.

BPH: But this geographic facility here, we had the early life history of fish as our area of expertise so that was the focus here. Milford was shellfish and phytoplankton because they have Gary Wikfors staff at Milford.

BM: So in your own work running this project, you are dealing with people in all of these different centers, getting people to work together. Do you have workshops frequently?

BPH: Initially we had meetings, physical on-site meetings. Now we do conference calling but as I said we are also part of this National oceanacidification group and they have meetings that

bring together not only those of us in the Northeast but also these people from Alaska and from the Northwest, all different line offices. Pacific Marine Environmental Laboratory. Jon Hare is in charge of the ship monitoring, the water quality monitoring up and down the coast and he is affiliated with the scientists in Florida at the AOML which is the Atlantic Oceanographic and Meteorological Laboratory and they launch cruises that also collect data from the South up to the North. So he is trying to link the two ends of the monitoring spectrum along this coast to see if we have conditions that exist here as well. So the national OA office has the bigger meetings and then they bring in a lot of academics as well from Maryland and Maine and all over the place. New Hampshire.

BM: So if you were asked by say a master's student who was thinking of going on to do a Ph.D. and who wanted to be on something of the cutting edge, make sure that whatever she did that she was going to be doing something that was important and she would be able to get a job doing, what would you recommend? Let's say she comes out of a background similar to yours.

BPH: Well, that's different [laughing].

BM: I means in terms of, basically she's well trained in biology, ok let's start with that.

BPH: Well, one of the things that I always tell the students is modeling is going to be very big. My background in math is such that I find modeling intimidating but I've heard some amazing things coming out of being able to do modeling and being able to mine data sets that already exist because everything was on paper and now it's hidden away in computer files someplace and we need modeling.

The other thing, of course, is technology. Technology in terms of the kinds of things that can remotely collect information and data from all over. That is another hot area that I advise people to ~~persue~~pursue. It depends on where their abilities and talents are. I mean, some people can take on the math necessary to conduct modeling easily and other people are more mechanically inclined and hands on and all that kind of thing.

The other thing is I often tell the young people is you really should get out on a ship even if you intend to never stay out on a ship even if you never intend to stay out on a ship as long as you live because if you don't see it up close and personal, you won't be able to gain a perspective of what it's like for a commercial fishery to exist and if a commercial fishery is ever going to exist or an aquaculture industry is ever going to exist, you won't understand it unless you get yourself out there and do it.

BM: Right, right. Which is what you also hear all the time from the people in the fisheries saying, you know, if these blankety-blank scientists ever came out in a boat.

BPH: That's right and the ones that get the most respect are those that do.

BM: Your exactly right and you don't even have to be there very much but the fact that you are

willing to go out and experience the rigors of life at sea means a lot.

BPH: Yeah, and they can tell, they can tell if you've ever been out there. [laughing]

BM: Yeah I've heard stories on that too. Yeah so modeling and technology those are really big parts of what's going on now, isn't it?

BPH: Yes.

BM: Certainly in population assessments, stock assessment but everything else too. Ecosystem analysis is all like that.

BPH: Absolutely, a lot of what we do here, of course, is we have our seawater labs and in order to do research on fish, you have to know where to catch them, you have to know where to find them, how to keep them alive and well and healthy. There's all kinds of...you have to be a fisherman, you have to be an aquaculturist. You have to know husbandry of animals like my biological tech John Rosendale, all of that before you ever even think about running an experiment.

BM: Right, right. But in other places where you don't have the labs and you are just doing the modeling.

BPH: But even then it's important to understand your target animals, whatever they are.

BM: Do you dive?

BPH: I did get certified recreationally years and years ago but that was never a major component of what I did.

BM: It wasn't. You've done collections?

BPH: Oh I've been out on the boats and yeah but diving wasn't necessary to do that. People often ask me if I go fishing and I say "no, I go catching, I go on a boat and we catch fish", we don't fish for them [laughing]

BM: Years ago, we did a study of fishery scientists and job satisfaction but anyway one of the top questions was what experience you've ever had fishing and there was quite a huge range and a surprisingly large number of people had never gone fishing and it just wasn't the reason that they were fisheries scientists. It had nothing to do with it.

BPH: If you were a fisherman, it didn't mean you knew how to swim either.

BM: It's true, it's true. [laughing] Yeah, yeah. So, I want to go back and look at a question about...we talked about trends in science and in what ways has the data changed that you have used over time? I don't know how you would address that.

BPH: In what ways the data has changed?

BM: Yeah in what was has the data changed that you have used over time?

BPH: Well, if you are talking about the part of my research that involves working in the seawater laboratory and designing running those kinds of experiments, that hasn't changed a lot.

BM: Yeah, yeah.Right.

BPH:What has changed in terms of data is the sheer volume of it. Electronically you could collect so much data so quickly that the storage of it, the managing of it, has become a job in itself. You know, when you had paper you would literally sit down in a room like you and I are and you would pass it back and forth and check over the pages to see if it all makes sense and then the next phase was Excel files you would put the things into Excel files and you would see if there were any outliers and you would fix them up accordingly. Nowadays there's hundreds of pieces of data that can come in and software that checks it and looks at it. Again, we used to have computer specialists who basically entered the data and proofed the data. Now you need computer data management specialists that can investigate those kinds of things.

BM: Do you have people like that?

BPH: No, no.

BM: This is a really big issue.

BPH: I do have one technician, Jeff Pessutti called a physical science technician. He's the person I would send out on the ships to put instruments over the side and make sure they were working and collect them and download information and that kind of thing. Jeff has tremendous capabilities in data management and computers and teaching himself things related to programming and websites and all that kind of stuff. . He works for Vince too ugh. It's like everybody needs him. [laughs]

BM: So that's another general area of where things could go in the future. That certainly is a big one, isn't it?

BPH: Yes, it is.

BM: I mean for NSF [National Science Foundation] grants you have to show that you have a plan for data management. There are different aspects of it, some has to do with the access to it but more generally they want to know whether you understand this.

BPH: And I don't think that's a bad thing because you've probably seen this as well as I do. People will die and/or retire and, you know, they've got all this sitting on the shelf and nobody can understand or interpret it except them.

BM: Exactly!

BPH: Being responsible not just in terms of being a good investigator but also being a good documenter of your output is a really good idea.

BM: I recall when Dr. Haskin died. Everything was just...paper all over the place. I don't know what ever happened to that.

BPH: That used to be one of Ken Able's favorite things – he would look for people's archives of data that nobody had done anything with and he would send a graduate student in there to dive in, and pick it all up and take it away. Garages all throughout New Jersey were Ken Able's favorite thing.

But the whole oceanacidification program already has gotten into this data management thing. Everybody had to sign something stating their data would make it into this particular place. That's easier for oceanographic data because it tends to follow a more prescribed format. Experimental data tends not to, as a rule, follow that neatly prescribed output. It can be somewhat inventive in how it works especially if you are getting into the behavior. Nowadays there's all these cameras you can put out in the field that can collect video imagery over time and that's another huge, huge data file whenever you bring video in and interpreting it is somewhat of an art, to say the least. So then it creating a data set based on a non-prescribed results.

BM: It's going to call for more systemization.

BPH: Exactly. It is very difficult to do that.

BM: And it doesn't work in favor of experimentation and creative thinking.

BPH: And it has a lot of holes in it to make it even more difficult to manage.

BM: Yeah, yeah. That's interesting. Either my brain is fried or we have...

BPH: I was going to say your third interview of the day. I was figuring you were going to be pretty tired.

BM: [laughing] It's been fun, I've really enjoyed it. And we covered these topics but there must be more that you would like to, that you think is sort of the value of the work that you are doing to yourself personally. Or the network of people that you work with, it sounds like it's very national or even international.

BPH: In some ways, it's broadened. When I first started working here with Anne Studholme there were like 4 of us in that group and at the time, we were our own little island and we did our thing and that was it. But just as it's very difficult to publish something as a sole individual in this field now, it's not possible to be relevant and not get out and talk to other people. You know, we often have this conversation that as much work as it is to prepare for and present data and information at any conference you go to, you always come back feeling as if your energy

level is better, higher because you can read and read and read and read but until you get up and close and personal with someone, you don't find out all the little difficulties and trials and tribulations that went into that perfect graph that they are presenting at a meeting.

And the other thing is when I started here, I was just a junior researcher working with a relatively small group. At this point in my career, I am supposed to be if not directly involved in the research itself, now I am supposed to be aware of coordinating a whole group of researchers and ~~it's~~ the difference between telling someone to do something versus listening to how they propose to do something and being a sounding board. Trying to learn from talking to people and reading about it and all of that to present an intelligent opinion to them. You know, that's kind of where I am now in my career at this point. When you tell somebody you work in marine science, their image of what you do on a day to day basis runs the gamut from Jacques Cousteau to National Geographic. I keep telling them, it can be wonderful but back when I was doing field work, I told people it can be wonderful on May 20th but it's not so much fun on January 20th! [laughing]

BM: Exactly.

BPH: And now I tell them, it can be really great when I'm doing something that I really feel I've got a handle on and that I'm really good at and really awful when your struggling to stay awake in a 3 hour meeting and you are wondering why you are there [laughing].

BM: Which we've all spent too much time in.

BPH: There's lots of meetings but it's really the only way you can keep an eye on what the spread of ideas and thoughts are.

BM: And share your ideas. Well, this has been really nice and I'm glad we had a chance to do this.

BPH: It's been nice meeting you. For years, I've seen your name.

BM: Do you have a copy of your CV or resume?

BPH: I can email one.

BM: And I want to take a picture.

BPH: Uh oh I was out walking and I don't know what I look like.

BM: You look great. I forgot to take one of Clyde but I have one of him recently anyways.

BPH: Do you want to go in my office or outside? What do you think? Yeah, that's fine but I think the background is a little messy. Well, we could do it outside, let's go outside.

