

Kathleen Kline: I just turned on the recorder.

Frederick Binkowski: Okay. Why did the DNR contact you about propagation? I wasn't doing anything related to sturgeon at that time. Why did they contact me? I think it mainly was because they were so new in this game with the sturgeon culture that they wanted to have a backup. They knew about the work that we were doing at the Water Institute. Especially working with alewives, and smelt and other Great Lakes species, which all are pretty well recognized by the scientific community as being very difficult fish to work with. A very difficult fish to raise and culture in the laboratory, and that's even trying to do experiments with them. So, I think that probably prompted them to contact me, and then ask if the water – well, that time, it wasn't the Water Institute. It was the Center for Great Lakes Studies zoology department if I would be willing to do a cooperative project with them where we would have some of the fish egg sac fry larvae in my lab. So, it ended up being like a backup.

KK: So, basically, if they were going to go to all that trouble of getting the eggs and everything, it would be great to have the experiment going on in two different places.

FB: Right. Exactly.

KK: Okay. How long were you been at UW Milwaukee at that point?

FB: As an employee, four years. I believe at that time; I started out in the zoology department. It may be that I already was in the – I was probably in the Center for Great Lakes Studies. You would probably be able to tell by the letters. If the letters were from the Center for Great Lakes Studies, then that's where I was at that time.

KK: But I mean, it was very early in your career then.

FB: Yes, four years.

KK: Okay. All right. So, you were a spring chicken?

FB: [affirmative] Although it was after graduate school. So, I had the graduate school behind me.

KK: So, you have been doing research for a while then?

FB: Yes. At least about eight years. Yes.

KK: Okay. But sturgeon, it seems like have really – once you got involved with sturgeon, that is kind of what you have made your career based on? I mean, not completely.

FB: Not completely. Because for a long time, even going into the early [19]80s after we discovered sturgeon and started working with them, even going into the early [19]80s, my emphasis was more on the Coregonus, the ciscos of Lake Michigan, Great Lakes. Because we did a lot of cisco work with Larry Crowder, Jim Rice, myself. So, there was quite a bit of work

in that area. So, the sturgeon just fit. We were able to fit them in when we could. I would say over the years, I probably have a connection with some of these species more than others. But there was always something going on where two or three, maybe sometimes even four different species that I was working on during any given period of time.

KK: Okay. All right. So, you usually did have a mix going on then.

FB: Oh, yes. But maybe from about, oh, let's say, 2000, probably from this period now, 2000 on, the emphasis has pretty much swung in the direction of sturgeon and perch. But prior to that, there were chinook salmon, coho salmon. I mean, all the salmonids. I've probably worked on all the salmonids in Lake Michigan.

KK: Okay.

FB: Okay. Second question. Were you present for the egg collection on the river? How does the idea – no, I wasn't. Not for the very first one. I was not present. The main person that was heading up that whole thing was (Don Suskova?) who as you know is dead. But you did talk to his wife.

KK: Yes. I just talked to Dan Folz too. He gave me he gave me a little bit more information. He was there too when –

FB: Yes. I'm sure that he was there. I'm sure the cesarean thing came about by them thinking about it, maybe talking to (Dorshow?) and probably talking to others. So, it was probably an advisory thing. A bunch of people, and they said, "No. You really won't be able to strip these fish using a traditional technique that you use for northerns and walleyes and so on. You're going to have to do a cesarean." So, (Dorshow?) may have had some influence on convincing them to go in that direction.

KK: How is (Dorshow?) taking eggs from white sturgeon?

FB: Basically, cesarean.

KK: Okay. So, he was doing that.

FB: Yes.

KK: All right. I guess it would be kind of hard to strip a white sturgeon [laughter].

FB: Yes, five hundred pounds. You have to climb on it. Maybe set it up on an angle and then slide down.

KK: [laughter] Those would be some good photos.

FB: Oh, yes.

KK: Okay. So, question 3, I think I have already figured out that you –

FB: The other part of this is where the fish ever recaptured, find out if they survived in –

KK: Oh, yes.

FB: During those early years, probably not. Because I don't think they put any effort into that. But I'm sure that if they captured a fish in 1980, that's probably an [19]84, [19]85. If that female was back up on the river and they did capture her, she would have the tag and they would know that. Now, the best guy to get that information from now would be Ron. It's very likely that some fish over the years that they did spawn. We know that at least four or five years later, that female will be back. We know that when they strip the female and when they do the cesarean, they without a doubt, put a Monel tag on her. They put that pinch tag on her dorsal fin. So, it's quite possible that it did happen, but you could verify that by asking Ron to look through the data.

KK: I think I might. I am just curious about that if she turned up again.

FB: Yes. Well, you'd be able to say that the technique that these guys use, even though it's pretty crude on the riverbank, that these fish were able to survive that. And come back four years later, tried to spawn again but avoid them when she would see them on there. Yes. Get away from those guys. They're just going to rape you.

KK: So, question 3, I think you were not up there when they were –

FB: Wasn't there when (Bellard?) was there. But (Don Suskova?) was there. The stories that you have heard about him are in the accounts of how he lived and are pretty true. I remember (Don Suskova?) telling me that he would work into the nighttime hours. He had a little block of cheese and some bread there that he would trim off with his knife. That would be his meal. I don't know. He slept there. Yes.

KK: That is what you heard from Don when he was in the lab, he had a little block of cheese?

FB: Yes. Don said – because the guy was so colorful. Don figured, hey this guy from Dartmouth, the professor and all that. But the guy was old. He was old-fashioned. He's working at night. That was probably his snack. Yes, Don said something like, yes, he had this block of cheese and a chunk of rye bread. He would cut that off and he'd munch it. I mean, he'd eat it. He basically would. Maybe that was even his dinner. He was a pretty frugal guy as I understand.

KK: Yes. That is what it sounds like.

FB: Yes.

KK: He sounds like he was a true New Englander.

FB: Yes. [laughter] I thought it must have been New Hampshire, right?

KK: Yes. Okay. Well, that is great, Fred. Thanks.

FB: I don't have any photos from Wild Rose hatching. But I would suggest that you give (Steve Pfeiffer?) a call or an email.

KK: Yes. I am planning to do that. Okay.

FB: Or ask him if he has – and I'm sure they did. They're in the record.

KK: Okay. They have got to have a file there someplace. Okay. Yes. Number 5.

FB: The studies that we did have to do more with continuing to refine the culture techniques. In other words, even to the point of the egg processing in the field with the bentonite clay to make sure that you could really get them clear of that adhesive material that's on the egg. Then when you brought them back to the lab and putting them in the McDonald's jar, you'd get much better rolling action. You wouldn't get all this fungus build up and get these big clumps of eggs fungusing up and then dying. So, the first efforts were really directed at continuing to improve the culture techniques. That included what I just described. In addition to that, we also looked at working with different water temperatures for the incubation period. We looked at using different lighting techniques for the hatched-out sac fry and foods. We tried all different kinds. So, those would be the main things that we emphasized during the work that we did with the first generation of eggs.

KK: That was a lot to be looking at.

FB: Yes. Well, we were young and enthusiastic. A lot of energy. Those were the days when I worked seven days a week.

KK: You were probably sleeping at the hatchery. You had a higher survival rate, right?

FB: Higher survival rates, which sometimes were in the [19]90s even. That was mainly because again, we're in a research setting and we have a lot more resources available to us. It's cleaner. The guys at Wild Rose Sturgeon were a sidebar thing for them to do. They had the responsibility to do northerns and muskies and walleyes. They put as much effort into it as they could. But they couldn't focus on it and just do that alone. So, that probably is the main thing. We just were able to put more effort into it and watch it more carefully. Because it's a laboratory setting, you have just more control over managing this whole thing. You have resources that you can bring to bear with bear on problems. You can solve these problems.

KK: What did you do with that first generation that you raised in Milwaukee? Where did they go?

FB: I'd have to go back and look at records to see what that is. But my guess is that we probably just use them for experiments that we just continue doing. So, they're more or less raised for

laboratory production.

KK: Research. Okay.

FB: Number 6. I don't really know.

KK: Did you look through? I sent you a PDF of the write-up of that.

FB: I didn't read it yet.

KK: Okay.

FB: My guess is, though, based again on the rumors that I have heard is that they probably were still experiencing – they were experiencing the same kind of problems that the people did back in the early 1900s, even in the 1920s, when the Canadians tried to do it. Everyone had problems with eggs, especially with eggs fungusing up.

KK: That is what it sounds like happened.

FB: It was just a case of, again, where they just didn't have the resources available to them. They also didn't have a lot of experience with other fish to be able to draw from that knowledge and apply some of these techniques or ideas to the sturgeon. Then once you had some of these ideas and you tested them and they worked, well, then you could work on refining them. But these guys, again, I mean, this was fly by the seat of your pants effort.

KK: Right. Yes. So, why are sturgeons so difficult to raise?

FB: Well, I think that the egg thing is – in the different life stages, the egg is one of the most difficult areas because you have this problem with fungusing. Then going back again to the early 1900s and 1920s, that was one of the reasons the failures just continued on. They weren't able to minimize the fungus growth in these incubation chambers and as a result, a lot of stuff would die. Then the other difficulty came into play with feeding them. When these sac fries were 20 days post-hatch, they were ready to eat food. If you didn't have the right thing available for them or a food item that was acceptable for them, it was only a matter of time, and they would die. So, it was getting into providing them more sophisticated types of foods.

KK: So, they are picky eaters?

FB: Yes. Lake sturgeon are very picky eaters.

KK: That is kind of funny since they end up being bottom-feeders that are just kind of sucking –

FB: Bottom feeders don't mean that they're feeding off of debris like a carp or a sucker does. They're feeding off organisms that live on rocks and in the substrate. Don't assume that just because a fish is a bottom feeder that they're feeding on, well, I would say garbage.

KK: Just whatever.

FB: Yes. I mean, carp do, and suckers do. But –

KK: Sturgeon do not?

FB: Not the sturgeon.

KK: So, did you experiment on that? I think you said on that first generation, you experimented with different things to feed them.

FB: Right. Actually, I have a menu. If I could find that slide, I could give you that slide.

KK: Oh, that would be terrific.

FB: Because it's a menu from newly hatched – not newly, first feeding to six months of age.

KK: Oh, that would be great.

FB: Yes. It would be cool to put it.

KK: Yes [laughter].

FB: That was developed 25 years ago. But I was going to give you an example of how fussy these fish are. You feed them live brine shrimp nauplii from the onset of the first feeding. They feed on it. Okay. This is again the reason why we could be further ahead than they would be in the hatcheries and at this new London location. Okay. So, they're feeding on live brine shrimp nauplii. Okay. Let me go to the pet store and let me buy some frozen brine shrimp nauplii, which they sell. Okay? I mean, this would be perhaps a lot easier to feed. It would be maybe even more cost-effective. We did that. I threw that in the water and nothing. The experiment that we ran, nothing. No response, no feeding. Then eventually, the fish die because they're not eating anything. Okay. So, what the hell is wrong here? They feed on it when it's live. They won't feed on it when it's frozen. So, let's take live brine shrimp nauplii, put them in a petri dish, okay? Put the petri dish in a microwave and zap them. Take that newly freshly killed brine shrimp nauplii, put it in the tank, and see if they'll eat it then. Fair enough, they did. So, it's something to do with freshness.

KK: Wow. They are picky.

FB: Yes. They would eat it when it was freshly killed because it probably still had the smells and it had other nutritional components that they wanted. It stimulated their response to go after the food, even though it was dead, but it was because it was freshly killed. Just prior to that, it was live. But this frozen stuff, it goes through so many processes that by the time you get it non-rapid and give it to a fish, especially a picky fish, they don't want it. It's like having a steak in your freezer for six months and you take it out. You probably don't want anything to do with it.

KK: Wow. So, the sturgeon has an expensive taste.

FB: They have an expensive taste because they're expensive fish [laughter]. Taste for the caviar. So, that's my short and sweet example of that. Now, make a note about this menu.

KK: Yes. I will.

FB: Find me to look for that. I should be able to find that slide. It might take an hour or so to go through a hundred slides. But I should be able to find it.

KK: Yes. I would love to see that, Fred. I think that would be really neat.

FB: Yes. You could make it into a PowerPoint slide.

KK: Yes. That is great. Well, this is what I needed to finish up this chapter, Fred. So, thanks.

FB: Okay.

KK: But I still want to talk to you more.

FB: Yes. What I'll do is I'll open up these attachments that you have here. Which ones are the important ones that you want me to look at and read to respond further to you?

KK: Actually, well, if you could just kind of look through, I sent you what I have so far for chapter 3. If you could just kind of look through that and make sure – just see what you think about it.

FB: Okay.

KK: But I would like you to look through the report from the first try at (River?) Lang's in New London just to see what you think about it.

FB: I'll read chapter 3. Then I'll open up –

KK: It is called –

FB: Open up all these and look at them.

KK: Okay. First propagation attempt. That is the one I am really –

FB: The Propagation Attempt?

KK: Yes. Then –

FB: 1978?

KK: Yes. Not so long ago.

FB: Oh, yes. It starts out with an envelope.

KK: Yes [laughter].

FB: (William Jasper?). Okay. I'll look at that one.

KK: Then I am going to want to talk to you in the next couple weeks more about the research that you have done since so.

FB: What I need to do is settle down and just get in a comfortable mode of thinking about this just like I am now. All these things just started coming back. Like this example of this live brine shrimp and frozen brine shrimp and freshly killed brine shrimp.

KK: Yes. That is a great example.

FB: Yes. It's so clear cut that it was like, how the hell can this be? They'll eat this freshly killed stuff and they won't eat this frozen.

KK: Meanwhile, other fish that you raise, you can just feed them pellets or something, right?

FB: Most of the fish, the trout, and salmon, you can do that. But with most of all the other fish, you have to start them out on something high quality.

KK: Something juicier.

FB: Then transition them. That includes alewife, includes ciscos, yellow perch.

KK: Yes. Okay. All right. Well, I will be talking to you again soon.

FB: Okay. Well, I hope this helps out.

KK: That helps a lot, Fred. Thanks.

FB: Okay.

KK: Okay. Take care.

FB: Bye.

KK: Bye.

[end of transcript]