

People of the Sturgeon: Wisconsin's Love Affair with an Ancient Fish  
Serge Doroshov Oral History  
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Kathleen Schmitt Kline: It looks like we are good to go. Can you hear me all right?

Serge Doroshov: Yes.

KSK: Terrific. Did you receive those two PDFs that I sent you earlier today?

SD: Yes. I forgot about this entirely. [laughter]

KSK: [laughter]

SD: But apparently, I was helpful in some way a long time ago.

KSK: [laughter] I know. I sent Fred Binkowski –

SD: Amazing how you found all these things.

KSK: I know. It was really fun. I was digging through a lot of papers at the Historical Society and there was a sturgeon file. Those letters were in there. So, it was kind of funny. I found some letters with Fred's name on them, too. I sent those to him. He kind of had the same reaction, like, "Wow, that was a long time ago." [laughter]

SD: [laughter] Well, it was what? Thirty years ago.

KSK: [laughter] So, do you remember reviewing that proposal? Do you remember being contacted?

SD: Yes, I reviewed it. I don't [laughter] recall right now. I had no time to look at my archive.

KSK: Oh, that is okay. No, that is okay.

SD: But I guess I sent him some advice, probably not very good advice.

KSK: [laughter]

SD: They had a problem with feeding larvae. At that point of time, some sturgeons and some species are very different in terms of feeding, how well they take their food and so forth. Later on, I learned that lake sturgeon is very sensitive to this thing. Apparently, they had problems. But otherwise, they did fertilization and incubation and everything, like probably I advised. So, they got a lot of eggs.

KSK: It worked out in the end?

SD: Yes. Huh?

KSK: [laughter]

SD: Yes. They raised some juveniles. Yes. It was a long time ago. Right now, it's greatly improved. So, there are pelleted feeds, micro feeds, so-called, diameter. One little pellet is probably less than one millimeter diameter. They can be used very efficiently because all these formulations they had at that time, it was leaching in the water momentarily. So, lake sturgeon is kind of slow feeders, and they wouldn't get anything from this. But temperature also could contribute. Yes, they had declined, decreased in temperature. Some sturgeon also stopped feeding at certain low temperature.

KSK: Well, I had a few questions just about – and I am going to be asking Fred about this, too, but just kind of about those early years. I know that you probably came into this country, was it 1977? Is that correct?

SD: That's correct. Yes. I was lecturing in the University of Washington for one quarter and then spent half a summer working as a consultant. Then I came to Davis, and I got that position to work. Then since that time, I started to work. So, I basically started to work in 1979.

KSK: Were you working on sturgeon in the Soviet Union?

SD: I had a second-hand experience. I didn't work myself. But one person who is a very well-known sturgeon culturist over there now, he worked in my lab. Occasionally, I was visiting his facilities and get some idea about sturgeon [laughter] to get some idea what they are and how to handle them. But, as I said, it was a second-hand experience. I learned myself working here with white sturgeon primarily and some other species.

KSK: When you came to UC Davis, did you know that you wanted to start working on white sturgeon right away, or did that kind of evolve?

SD: Yes. Well, they mentioned this [laughter] interest to me several times just because I was Russian.

KSK: [laughter]

SD: [laughter] I was trying to sort of play it down. Because knowing sturgeon, I thought aquaculture, well, it's virtually impossible.

KSK: [laughter]

SD: [laughter] They mature so late and grow slowly and so forth. So, I actually started to work with the larval fish, and I worked a lot with the larval striped bass and some model species called tilapia, tilapia mossambica. I was interested about the process of swim bladder inflation that is little larvae because many of them fail to do that thing. As a result, the survival of juveniles is very low. So, that's the first work I did. It took several years. In between, I started to work on sturgeon, primarily because there was tremendous interest and pressure from the aquaculture industry here. But when I got involved and met Fred and some other people, Ted Smith and so forth, of course, it added to my interest. Because I knew that some other people were working with different species, and we were all enthusiastic about this thing. [laughter] We pursued

different avenues in this thing. Some people were developing hatcheries for potential stocking, like Ted Smith in South Carolina and some others like Fred and Ron later on. They decided to go primarily by environmental management and the management of the stock because there were some spawning sites available in the river there. So, it was very interesting.

KSK: I need to talk to Fred more, but he mentioned that, I think it was 1979 where there were these three separate efforts going on in Wisconsin.

SD: That's correct, yes.

KSK: How did you all come about finding out what each other was doing?

SD: I think –

KSK: He mentioned some meeting and you were all sitting in a hotel room.

SD: Right, right.

KSK: [laughter]

SD: You see, none of us at that point of time, if I am correct, published anything. So, we couldn't learn about each other from publications and so forth. Also, there were not a lot of meetings at that point of time on sturgeon. I can make a mistake, I don't recall right now. But of course, I guess we finally started to communicate by phone and had a phone conversation. Fred called, and Ted Smith and so forth. We started to build some modest facilities here for sturgeon spawning at that point of time. We received the grant, the money for that from U.S. Fish and Wildlife Service. That's probably why that U.S. Fish and Wildlife Service decided to get all of us together and lead town meetings. Yes, yes. So, there I met Fred and Ted and some other folks working on Atlantic sturgeon or shortnose sturgeon. Yes, we got together. It was exactly like Fred described. We were surprised that we were doing this work without knowing each other. We're very enthusiastic about the opportunity to meet and discuss and build some kind of program and communications.

KSK: So, Fish and Wildlife, that was probably the connector.

SD: Yes, it was connected to that. Soon after that, there was a meeting of World Mariculture Society in New Orleans. We all came there, too, and we all gave presentations. There were some results. After that, there are quite a few publications that appeared from all these different places. So, after that, we came to this very first special symposium on sturgeon in Milwaukee. It was 1983.

KSK: That is right. I have the proceedings from that, I think.

SD: That's correct. That's pretty nice proceedings. Old book now, but [laughter] it has very good, very interesting information, how it all started.

KSK: Did you have some early funding from California Sea Grant as well?

SD: That's correct, yes. Indeed, Sea Grant was very instrumental in those things. First of all, Wisconsin Sea Grant was very helpful to Fred and Ron. I think they still help them with this thing. Our California Sea Grant was also very helpful. They supported our study for many years. We kind of worked together with California and Wisconsin Sea Grant, supporting each other's proposals and so forth. Here, you see, we made major emphasis at the University of Davis on development of production aquaculture. So, now, this is totally independent on the wild stock and it's like a third generation of fish in captivity. So, they're adapting to new environment, and they function, and they produce quite a lot of caviar, about ten or probably a little bit more metric tons every year to the market, and of course, flesh. So, after that, we were also supported by USDA, the special grants and also through their regional centers. We were receiving support from the Western Regional Aquaculture Center, which is located in Seattle, University of Washington. Because of that, there is also a development of the aquaculture in some other states of the region, especially in Idaho. Yes, Idaho used to be the major or still major producer of trout. Some of the trout farms shifted to sturgeon.

KSK: So, it is kind of interesting if you were to compare your career with Fred's, you both kind of started at the same place. But Fred's has gone more toward, I guess, learning more about life history in the sturgeon's own natural environment, whereas yours has gone toward more with aquaculture with farmer of sturgeon.

SD: Yes. Yes, main direction. Yes. That's true. That's correct. However, we were continuously interacting, keeping interest to each other. Actually, also doing some work. For example, we did a lot of work in the Hudson River from here in Texas. Yes, looking with Atlantic sturgeon on Hudson River in New York State. We were looking for reproductive ecology of the population. For the past ten years, we worked with a green sturgeon. It's an endemic Pacific Coast species. We do not aquaculture study, but environmental studies of various categories.

KSK: So, you have been doing both?

SD: So, it was kind of nice because information from Fred and Ron, environmental information was extremely helpful to our work, as well as our results helpful to them.

KSK: I have one question about caviar. [laughter]

SD: Yes, go ahead.

KSK: I read somewhere and I think it was a quote from you in some story that said that the best caviar, like the caviar that we get here from lake sturgeon, which we cannot sell, which is just basically processed in someone's home to keep, that is coming when the sturgeon are spawning in April. But I think I read somewhere that said that if you were to strip the white sturgeon when it was spawning, that that actually would not be the best caviar. Is that correct, or do I have that wrong?

SD: No, no, it's a little bit wrong. Well, unfortunately, we have to sacrifice the fish. The reason is the eggs. We have to kill the fish, to slaughter the fish, the fish when they go to caviar production.

KSK: Why cannot you just do like the caesarean section? Why cannot you just slit them open and take some of the eggs out and then sew them back up?

SD: You can't because the eggs are still within the ovaries.

KSK: Oh, they are still in the sac?

SD: Yes, they're still in the sac. Not the exact sac. They are kind of halfway open but separated from the abdominal cavity by the epithelium. When they ovulate – and that occurs during the spawning – they become free. They fall down into abdominal cavity and kind of float there in the peritoneal fluid. Then you can take those eggs and those will be procedures that you use for spawning. However, those eggs differ in taste as compared to those that are in the ovary. They kind of lose the taste, the normal taste of the caviar. That's one reason. Another reason is that making cesarean section, if you make cesarean section, C-section for hatchery fish, you are dealing with probably ten, fifteen females at max because they produce a lot of eggs. It's a good number for the one season to spawn and so forth. So, you can apply this procedure. You can do all the suturing and you can sort of do postoperative procedure. You need to watch fish carefully, so the incision would heal well and so forth and so forth. But if you produce ten metric tons of the caviar –

KSK: [laughter]

SD: – you have to do it with thousands of fish. So, it's completely unrealistic. The third reason is that in order to obtain those free eggs, you have to induce ovulation by using the special hormone, an inject hormone. There may be preoccupation from the consumer and from FDA and so forth that this hormone somehow may be retained. So, there are a lot of these things. But you are right. Some people are trying to do this thing. Russian, for example, they are trying to spawn the fish and then suture that and produce caviar from the eggs.

KSK: Oh, they are?

SD: Yes, they are trying this thing. I don't know what their progress was recently. But before they brought some little jars of the caviar to our 4th International Sturgeon Symposium –

KSK: In Oshkosh?

SD: Yes, in Oshkosh. Yes. It wasn't tasty.

KSK: [laughter]

SD: I mean, it was totally different. Yes. They said that they are planning to improve this. How? I don't know. There are biochemical processes occurring there because the taste is

determinant by our receptors in the roof of the mouth. What happens is when you have it in your mouth, there are some volatile product released, which affect those receptors. So, you say, "Oh, it tastes great. It tastes like sturgeon caviar." [laughter]

KSK: [laughter]

SD: Those volatile products may change during the process of the ovulation because there are very significant biochemical changes occurring there.

KSK: Wow. It is a very complicated thing. [laughter]

SD: Yes, I know. Yes. This whole thing is very complicated. [laughter]

KSK: [laughter]

SD: Yes. Anyway, they basically slaughter the fish and then take the ovary and screen the eggs through the screen and sold those eggs and bag them [inaudible]. That's what they do, and selling those carcasses of the fish to smokers.

KSK: So, the flesh is being used as well?

SD: That's right. Of course.

KSK: So, the caviar industry in Russia, it sounds like a lot of these secrets – I mean, they had been doing artificial propagation for quite a while, right? But those secrets were kind of locked up in the Soviet Union. So, it sounds like everybody here in the U.S. kind of had to start from scratch?

SD: In some way. In some way. But it was known before what they do. Yes, it was known. It's not like secrets.

KSK: [laughter]

SD: It's more related to the fact that sturgeon was one of the major fish, more important than salmon in Russia. There are more attention to this fish. It was kind of traditional.

KSK: Part of the culture?

SD: Back in the history for many, many centuries. So, they paid more attention and they put more resources to do this thing. However, if you wanted to do that thing before here, you could do it. Information was available. As a matter of fact, I want to mention about paddlefish. You know paddlefish?

KSK: Yes.

SD: You do. Paddlefish is a very close relative of sturgeon, very close. It's basically the same

group of fish. So, the paddlefish, they spawn exactly the same way. They produce similar eggs and so forth. Their physiological mechanisms are exactly the same. The scientist by name, Burkett, that was the last name. I believe he was either in Wisconsin or maybe in Minnesota. I don't recall right now. He did the same thing with the paddlefish as we did with sturgeon, using hormonal injection for ovulation and so forth, quite a while ago, somewhat in the 1970s. Yes. So, it could be done. What was important in our meeting and so forth is that we had a group of people who were generally interested in this thing and decided to do it and decided to stay in touch and continue to work together. That was an important thing. That was a very important move.

KSK: So, are you saying then that without this group of scientists who were all interested in kind of working on the same things, probably not as much progress would have been made at this point?

SD: It's difficult to say.

KSK: [laughter]

SD: Would we make some progress, or maybe not. Who knows? Yes.

KSK: But it has been really helpful having other people, too.

SD: But certainly, the fact that there was great interest from several people. The fact that all these people, I know Ron Brook, I know Fred very well, I know Ted Smith and some others, all these people are really great. They are doers. They do things.

KSK: [laughter]

SD: They choose to think. So, that was important, I guess.

KSK: Had you ever been to Oshkosh before the Sturgeon Symposium was there?

SD: Let's see. No, I guess it was my first time. You mean 1983, right?

KSK: No, 2001 for the Sturgeon Symposium.

SD: Oh, no. I was before. I went before many times. Yes.

KSK: So, you have been up –

SD: I believe the first time I came was in 1983 for the symposium that was organized by Fred.

KSK: Of course. Of course.

SD: Yes. But after that, I was there many times. I was coming once in a while, and I spent sabbatical there.



KSK: Oh, you did?

SD: Yes, yes. It was kind of not proper season [laughter] to work with sturgeon.

KSK: [laughter]

SD: But I spent working some sabbatical a few months, working with lake trout in Lake Superior. Yes. So, I was very familiar. After that, I was going to Wisconsin for quite a while. Yes.

KSK: I wasn't working for Sea Grant when the symposium occurred in Oshkosh, but I know that  
—

SD: I actually was a couple of times on the Sea Grant review panel. Your Sea Grant in Madison. Before you, I guess. Yes, yes.

KSK: [laughter]

SD: So, Oshkosh and Wisconsin in general, Milwaukee and Madison, [laughter] very familiar places.

KSK: So, you have been here quite a bit? [laughter]

SD: Very familiar place. I like it very much.

KSK: Oh, well, thank you. Madison is my hometown, so I grew up here.

SD: Really? [laughter]

KSK: [laughter] Going up to the Menominee Reservation during the Sturgeon Symposium, was that your first time there?

SD: It was my first time. It was really romantic. [laughter]

KSK: Can you just describe a little bit your memories of that? I just have read stories about — they had the powwow and the dance and —

SD: That's right.

KSK: — all of these people from different countries.

SD: It was [inaudible] for quite a long time in the dark. It was very interesting. At the end, everyone went down over there to this [laughter] little circle and started to dance.

KSK: So, they did, people did get up and dance?

SD: Yes, yes, yes. That's right. Yes.

KSK: Well, that is great.

SD: They had nice costumes, just beautiful, just beautiful.

KSK: Oh, that is terrific. That is just a neat –

SD: It was really great.

KSK: I like to think about all those people from the different countries coming there.

SD: Oh, yes. They were absolutely shocked. [laughter]

KSK: [laughter]

SD: They were really surprised. It was very nice.

KSK: [laughter]

SD: It was great.

KSK: Well, I think that is about all I have for you right now. Would it be okay if I have any additional questions if I email you?

SD: Of course. Yes. Don't hesitate to email and I'll try to answer the best I can anytime.

KSK: That is terrific.

SD: What you're trying to do?

KSK: Well, we are writing this book. Ron and Fred are authors on it, too. We are writing it about the history of lake sturgeon in the Winnebago system. I am working on the chapter about research right now, but we are also covering all the cultural traditions about lake sturgeon in the area.

SD: That's nice.

KSK: Yes. It has been a really neat project to work on. I have really enjoyed it.

SD: Is it going to be kind of an article or report or what?

KSK: It is going to be a book published by our Historical Society Press here in Madison.

SD: That's fantastic. Yes.

KSK: Yes. We have a really great photographer working with us. So, we have had some really great photos. We are hoping to have it ready and published in time for the symposium in China next year.

SD: Oh, you have about one year left.

KSK: Yes, I am writing very fast. [laughter]

SD: [laughter] Well, publishing and printing, that's another story.

KSK: We are keeping our fingers crossed, so that it will work out.

SD: It should be a really nice book.

KSK: Yes, I hope so. We will make sure that you have one, a copy.

SD: You know what you may also stress somewhere over there, it's very important. You mentioned about this. We talked about this small group of people, how it changed, the approach to sturgeon here in this country. But you should mention also, changed approach to sturgeon in all other countries as well. I mean, there were a lot of new interest and efforts, conservation and so forth, going on in many, many countries right now.

KSK: You think that is a testament to what has been going on here in the U.S.?

SD: In many ways, yes. In many ways, yes, because basically, we made it very visible. There were some studies with the Siberian sturgeon in France they were trying to domesticate. They started a little bit early just communicating with Russia. But they didn't publish. A few people knew about this thing and whatever. But here, we were going to different conferences all over the world and whatever. We made this thing visible. The people started to work in other countries.

KSK: Do you think this is pretty amazing that this next symposium is going to be in China?

SD: Yes, it is amazing. But China is a big country. Let's see, I'm trying to remember. There were, I believe, something like six or seven species of sturgeon there –

KSK: Oh, really?

SD: – and one unique species of paddlefish. The problem was that almost all of them were concentrated in two major rivers. One is the Moon River in the north. It's a river between Russia and China. That river was not managed very well. There was overfishing there. So, some species were depleted. Another one was the Yangtze River, the biggest river in China. I know they are building this or finishing three gorgeous dams. After that [laughter], the chances are very small –

KSK: Wow.

SD: – yes, for the sturgeon, unless they do something about that.

KSK: Wow.

SD: So, that would be a very appropriate thing to discuss when we go to the symposium next year. Are you planning to go there?

KSK: I would actually love to. I am trying to work my way into that. [laughter]

SD: Yes. It might be interesting, actually.

KSK: It sounds like it would be a terrific meeting.

SD: Yes, yes.

KSK: I do just have one more question for you –

SD: Sure.

KSK: – just regarding poaching, which has been an issue in Wisconsin. We have a sturgeon guard program now with citizen volunteers who protect the fish on the river. Is there a problem with poaching in California with white sturgeon?

SD: Yes, yes, yes. Actually, we made a few suggestions once in a while to Fish and Game to organize the public and find some volunteer and people from the clubs. Somehow, it didn't work in California. [laughter]

KSK: [laughter]

SD: But they do have a problem, particularly in the mid-reaches of the river. There are some places there with very difficult access and it's in the dark. There are some poaching. So, there is no doubt about this. Yes.

KSK: So, that is still an ongoing –

SD: I wouldn't say that this is very extensive or whatever. It's very hard to judge. But sometimes, you find the papers, or Fish and Game contact you and so forth. Right now, I know that one of our biochemists here, he works on a sort of forensic science based on how to distinguish the eggs from domesticated sturgeon raised on the farm from the wild. Because apparently, sometimes these people claim that they came from the farm, this caviar or whatever. So, apparently there is some poaching, yes. But in Wisconsin, you have great program, I mean. Sturgeon for Tomorrow, you are familiar with this club, right?

KSK: Oh, yes. They have been helping with the book tremendously.

SD: Yes, yes. I know these people for a long time. They're very great people. That's a unique public program that you did there, really unique. You also have to stress it in your book. It's very important to mention.

KSK: Oh, there is a whole chapter on them. The history of Sturgeon for Tomorrow, how it got started. It is a pretty interesting history. Actually, they had their own Russian scientist. [laughter]

SD: Because I know when the Russians came to this International Sturgeon Symposium in Oshkosh – and I talked to them, of course, I was there – that Sturgeon for Tomorrow club and all this protection and guarding the spawning grounds, whatever, it was entirely new to Russians. [laughter] They couldn't even imagine that this thing is possible.

KSK: That people would actually take the time to try and stand there and protect the fish?

SD: Yes.

KSK: Wow. That is really interesting to get –

SD: Because they were so impressed with this thing. They were talking and talking about this thing. "Oh, we should do it back there in Russia and whatever." [laughter] Apparently, it never worked this way. [laughter]

KSK: [laughter]

SD: But somehow, Ron and Fred managed to convince people. Sturgeon for Tomorrow club was a major point because the people there were educated. They were very good. They understood everything very well and they're really helpful.

KSK: Wow. Well, that is terrific. Well, thanks so much for your time.

SD: You're welcome, Kathy.

KSK: I will be in touch. If I am not, you will be getting a book in the mail sometime. [laughter]

SD: [laughter] Yes, I'll be glad to have a great book.

KSK: Thanks so much.

SD: It's going to be a good book. Please contact me if you need anything, okay?

KSK: Thank you.

SD: Bye.

KSK: Bye-bye.

[end of transcript]