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Oral History Program
Audubon
University of South Florida, Tampa Library

Digital Object Identifier: A68-00006
Interviewee: Joan Browder (JB)
Interview by: Ann Hodgson (AH)
Interview date: February 4, 2022
Interview location: Corkscrew Sanctuary
Transcribed by: Dahlia Thomas
Transcription date: March 29, 2022
Audit Edit by: Richard Schmidt
Audit Edit date: May 24, 2022
Final Edit by: Dahlia Thomas
Final Edit date: May 24, 2022

Ann Hodgson (AH): This is Dr. Ann Hodgson with the University of South Florida Library, the Special Collections, and I'm here today with Dr. Joan Browder. Joan, welcome very much to the Florida Environmental and Natural History program.

Dr. Joan Browder (JB): Well, thank you for bringing me into it.

AH: You're very welcome. I'd like to start our conversation today by just asking you where did you grow up? And then we'll talk about how you got interested in science and what your career path has been.

JB: Well, I grew up in Amarillo, Texas, as far from water as you can imagine. And I came to Miami with my previous husband to visit his father, and we liked it so much we decided to stay here. He got me in to watching birds, appreciating nature, and having some sort of a structured life of appreciating it and working with other people. But I've always loved the natural world and I love to go walking many miles from my home around Amarillo just to appreciate wild country.

AH: Now your parents were there in Amarillo, right?

JB: Right.

AH: And you went to elementary and high school in Amarillo?

JB: Late elementary and high school. Before I was in Oklahoma and I was also in Arkansas, also in Kansas. But I was in schools beginning in Arkansas, then Oklahoma City, and then Amarillo.

AH: And were your parents interested in nature as well or?

JB: Not really but my mother loved to be in the yard. She loved to mow the grass and she wanted it all nice and neat and I'm just the opposite.

AH: I notice you have a fantastic natural native plant garden outside.

JB: Yes, we're very fortunate.

AH: So, where did you go to college?

JB: Well, I started at— a combination, I think, of West Texas State College and Amarillo College, and got a couple of years of school there. And then when I came to Miami, after several years, I had very young children at that time. After that, when they got older, I went back to school and by then I'd already been indoctrinated in nature in a more formal sense. I'd been writing articles for nature magazines and the newsletter for a while for the Tropical Audubon Society. So, I wanted to know more about it. More about the things I was interested in like the Sargasso Sea, periphyton in the Everglades. So, when I went back to school, it was to get up all the biology courses that I needed to get a Bachelor of Science degree.

AH: Okay. So, where did you go to school then? Where did you matriculate?

JB: University of Miami is where I got my bachelor's and then I went on and got my master's also in biology. And then I went to the University of Florida and got my PhD. And it was while I was at the University of Florida that I did my work at Corkscrew [Swamp Sanctuary].

AH: What was your master's program in?

JB: Cattle egrets.

AH: Okay.

JB: My major professor was an ornithologist. Dr. Oscar T. Owre.

AH: Dr. Oscar who?

JB: Owre.

AH: Owre. Well, cattle egrets became a really interesting bird in Florida at the time, didn't they?

JB: They were. Right. And there was already a collection of them that he had. Skins and stomach contents. And I got to work with both of those for my master's thesis. We we're emphasizing the stomach contents.

AH: and then in your PhD program, tell us about that.

JB: Well, the title of my dissertation is Water Wetlands and Wood Storks. And a place to go for wood storks, of course, was Corkscrew. And there was a whole history and natural history about woods storks in South Florida. They had been very prominent, fairly abundant, and then gradually declined. I guess they were in the thousands, then in the hundreds, and then in the almost in the tens or so. I can't remember the exact figures, but anyway I was lucky enough to catch them in 1973 when there were more in the hundreds— Well actually, low thousands, I guess. Not when they were further declined. So, I had enough to work with. And my work had two paths. I was looking at their feeding and the conditions that facilitated their feeding, the expansion and contractions of wetlands. And I was looking at where they fed and how they founded. And we followed them in a plane. My history at Corkscrew — let me give you a little background on that. There was no place really at Corkscrew for me to stay when I came down to

South Florida. So, I bought a trailer in Gainesville and hauled it down to a gas station outside of Corkscrew.

AH: We'll take a little break and be right back.

Pause in recording

AH: Okay, so tell us. You got the trailer.

JB: Yes, and I hauled it down to Immokalee, nearby Corkscrew. And that's where I was stationed when I was down in South Florida. And I did all my processing of my fish and invertebrate samples in that little lab. The kitchen was my lab and that's where I slept as well. So, it was nice. Excuse me just a second, I'll show you. That some of the stuff of my lab and that's my present husband. And that's the little dog I had then named Chica.

AH: Alright. Well, that's fantastic. We'll make an effort to go ahead and scan this picture and include it with your interview.

JB: Yeah, I'd like that.

AH: Thank you for showing us that. Very nice. So, you were right in Immokalee?

JB: No, actually I was just outside of Corkscrew, but Corkscrew is very close to Immokalee. And it's just like a gas station at the side of the road, at the road where you turn in to going directly to Corkscrew.

AH: Okay, I think I know that corner.

JB: So, more history about that but let me tell you one more thing. The other part of my work was following the wood storks which we did in a small plane. So, I'll tell you about the two separately. For the fish and invertebrate work, I had a large throw trap. It was circular, it was called a Waggoner ring, but it was two meters for other people originally, but they made a one meter one for me. Even so, that was a lot for me to handle. So, Dr. [Howard T.] Odum got me an assistant, and his name was Ed Carlson.

AH: Oh.

JB: Is that a familiar name?

AH: It is, and in fact, we're going to be talking with Ed later this week.

JB: Fantastic. Please tell him hello for me.

AH: I will do that.

JB: So, I feel like I'm instrumental in his career.

AH: I feel like you were. Absolutely.

JB: So, he came there with me, and he was there ever since. So, I thought that was so neat and he was a great help. He was nice and tall. He was very, very helpful.

AH: So, lets drop back for a minute and your major professor was?

JB: Dr. Howard T. Odum, famous systems ecologist, and brother of Eugene Odum, who is also a famous ecologist.

AH: And how did you formulate your research project? How did you decide what you were going to study for your PhD?

JB: Well, we talked about doing nutrients, having the birds distribute the nutrients, gather the nutrients from all over the wetlands, and focusing in on tree islands and places where the birds roosted. So, we talked about that and that got us started about it. And then I just got more interested in the wood storks and the feeding regime, and the way the water expanded and contracted. And that's what really interested me. And the birds were living off of that. That was how they made their living. Keying in on that food supply that grew when the water was expanded and then concentrated in order for them to be able to feed on it efficiently in many places over the area.

AH: Now, Dr. Odum was your major professor.

JB: Yes.

AH: Were there others on you committee as well?

JB: Yes, Dr. Wayne Huber is a hydrologist. He was on my committee. I also had two others— And I'm sorry that I can't off hand remember their names, but I can look at my dissertation and give that information to you.

AH: Sure. Sure. And so, you sat down with your committee and kind of framed your study plan.

JB: Right. Uh-huh.

AH: Okay.

JB: And it just grew as sort of— maybe it probably expanded from what it was initially going to be because it was a focus on the wetlands. The flying and looking for the birds was maybe ancillary, but a very important part.

AH: So, what were the key questions that you wanted to answer when you were doing your research?

JB: Well, what happens when you disturb that? I actually ended up doing, I did a model. That's what Odum students did, they did computer models. And mine was a model of the wood stork population and how it changed from year to year depending on the water conditions. How much the water area expanded and how quickly, regularly it decreased concentrating the pray. And avoiding reversals was important too, because the birds could be all set feeding their young, everything going well, all of a sudden there's a reversal. All of a sudden all of the water floods out in front of the wetlands again, and the fish and invertebrates disperse, and they can't get

enough for their young. And so, they abandon their nests even though they had been successful initially.

AH: Some of the folks who will listen to the interview later may not be completely familiar with wood stork biology. Do you want to just talk through for a minute, kind of how they feed and how important water levels really are to them?

JB: Right. Well, first of all, they're a long-lived bird that doesn't breed until maybe it's about four or five years old. And so, they don't have to breed every year to have a successful population. And that's important because they're not going to have the conditions that allow them to breed every year successfully, and at maximum amount. But when things are going well, they'll have enough of them to keep the population strong. And when [Herbert W. Kale II] studied the birds initially, they were ten thousand breeding pairs or more. But when I was there, it was more like three thousand breeding pair. And like I say, it went lower than that after I left so, it was a good thing that I was there during the time I was.

AH: And you're talking about the breeding colony at Corkscrew Swamp Sanctuary?

JB: Specifically. And that colony played a tremendous role in the population. It was much more important then than it is now. Why? Because the importance of that colony and that location deteriorated as the land use all around there in southwest Florida changed. And they no longer had those good conditions.

AH: So, wood storks are primarily piscivorous birds, right?

JB: Yes.

AH: And they have a unique foraging strategy.

JB: Yes, they feel it and that's why they need to have it very concentrated. So, they can have it brush up against their beak when they're walking around or otherwise, they just keep wandering around and not happen into anything to eat. So, it's very important to— You'd think they'd eat fairly large fish too. They don't. Mainly the fish they eat are small. But I saw one eat a very large fish once at Corkscrew.

AH: Now, what years were you at Corkscrew?

JB: '73 to '76 was when I did my dissertation. So, in '73 and '74 I guess, were the strongest years. I want to remind you that those were the years of the gas crisis. The gas shortage where people had to stand in lines for long periods of time to get gas. To be able to move around. And I had to drive from Gainesville to Corkscrew. My husband actually put a Mercedes gas tank on top of my Volkswagen so that I could carry some more gas, my own gas. Maybe that wasn't a very safe thing to do but anyway it did work. So, I didn't have to spend all my time when I just came down for a few days, waiting in gas lines. And then also we were flying in a plane. When I started out the flying, I was renting a plane from Fort Myers Airport but my boyfriend, soon to be husband, was getting his PhD in Puerto Rico and somehow or other he could fly. He loved to fly. And he came across a plane that was for sale and he bought it. So, then he began to fly up to

Gainesville to see me. I guess mainly he kept it in Miami because he was at University of Miami student as well.

AH: Can you remind us of his name?

JB: Peter Schroeder.

AH: Okay. And what type of plane did he buy? Was that a Cessna 172 or?

JB: It was a Cessna. I think it was a 174. It had a little bit of difference from the 172. So, he started flying me. So, we'd have these adventures flying around Southwest Florida looking for wood storks, looking for concentrations below. And also, actually following them from the rookery. Not right behind them but keeping an eye on them.

AH: You were sort of circling over and watching to see which way they flew.

JB: Exactly and then we'd go off that way too. We followed one to Lake Okeechobee. You know they do feed at Lake Okeechobee, that Western area. So, I was pretty impressed with that.

AH: That's quite a distance.

JB: Yes. Yes, it is. And I think they also got down into the coastal wetlands around southwest Florida, but it was mainly in these pockets of water in the sloughs and ponds.

AH: Was your following flight patterns, you were one of the first people to do that, weren't you?

JB: I think so. I published a little paper on it and I had another paper published from my model. But I didn't really publish as much as I could of from that research because there could have been a lot more. But I had to move on with my life. So anyway, I'm glad I did that little paper about the flying.

AH: What were some of the key things you learned from that?

JB: Well, that they could fly as far as Lake Okeechobee and maybe utilize that area, a different area, you know, that was doing different things at different times compared to southwest Florida. And that was part of their adaptability and that they had a great skill in finding places to feed. I'm sure they were using other white birds and other wood storks to spot the places to feed. And there were a lot of places like that, and they didn't all dry at the same time. They didn't all concentrate their food at the same time. It was at different times in different areas. So that was neat.

AH: So, they were really adapting to habitat availability across the landscape.

JB: Correct. That big landscape was supporting them. They needed it all and they didn't need it to get chopped off and dried up. So, I mentioned the model that I did, it was a population model linked to a hydrodynamic model. And the hydrodynamic aspect of it was like a big bow. I put everything together in one bow. It was pretty primitive hydrodynamic model— I'm sorry. A hydrologic model. And I had the area expanding and contracting and feeding the birds. Growing fish and invertebrates when it expanded based on how much land the water expanded to. And then concentrating it depending on how much the area shrank that was covered by water.

And that was what my model was, and it did that based on hydrologic patterns that I had information for. I put real information on the water input and the drying down and so there was some difference every year. And then I had two models. I had my natural system model and I had my altered system model. I think I had the first one of those, certainly the first one in Florida. So, that was sort of a precursor to what they had for the Everglades but their models were much more complicated, sophisticated, much more complicated. Mine was very simple. And I grew wood storks, raised babies. And I had a pattern that came out of that. It just came out by itself that matched pretty well the history of the production of the young at Corkscrew. It matched that.

AH: So, tell us a little bit about your fish work and how that ties to the successful raising of wood stork babies.

JB: Okay. Well, it's one example of the many places over the landscape that are doing the same thing although maybe slightly different time, slightly different intensity. And it was just one place, but it was a good place. It was flooded in the center the whole time I explored it, but the water did spread out from there. And I sampled in the area around the pond as well as in the pond over time, and measured the water levels at the same time, and had a picture of how that happened. I had a knowledge of the fish that contributed and invertebrates that contributed because I sampled them and had their density and I had identified them all so—

AH: Now the Corkscrew Swamp Sanctuary, you know, is such an important Audubon facility and you were there very early in its history.

JB: In a way I was. I mean I wasn't the earliest but basically the one after Kale, he was the earliest. So, I had something to go on and had information about the birds from his work.

AH: And what facilities were there at the time when you were at the sanctuary?

JB: Well, there was the boardwalk, and they were taking visitors. They had a visitors' center and also with Dr. Owre's group, there was Dr. Mike Duver. Do you know him?

AH: Mm-hmm. I know Mike.

JB: Well, he was there too. He was doing his research on the water as a hydrologist, focusing on the sanctuary itself. And he did that for many years and went on to work, I think, for the water management district for many years.

AH: So, did you study— besides the wood storks, did you study other aspects of the landscape or did you have secondary questions that you were looking at?

JB: I think I was focused on this. This was actually enough. Especially since it changed from year to year and it changed with development, and changes in water management in the area.

AH: Tell us how your research has actually influenced the effort to restore the Everglades. What were the stepping stones from your research?

JB: Well, I think the most important thing was a natural system model; that I don't take credit for it. Wipe that out. I told somebody— what's his name, a famous fishery biologist, who came down

and took an interest and still comes to the area and is interested. But there was already a water management model, and it was very structured with all the water management structures in it and the idea was to take out all those structures and then it would be a natural system and it would function more naturally. Of course, that's not completely true because just doing all that manipulation of the water changed the soil. You know how the soil degrades and subsides and oxidizes and disappears? So, the elevations changed some. But despite that, it worked pretty well. And the natural system model, somehow, was able to cut through all the disagreement and different ideas that people had about how the Everglades worked, and they were able to focus and get an agreement on a plan. Which is CERP [Comprehensive Everglades Restoration Plan] and I think the whole thing depended on the natural system model.

And I just told this famous biologist at a meeting, I just mentioned that to him and he took off with it and he developed, he had a model too of the Everglades, besides the one with the water management district had. The water management district was sort of refusing to pull out all its canals and structures and have a natural system model. But the biologist did that with his model and he sold it. He sold the idea and it sort of sparked somebody to do a version of the water management model that was a natural system model. And now they're on to a second version, a more sophisticated version. They called it two-by-two; it was the first one. It was two miles by two miles, I think. And now they have a much more refined model. So, that good.

AH: So, you graduated with your doctorate in 1976 and then what have you done since graduation?

JB: Well, I worked for about a year and a half at the University of Miami, the Rosenstiel School. And in that time— just before that I did a soil subsidence model and I published it. I worked with this little soil scientist. I had a little contract with him, just on my own after I completed my dissertation work. So, I published that. And then I got a contract with Everglades National Park. I think it was more than one contract. Maybe two to study periphyton. That had always been my interest. Ever since back when I was working for Tropical Audubon as a volunteer, of course. So, I got to work with that, and I published some numbered park reports. I don't know if they'll survive long term, but anyway at least they were formal numbered reports. And then I had one other study that was a food habits of the fish that were living in the periphyton. And maybe I had crayfish too.

So, I hired some people to help me, and we went into the Everglades in the middle of the night – or actually its twenty-four hour- and we had our mosquito hats and shirts on, and we slept in the back of our vans, our pickups and we collected fish around the clock. I have a little paper about that, that never published and never was a report. I did that. And later, after I was already working for the NOAA [National Oceanic and Atmospheric Administration], I was asked to do a chapter on Periphyton for that first book that came out about the Everglades. The one that Steve Davis and John Ogden. So, I have a chapter. There's three authors: Cat Gleeson and David Swift were the other two authors. They were much more involved in periphyton as part of their work than I was. And I had a great time working on that doing that. I'm glad I did it. And I think I had a role there too and my work had a role in helping to bring a true periphyton and algal expert to

south Florida and that's Evelyn Geiser. I guess it might have happened anyway, but people didn't take periphyton seriously.

AH: Now, what year did you go to work for NOAA.

JB: 1978.

AH: Okay. And what was your first assignment with him?

JB: To write management plans. Fishery management plans. That was just after the fishery management plans had been conceived and Magnuson-Stevens Act. And at that time we were tasked with actually writing those plans. They don't do that anymore. So, I worked on the king mackerel plan and the ground fish plan. The ground fish plan was for the Gulf of Mexico and the ground fish were the mainly Atlantic croakers, some catfish, and other sand seatrout. And they were part of a fishery that supported the cat food industry in the northern gulf, Purina and Kozy Kitten. These fish were being caught wholesale by the shrimp fishery, so there was interest in that having catch reduction, but it really didn't happen. That plan was not ever implemented. And meanwhile, I went on to other things at NOAA. I did lots of different things.

AH: Kind of give us an idea of that trajectory, but were the other things?

JB: Well, I worked with the pelagic species like billfish. I worked with the tuna that came back from the Gulf of Guinea and were offloaded at Puerto Rico. I didn't do anything interesting with that. I just recorded it. And I started getting contracts to do work in south Florida in the estuaries, and my first ones were over in southwest Florida, an area that I was familiar with. So, I was now working in the estuaries corresponding to the freshwater wetlands, where I'd worked for my dissertation. So, I had several years of experience near Fakahatchee [Strand Preserve State Park], Faka Union [Canal] in Pumpkin Bay. I started doing comparisons of the three areas. And I participated in some of the planning for performance measures for the early management work for those areas. They were always sort of CERP but not directly. I think they're more directly CERP now than they were back in the early years. And I was quite interested in seeing that the estuaries would get a proper amount of fresh water to maintain lower salinities and have estuarine conditions.

AH: And what are you working on now? You've had a broad career.

JB: I have. But it has had some commonalities. It's always had some threads. And the freshwater flow and the management of it and how that affects production and diversity in the natural world in general, both in the wetlands and then in the estuaries. And in my career at NOAA has emphasized the estuaries and I wrote a paper in 1981, I think, about that for a freshwater flow symposium. Sort of a review of a lot of work with some themes in it. That sort of launched me in that interest. And off and on I got contracts to work at estuaries. I've worked in the St. Lucie Estuary with fish with abnormalities and quantified the abnormalities. I actually did that for many years.

AH: When you say abnormalities, what source of abnormalities are you referring to?

JB: Well, there were externally visible ones because we weren't cutting up fish and looking at their livers or anything. We were looking superficially at the fish, on their skin or some deformity of a fin. So, this included ulcers, but ulcers were the lowest prevalence of the abnormalities that we monitored. And we looked at a number of fishes that were caught on hook and line. And quantified their abnormalities and followed that for several years.

AH: And were you able to determine why these abnormalities were developing?

JB: No, other than that there was a relationship with fresh waterflow and outflows. In the St. Lucie is one of those areas that gets too much abnormally too much freshwater because of the management of the lake as does the Caloosahatchee [River]. So, there was some relationship but why? We didn't exactly determine, but we looked at some relationship with water quality and because the water management district had some good water quality data that had been collected and we used that data and did some analyses. But we never got a long way forward in that research. That was about the time we no longer got the funding. We were getting funding every year. Year after year after year. And then the funding sort of dried up for us because they were more interested in turn dirt- it's an expression, you've heard of it before? - projects than research projects.

AH: As you look back over your career, what are the high points? Or what are the things that you're really, really invested in and proud of?

JB: Well, I'm happy with my dissertation and the outcomes that came from it. I'm happy with the freshwater flow paper. It's been cited a lot, and my idea of production was related to the area of overlap of dynamic factors like salinity and stationary factors, like the shoreline or the bottom contours. When they overlap, the right salinity range and the right kind of habitat of shoreline or bottom contours. Then you maximize your production of whatever fish you were looking at. So, that's an idea that came out of that. And quite a few people have either accepted that or tried to experiment with it. It's a hard thing to demonstrate exactly because the salinity is always changing at the time, and it's very dynamic. But as a concept, I think it's a useful working concept.

Right now, we're doing monitoring in Florida Bay and Biscayne Bay, and my part of this work – I have partners, other P. I's. My part is, again with the small fishes and invertebrates, and we're seeing interesting patterns. And we're trying to see and say which species will come in here if we actually are successful at reducing salinities in a way that would be more characteristic of an estuary, because even Biscayne Bay is not estuary-like. It's the nearshore area where we're working wouldn't qualify as a typical or a good estuary because it doesn't have the salinity gradient going from lowest salinity of the shore, gradually going out to higher and higher salinities to until you meet the ocean water that you would need to have to actually qualify and have the production of an estuary.

So, that's actually an objective of CERP and Biscayne Bay Coastal Wetlands Project to recreate more estuary-like conditions and also the water comes out from canals and doesn't come out all along the shoreline. So, you're missing having that gradient all along the shoreline and just getting untypical, inappropriate gradients right there where the canals are. The whole idea of

Biscayne Bay Coastal Wetlands is to try to spread out that water that comes out of the canals into the wetlands adjacent to the canals. So, that there will be more are more shoreline that is right on the typical gradient of salinities going from lowest to the shoreline to gradually increasing.

We're particularly interested in the Mesohaline zone and having more Mesohaline zone and that's almost missing in our area, except in that very atypical area where the canals might create the salinities, but have other conditions must not be quite right to support the fish species that would be typical of those salinities. And then in Florida Bay, of course they have extreme high salinities. We have two parts of our study and Chris Kelble at AOML [Atlantic Oceanographic and Meteorological Laboratory] is my partner in this, and he focuses on the swordfish. Again, I focus on the little fish and shrimp and crabs that are found there with him, that are basically their prey. That's actually true in Biscayne Bay too. I have several P. I.'s associated with me and [Dr. Joseph E.] Serafy looks at the mangrove fish that are mainly reef fish that have come in from offshore to shelter in the mangroves. So again, we have the big fish and the little fish in the same study, and we can potentially look at them in interaction with each other as different parts of the same ecosystem.

AH: You've been working on Everglades restoration now for—

JB: Many years. It's amazing really. I started in 1994 working with the concepts and working with what became the South Florida Ecosystem Restoration Task Force. It was initially just a federal body when it first started, and that was when they were having the reconnaissance study at the Corps [U.S. Army Corps of Engineers]. And we sort of developed the objectives for reconnaissance study at the Corps. And I don't think they were ever formally accepted, but I think they were accepted; they were very controversial. Very controversial, especially up in the Everglades agricultural area. But over time there were some more accommodations and agreeing on commonalities and common purposes. And we worked actually with someone from the Department of Agriculture, who was assigned to the area, to Belle Glade, and doing sugar cane research, was part of our group that followed when we started the real planning work for CERP.

That led to the Yellow Book [Central and Southern Florida Comprehensive Review Study], and we've talked about developing more water tolerant varieties of sugar cane, that could tolerate water levels not being kept so low as they had been in the agricultural area. So that started out with some controversy but working out of some issues that got everything off of the ground and got the passage of CERP in 2000. And then I've been working with the monitoring in Biscayne Bay since 2002. First with funding from the Water Management District and then with the funding that was coming. Part of the recovery and monitoring and assessment plan, our funding comes from the Corps, but some of it comes from the Water Management District. So, at NOAA now, I work exclusively on reimbursable funds, except not my own salary, but to do any work to actually accomplish anything. I receive this reimbursable funding.

AH: The Yellow Book was published in 2000, right?

JB: Mm-hmm.

AH: And so, it's about twenty-two years later now since its publication. Quite a bit of progress has occurred.

JB: Yes, definitely.

AH: Some is left to go. What's your long-term prediction for how successful Everglades restoration will be?

JB: Well, I think we've already seen some successes, and that it can be successful. It's going to depend on the support. It's going to depend on how fast it occurs relative to how fast land is turned into development. Like now, in Dade County, they've been fighting the boundary, the development boundary, and wanting to expand it. And whenever that happens, it puts more constraints on what you can do in the Everglades and with the water management. I think it's a race against time and so I think it's really—very, very important to have the public support, and I think we have both right at the moment. I think it's beginning to move faster in just the past few years. So, I'm optimistic. And I think also, we have the sea level rise issue, and whatever we're doing for CERP is going to be fighting against sea level rise and everyone will benefit. And also, everyone will benefit from the water supply that's provided through CERP, and preserving our wetlands. And the water quality too, that should come with it.

AH: I really appreciate your telling us so much about your career from your early years through your doctorate, fascinating studies that you conducted, and right into your most recent involvement in conserving Florida's fantastic wetlands. We're about to wrap up. Do you have any parting thoughts for our listeners, for the folks that are going to be able to listen to your interview?

JB: Well, I would like to say that I'm really encouraged by all the young people I see joining the effort and all the great ideas they have. All the enthusiasm and concern and I think that that's absolutely essential, and they seem to have it. The Everglades seems to have it and estuaries seem to have that. There's a lot of support for Biscayne Bay, growing support. And there always was for Florida Bay, that's part of what got the CERP started, the concern for Florida Bay. So, I think that we should all be optimistic but vigilant, on our toes too, to continue to try to make a difference.

AH: Well Joan, thank you very much for being with us this afternoon. I really appreciate your taking the time to talk to the folks who are going to be listening to all the interview that we're collecting for the Florida Environment and Natural History project at the University of South Florida Library in our Special Collections. Thank you again for being with us.

JB: Well, you're very welcome.

AH: Nice to talk with you.

JB: Thank you.

End of recording.