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Interviewer: Michelle McAnnally
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Michelle McAnnally (MM): All right, tell me your name and your title right now.

Susan Adams (SA): My name is Susie Adams, and I'm a research fisheries biologist.

MM: Tell me a little bit about your background. Tell me where you're from and where you went to school.

SA: I grew up in [Limas?] California. It's a small town east of Sacramento. And I went to college at Carleton College in Northfield, Minnesota, a small liberal arts school. Got a bachelor of arts in biology. And then I got a master's in fisheries management at the University of Idaho, and a Ph.D. in organismal biology and ecology at the University of Montana.

MM: All right. So tell me, how did you become interested in fisheries work?

SA: Kind of roundabout, but I always wanted to be a biologist when I was a kid, and I didn't really know exactly what that meant. I thought it meant being, I guess, a park ranger. And so I majored in biology and I liked it, but I decided at some point that I wanted two things; I wanted to be a marine biologist, and I wanted to live in the mountains. So the mountains won out, and I didn't know what to do when I got to the mountains [Laughs], so I started working for the Forest Service as a volunteer, and a backcountry wilderness ranger. And I worked on trails with this old guy who was missing most of his teeth, for a summer right out of college, and it was quite an experience. And they sent me to fire school, and so while I was there I started fire fighting. And the next two years I worked on a helattack fire crew for the Forest Service, and at the end of the second summer when I was going to be laid off the fisheries crew needed some help. So I started working with them, and that led to the next summer's job at a research station in Boise, Idaho, where I did... I was a technician for a fisheries researcher for a couple summers. So that's how I got into fisheries. And I really like streams, and most of the money in stream work is in fish, so that's how I got into fisheries.

MM: Let's talk a little bit about your fire fighting career. I didn't know that about you. Tell me a little bit about the work you did and where you worked in fire.

SA: The first summer when I was a volunteer I worked out of Boise National Forest in [London?], Idaho. And I was just on a regular crew, I guess, one that when fires broke out just helped here and there as needed, and got to go on my first helicopter ride which I thought was really [fun?]. I'd always wanted to go on one. And so then I applied for the helattack crew on the [Pinot?] National Forest in Idaho. And so I worked two years on the helattack crew. We mostly

did initial attack fire fighting, and then we would also, like on the Yellowstone fires we'd work at the helibase or out at a remote helispot working with the helicopters. And then we'd go out between [word unclear] regular crew when there were big fires around. I did that for two years and then my first year in fisheries I also did some fire fighting.

MM: Tell me about your first fisheries job with the Forest Service. What did you do with that?

SA: I counted rocks. In Mississippi the Forest Service is responsible for the actual fish in the streams and the small lakes on the forest. But otherwise the state is responsible for the fish and the Forest Service is responsible for the habitat. So most of the fisheries work there is actually habitat work. And in central Idaho there's a lot of sedimentation in streams that cover up the spawning beds for salmon and trout. So we were doing monitoring and we were counting how many rocks were stuck in the sand and measuring how much was in the sand and how much wasn't. We did that all summer and built a few habitat structures, but mostly we counted rocks. [Laughs]

MM: Okay, let's go on a little bit more. And then you came to Mississippi. Tell me how that came about.

SA: Okay, I had finished my Ph.D., and I was doing a short post-doc at the Flathead Lake Biological Station which is part of the University of Montana, and I was looking for a job, and I talked to Mel Warren about this job that I have now, and it sounded like the perfect job, although Mississippi sounded awfully hot [Laughs]. So I came down here in June and checked it out, and it was hot but the people seemed great and it was really my dream job and so that's why I came here.

MM: Tell me, why was it your dream job? What attracted you?

SA: Several things. One, that I could do research on a wide variety of things, and that I could choose, within certain limits I could choose what I was working on. And it's mostly research; there's no teaching responsibilities. And you get enough money that you can do pilot studies without having to spend all your time writing proposals. And those were the main things. But the fun thing about Mississippi is that the biodiversity is just incredible. The places where I did my master's and Ph. D. research there were at most four species of fish in the stream. And the first time I came here there was a drought and I was sampling fish in these little drying pools that were isolated and sticky, and there were twelve fish species in these horrible little pools. [Laughs] That's been really fun

MM: That was one of your first jobs down here was counting fish in the pools? Tell me what you first did when you came.

SA: Yeah. I did some work, some mussel work with Wendell Hague and Mel Warren, and then this drought that I mentioned was ongoing, and it was a pretty severe drought and there were streams drying up that hadn't dried up for as long as people could remember. And so we went out and sampled what was left in these little drying pools and we walked up and down the streams to make sure they were dry, and then over the course of the next year we went back and repeatedly

sampled to see how fast the fish and the crayfish were coming back into these streams. And they actually came back fairly quickly, but not... In other studies of recolonization of streams like this the fish would come back almost immediately, but the interesting thing here was the drought ended in the fall, so the fish didn't really start coming back until spring when they started making their spawning movements. The interesting thing about that is to suggest that even these small fish—most of these fish that we're talking about are really small—a lot of studies have shown that they don't move very far, but this work suggested that they have to actually move quite extensively to be able to get back into these streams that have been dry for kilometers.

MM: What year was this that you first came to Mississippi?

SA: 2000. January of 2000.

MM: So tell me a little bit about how your work has evolved since you've been here. If there's any such thing as a typical day in the life of Susie. What are your research interests here? Tell me a little bit about the different projects that you've worked on that come to mind and stick out that you remember.

SA: Okay. Actually quite diverse. Hard to put in a nutshell Right now I'm working on a number of different things and some are taking more time than others at any particular time. The first is a study that I'm doing with some other biologists in the Center for Bottomland Hardwood Research, which is what I'm part of. We're looking at a native plant called {Swamp Cricket?}, and it grows in wetlands, and it produces fruit in the spring when the water is likely to flood. So one of the technicians at our lab in Stoneville found that the channel catfish had swamp {cricket?} in their stomach. And in the Amazon there's all kinds of catfish that live just by eating fruits from trees and dispersing those seeds, but it had never been documented in North America before. So we were all excited about this, so we're doing this collaborative study looking at catfish eating and dispersing these seeds, and birds that are dispersing the seeds; and we hope to look at how changes in hydrology down in the Delta, where areas that used to flood regularly no longer flood, how that changes sort of the plant behavior and how long they hold on to fruits for the birds to get them, versus dropping them for the fish to get them. And so far we've found that the catfish are eating these fruits, and that the seeds are viable and they're passing them, so they're dispersing the seeds, which pretty cool. And I always thought, I get so frustrated working with fish because they're always moving when you want to study them, and I thought it's so much easier to work with plants, but now the plants are as bad as the fish, because they don't fruit when they're supposed to fruit, and this year they don't fruit, and that year they fruit, so... [Laughs] So that's been challenging, but it's been really interesting and it's fun to work with.

MM: Well what's another project you're working on?

SA: Okay, the biggest one I have going on is funded by the National Marine Fisheries Service, working on an {anatomous?} fish called the Alabama shad. And the adults live in the ocean and they come up the streams to spawn, and then the juveniles spend their first year in the stream kind of swimming their way down the river and growing as they go. And there's not very many Alabama shad left compared to what there used to be, and they're a candidate for endangered species listing, and probably one of the best populations left in the South is in the Pascagoula

River in southern Mississippi, which is one of the only large undammed rivers in the nation, actually. It's a really neat river [words unclear]. So really not very much is known about these fish there at all. So I have some graduate students at the University of Mississippi working on when they spawn and where they spawn and what kind of habitat they use, and how many are there. And it's challenging when nobody's worked on the fish before; just figuring out where and when to catch them has been challenging. But that's been an exciting project. I go down there maybe about five trips a summer down there, some of which the technicians go on, some of which I do, and we take the electro fishing boat and spend a week on the river, sampling by electro fishing [voice drowned out by background noise]. And we're finding them so that's something.

MM: A little bit about your field work, about being out on the water. Tell me what a day like in the field is.

SA: Okay. It depends on what I'm doing, but for the two projects I've talked about so far, we use the electro fishing boat for the field nets. And so, take the boat out, usually fairly early. And the electro fishing boat has these anodes that go into the water and they send electricity into the water and the fish get stunned and pull it up and you net them and put them into [words unclear]. And it's exciting especially here when you get all kinds of wild things, you don't know what you're going to get. We've gotten, well not so much in electric fishing, but the field nets have gotten sturgeon, and you get lots of big gar, so it's pretty wild. And it can be hot out there, and humid. But we'll do that all day. And with the catfish study, we were working on the {Hokesville?} Lake of the Mississippi River, and we were electrofishing at night because that's when the catfish were feeding, and that was kind of neat. And we'd be out by this kind of wild forest along the side of the lake, and the lights of the casino in Greenville on the other side of the lake were glowing [Laughs]. It was neat to be out there at night. And then some of my other work, most of my work up until like I guess the last two years, has been in small streams. A lot of it in northern Mississippi. And there we did a lot of electric fishing with the backpack electric fisher. So you carry a unit on your back with a battery, and then you've got this probe that goes into the water and sends electricity out. And then there's two people who walk along the sides with big nets and scoop up whatever's electrofished. And then we use a seine, which is just a big net that two people drag along and scoop up fish and crayfish. And it works better in pools where the fish tend to be able to escape from the electrofisher. And so we'll often go out and work, you know, go out at eight-thirty and work until four-thirty or five doing that. And you go to some really pretty places, and you go to some really trash places, and see just gorgeous forests, and there's poisonous snakes around [Laughs]. That turns a lot of people off, and it's a little nerve-racking, especially when the water's muddy and you can't see in it anyway. But you generally see more neat and exciting things than you do scary things.

MM: Have you had any scary experiences or especially exciting experiences out there?

SA: Probably my most scary experience was not really scary at all. [Laughs] I was working in Alabama with somebody from the Alabama National Forest, and it was my first year in the South, and I was still pretty nervous about all these snakes. And we were doing habitat, we were measuring pools and {wrinkles?}. And we were walking, we had walked a few miles up the stream, and it was starting to get dark, and the trees were over the stream and it was creepy, and I

started thinking about the movie *African Queen* with the leech scene. I was getting all kind of creeped out walking along, and we kept hearing these plops of all these snakes falling off the branches into the water. And so I just kind of had that uneasy feeling. All of a sudden I stepped on the end of a stick, and the front of the stick came up out of the water right at me, and I screamed as loud as I could scream. Kevin was way up ahead and he turned around: “what’s wrong? What’s wrong?” I said “Nothing. A stick/” But I was so scared. [Laughs] I thought I was being attacked by a cobra.

MM: After all that excitement you do out in the field, tell me about what goes on in the lab. What do you do once you do your field work and bring it back to the office?

SA: Okay. It depends again upon the project. A lot of the projects, like the drought study I talked about, there really wasn’t lab work involved, so when we came back we just had data sheets. And either I or one of the technicians would enter the data, and then begin the long process of analyzing the data and writing up the results, with the goal of all these studies being peer review publication. There’s other studies where I got... I’m starting to get into a lot of crayfish work now, and the biggest challenge there is just learning to identify them. It’s especially hard here because there’s a lot of undescribed species here in Mississippi, and you have to have the reproductive form or the [word unclear] to figure out what species they are for a lot of them. And so there we’ve been bringing the crayfish back and spending a lot of time learning to identify them, and measuring them, and figuring out what form they are, whether they’re males or females. So that’s rather time-consuming. And then for another study I’ve done in Alabama, I’m looking at differences in growth and the kind of eggs that darters have as you move down the stream. And so there I’ve had to bring the fish back to the lab and count the number of eggs they have, weigh the fish, measure them, and then extract the {otilus?}, which in darters they’re a little bone about this big, which are in part of the ear, there’s three {otilus?} in each ear, and you can take them out and you can count the rings on them like you would a tree. And so we’ve been doing that, and then we had somebody, Ray in Tennessee, has raised some known age darters for us so that we can validate those rings, to show that the ring that we think is a one-year ring is really a one-year ring. So that kind of thing takes a lot of time, and a lot of time there’s a project like that, a lot of times I’ll hire somebody or have one of the technicians here do a lot of the lab work.

MM: Do you have a favorite species.

SA: [Laughs] I don’t have a favorite species.

MM: One that’s more interesting perhaps than other subsets?

SA: Well, I really like the darters. I’m still doing work in Montana too, with some folks out there, and we’ve just found out there’s two undescribed species of sculpin where we’re working. So that’s really exciting; I really like sculpins. And I like dale frogs a lot. Dale frogs are very cool. But they only live out West.

MM: So when you discover a new species, what’s the procedure for that? How do you know? Do you get to name it? And then they go into the literature?

MM: Well, whoever does the formal description of the species gets to name it, and I have never done that and I'm probably not inclined to do that. But what we did is, we knew there was confusion about the taxonomy of the sculpin. And there's a person who was a student at the time, named Dave Neeley, who's now a post-doc at Washington University in Saint Louis, and he was working for his Ph.D. on the taxonomy of sculpins, and he asked that we send some of these to him. So when I was working on my Ph.D. I sent him some sculpins from one stream, and then a couple years after I moved here I went back to Montana and was doing some research out there on sculpin movements, and we sent him a bunch of samples from different streams, and he did morphology on them and measured all these different measurements: how high they are, how long they are, how big their eyes are, and all these things. And he found two different groups. And then he did a genetic analysis of them, and that matched the morphological differences. And then he compared them to a whole bunch of other species of sculpin around the country and the world. So you can kind of figure out how much different they are from another species, versus how much different they are from the other species in the same stream. So he's going to do a formal description of them.

MM: Talk a little bit about the role of bottomland research and hydrology research in general in the national forests in Mississippi. Talk about how your work integrates with rest of the national forest work, and talk about some of the benefits and applications of the work that you do.

SA: Okay. So we're doing mostly biology work; weren't not doing any hydrology work anymore. And it's really increasingly important for the national forest to know what they have in their streams first of all, that's the most fundamental level, so that they can do the planning for projects and write environmental impact statements and that sort of thing. And so we've had a project going on for five years that now Warren's been in charge of, sampling the fish around the national forests in Mississippi. We've sampled hundreds and hundreds of sites and we have a huge fish collection. Just to figure out what's out there and where they are. And the next step is to try to start figuring out how habitat affects these fish, and what is the natural variation in the fish. And that's part of the drought study: how much can a population change over the course of a year, and how much does an event one year affect the population the next year? And that's all really important for monitoring kind of things, to figure out... If you want to look at the impacts of a habitat change, you have to know how much change there would have been without the habitat change there. So it's important in that respect. And then some of what we do is important to agencies outside of the national forest. Like the Alabama shad work will be used by the National Marine Fisheries Services as part of their packet of information to decide whether to list the species as endangered. And if it does get listed, and even if it doesn't, to help design programs to help preserve the species.

MM: If you were giving some advice to somebody who wanted to get into what you do, what would your advice be as far as what classes to take, where they might try to get a first job, or what kind of volunteer work they could do, like you did to get a start? What would you tell somebody that came up to you in the tenth grade and said "I want to be a biologist, a fisheries biologist?" What would you tell them?

SA: The first thing I would tell them is to try to get some experience in the field to see if they like it, I guess. And actually I have a high school student right now who's working with me as an intern for the summer, and that program is trying to exactly that: trying to give high students an opportunity to see what the field is like, and what they like about it and what they don't like about it. And then I think it's really important to take a broad range of classes early on, and then you can decide what you're really interested in and specialize more in the fisheries field. You know, when I got my master's it was in fisheries management, and at the land grant college in Idaho, and I didn't really know what that meant. What it meant was it was more of a fish and game oriented degree. I had to actually manage a fishery, like how you would manage a large mountain bass fishery so that people can catch all the fish that they want to catch. And I was more interested in the ecology side of it, so I realized I needed to do more in a biology department than in a fisheries department, and those were differences that were really unclear to me when I started out. And so I think that by taking a broad range of courses and by trying to get a diversity of experience, that you can really decide what you like the most. And then ultimately to go to graduate school in that region that you want to work in. Because it was hard to go to school out West and then come here, where everything is different. Much more different than I anticipated. Not only the hydrology's different, and obviously the species are different, but the substrate's different, and what control of the channel, of the stream is different. It was challenging to come here after I'd finished all my education.

MM: You touched a little bit on this, but let's go into it a little bit further. You say when you came here, you were blown away by the diversity of the species in Mississippi. Let's talk more about you coming from out West to Mississippi. First, from the work perspective. The diversity is one thing that you mentioned. What else is very different, or that you found maybe surprising, or maybe that you like about the South that's really different from out West?

SA: Well, it's a lot easier to work in the winter here. [Laughs] That's for sure. You can't really do much in the winter out there on the streams. So that was kind of neat, to go to work year round out in the field. It was completely challenging to try to figure out how to work in muddy water. Because a lot of the work that I did, I snorkeled for almost everything. I did electro fishing, but if I wanted to understand the behavior of a fish, I would snorkel in a stream and watch it. And you can't do that in Mississippi [Laughs] so you have to get more creative and figure out ways to approach things. And sometimes that means taking the fish out of its natural environment and bringing it to the lab, where you can see it a little bit in the tanks. So that was really challenging. Another difference was, the streams in northern Mississippi are sand bed streams. They're really unstable and they're constantly shifting. I was used to working streams where if there's a pool here one day, there's likely to be a pool here five years later. In Mississippi, there's a pool here one day, and then there's a thunderstorm, and the next day there's no more pool here. The pool's way out there. So it's a really different mind set about thinking how you measure habitat and how you measure populations over time.

SA: It's a really different mind set in thinking about how you measure habitat and how you measure populations over time and space, because everything's always changing. The diversity's just been exciting, and I'd never seen a fresh water mussel in a stream before I came here; I'd never seen a crayfish in a stream before I came here. I'd seen them in lakes but not in streams. But now I'm all into crayfish because they're so fun and there's so many different kinds. And the

amphibians are great. I've seen more amphibians outside my window at my house than I've seen in my whole life. [Laughs] So that's really neat. So that's probably the best part, is the diversity.

MM: So on your personal life: I know you have a family, and they're all growing up Southern now, what have you found about the South, or what was surprising about it? You said you noticed how nice the people were when you first came here. It must have been quite a culture shock to come here for the first little bit. Tell me your impressions of Mississippi and north Mississippi, and the forest here.

SA: I think... You know, the people have been great, and I think the cultural shock wasn't quite as big as I expected, and I think that's because we're in a university town, probably. If we'd moved to another small town in Mississippi it would have been quite different. The people have been great. There's a lot more family connection here than I'm used to. I grew up in California where people moved all the time, and I hardly knew anybody who'd been there more than two generations. And now half the people I know here have been in Lafayette County for five generations, and that's very different as far as the social structure. People just don't know somebody; they've known them for generations. And they're inter-related to everybody. And that's really different. I think that's really a neat thing, but it also makes it a little harder to break into a community I think, than when everybody's new. There's a lot more going on here than there was in the town we lived in. We lived in, actually we didn't even live in a town, we lived fifteen two miles from town. So for the kids there's a lot more to do. There's great parks and lots of programs, and stuff going on at the university for the kids to do. And that's been fun. The hard things, I guess, have been being far from family, and far from the mountains, and it's so hot in the summer. [Laughs] But there's sure a lot of beautiful weather here in the winter, so that's been nice.

MM: So, your future plans. Do you think you want to stay in Mississippi, or do you feel like maybe you're going to be gone at some point?

SA: Yeah, I'm really torn, because it's still, it's the perfect job. I love my job. But like I said, as far as the family, and my parents are getting older. So it's a struggle. I keep my eye out for what's going on out West, but I really like my job here too. So I'm not sure what will happen. I'm open to both directions, I guess.

END OF INTERVIEW