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Description: **3996 Joseph Kelley,** interviewed by Adam Lee Cilli, September 18, 2013, in his office in Bryand Hall at the University of Maine, Orono. Kelley talks about his graduate research on salt marshes; his later work with the Maine Geological Survey; his beginnings at the Climate Change Institute; his interdisciplinary research with Harold Borns and others on the sea-level rise in coastal Maine; the CCI's 2000 name change; the reality of anthropogenic climate change; and the history of the CCI.

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Related Collections & Accessions

Restrictions

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Notes

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Narrator: Joseph Kelley

Interviewer: Adam Lee Cilli

Transcriber: Adam Lee Cilli

Date of interview: September 18, 2013

ABSTRACT: This interview took place in Joseph Kelley's office in Bryand Hall at the University of Maine in Orono. In the first half of the interview, Kelley discussed his graduate work studying salt marshes and spoke at length about his later experiences working of the Maine Geological Survey. Later, he reflected on his involvement with the Institute and the interdisciplinary research he undertook with Harold Borns and others on sea-level rise in coastal Maine. He also spoke at length about the discussions that took place surrounding the Institute's name-change in 2000. Towards the end of the interview, he shared his views on the so-called climate change debate as well as the history of the Institute.

Note: This is the transcriber's best effort to convert audio to text, the audio is the primary material.

Cilli: Today is September 18, and I am here in Joe Kelley's office to talk to him about his experiences with the Climate Change Institute. Just to start us off, I'm wondering if you can tell me a little bit about how you got interested in marine geology.

Kelley: I went to graduate school in the 1970s at Lehigh University in Pennsylvania, and I was given a fellowship, which I didn't know when I accepted, but it said that I would work in a salt marsh in New Jersey. I didn't go there for that reason; I went there for the money in the fellowship, but it was a great fellowship and I ended up never looking back. I just liked marine geology. I've been other places, but I always worked for the most part in marine environments.

Cilli: So can you tell me a little bit more about your educational background.
Kelley: Yeah, sure. I went to Lehigh University to graduate school. I had a bachelor's degree from Boston University in geology, but it was in mostly rocks. I intended to continue that when I went to Lehigh University and it was a fellowship to study salt marshes, so I did and I got interested in it. It was a whole new world, and I loved it. And I finished my master's. Just as I was finishing I was looking at other graduate schools to continue on a similar line, when my wife came in to graduate school, so I stayed for a PhD at Lehigh while she got her master's. We went to New Orleans after that; I taught at the University of New Orleans from 1979 to 1982. She worked for an oil company, and it was great except that we didn't really like the political climate and the climate climate. But I did like the coast, and I wrote a book on it. It was one of the last things I did there. And I've remained ever since then, on National Academy panels and other things, dealing with the loss of land there. But a position opened up in the early 80s here at Maine, two of them. One in the department and one with the Maine Geological Survey, and I took the latter. I'd be tired of just teaching a lot and so I worked for 17 years as the state's marine geologist, but I was based here—primarily to get grants, work with students, [and] I taught a little but that wasn't a requirement. Then in the 90s I got put out by the state and I decided I wanted to have a full-time academic position and got some offers from other places,

and when that happens suddenly you appear golden and they want you to stay. And they wanted me to stay. And since then I've been the head of the department here for five years, but I've been involved in the Institute since the day I arrived, really.

Cilli: Tell me how you got involved in the Quaternary Institute. Did someone like Hal Borns contact you?

Kelley: Absolutely. Hal Borns was one of the people who wrote a research proposal that funded the other position here at the University of Maine, in geology. So it was natural that we worked near one another. Our first project, I was given this project (worth millions of dollars), to decide whether or not Maine was tectonically active, whether there was earthquake potential. And the reason was that the Nuclear Regulatory Commission was considering putting a high-level radioactive dump site in some state. So we were interested in looking at all manner of coastal things. There were rumors that the Down East area of Maine was sinking rapidly, so understanding sea level became an important thing to do here. I came here with my colleague, Dan Belnap. We began a series of investigations into changes in the relative level of the ocean all along the Maine coast. Of course, now, in sort of real time and going back thousands of years, as far back as the Ice Age. I'd never done that kind of work before, but it was really interesting and I could see how important it was. That's how I came to know Hal Borns more, and he became interested in having me lead field trips for their group. I wasn't actually a member, formally, but I went on their field trips and was involved in a research proposal that Hal developed. It just happened over time that I was officially a member. There was never a ceremony or anything. It's much more formal today. But then it was not; you just got invited to come on trips, to meet with people, they'd have speakers (well, that was open to anybody). So I just went into it naturally, working on a project originally and just continuing to work on projects with people and being associated with them.

Cilli: Other than Dan Belnap, where there any other faculty members in the Institute with whom you've done research.

Kelley: Absolutely. Certainly Hal Borns, on things related to sea level. George Jacobson got a research proposal a number of years ago to work on salt marshes. And we'd begun that a little earlier, but we continued to work on salt marshes. I provided research grants to David Smith, a historian, for his work on salt marshes. And we collaborated to the degree that I edited his manuscripts. He wrote some rough first drafts, but that worked out. But mostly people who do work, not exclusively, but in a coastal area. Now Brian Olsen happens to study salt marshes and birds. I've worked with him lately. Now, I'm going to the Falkland Islands soon with Brenda Hall and Jacquelyn Gill, and we're about to begin some research projects there. So a lot of people. Not all by any means, and often not regularly. It was one project, we got together, we had a common interest, we worked on it, and we published it.

Cilli: I'm wondering if we can hone in on one of those instances of cooperation with members of the Institute. Could you go into a little more detail about your collaboration with Hal?

Kelley: Hal was one of the initiators of what was called an EPSCoR; it was a National Science Foundation effort to create a more competitive University of Maine on a national level. As an author of that he had an interest in geologists they hired succeeding, and by association, me too. We worked on a project on salt marshes and we were interested how fast sea level growing

adjacent to them. Because that drives salt marshes. They're always graded to meet high water. Hal didn't really have any background in this; and I was able to provide him with some. He knew the geography of the coast well: places to go, things to do, and that part worked out particularly well. He was fun to work with in the field; never complained about anything. He went off from that, into areas I didn't think were quite valid. The thought that Down East Maine was sinking radically really posed a question to us. Was it really doing that? And there were a variety of pieces of evidence that suggested it, but most tellingly was a survey done by a survey engineer here who I assume was sort of a member of the Quaternary Institute, Dave Tyler. And this was a highly precise survey, and he looked at older versions of the survey and it showed that the elevations had changed over time. And when he looked at them state-wide, Eastport Maine was a bullseye of sinking—up to a meter a year. There were other things that seemed to lend credence to that, and I actually wrote a paper for the group for the biggest journal in all the geosciences, call Geology, in which we describe coastal warping in the coast of Maine. And it was great. It was a prominent journal; I was happy that they made me a co-author. Though I actually contributed nothing other than I went home one week and wrote the paper. And it turned out it was wrong. And we got a call from MIT, from a man named Navi Taksas, who was a brilliant MIT seismologist. He said, "this is incredible. If that area is sinking I've got to know more about this." We weren't able to reach any kind of deal with Navi to work with him on this, because the overhead at MIT was 120 percent. And Maine wouldn't pay someone that much money just for the privilege of working, but we provided him with all this information. And sometime later we got a call from one of his postdoctoral students, saying "boy, he looked at these surveys and they were systematically in error." And he came to us and visited and I listened, and they were. If you begin a survey at one elevation and everything is relative to your starting point, you could propagate errors. And an error was propagated. And other surveys didn't show this sinking. So there was one error that was by chance used that was in error. And so he wanted to do something about it. Others did not. Hal particularly didn't agree with him. But I didn't have any argument. In fact, Dave Tyler, who did this, said "absolutely, I was wrong, and this fellow was right." He should write a comment. And so he wrote a comment to the journal. And Hal wanted me to write a reply, but I couldn't, because I couldn't comment on it. It looked right to me. Science ends up right in the end. We disagree, but then we find in the end that there is no sinking in Down East Maine. And the more we've looked at it, two PhD thesis, *two* PhD theses, looking at sea level change in coastal Maine, from Eastport to Kittery practically, over the past 5,000 years, showed absolutely no difference at all. This was really conclusive. And each of these PhD students went on to great careers. I'm convinced that survey was in error. But it took a period of five years to get through working on things, seeing things published. Some of the maps you see in my office here, all came from that project. It was ultimately funded by the Nuclear Regulatory Commission. They were looking to put nuclear waste, or not, but they wanted to know if this was a suitable location for it.

Cilli: And this map I presume is accurate.

Kelley: It is. In fact it's quite accurate. And that work spawned more work. On this map is a glacial surficial geologic map, there's a dark blue line that maps that inland limit that the ocean went at the end of the ice age.

Cilli: Oh, that's as far as the ocean reached?

Kelley: Yeah. Almost as far as Millinocket in this valley. [points to map] But they also are at a common elevation, suggesting there's been no rapid sinking or uplift or any change in the land. So, it's Quaternary science, it's not climate science. We were looking at sea-level change, well that's climate-driven, but this was driven by a need to know whether this was a tectonically stable area, a need to understand to understand sea-level change, and that's for the most part a climate-driven process. So that got me involved pretty heavily with Hal. There was a book that I edited that the group put out. So, we worked together as a team for quite some time. And that's how I met many of the other people in the Quaternary Institute. There weren't that many then. There were seven or eight at the most. George Jacobson was one. And it was through talking with him on that project that we got other projects together. So it's been a good association, but not forced. I don't feel like I have to go out there and find someone to work with there tomorrow. I still continue to work with Dan Belnap, my colleague from the early 80s, who's also a member of the Institute. And other things as they come up. If I have an idea that makes sense, I'll find someone who can work with me on something or other.

Cilli: It sounds like you've worked with some geologists. Have you worked with many scientists outside the realm of geology?

Kelley: Yeah, well Dave Smith was a historian. Dave passed away. Dave Sanger is retired. Dave is an archeologist. We became interested in sea level change because it was eroding coastal middens, archeological deposits near the ocean. And he took a strong interest in sea level change. We were on students master's theses together. He and I never wrote a paper together, but my wife eventually ended up doing her PhD thesis with Dave. I've worked with Ron Davis, who's a botanist…. George Denton I never had occasion to work with; his work was always at the Antarctic at that time. That's about that.

Cilli: What were some of the day to day things you did when you worked for the Maine Geological Survey?

Kelley: Oh, I was given a state struck, a state credit card, and one day a week I was to drive to Augusta to attend a staff meeting and other business as it would come up. I reviewed every application to alter the coast. I wrote the rules that govern development on beaches and salt marshes and everything like that. And I would defend those rules; I had to go to public hearings, I had to hold them myself. Being from the university and the Climate Change Institute, was a real advantage. I had hard new information on sea level change in the area, and I could talk seriously about what risk that would pose to the state. So one day a week I was involved in purely state activities. But often they'd play back. There was money available to state agencies not available to universities and I would get a grant and bring it back here. And work with someone or other on projects. But mostly I would come back here and do what I'm doing now; write papers; working with data that's collected. As my children, I was away five out of every seven days in the summer, most of their early lives, because we had to work summers on boats, because [of] the weather and we had a lot of projects. So I was offshore all the time. So a lot of it I wasn't here; I was working in boats. Not all the coastal work you do is land. I'd three quarters of it is out in the ocean.

Cilli: Okay, so working on boats on something geologically-related.

Kelley: Yeah, for the most part. Sometimes marine science. Sometimes habitats on the bottom. Nobody in Climate Change was in that then. But it didn't matter to me. I was interested in that. The sea level change was my strongest connection to the Institute, and the response of inhabitants on the shoreline, people for the most part but also plant communities and some animals, to changes in sea level. How does a sand beach respond to rising sea level as opposed to a salt marsh?

Cilli: You mentioned that much of your work didn't necessarily have to do directly with climate change. What did you think when the name was changed from the Quaternary Institute to the Climate Change Institute?

Kelley: I was in the room when we made the agreement. It was fairly recently. Paul Mayewski was the new director, and he proposed a Climate Change Institute for his own group that he brought here. He wasn't at the meeting, though. We were talking about that name, Quaternary…. But it was Dan Sandweiss who said it most persuasively. He's an anthropologist, and there's a lot of importance that's attached to names. He said that, "Climate Change Institute, everybody knows what that is." And at that time people were becoming interested in climate change more and more. He said, "maybe we don't want that to be a little institute that's attached to our bigger Institute, we should just drop the whole argument that we had over decades over the name Quaternary, change it to the Climate Change Institute, and make Paul the director." It first didn't make sense but then it really did make sense. As it was, Paul was working on the Greenland ice core and was doing phenomenal research, had lots of people (postdocs and grad students). It was almost the tail wagging the dog, since he was a good part of the total number of projects and people in the group at the time. So he was approached and accepted that responsibility, and we changed the name then to the Climate Change Institute…. In retrospect I still think it was probably a good idea.

Cilli: What do you think has been the Institute's most important contribution to our understanding of climate?

Kelley: That's a hard question. There's so many people. I mean I wrote Maine sand dune laws and all that. George Denton discovered in part how ice ages end and has made tremendous inroads into understanding why climate has changed, so everybody's work is, in their niche… Overall one of the greatest contributions we've probably made is to produce a lot of students who have left here (we didn't have a PhD program then) but a lot of students have come through here. And many of them have gone on to outstanding careers. And that is the most general and specifically concrete thing we've done. Details, resolving this technical problem, posing certain problems, all of that has occurred, but it's hard for me to weight that. I know my field, but I don't know some of the other fields very well….. Maybe it was just having the whole idea of having a Climate Change Institute that we would focus on climate change and what results from that, might have been an important contribution in itself.

Cilli: Moving from the Institute's contributions, what is the contribution you've made that you would say you're most proud of?

Kelley: Probably it was the developing of the rules, now it's a law, that governs the response of the citizens of this state to one aspect of this change, and that's rising sea level. It doesn't say that exactly in the rules and certainly not in the law, but it was clear to me that sea level and

coastlines were antagonistic with one another, and that the best response I could come up with people was basically to move back and get out of the way, rather than armor the coastline and turn them to a rocky coast, of which we had many. and so I promoted that in rules that we, and again it was based on data from various projects, that sea level was rising faster than ever. And so we wrote rules that said basically you can't build sea walls. That was the first time in the world that any entity said you couldn't build sea walls. That if your wall or house behind it was destroyed by a storm you had to take it down, and you had to do it at your expense. And you couldn't rebuild and your land was now gone. That you couldn't build buildings that were unmovable, like a high-rise building…. The rules have evolved a little bit over time. You're allowed to rebuild once today. Understanding of sea level change has been big, and we probably have the best understanding of sea level change here than really anywhere in the world, because we've gone offshore and followed it and, where we're working now, Dan Belnap and I are working in Ireland looking to see whether England and Ireland were ever connected by land or whether it was always ocean. It was always ocean. But that's not what archeologists thought there were land bridges and people walked across. That's not true; it didn't happen like that at all. So that whole project, it was a million pound research project, came from our work. So things lead from one thing to the next, and I'd like to think that the beach law is done; it's gonna stay in. Seven of the states copied it shortly thereafter, which was nice. The sea level work is probably going to be ongoing.

Cilli: How do you think the Institute has changed since you first got involved in it?

Kelley: In a single word. It's grown immensely. And it's grown from an entity that was probably not recognized by many people as being on the cutting-edge, although it was from the beginning. As climate has become known, the fact that we have this institute here has become known. It's grown tremendously in numbers of people, and that's changed the overall character of the group. It's hard to have a meeting with one group. Very few people sit at the table now, cause you can't see them. I don't even know some of the people. I don't even know how people became members originally. Maybe it was by Hal Borns coming up to you and saying "why don't you come to this field trip with us." Now, if you want to become a member you give a talk, you request to become a member. This year I'm on the review committee. I don't think anyone's ever been turned down. So it's grown in a way that isn't an intimate group of friends anymore, although we do make efforts to stay together. We're going out to a formal restaurant and a formal dinner tomorrow night. We'll have a field trip in a couple of weeks, to a coastal place in Maine, and everybody's invited, but not everyone can go. And everybody contributes to those; everybody talks. So there have been changes, mostly in the size and breadth…. So, we've become a bit more distant. That doesn't mean that we don't still do work. And it's nice to meet these other people. I've particularly enjoyed meeting Brian Olsen, who's in the School of Biology and Ecology. He studies salt marshes, but he studies birds in salt marshes. And that's really interesting. It gives me a whole other dimension in something I thought I knew a great deal about. So we've changed in size and intimacy but not in overall intent. I think people still collaborate with each other. We all have the Borns Symposium, [where] we get a chance to get together every year. At the gala we're having tomorrow evening, everybody will give a 90 second presentation to describe what they're doing. It's for the new students to hear what other faculty members work on. And we have projects, I mean IGERT, the big integrative graduate student research training fellowships: I was involved in that. That was a climate change submission. Jasmine Saros headed it up, and I also had a student in it.

Cilli: So what sorts of things will you do at your annual field trip?

Kelley: We're going to be going Down East to Pitiminea Island or Great Was Island, something in the Down East part of the coast. It's fairly remote; there's a federal wildlife refuge there, and somebody will have initiated this. I think it was George Jacobson. There are a lot of freshwater wetlands there. Well, my interest in freshwater wetlands, I just finished a grant studying what happens when the ocean encounters a freshwater wetland; erosion happens and the wetland changes. I suspect I will have an opportunity to expound on that when we stand near such an environment there. But George will talk about the plants. Somebody will talk about what the rocks are made of there. Biology people will talk about things I can't even guess. But there's always regular contributions from people. There will probably be several stops; we'll look at one thing primarily, several others will give talks. But a large part of the trip though are having private conversations with someone while you're walking, or having dinner, or being closer to them. The university precludes us from having families come anymore. It used to be everybody's family came, so you could know someone: their wife, their children. But they don't allow us to do that anymore, which is unfortunate. So if they come they'll come in separate cars, which is contrary to our views as climate scientists. But the last few years we've been compelled to do something a bit different.

Cilli: So you go in university vehicles and your families drive separately?

Kelley: Well, my wife is… my children are all grown up. One is a climate change PhD student at University of Buffalo. My wife is also a member, so we'll ride in the bus. We used to ride on school buses, with no restrooms. Now, I think they're going to have a regular, nice tourist bus.

Cilli: How supportive has been the University of Maine of the Institute over the years.

Kelley: Broadly supportive, I'd say. I mean, grants come in, and they get the indirect costs. They've been supportive, probably most importantly, in hiring people, new positions. Hal's idea of jointly hiring, hiring somebody with money from the Institute and then money that comes from a department, to get George Jacobson's replacement position. Jacquelyn Gill got the position, and half her salary is from the Climate Change Institute. So when she goes up for tenure, her committee will include people from her department as well as people from the Climate Change Institute. In doing that, in being able to work with the university, both the departments and the Institute have benefitted tremendously. So to that the Institute is tremendously indebted to the university for… not the university in a monolithic sense, but to individuals…. It's been a relatively easy argument to make, and it's been a successful one. When I was chair of the department, at a time when there was nobody being hire, we hired a completely new person. So I would say the university's always been pretty good to us. Except for not letting our families come on the bus trip. Sore point. Because money we use to travel is not university money; it's an endowment gift, and it's specifically for things like that. But for whatever reason the university has not allowed that.

Cilli: Interesting. So, it seems to me that within the scientific community there's no debate about the human role in climate change. But outside the scientific community it's an issue up for debate. Do you have any guesses as to why that might be the case.

Kelley: Well, it's the case in the United States. It's not the case in Europe. Europeans are quite accepting of the fact that climate is changing. Maybe they've got a longer historical record. They could see that there used to be a town here and now it's underwater. I don't mean scientists, but I mean people are familiar with that as populations. But in the United States that's not the case and so, what's up here. I think in part it's ignorance. There are people who just don't know certain things. And there are some people who don't like the penalty of climate change. If I know that there's climate change and that I'm causing, I maybe have to do something about it. Oil companies, huge corporations, for example, don't want to be target like the tobacco companies were, and be told "you owe us billions for the damage you caused." So they've been deniers. So, between major companies, coal, that benefit from things that change to climate, people who are generally ignorant. And unfortunately the issue became something of a Democratic and Republican divide. That's been the biggest problem. I mean, there are Republicans who understand that climate is changing, and members of the Institute for that matter, but if you look as a group most of the people who don't accept climate change are probably conservative Republicans, who don't really know why. But they've heard this, from wherever they get their information, from various media outlets, and their own friends, so a hard body of people have come into existence who don't accept it…. They'll turn around and blame it on a Democratic politician, "oh, Barack Obama is just saying that." He didn't have anything do to with that. The Institute existed long before there were those kinds of political dimensions. And we're honest people. A lot of us thought we were going to get another ice age before we'd see any warming, 'cause we're in a time when one should be on our doorstep. But it's not. So it's become political, and that's why it's really as strong a movement as it is. Europeans are no smarter than we are, but it's more of a popular culture of understanding that climate has changed. They went through the "little ice age," the medieval warming period. It's part of their culture; kids learn this in school. The canals used to freeze and now they don't. They can now grow grapes in Britain, but for a time there they could not. So they're much more familiar with that. And most parts of the world, if scientists say it in China or other parts of the world, they have no reason to doubt it. They have no knowledge. It's here where facts themselves are challenged but not on the basis of superior facts…. It is odd, though. And I don't have the last word on why this country is different. And if you look at it regionally, people in the northeast are much more likely to accept climate change than people in the South.

Cilli: Well, that's about all the questions I had, but before concluding the interview I wanted to give you a chance to add anything that I didn't ask you about.

Kelley: When you look back at the Institute, I've hear Hal Borns asked many times, how did he come up with it, and he'll explain it. But I don't think it happened that way. I think it's an easy way to explain it, there are these the series of events that happened historically. But I don't think from the get go Hal Borns ever had in mind this Institute we have today would ever be like it is. It's been one very small step at a time, that many have tried to generalize and say, "well, Hal had this stroke of genius to create this Institute." It was a stroke of genius, but I don't think Hal could have foreseen where we went. And every step, bringing in Paul and changing to the Climate Change Institute, I think we're still finding out what the impact of that is. What's it going to mean. I don't think it's played out yet. It's going to continue to change. So the history of the Institute is not out of one major incident; it's just a continuously evolving set of interpersonal relationships between people and nature. And it's been a great mechanism for us to collaborate together. I wouldn't know anything about plants, really, without George Jacobson

taking me out and explaining all of that to me. And other people might say the same about what I've told them about things. So it's been a special relationship, and one that's continuing.

Cilli: Alright, thank you.